HHS Public Access

Author manuscript

AIDS Behav. Author manuscript; available in PMC 2015 May 22.

Published in final edited form as:

AIDS Behav. 2014 January ; 18(1): 180–188. doi:10.1007/s10461-013-0505-1.

Sexual partnerships with men and women among men who have sex with men in Beijing and Chongqing, China, 2010

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Abstract

HIV is spreading among Chinese MSM and may possibly lead to infection of female partner. Pressure to marry may drive a greater proportion of Chinese MSM to have female partners than MSM elsewhere in the world. Measurement of the size of the potential risk to female partners of Chinese MSM is inconsistent in literature. From samples of MSM in two Chinese cities, we documented numbers of sexual partners and sexual activity with those partners. About 500 MSM were sampled in each city. 11.0% and 12.6% of men reported having any female partners in the past six months in Chongqing and Beijing, respectively. Men also reported that only 7.3% and 6.7% of their entire partnerships were with women in Chongqing and Beijing, respectively. Defining transmission risk accounting for receptive anal sex among men and condom non-use with both male and female partners 3.4% of MSM in both Chongqing and Beijing would have the potential to transmit HIV to female partners. Only 9 (1.8%) men in Chongqing and 2 (0.4%) in Beijing were HIV-positive and also had unprotected intercourse with females. The majority of HIV transmission risk among MSM in China is not from MSM to females.

Keywords

MSM, sexual partnerships; China; HIV; risk taking; bridging; female partners

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Conflicts of Interest: None.

Introduction

The relentless rise of the HIV epidemic among men who have sex with men (MSM) in China has been well documented in over a decade's worth of published literature [1-3]. However, prevention activities, including HIV testing, may not be reaching the goal of reductions in new infections because of low coverage [4.-6]. Unfortunately, this suggests that this rise in HIV transmission will continue producing a larger and larger pool of infected MSM.

The literature on HIV among MSM in China has also focused on whether Chinese MSM may transmit HIV to their female partners and by extension the general Chinese population [7-12]. Modeled HIV transmission based on condom use rates suggest a large potential increase in transmission from MSM to female partners of MSM [9]. With the population of MSM estimated to be between 5 and 10 million in China [13] this represents a potentially serious generalized public health problem.

Bisexual behavior is not unique to Chinese MSM. The literature among Chinese MSM suggest that China is unique in the level of pressure to marry among men [14] thus creating the potential of spreading HIV through bisexual behavior. Fully 34.4% of MSM participants in one study reported intending to get married and the majority of these reported their reason for intending to do so as social and family pressure [15]. China is not alone in having a culture that values marriage. In other studies of the “bisexual bridge” from MSM to female partners around the world the findings have generally been mixed. Izazola-Licea et al. (2003) suggest that in Mexico (a culture known for its machismo and high rates of bisexuality) bisexuals practice more safe sexual practices compared to men who only have sex with other men making them less likely to bridge HIV to women [16]. This finding is echoed in a study of men in the United States that found that bisexual men were more likely to have unprotected sex with female partners than male partners reducing their risk of acquiring HIV from male partners and the risk that they would in turn transmit HIV to their female partners [17]. In the United States, researchers have suggested that bisexuality is a minor contributor to new HIV infections [18], while a number of published studies conclude that there is potential for spread of HIV from MSM to the heterosexual population [19-21]. If bisexuality is common among Chinese MSM, this could suggest a grave threat to Chinese public health.

Measurement of the potential risk to female partners from the MSM population is documented but inconsistent in the published literature. Some researchers report only marital status as evidence of risk to female partners while others quantify the proportion of MSM having both unprotected anal intercourse (UAI) with men and unprotected vaginal intercourse (UVI) with women [22, 23]. In between these two ends of the spectrum are measures that range from having “any female sex partners” to simply sself-reported “bisexual” identity [10,12]. Lacking in the literature are measures that quantify the proportion of MSM who have female partners and the proportion of MSM who have both UAI and UVI. Additionally, data is lacking on the quantity of potential exposures of women to HIV from MSM such as the number of unprotected sex acts engaged in with both men and women as per act risk of transmission is arguably a crucial factor in whether a female

partner of an MSM will be infected. Moreover, the likelihood of MSM being infected is related to the role in anal sex he engages in with other men. Men who take the receptive role are more likely to be HIV infected than those who only take the insertive role [24]. To be an effective bridge from MSM to women, an individual MSM would have to have a high probability of acquiring HIV infection through MSM sexual activity (i.e., taking the receptive role during anal sex with men) and having UVI with a female partner. The literature appears to not document the potentiality that Chinese MSM with both male and female sex partners are only the insertive partner with both genders. Another issue in the existing literature is that many papers report the proportion of MSM who do not use condoms with female partners out of the denominator of MSM who have female partners and not out of the denominator of all MSM thus potentially over representing the threat of HIV transmission to women from the MSM population as a whole. For example, Chow et al., (2012) report that 29% (53/183 men) report having sex with a female in the past six months then subsequently report that 22.6% (12/53 men) did not use condoms at last vaginal sex with their female partner [9]. However, if the total sample of MSM is used then only 6.6% (12/183) of MSM did not use condoms at last vaginal sex. The former overstates the risk to women from the MSM population by almost three times compared to the latter.

Further complicating this discourse is that the HIV epidemic among MSM in China is not uniform, that is HIV incidence is not evenly distributed across all Chinese cities thus the corresponding risk to women may not be uniform across the country. Differences in background HIV prevalence among MSM must also be taken in to account when estimating the risk of transmission to female partners of MSM. Cities with high prevalence but relatively lower bisexual behavior and unprotected anal intercourse with men and unprotected vaginal or anal sex with women may create a situation where infection of women is more likely compared to a location where risk behaviors may be high but prevalence is low among MSM. Beijing and Chongqing potentially represent two paradigms of Chinese cities in terms of the HIV epidemic among MSM. Beijing has to date had lower HIV prevalence, which has grown only slowly in the past years [2]. Chongqing on the other hand has experienced a rapid rise in HIV among MSM [3].

Considering the rising HIV epidemic among MSM, the documented potential of a bridge from MSM to women in China, the wide range of approaches to measuring that bridge, the mixed findings about the potential bisexual bridge from around the world and the wide range of background prevalence of HIV among MSM across cities in China, we set out to carefully explore and attempt to quantify this important epidemiological question.

Methods

Participants were recruited using Respondent-driven Sampling (RDS), a sampling method commonly used with hidden populations for HIV research worldwide [25,26]. Eligible men were self-identified as MSM, over 18 years old, lived or worked in Chongqing or Beijing and had sex with at least one other man in the past 12 months (anal, oral, mutual masturbation). After obtaining informed consent each participant completed a computer based survey, had HIV pretest counseling and provided a specmimen for HIV testing. Each participant was given three recruitment coupons to give to other MSM in their social

networks. Men who received coupons presented themselves at the study site for eligibility screening. Men received 30 Chinese Yuan (CNY) for their study visit and 10 CNY for each of up to three referrals.

Measures

Demographics and overall risk variables were measured using standardized questions in both sites. Sexual behavior was collected using a partner by partner series of questions for up to three male and two female partners for each participant. This type of assessment allows for detail information on number of partners and background characteristics of partners to be measured and is superior in investigating complex phenomenon for which aggregated sexual history data is unsuited such as racial or gender mixing [27]. For each partner, particpants were asked to report the age, gender, type of partner and whether they had unprotected sex with that partner in the past six months. For male partners, questions about where they met, where they have sex, sex work and discussion of HIV were asked. HIV status was measured by self-report and by laboratory testing of collected specimens.

Analysis

Our analysis presents two types of data. First, we present individual characteristics of participants and their partners. Second, we present partnership level data for all participants or in other words the six-month “ecology” of sexual partnerships of our participants.

We calculated crude frequencies and conducted χ^2 tests to compare the individual level characteristics of the participants in both cities. We then examined the characteristics of partnerships reported by participants descriptively. Finally using a hierarchy of potential transmission/acquisition risk among men and their female partners we illustrated the size of the potential risk to female partners from the MSM population as a whole.

Ethical approval was obtained from China's National Center for AIDS, Vanderbilt University and University of California, San Francisco.

Results

Demographics – individual level variables (Table 1)

A total of 500 MSM were sampled in Beijing (13 weeks of recruitment) and 498 in Chongqing (8 weeks of recruitment). Overall the Chongqing sample was younger with the majority (64.3%) aged 18-25 years old compared to Beijing where only 35.2% were 18-25 years old (χ^2 98.8, *df 3*, p <0.001). Mean age was 30.6 years (Standard Deviation [SD] 9.4) and 25.6 years (SD 7.1) in Chongqing and Beijing, respectively. Both samples were overwhelmingly of Han ethnicity (97.4% in Chongqing, 93.8% in Beijing). More MSM were college educated in Chongqing (66.3%) compared to those in Beijing (42.4%) (χ^2 75.2, df 4, *p* <0.001). In terms of marital status, the majority of MSM in both cities were single (87.3% in Chongqing, 78.8% in Beijing). There appears to be a discrepancy between reporting marital status as married and reporting living with their wife. In Chongqing 8% of respondents indicated being married while only 6% reported living with their wife. An even greater difference was noted in Beijing where 15.4% of respondents reported being married

while only 5.8% reported living with their wife. Overall, MSM in both cities tended to live alone (74.3% in Chongqing, 62.0% in Beijing), while almost 20% in both cities reported living with a boy friend. Notably, MSM in the Chongqing sample were more likely to be students (25.1%) compared to those in Beijing (6.6%) (χ^2 49.8, df 4, p <0.001). Fully, 83.8% of MSM in Beijing were employed full-time compared to 65.7% in Chongqing (χ^2 94.5, df 4, p <0.001). Chongqing MSM reported lower levels of income than those in Beijing. Almost 30% of MSM in Chongqing reported no income while only 9.6% of MSM in Beijing reported the same (χ^2 98.6, df 4, p <0.001). A majority in both samples reported gay as their sexual orientation (67.5% in Chongqing, 74.4% in Beijing).

Sexual Activity- individual level variables (Table 1)

Similar proportions of MSM in both cities reported having any female partners in the past six months (11.0% in Chongqing, 12.6% in Beijing) and MSM in both cities reported similar mean number of total partnerships over the past six months (1.9 mean partnerships in Chongqing, 2.2 in Beijing). Comparing mean number of total male and female partners in the past six months across the two cities, participants had a mean of 2.1 male and 0.15 female partners in Beijing (a 14 to 1 ratio) and 1.7 male and 0.11 female partners in Chongqing (a 15 to 1 ratio). Any unprotected sex with male partners was more often reported by MSM in Chongqing compared to Beijing (60.6% in Chongqing, 44.4% in Beijing). Similar levels of any unprotected sex with female partners was reported in both cities (8.2% in Chongqing, 10.6% in Beijing). Main partnerships were overwhelmingly male among both samples of MSM with 69.1% of Chongqing MSM and 60.4% of Beijing MSM reporting having a male partner as their main partner, respectively. Finally, sex work, which is either being paid or paying for sex, was low in both cities with 1.2% in both samples reporting being paid for sex and 1.4% and 0.8% reporting paying for sex in Chongqing and Beijing, respectively.

Partnerships with men- partnership level variables (Table 2)

We examined the characteristics of partnerships reported by men in both cities. Men in Chongqing reported on 870 partnerships with men and men in Beijing reported on 1037 partnerships with men, approximately 1.7 and 2.1 partnerships per respondent Chongqing and Beijing, respectively. The mean age of partners was 25.5 (SD 6.2) in Chongqing and 29.4 (SD8.9) in Beijing. While the majority of partnerships in Chongqing were main partnerships (50.2%) the majority were casual partnerships (64.7%) in Beijing. This difference may be reflected in the places where MSM in both cities meet partners. In Chongqing, meeting partners on the internet (79.8% of partnerships) and in bars (9.3% of partnerships) were the most common venues for meeting partners. In Beijing, the most commonly cited places to meet partners were internet (48% of partnerships), parks (20.2% of partnerships) and other places (15.5%). Regardless of where men met partners, sexual activity most often occurred in one of the men's homes. In Chongqing almost 70% of partnerships and in Beijing over 70% of partnerships involved having sex at one of the partner's homes. Of note, despite reporting meeting 20% of partners in parks, men in Beijing reported only having sex in parks in 4.8% of partnerships. In terms of sexual intercourse, high proportions of MSM in both cities report both unprotected insertive and receptive anal intercourse with male partners. Unprotected insertive anal intercourse was reported to be

present in 47.9% and 39.1% of partnerships in Chongqing and Beijing, respectively, while URAI was reported to be present in 49.5% and 31.2% of partnerships in Chongqing and Beijing, respectively. While not reported in the majority of partnerships alcohol use before or during sex was reported in 38.2% of Chongqing and 17.0% of Beijing partnerships, respectively. Substance use before or during sex and buying sex with in a partnership was extremely low in both cities. Finally, almost half of the partnerships in both cities involved discussion of HIV.

Partner by partner measures (Table 3)

In Beijing, the three male partner assessment collected data on 70% of the sample's entire number of male partnerships over the past 6 months. The two female partner assessment captured 99.9% of the sample's entire female sex partners in the past six months. In Chongqing, the three male partner assessment collected data on 87% of the sample's entire number of male partnerships over the past six months. The two female partner assessment captured 99.4% of the sample's entire female sex partners in the past six months.

From the partner-by-partner assessment, in Chongqing out of 939 partnerships 69 (7.3%) were with women and 870 (92.7%) were with men while in Beijing of the 1112 partnerships reported only 75 (6.7%) were with women while 1037 (93.3%) were with men. Throughout additional indicators such as partner type, unprotected intercourse, alcohol use before or during sex, selling sex, the pattern that female partners make up a small percentage of all partners among MSM is consistent.

Investigating the potential bridge of HIV from MSM to female partners. (Table 4)

Examining sexual behavior among the 63 (12.6% of 500) Beijing men who reported female partners, 17 (3.4%) had both male unprotected receptive anal intercourse (MURAI) and female unprotected intercourse (FUI), 36 (7.2%) had FUI but not MURAI, 0 (0%) had MURAI while not having FUI and 10 (2.0%) had neither FUI or MURAI. Among the 55 (11.0% of 498) Chongqing men who had female partners, 17 (3.4%) had both MURAI and FUI, 24 (4.8%) had FUI but not MURAI, 3 (0.6%) had MURAI while having FUI and 11 (2.2%) had neither FUI or MURAI.

Finally, In terms of men who tested positive for HIV, of the 500 MSM in the Beijing sample, 2 (0.4%) tested HIV-positive in the present study and had FUI with one female partner each (mean = 1) in the past six months. Contrasting this, 17 (3.4%) who tested HIV positive had UIAI with a total of 26 male partners (mean = 1.5) in the past six months. Among 498 Chongqing MSM, 9 (1.8%) who tested HIV positive in the present study reported 13 female partners (mean = 1.4) in total over the past six months while 42 (8.4%) who tested HIV positive had UIAI with a total of 71 (mean = 1.7) male partners in the same period (data not shown). Notably, no participants self-reported being HIV-positive at the time of the survey suggesting that these few men with “unrecognized” HIV infection were the most likely to be in a position to transmit HIV to females.

Discussion

Through data collected in 2010 in Chongqing and Beijing, we were able to characterize in detail the partnership patterns among a diverse sample of Chinese MSM with both their male and female partners. To our knowledge, this is the first attempt to measure sexual partnerships of Chinese MSM in such a way as to more accurately compare Chinese MSM's male and female partnerships and their potential for transmitting HIV to female partners.

Chongqing MSM were younger and more likely to be college students while in Beijing men were more often married, were more often employed and had higher incomes. Both cities had similar levels of various living situations whether alone, with a boyfriend and in fewer instances with wives. The finding that about 20% of MSM in both cities live with a boyfriend may suggest that MSM in China do have the potential to establish and nurture enduring partnerships instead of being limited to furtive anonymous sexual encounters that have been suggested to be the norm in other research (cite). Furthermore, it would appear that MSM in both these Chinese cities have fewer casual partnerships than other MSM (e.g. SF MSM reported 76% of partnerships were causal partnerships CITE). Moreover, our data suggest that sexual activity within partnerships most often happens at one of the partners' homes and not in public or semi-public environments further eroding the “inherently high-risk” characterization of Chinese MSM engaging in furtive sexual encounters in anonymous environments. Despite these findings, which in our assessment normalize Chinese MSM and their partnering practices, there is cause for concern. Large proportions of partnerships with other men involve both unprotected insertive and receptive anal intercourse. Being “married” among MSM was not a clear indicator of potential risk to female partners as many married MSM did not live with their female partners. In our study, the discrepancy between being married and living with the wife suggests that marriage in itself may not denote risk as the couple is not living together and thus may not be engaged in sexual activity with one another. This may be due to situations where married couples are apart for economic reasons (i.e., internal migrants) or because the marriage is pro forma or a sham [15]. Secondly, it should be noted that only a small proportion of MSM in both samples reported having female partners and/or unprotected sex with female partners.

Previous published studies have used a variety of indicators to suggest there is a risk of bridging to female partners of MSM [8, 10]. These have included being ever married, having recent female partners and having unprotected intercourse with female partners. It should be noted that studies are now suggesting that some proportion of MSM enter into “sham” marriages to fulfill social obligations not to fulfill sexual desires for females thus further eroding the potential value of “married” as an indicator of risk to female partners. Indeed a recent study on intention to marry among Chinese MSM reported that among MSM who intended to marry 16.2% intended to marry lesbians [15]. Our data suggest that these measures may overstate the risk of HIV transmission to female partners of MSM. Using the current Beijing data as an example, being ever married would estimate that 21.2% of all MSM pose a risk to female partners, 15.4% if currently married, 12.6% if having sex with a female partner in the past six months and 10.6% if unprotected intercourse with female partners. This pattern is echoed in Chongqing. We suggest, however, that the conditions for transmitting HIV to female partners requires the presence of both unprotected intercourse

with female partners and unprotected intercourse with male partners. Only 5.2% of Beijing MSM in the current study meet these conditions. Moreover, with the risk of infection between male partners highest when engaging in receptive anal intercourse with a male partner, we suggest that the best indicator of potential HIV transmission risk to female partners available in the current data, other than a clearly HIV-positive person having sex with a female partner, is an individual having both unprotected intercourse with a female partner and having unprotected receptive anal intercourse with male partners in the same period. Only 3.4% of Beijing MSM in the current study met these criteria. Again, similar proportions of MSM in Chongqing met all the criteria described above. Finally, the low proportion of HIV positive MSM also having unprotected intercourse with female partners was very low in our study.

Our study is not without limitations. First, while better quantifying the risk of HIV transmission to female partners our measures are still imperfect. To quantify the potential transmission risk, total number of episodes of intercourse and total number of episodes of unprotected intercourse with sexual partners need to be collected. That is, understanding the quantity of sex engaged in with partners, what genders, what sexual position and what proportion was unprotected would better illustrate whether MSM in China are indeed a potential bridge of HIV infection to women. Second, our study is also based on data from two large cities in China and may not represent all Chinese MSM. However, the two cities chosen for inclusion do represent two main paradigms of the HIV epidemic among MSM in China. Chongqing represents a city with a rapidly expanding HIV epidemic while Beijing illustrates an example of a city where the HIV epidemic is low and slowly expanding among MSM. Third, only a few cases of unrecognized HIV infection were detected in this study limiting our ability to quantify the potential HIV transmission behaviors among this crucial group in regards to female partners. Fourth, our study had few HIV-positive participants and were thus unable to characterize with great certainty the transmission risk behaviors of this group.

Add discussion of R0. Future research may be warranted to better understand whether there is truly risk to female partners of MSM in China. Studies must be undertaken to understand the sexual behaviors of MSM who are infected with HIV but unaware of their status with their female partners as well as studies that document if there are changes in sexual risk behaviors with women once MSM are diagnosed with HIV. At least one such study has been carried out however the outcome was unprotected anal sex with male partners and unprotected vaginal sex with female partners (i.e., measures of condom use) but did not include measures of the number of sexual acts or information about HIV prevalence among the female partners [28]. Add discussion of R0. From an epidemiological and biological point of view, transmission of HIV is governed by a different set of rules depending on the gender of the persons involved. Among MSM there is most likely a short period of time between infection and onward infection (i.e., acute infection) which benefits from quick partner turnover among MSM. It is likely that with the few female partners MSM have and the period between sexual activitiy with these women, the likelihood that an MSM will be in an acutely infectious stage when having sex with their female partners is low. Ultimately, without studies that document the magnitude of sexual activity with women and actual infections of women from MSM, such as dyadic studies, most current findings around risk

of HIV transmission from MSM to women are circumstantial. It is possible that studies of HIV infected women that bring in their spouses (which would likely include a few MSM spouses) would find that the MSM partners are HIV-negative. One such study, although the authors did not collect risk behavior data on spouses found that many spouses of HIV infected pregnant women were actually HIV-negative suggesting that HIV infected women were infected by someone other than their husband [29].

Our data clearly indicate some small risk of HIV infection to female partners of MSM (i.e. some HIV positive MSM reported having unprotected intercourse with female partners) but the data also suggest that the majority of potential HIV transmission attributable to MSM in China lies within male-male partnerships and not in the minority of partnerships that MSM have with women. HIV prevention research for MSM in China should focus on the larger risks of transmission between MSM.

Acknowledgments

This study was supported by grants from the National Natural Science Foundation of China (81273188), Chinese State Key Laboratory for Infectious Disease Development Grant (2012SKLID103) and the U.S. National Institute of Health grants (R01AI078933).

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Table 1

Individual level demographic and partnering pattern characteristics, MSM, Beijing and Chongqing, 2010.

	Beijing N = 500		Chongqing N = 498		
Variable	**n**	**%**	**n**	**%**	**χ^2 (df) *p***
Age					98.9 (3) <0.001
18-25	176	35.2	320	64.3	
26-30	133	26.6	105	21.1	
31-40	124	24.8	53	10.6	
41+	67	13.4	20	4.0	
Ethnicity					7.6 (1) 0.02
Han	469	93.8	485	97.4	
Other	31	6.2	13	2.6	
Education					75.2 (4) <0.001
None	1	0.2	1	0.2	
Elementary school	14	2.8	2	0.4	
Middle school	112	22.4	38	7.6	
High School	161	32.2	127	25.5	
College or more	212	42.4	330	66.3	
Current marital status					14.4 (3) 0.01
Single	394	78.8	435	87.3	
Married	77	15.4	40	8.0	
Divorced	28	5.6	22	4.4	
Widowed	1	0.2	1	0.2	
Living situation					49.8 (4) <0.001
With wife	29	5.8	30	6.0	
With other female sex partner	4	0.8	6	1.2	
With boy friend	109	21.8	90	18.1	
With other male sex partner	48	9.6	2	0.4	
Alone	310	62.0	370	74.3	
Employment					94.5 (4) <0.001
Full time	419	83.8	327	65.7	

	Beijing N = 500		Chongqing N = 498		
Variable	**n**	**%**	**n**	**%**	**χ^2 (df) *p***
Part time	21	4.2	0	0	
Student	33	6.6	125	25.1	
Unemployed	21	4.2	43	8.6	
Retired	6	1.2	3	0.6	
Income (per year CNY)					98.6 (4) <0.001
0	48	9.6	145	29.1	
<1000	24	4.8	22	4.4	
1000-2000	242	48.4	232	46.6	
3000-4999	79	15.8	73	14.7	
>=5000	107	21.4	26	5.2	
Sexual Orientation					18.9 (3) <0.001
Gay	372	74.4	336	67.5	
Straight	8	1.6	1	0.2	
Bisexual	112	23.6	135	27.1	
Unsure	8	1.6	26	5.2	
Sexual partners past six months					
Female	63	12.6	55	11.0	ns
Male	479	95.8	484	97.2	ns
Partnerships per participant	Mean	sd	Mean	sd	z, *p*
All (mean)	2.2	1.1	1.9	0.9	4.7, 0.00
Male (mean)	2.1	0.9	1.7	0.8	7.4, 0.00
Female (mean, sd)	0.15	0.4	0.11	0.3	2.2, 0.03
Male unprotected sex					
Any	222	44.4	302	60.6	26.4 (1) <0.001
Insertive anal	145	29.0	221	44.4	25.4 (1) <0.001
Receptive anal	147	29.4	231	46.4	30.6 (1) <0.001
Female unprotected sex				8.2	
Any	53	10.6	41	8.2	ns
Insertive vaginal	53	10.6	41	0.6	ns
Insertive anal	2	0.4	3		ns

Variable	Beijing N = 500 n	%	Chongqing N = 498 n	%	χ^2 (df) *p*
Had Main Partnership					ns
Male	302	60.4	344	69.1	
Female	55	11.0	45	9.0	
Male partnerships					27.1 (2) <0.001
Main only	149	29.8	109	21.9	
Main and casual	154	30.8	235	47.2	
Casual Only	176	35.2	140	28.1	
Sex Work					
Received money	6	1.2	6	1.2	ns
Paid money	4	0.8	7	1.4	ns

AIDS Behav. Author manuscript; available in PMC 2015 May 22.

Table 2

Male partnership characteristics among a sample of MSM, Beijing and Chongqing, China, 2010.

	Beijing N = 1037		Chongqing N = 870		Pointless, just describe?
Variable	**n**	**%**	**n**	**%**	**χ^2 (df) *p***
Partner Type					
Main	366	35.3	437	50.2	
Casual	671	64.7	433	49.8	
Satisfaction with partner					
Satisfied	662	63.9	353	40.6	
Somewhat satisfied	345	33.3	467	53.7	
Not satisfied	30	3.9	50	5.7	
Where met partner					
Internet	501	48.3	694	79.8	
Bar	48	4.6	81	9.3	
Bathhouse	97	9.4	5	0.6	
Sauna	2	0.2	0	0	
Massage	1	0.1	1	1.1	
Park	209	20.2	13	1.5	
Public restroom	8	0.8	2	0.2	
Club	10	1.0	30	3.4	
Other	161	15.5	44	5.1	
Where has sex with partner most of the time					
My place	434	41.9	376	43.2	
His place	328	31.6	225	25.9	
Bar	0	0	2	2.3	
Bathhouse	86	8.3	8	0.9	
Sauna	1	0.1	0	0	
Massage	1	0.1	1	0.1	
Park	50	4.8	4	0.5	
Public Restroom	14	1.4	3	0.3	
Club	1	0.1	0	0	

	Beijing N = 1037		Chongqing N = 870		Pointless, just describe?
Variable	**n**	**%**	**n**	**%**	**χ^2 (df) *p***
Hotel	115	11.1	250	28.7	
Other	7	0.7	1	0.1	
Alcohol use before or during sex	860	82.9	537	61.7	
Never	171	16.5	324	37.2	
Sometimes	6	0.5	9	1.0	
Always					
Substance use before or during sex	1	0.09	3	0.3	
Sold sex	4	0.4	12	1.4	
Bought sex	14	1.4	13	1.5	
Talked about HIV	523	50.4	409	47.0	

Table 3

Descriptive comparison of select characteristics by female and male partnerships among MSM, Beijing and Chongqing, 2010.

Variable	Beijing N = 1112		Chongqing N = 939	
Partner Gender	Female	Male	Female	Male
	N= 75	N = 1037	N = 69	N = 870
	(6.7%)	(93.3%)	(7.3%)	(92.7%)
Variable				
Partner Type				
Main	59 (5.3)	366 (32.9)	47 (5.0)	437 (46.5)
Non-steady	16 (1.4)	671 (60.3)	22 (2.3)	433 (46.1)
Any unprotected intercourse				
Female partner				
Vaginal	66 (5.9)	NA	56 (6.0)	NA
Anal	21 (1.9)	NA	28 (3.0)	NA
Male Partner (anal)				
Insertive	NA	405 (36.4)	NA	456 (48.6)
Receptive	NA	324 (29.1)	NA	433 (46.1)
Used alcohol before or during sex				
Never	57 (5.1)	860 (77.3)	40 (4.3)	537 (57.2)
Sometimes	12 (1.2)	171 (15.4)	29 (3.1)	324 (34.5)
Always	6 (0.5)	6 (0.6)	0 (0)	9 (1.0)
Used substances before or during sex	0 (0)	1 (0.8)	0 (0)	3 (0.3)
Sold sex to partner	0 (0)	4 (0.4)	0 (0)	12 (1.3)
Bought sex from partner	0 (0)	14 (1.3)	0 (0)	13 (1.4)
Talked about HIV with partner	8 (0.7)	523 (47.0)	5 (5.3)	409 (43.6)

NA - not applicable

Table 4

Individual level sexual behaviors with men and women among MSM who reported female sexual partners in Beijing and Chongqing, 2010.

Variable	Beijing N=500	Chongqing N=498
	n (%)	
Reported both male and female sexual partners	63 (12.6)	55 (11.0)
FUI*, No MURAI **	36 (7.2)	24 (4.8)
MURAI, No FUI	0	3 (0.6)
Neither FUI or MURAI	10 (2.1)	11 (2.2)
MURAI and FUI	17 (3.4)	17 (3.4)

* FUI= female unprotected intercourse

** MURAI= male unprotected receptive anal intercourse