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Strategies for Promoting HIV Testing Uptake: Willingness to Receive Couple-based and Collective HIV Testing among a Cross-sectional Online Sample of Men Who Have Sex with Men in China

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Abstract

Objectives—Low rates of HIV testing drive the rapidly growing HIV epidemic among men who have sex with men (MSM) in China. We examined the potential utility of couple-based and collective HIV testing strategies among Chinese MSM.

Methods—A cross-sectional online survey was conducted among 1,113 MSM in 2013. Multivariable logistic regression analyses were conducted to identify factors associated with willingness to receive couple-based and collective testing.

Results—Acceptability of couple-based testing was very high among participants (86.1%), with a moderate level of interest in collective testing (43.2%). Being “out” to others about one's sexual identity (AOR = 1.48, 95% CI: 1.01, 2.17) and having ever had an HIV test (AOR = 3.05, 95% CI: 2.10, 4.33) were associated with willingness to receive couple-based testing. Having multiple male

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anal sex partners in the past three months was associated with willingness to participate in collective testing (AOR = 1.43, 95% CI: 1.03, 1.99).

Discussion—Couple-based and collective HIV testing could help better control the HIV epidemic among Chinese MSM if implemented and promoted in a culturally competent manner.

Keywords

HIV; men who have sex with men; testing; couples; China

INTRODUCTION

HIV testing is one of the few effective HIV prevention tools and is a critical first step in the HIV care continuum. Recent scientific advances have called for increased efforts to promote HIV testing uptake among key populations worldwide.¹² The Chinese government has prioritized HIV testing as a key strategy to control the rapidly growing HIV epidemic among men who have sex with men (MSM), who now account for over a third of new HIV infections in the country.³⁴ However, significant individual, socio-cultural, and structural barriers (e.g., fear of positive results, HIV stigma, and gay-related discrimination) exist that discourage Chinese MSM from seeking HIV testing services.⁵ A recent meta-analysis reported that prevalence of HIV testing in the past year among Chinese MSM was only 38% and only 47% of MSM have ever been tested.⁶ To more effectively control the HIV epidemic among MSM in China, new strategies are needed to significantly increase HIV testing uptake among this disproportionately affected population.

Couple-based testing, where couples participate in the entire cycle of HIV counseling and testing together including receiving their test results as a couple, has been shown to effectively reduce HIV transmission among serodiscordant heterosexual couples in Africa through risk reduction counseling tailored to the couples' HIV sero-status.⁷⁻⁹ However, couple-based testing for MSM has not been widely used and received little attention until recently. Several studies conducted in North America, Brazil, Australia, United Kingdom, South Africa, and Thailand reported high levels of willingness (well over 80%) to utilize couple-based HIV testing services among MSM.¹⁰⁻¹² Studies of US gay male couples reported that nearly 20% of HIV-negative men had not been tested for HIV since they have been in their relationship, but expressed interest in participating in couple-based testing.^{13,14} Furthermore, a randomized controlled trial conducted with US MSM found that couple-based testing was safe for male couples, and it was equally acceptable to individual HIV testing for men who have main partners.¹⁵ A few studies conducted with Chinese MSM reported that having a new partner, being asked by a partner or boyfriend, and a sense of responsibility to protect partners from HIV infection facilitate men's decisions to get tested.^{5,16} These findings suggest that couple-based testing could be a useful strategy to promote HIV testing among Chinese MSM. In fact, a male couples HIV counseling and testing program piloted at a community-based organization in Chengdu received positive feedback, and the China CDC has started to incorporate a male couples counseling and testing curriculum into the national training plan for counselors.¹⁷

Collective testing, defined here as two or more socially connected individuals instead of romantic or sex partners participating in HIV counseling and testing together in one setting, may offer another strategy to help Chinese MSM overcome barriers to testing. In Western cultures where individualism is emphasized, obtaining an HIV test is a very private and personal matter. However, within the Chinese collectivist cultural context, processes of dealing with health-related issues often involve agents beyond the directly affected individual. Typically, these agents involve immediate family members and sometimes extended family members. However, due to social stigma attached to homosexuality and MSM behavior, few Chinese MSM are “out” (i.e., disclosure of gay or bisexual identity) to their families. Thus, when it comes to managing HIV-related health issues such as HIV testing, MSM may seek support from other MSM friends. In a qualitative study of MSM in Nanjing, some participants reported that they had their first HIV testing experience with close friends.⁵ Furthermore, collective testing takes advantage of MSM's existing social networks. Studies conducted in the US showed that network-based approaches were able to locate unrecognized HIV infections among high-risk MSM.¹⁸¹⁹ A collective testing format could appeal to first-time testers by helping to reduce their fear of testing while receiving social support to cope with the potential stress from stigmas related to HIV/AIDS and having a sexual minority status.⁵

We conducted an online survey among Chinese MSM to examine the acceptance and potential utility of couple-based and collective HIV testing strategies. In this paper, we describe MSM's willingness to utilize couple-based and collective HIV testing and associated factors.

METHODS

Survey Development and Field Testing

Design and development of our online survey were informed by extensive formative work. We conducted 60 individual interviews with MSM and stakeholders and 7 focus group discussions with MSM to explore strategies that could promote HIV testing uptake and improve sexual health services for MSM. Furthermore, we interviewed 13 key informants specifically about conducting an Internet survey among MSM in China. To enhance survey completion rate and address community concerns, the draft survey was reviewed by MSM who had previously completed online surveys, local CBO leaders and staff, Chinese gender studies sociologists, public health experts and physicians responsible for prevention programming, and an online survey design specialist. Finally, we conducted a fully functional online field test of the draft survey with 201 MSM (data not included in current analyses). Based on feedback from the field trial, we further revised the survey to improve its readability, comprehensibility and flow.

Participants and Recruitment

In collaboration with an MSM community-based organization in Guangdong province, we launched a cross-sectional online survey in May 2013. The survey was hosted by the largest MSM website in Guangdong (www.gztz.org), which has over two million unique visitors each year. A banner advertisement was posted on the website's homepage to invite

participation in the survey. After clicking on the banner, interested participants were directed to the survey. An online informed consent form was provided and had to be agreed on before participants could proceed to the survey. To be eligible, participants must have been born male, had anal sex with men during their lifetime, and were at least 16 years old (age of consent in China). No personal identifying information or IP addresses were collected from participants. No monetary incentives were offered for participating in the survey. Instead, participants who completed the survey were offered website credits that can be used to access certain website features. During a 28-day period, 1,935 eligible participants entered the survey, and 1,342 (69.4%) completed the questionnaire.

Measures

Participants were asked about their age, educational level, marital status, employment, sexual orientation, and if they have told anyone about their sexual orientation or that they had sex with other men. They were also asked to report on their sexual behaviors during the past three months including number of male anal sex partners and condom use with these partners during insertive and receptive anal intercourse. In addition, participants were asked if they had ever tested for HIV, and if yes, when was their most recent HIV test. To assess participants' willingness to receive couple-based testing, they were asked if they would consider taking an HIV test together with a new partner in the future (response options were "Yes" or "No"). For collective testing, participants were asked if they would like to test together with a good gay friend or friends in the future (response options were "Yes" or "No").

Statistical Analysis

We restricted our analyses to participants who responded to either question on willingness to receive couple-based or collective testing ($N = 1,113$). Bivariate and multivariable logistic regression analyses were conducted using STATA 12.0 to identify factors associated with willingness to receive each type of testing (i.e., couple-based and collective testing). Variables that were significant ($p < 0.05$) in the bivariate analyses were entered into the multivariable models after controlling for age, marital status and sexual orientation. The study and analysis were approved by the University of North Carolina – Chapel Hill's Institutional Review Board and the University of California – San Francisco's Committee on Human Research.

RESULTS

Socio-demographics and HIV testing history

Table 1 presents socio-demographic characteristics and HIV testing history of participants. Over half of participants (56.2%) were between the ages of 26 and 35 (Mean = 30.6, SD = 6.6, Range: 16 – 64) and had an educational level of college or above (53.3%). A majority were single (82.5%) and self-identified as gay (72.9%), however, just under half (48.5%) had disclosed their sexual orientation or MSM behavior to other people. Over one third (38.9%) reported having two or more male anal sex partners in the past three months while about a quarter reported engaging in unprotected insertive and receptive anal intercourse with these partners (27.2% and 25.8%, respectively). In our sample of participants, 60.5%

reported having ever tested for HIV. Among these, 42.1% had an HIV testing within the past six months while 30.5% were tested more than 12 months ago.

Willingness to receive couple-based testing

A very high proportion of participants (86.1%) reported that they would be willing to receive couple-based testing. Table 2 presents bivariate and multivariable correlates of willingness to receive couple-based testing. At the bivariate level, older participants (36 years old or older) had reduced odds of willingness to receive couple-based testing (OR = 0.55, 95% CI: 0.33, 0.93). Participants who were single (OR = 1.69, 95% CI: 1.12, 2.55), had disclosed sexual orientation or MSM behavior to others (OR = 1.79, 95% CI: 1.26, 2.56), had 2 or more male anal sex partners in the past three months (OR = 1.63, 95% CI: 1.02, 2.59), or had ever tested for HIV (OR = 3.15, 95% CI: 2.20, 4.52) had significantly greater odds of willingness to receive couple-based testing. After controlling for age, marital status and sexual orientation, participants who were “out” and those who have ever tested for HIV had 1.48 fold greater odds (95% CI: 1.01, 2.17) and 3.05 fold greater odds (95% CI: 2.10, 4.33) of being willing to receive couple-based testing compared to those who were not “out” and those who never tested for HIV, respectively.

Willingness to receive collective testing

Almost half of participants (43.2%) reported that they would be willing to participate in collective testing. Table 3 presents bivariate and multivariable correlates of willingness to participate in collective testing. In the bivariate analysis, participants who had multiple male anal sex partners in the past three months had 1.43 fold greater odds (95% CI: 1.03, 1.98) of willingness to participate in collective testing, which remained significant in the multivariable model (AOR = 1.43, 95% CI: 1.03, 1.99) after adjusting for age, marital status and sexual orientation. No other socio-demographic or behavioral characteristics were significant at the bivariate and multivariable levels.

DISCUSSION

In this paper, we examined willingness to receive couple-based and collective testing among Chinese MSM. Consistent with findings from other studies,^{10–12} we found high acceptability of couple-based testing among Chinese MSM in our study (almost 90% expressed willingness). There was also a moderate level of interest in collective testing that 43% of participants said they would be willing to participate in it. These findings add further evidence that couple-based testing has great potential to increase HIV testing uptake among MSM across different cultural settings and suggest that collective testing could appeal to MSM in China and other collectivist cultural contexts.

Men who were “out” were more likely to be willing to participate in couple-based testing. These MSM were probably exposed to more HIV-related prevention information and hence were more receptive to new HIV testing settings. Furthermore, MSM who were “out” may be more likely to establish stable long-term partnerships with other men and therefore be more willing to get tested with main partners. We speculate that the gradual evolution of a more tolerant cultural environment towards MSM in China will encourage more men to be

openly gay, further expanding opportunities for couple-based testing promotion. We also found that participants who ever tested for HIV were more willing to participate in couple-based testing, which was not surprising in that MSM with HIV testing experiences have already overcome significant barriers to testing and hence more likely to participate in other forms of testing. In terms of collective testing, men who reported having multiple partners were more likely to be willing to get tested together with a good gay friend or friends. These men were probably conscious of their higher risk for HIV and testing with a friend or friends would reduce anxiety and fear of being tested HIV-positive. Besides these few differences, willingness to participate in couple-based and collective testing was not significantly different between socio-demographic characteristics of participants, suggesting that these testing strategies can be promoted among diverse groups of MSM.

Although participants in our study expressed strong interest in couple-based and collective testing, some important research and implementation questions need to be addressed before these testing strategies can be effectively promoted. First, additional work should explore social and cultural barriers and facilitators to utilizing these testing strategies among Chinese MSM. For example, how do men decide whether to test by themselves or with others, and, how do they decide who to test with? Second, intervention trials are needed to assess the efficacy and safety of these strategies among Chinese MSM. In their randomized controlled trial among MSM in the U.S., Sullivan and colleagues reported that couple-based testing did not result in greater likelihood of intimate partner violence or dissolution of relationships.¹⁵ However, since HIV/AIDS is more stigmatized in China, a partner or a friend testing HIV-positive may face more negative social and relationship consequences. Third, if proven efficacious and safe, marketing and packaging are needed to raise awareness of these testing services and optimize adoption among Chinese MSM in clinical and community settings.¹²

Our study has several limitations. First, this was a convenience sample of participants recruited on a gay-oriented website from South China. Our findings are not generalizable to Chinese MSM who do not have access to the Internet, who do not visit the website used for recruitment, or who are from other parts of China. However, this website is an extremely high traffic site with over 45,000 overall site visitors during the month the survey was hosted. Second, our questions on willingness to use couple-based and collective testing were hypothetical and may not reflect actual use of these testing services when they are available.²⁰ Third, some participants might have misinterpreted the meanings of couple-based and collective testing due to simple phrasing of these questions. However, our survey was designed based upon extensive formative work and field testing, reducing this possibility. Fourth, couple-based testing only referred to testing with a new partner while some participants were already partnered to another male. Fifth, limited by the measures included in this study, we were not able to examine other psychosocial variables that may be relevant to willingness to utilize these testing services among Chinese MSM, such as gay-related stigma, social support and characteristics of social networks. Finally, given privacy concerns, we did not collect IP addresses or identifying information, which limited our ability to deduplicate responses. However, since no monetary incentives were provided, we expect that there was minimal risk of a participant taking the survey multiple times. Furthermore, on the GZTZ website, a username was required to gain access to the survey. A list of usernames and assigned study ID numbers was kept (unaffiliated with survey

responses) on file. The same username was not permitted to complete the survey more than once on the GZTZ website. Since the study incentive was linked to the specific username account and was minimal, it is unlikely that an individual would be motivated to create a second username in order to complete the survey again.

In spite of these limitations, this was the first study that we are aware of to examine the acceptability of couple-based and collective testing strategies among MSM in China. With high rates of unrecognized HIV infections and low levels of HIV status disclosure,^{21–23} these alternative HIV testing strategies could help better control the HIV epidemic among Chinese MSM if implemented and promoted in a culturally competent manner.

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KEY MESSAGES

- Acceptability of couple-based HIV testing was very high among Chinese MSM participants (86.1%).
- Collective testing could have appeal among high-risk MSM in China (43.2% acceptability) and other collectivist cultural contexts.
- Alternative HIV testing strategies could help better control the HIV epidemic among Chinese MSM if implemented and promoted in a culturally competent manner.

Table 1

Socio-demographics, behavioral characteristics and HIV testing history among MSM participants (N = 1,113)

	N (%)
Age	
16 – 25	268 (22.3%)
26 – 35	677 (56.2%)
36 or older	259 (21.5%)
Education	
High school or less	238 (19.9%)
Some college	320 (26.8%)
College or above	636 (53.3%)
Marital status	
Married/engaged	208 (17.5%)
Single	982 (82.5%)
Employment status	
Part-time/unemployed/retired	119 (10.0%)
Full-time/student	1069 (90.0%)
Sexual orientation	
Gay	873 (72.9%)
Bisexual/Heterosexual/other	325 (27.1%)
Out to anyone	
No	618 (51.5%)
Yes	583 (48.5%)
Have a main male partner	
No	664 (55.8%)
Yes	526 (44.2%)
Number of male anal sex partners (past 3 months)	
0	222 (20.1%)
1	454 (41.1%)
2 or more	430 (38.9%)
Any UIAI (past 3 months)	
No	643 (73.7%)
Yes	229 (26.3%)
Any URAI (past 3 months)	
No	631 (75.1%)
Yes	209 (24.9%)
Ever tested for HIV	
No	572 (39.5%)
Yes	723 (60.5%)
Most recent test	
6 months	302 (42.1%)
7 – 12 months	197 (27.4%)

	N (%)
> 12 months	219 (30.5%)

Note: UIAI = unprotected insertive anal intercourse; URAI = unprotected receptive anal intercourse.

Table 2
Correlates of willingness to receive couple-based testing among MSM participants (N = 1,095)

	Willing to receive couple-based testing (n = 943, 86.1%)			
	n/N (%)	OR (95% CI)	p	AOR (95% CI)
Age				
16 – 25	215/242 (88.8%)	1		1
26 – 35	539/621 (86.8%)	0.83 (0.52, 1.31)	0.417	0.71 (0.43, 1.18)
36 or older	189/232 (81.5%)	0.55 (0.33, 0.93)	0.025	0.55 (0.31, 1.01)
Education				
High school or less	180/207 (87.0%)	1		
Some college	244/288 (84.7%)	0.83 (0.50, 1.39)	0.485	
College or above	516/595 (86.7%)	0.98 (0.61, 1.57)	0.932	
Marital status				
Married/engaged	153/190 (80.5%)	1		1
Single	783/895 (87.5%)	1.69 (1.12, 2.55)	0.012	1.35 (0.83, 2.18)
Employment status				
Part-time/unemployed/retired	94/105 (89.5%)	1		
Full-time/student	841/979 (85.9%)	0.71 (0.37, 1.37)	0.308	
Sexual orientation				
Gay	701/803 (87.3%)	1		1
Bisexual/Heterosexual/other	239/289 (82.7%)	0.70 (0.48, 1.01)	0.054	0.90 (0.60, 1.37)
Out to anyone				
No	467/564 (82.8%)	1		1
Yes	475/530 (89.6%)	1.79 (1.26, 2.56)	0.001	1.48 (1.01, 2.17)
Number of male anal sex partners (past 3 months)				
0	182/219 (83.1%)	1		1
1	379/446 (85.0%)	1.15 (0.74, 1.78)	0.532	1.00 (0.63, 1.59)
2 or more	376/423 (88.9%)	1.63 (1.02, 2.59)	0.041	1.27 (0.78, 2.08)
Any UIAI (past 3 months)				
No	552/635 (86.9%)	1		
Yes	194/222 (87.4%)	1.04 (0.66, 1.65)	0.861	

	Willing to receive couple-based testing (n = 943, 86.1%)			
	n/N (%)	OR (95% CI)	p	AOR (95% CI)
Any URAI (past 3 months)				
No	540/623 (86.7%)	1		
Yes	179/203 (88.2%)	1.15 (0.71, 1.86)	0.581	
Ever tested for HIV				
No	343/439 (78.1%)	1		1
Yes	597/650 (91.9%)	3.15 (2.20, 4.52)	< 0.001	3.05 (2.10, 4.33)
Most recent test				
6 months	244/263 (92.8%)	1		
7 – 12 months	169/184 (91.9%)	0.88 (0.43, 1.78)	0.716	
> 12 months	184/202 (91.1%)	0.80 (0.41, 1.56)	0.506	

Note: UIAI = unprotected insertive anal intercourse; URAI = unprotected receptive anal intercourse.

Table 3

Correlates of willingness to participate in collective testing among MSM participants (N = 1,113)

	Willing to participate in collective testing (n = 481, 43.2%)			
	n/N (%)	OR (95% CI)	p	AOR (95% CI)
Age				
16–25	110/245 (44.9%)	1		1
26–35	276/635 (43.5%)	0.94 (0.70, 1.27)	0.701	0.91 (0.67, 1.24)
36 or older	95/233 (40.8%)	0.84 (0.59, 1.21)	0.362	0.78 (0.53, 1.16)
Education				
High school or less	86/208 (41.4%)	1		
Some college	127/294 (43.2%)	1.08 (0.75, 1.55)	0.679	
College or above	265/606 (43.7%)	1.10 (0.80, 1.52)	0.549	
Marital status				
Married/engaged	85/193 (44.0%)	1		1
Single	390/910 (42.9%)	0.95 (0.70, 1.30)	0.763	0.87 (0.61, 1.23)
Employment status				
Part-time/unemployed/retired	50/107 (46.7%)	1		
Full-time/student	425/993 (42.8%)	0.85 (0.57, 1.27)	0.436	
Sexual orientation				
Gay	356/814 (43.7%)	1		1
Bisexual/Heterosexual/other	124/295 (42.0%)	0.93 (0.71, 1.22)	0.614	0.91 (0.68, 1.21)
Out to anyone				
No	237/573 (41.4%)	1		
Yes	244/538 (45.4%)	1.18 (0.93, 1.49)	0.180	
Number of male anal sex partners (past 3 months)				
0	92/222 (41.4%)	1		1
1	170/454 (37.4%)	0.85 (0.61, 1.17)	0.317	0.85 (0.61, 1.18)
2 or more	216/430 (50.2%)	1.43 (1.03, 1.98)	0.033	1.43 (1.03, 1.99)
Any UIAI (past 3 months)				
No	285/643 (44.3%)	1		
Yes	94/229 (41.1%)	0.87 (0.64, 1.19)	0.391	

	Willing to participate in collective testing (n = 481, 43.2%)			
	n/N (%)	OR (95% CI)	p	AOR (95% CI)
Any URAI (past 3 months)				
No	271/631 (43.0%)	1		
Yes	98/209 (46.9%)	1.17 (0.86, 1.61)	0.320	
Ever tested for HIV				
No	184/447 (41.2%)	1		
Yes	295/660 (44.7%)	1.16 (0.91, 1.47)	0.244	
Most recent test				
6 months	119/267 (44.6%)	1		
7 – 12 months	85/184 (46.2%)	1.07 (0.73, 1.56)	0.733	
> 12 months	91/208 (43.8%)	0.97 (0.67, 1.39)	0.858	

Note: UIAI = unprotected insertive anal intercourse; URAI = unprotected receptive anal intercourse.