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STD Prevalence, Risky Sexual Behaviors, and Sex With Women in a National Sample of Chinese Men Who Have Sex With Men

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We describe the behavioral characteristics and sexually transmitted disease (STD) prevalence of Chinese men who have sex with men (MSM) (n=41) from a national probability sample of men (n=1861). Most MSM were partnered with females (97%) and had a low rate of consistent condom use (7%). More MSM than heterosexual men self-reported a prior STD and risky sexual behaviors. MSM may act as a bridge for HIV transmission to female partners. Targeted interventions may help prevent a generalized HIV epidemic in China. (*Am J Public Health.* 2009;99:1978–1981. doi: 10.2105/AJPH.2008.150037)

In some parts of China, HIV prevalence has exceeded 1% of the general population.[1,2] Men who have sex with men (MSM) accounted for 7.3% of HIV infections[3] and 11% of new HIV infections in 2007.[4] The proportion of HIV infections among MSM is likely to grow, as studies have documented increasing HIV prevalence and high prevalence of risky sexual behaviors and of sexually transmitted diseases (STDs) among this population.[5–12]

MSM may serve as a bridge population for transmitting HIV to the general population. Empirical data have shown that a large proportion of Chinese MSM are either married or have female sex partners.[5,13] High-risk sexual behaviors with both male and female partners among MSM are also common. Surveys have documented extremely high rates of inconsistent condom use with female partners.[13–15] We report the sociodemographic and sexual behavioral characteristics and the STD prevalence of a national probability sample of Chinese heterosexual men and men who had homosexual experiences.

METHODS

A Chinese household survey (not including Hong Kong and Tibet) of adults aged 20 to 64 years was implemented between 1999 and 2000 with probabilistic sampling, as part of the Chinese Health and Family Life Survey. The procedures in this study were previously reported in detail elsewhere.[16] Of the 5000 individuals sampled nationally, 3813 completed the computerized interview and 3426 (participation rate=69%) also provided a urine sample.

Adult MSM (n=41) and heterosexual men (n=1820) were identified through participants' reply to the question, "Have you ever had sex with another man?" Sociodemographic characteristics, including place of residence, education, employment, marital status, and monthly income, were also recorded. Condom use with spouse or primary sex partner, sexual encounters with nonprimary partners, and whether participants ever gave or received money, gifts, or valuables for sex were assessed. Finally, participants self-reported lifetime history of any STD. Urine specimens were collected and tested for gonorrhea and chlamydia by standard laboratory methods.

RESULTS

Of 1861 male participants who answered the question concerning MSM behavior, 41 (2.2%) reported ever having had sex with men (Table 1). MSM appeared to be younger than heterosexuals (42% vs 27% were younger than 30 years old), although the difference was statistically nonsignificant. A majority of MSM (85%) did not attend any form of college, but they were significantly more likely than were heterosexual men to have attained more than a primary school education (98% vs 84%; $P=.041$). Heterosexual men were more likely to be married than were MSM (85% vs 68%; $P=.027$), but it is important to recognize that most MSM were currently married.

Sex with Women and Risky Sexual Behaviors

Of the 34 MSM who reported having a spouse or primary sex partner (hereafter called "partner"), the partner was female in all but

TABLE 1—Sociodemographic Characteristics and Sexual Behaviors of Male Study Participants: Chinese Health and Family Life Survey, 1999–2000

	All Participants		MSM		Heterosexuals		
	No./Total Sample	%	No./Total Sample	%	No./Total Sample	%	*P*[a]
Age, y							.107[b]
<30	500/1861	26.9	17/41	41.5	483/1820	26.5	
31–50	1058/1861	56.9	20/41	48.8	1038/1820	57.0	
≥51	303/1861	16.3	4/41	9.8	299/1820	16.4	
Education							.041[b]
Primary school or less	299/1861	16.1	1/41	2.4	298/1820	16.4	
Secondary school	706/1861	37.9	17/41	41.5	689/1820	37.9	
High school	556/1861	29.9	17/41	41.5	539/1820	29.6	
College[c]	300/1861	16.1	6/41	14.6	294/1820	16.2	
Current location of residence							.116[b]
Rural	385/1861	20.7	4/41	9.8	381/1820	20.9	
Urban	1476/1861	79.3	37/41	90.2	1439/1820	79.1	
Employment status							.601[b]
Unemployed	104/1763	5.9	3/41	7.3	101/1722	5.9	
Temporary	361/1763	20.5	10/41	24.4	351/1722	20.4	
Full-time	1298/1763	73.6	28/41	68.3	1270/1722	73.8	
Monthly income, yuan							.911[b]
<100	141/1860	7.6	2/41	4.9	139/1819	7.6	
200–800	952/1860	51.2	22/41	53.7	930/1819	51.1	
≥900	767/1860	41.2	17/41	41.5	750/1819	41.3	
Marital status							.027[b]
Never married	231/1850	12.5	11/41	26.8	220/1809	12.2	
Currently married	1560/1850	84.3	28/41	68.3	1532/1809	84.7	
Cohabiting	34/1850	1.8	1/41	2.4	33/1809	1.8	
Divorced	25/1850	1.3	1/41	2.4	24/1809	1.3	
Gender of spouse/primary sex partner							.021[b]
Male	1/1649	0.1	1/34	2.9	0/1615	0.0	
Female	1648/1649	99.9	33/34	97.1	1615/1615	100.0	
Last time had sex with spouse/primary sex partner							.262[b]
Within last 2 wk	1198/1645	72.8	23/34	67.6	1175/1611	72.9	
Within last mo	202/1645	12.3	5/34	14.7	197/1611	12.2	
Within last y	161/1645	9.8	2/34	5.9	159/1611	9.9	
1 y ago or more	84/1645	5.1	4/34	11.8	80/1611	5.0	
Frequency of sex with spouse/primary sex partner							.730[b]
More than once per wk	892/1561	57.1	17/30	56.7	875/1531	57.2	
2–3 times per mo	443/1561	28.4	10/30	33.3	433/1531	28.3	
Once per mo or less	226/1561	14.5	3/30	10.0	223/1531	14.6	
Condom use with spouse/primary sex partner							.367[b]
Always	97/1559	6.2	2/30	6.7	95/1529	6.2	
Sometimes	460/1559	29.5	12/30	40.0	448/1529	29.3	
Never	1002/1559	64.3	16/30	53.3	986/1529	64.5	
Had sex with others while with spouse/primary sex partner							.047
Yes	315/1648	19.1	11/34	32.4	304/1614	18.8	
No	1333/1648	80.9	23/34	67.6	1310/1614	81.2	

Continued

TABLE 1—*Continued*

Received money, gifts, or valuables for sex in past y							.128[b]
Yes	29/1855	1.6	2/40	5.0	27/1815	1.5	
No	1826/1855	98.4	38/40	95.0	1788/1815	98.5	
Gave money, gifts, or valuables for sex in past y							.031
Yes	149/1861	8.0	7/41	17.1	142/1820	7.8	
No	1712/1861	92.0	34/41	82.9	1678/1820	92.2	

Note. MSM = men who have sex with men. Sum of total sample varies because of missing values.
[a]*P* value obtained from the Pearson χ^2 test for categorical variables unless otherwise indicated.
[b]*P* value obtained from the Fisher exact test
[c]Junior college or above.

1 case (Table 1). Most MSM (82%) reported having had sex with their partner within the past month, and 90% reported having had sex with their partner at least 2 to 3 times per month on average. Consistent condom use with female partners was low for both MSM and heterosexuals (7% and 6%, respectively); 53% of MSM had never used condoms with their partner in the past year. MSM were significantly more likely than heterosexuals to have had sex outside of their primary partnership (32% vs 19%; *P*=.047) and to have given money, gifts, or valuables for sex in the past year (17% vs 8%; *P*=.031).

Lifetime STDs and Urine Test Results

Two percent of men in our sample self-reported ever having had an STD (Table 2). MSM were significantly more likely than heterosexuals to report ever having had an STD (11% vs 2%; *P*=.001). There was a trend difference in the cross-sectional prevalence of gonorrhea- or chlamydia-positive test results between MSM and heterosexuals (8% vs 3%; *P*=.074).

DISCUSSION

In this population-based Chinese probability sample, an estimated 2.2% (95% confidence interval [CI]=1.6, 3.0) of adult males aged 20 to 64 years were MSM. Even this modest prevalence rate produces a conservative estimate of 7 000 000 MSM in China. We found that these men had regular sex and inconsistent condom use with their female partners. Compared with heterosexual men, MSM had higher rates of STDs and engaged in more risky sexual

TABLE 2—Prevalence of Sexually Transmitted Diseases (STDs) Among Male Study Participants as Determined by Self-Reports and Urine Test Results: Chinese Health and Family Life Survey, 1999–2000

	All Participants		MSM		Heterosexuals		
Lifetime STD	No./Total Sample	% (95% CI)	No./Total Sample	% (95% CI)	No./Total Sample	% (95% CI)	*P*[a]
Self-reported STD							.001
Yes	34/1752	1.9 (1.3, 2.7)	4/38	10.5 (2.9, 24.8)	30/1714	1.8 (1.2, 2.5)	
No	1643/1752	93.8 (92.5, 94.9)	30/38	78.9 (62.7, 90.4)	1613/1714	94.1 (92.2, 95.2)	
Do not know	75/1752	4.3 (3.4, 5.3)	4/38	10.5 (2.9, 24.8)	71/1714	4.1 (3.2, 5.2)	
Urine test							
Any STD[b]							.074
Positive	44/1685	2.6 (1.9, 3.5)	3/38	7.9 (1.7, 21.4)	41/1647	2.5 (1.8, 3.4)	
Negative	1641/1685	97.4 (96.5, 98.1)	35/38	92.1 (78.6, 98.3)	1606/1647	97.5 (96.6, 98.2)	
Gonorrhea[b]							>.99
Positive	2/1685	0.1 (0.01, 0.43)	0/38	0 (0, 9.3)[c]	2/1647	0.1 (0.01, 0.44)	
Negative	1683/1685	99.9 (99.6, 100)	38/38	100.0 (90.7, 100)[c]	1645/1647	99.9 (99.6, 100)	
Chlamydia[b]							.066
Positive	42/1685	2.5 (1.8, 3.4)	3/38	7.9 (1.7, 21.4)	39/1647	2.4 (1.7, 3.2)	
Negative	1643/1685	97.5 (96.6, 98.2)	35/38	92.1 (78.6, 98.3)	1608/1647	97.6 (96.8, 98.3)	

Note. CI = confidence interval; MSM = men who have sex with men. Participants who knew the term "STD" self-reported lifetime history of any STD.
[a]*P* value obtained from the Fisher exact test.
[b]Determined by a urine test.
[c]One-sided 97.5% confidence interval.

behaviors. As most MSM were married to females, their female partners could be exposed to STDs and at elevated risk for HIV infection. The concern that Chinese MSM may be a potential bridge for HIV transmission to the general population is therefore valid and deserves more focused investigation.

This study had a small sample size of MSM (n=41), thereby limiting our power to detect statistically significant relationships. We were also not able to examine variables related to sex partners and behaviors in more detail. We did not have MSM-specific questions relating to sexual behavior (e.g., unprotected anal intercourse) and other contextual issues (e.g., homophobia, stigma). Some MSM may have chosen not to participate in the survey or may have denied MSM behavior because of societal stigma. Our findings may therefore be an underestimate of STDs and sexual risk behaviors among Chinese MSM.

Other methods to reach representative samples of MSM, such as time-location sampling or respondent-driven sampling, may be better positioned to enhance our understanding of the risk behaviors of MSM. Additionally, STD and HIV behavioral surveillance needs to be regularly conducted to monitor trends over time. Whereas interventions in the West have been developed in the almost exclusive context of MSM-only behavior, interventions in China will need to take into account the unique context of bisexuality evident among Chinese MSM. Qualitative research aimed at understanding these sociocultural contexts is therefore essential for the development of surveys and interventions.

Finally, it is of note that the prevalence of HIV infection in China is still relatively low. We therefore have a rare opportunity in HIV prevention work: time to act. The HIV epidemic among MSM in Thailand[17,18] strongly suggests that this window of opportunity to prevent a widespread HIV epidemic among MSM and, potentially, their female partners will not last. The time to act is now. ■

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Contributors

C. Wei and T.E. Guadamuz analyzed the data and led the writing of the brief. R. Stall and F.Y. Wong conceptualized the study and oversaw all aspects of the study analysis and writing of the brief.

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Human Participant Protection

The assessment protocol was reviewed and approved by the institutional review boards of the University of Chicago, Renmin University, and Peking Union Medical College. The data analysis portion of the study was considered nonhuman subjects activity (publicly accessible data) and thereby did not need institutional review board approval by the University of Pittsburgh and Georgetown University.

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