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Sexual Transmission Behaviors and Serodiscordant Partnerships among HIV-positive Men Who Have Sex with Men in Asia

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Abstract

We described sexual transmission behaviors and serodiscordant partnerships among an online sample of HIV-positive MSM (N = 416) in Asia. High rates of UAI (74.8%), serodiscordant partnerships (68.5%), and unprotected sex within serodiscordant partnerships (~60.0%) were reported. Increased number of partners, meeting partners on the Internet, drug use before sex, and not knowing one's viral load were associated with UAI. Efforts to develop and scale up biomedical and behavioral interventions for HIV-positive MSM in Asia are needed.

Keywords

Men who have sex with men; HIV/AIDS; sexual transmission behavior; serodiscordant; Asia

Men who have sex with men (MSM) in Asia have attracted increasing attention recently because, in part, of the rising HIV infections throughout the region.¹ As a result, increasing epidemiological data have been generated documenting HIV prevalence, incidence, and risk factors. However, the “double-stigma” of being a homosexual and being HIV-positive has been a major barrier to studying specific sexual transmission behaviors among HIV-positive MSM in Asia. Homosexuality is still a cultural taboo; and in several countries, homosexual acts are criminalized and prosecuted.^{2,3} HIV/AIDS stigma and discrimination are highly prevalent among general populations and among people living with HIV/AIDS.^{4–6} Within this highly stigmatized and homophobic context, it is difficult to recruit HIV-positive MSM into research studies in the region. Therefore, it is not surprising that there is scarce information on sexual transmission and related behaviors among HIV-positive MSM in Asia.^{7,8}

Prevention with Positives (PWP) is a key component of the overall HIV prevention agenda.⁹ Improved understanding of the sexual transmission risk behaviors among HIV-positive MSM is needed for secondary prevention, particularly sexual risk reduction with

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serodiscordant partners and prevention of co-infections. Data has shown that newly diagnosed individuals have high levels of viral load which increase infectiousness.¹⁰ Although it has been reported that some HIV-positive MSM decreased risky behaviors following diagnosis, a significant proportion still continue to engage in unprotected anal intercourse (UAI).¹¹ Furthermore, in some Asian countries, lack of sufficient funding and well-trained healthcare workers for HIV prevention and treatment, may be a significant barrier to accessing and receiving HIV treatment and care, which may in turn, sustain high levels of community viral load.

In this article, we described correlates of UAI and sexual practices within serodiscordant partnerships among a multi-country online sample of HIV-positive MSM residing in Asia.

In collaboration with over 40 community partners from 12 different countries in Asia, a gay-oriented website (www.Fridae.com) launched an online survey (Asian Internet MSM Sex Survey [AIMSS], www.2010aimss.com) between January 1st and February 28th, 2010 as a part of the MSM community assessment and evaluation in the region. Participants were recruited exclusively through online methods. Banner advertisements were posted on the website, pop-up advertisements were posted in gay chat-rooms, and emails were sent to different listservs by community partners to invite participants for the survey. Interested participants were then directed to the online survey website after clicking on a link in the advertisement or in the email. An online informed consent was obtained from participants before proceeding to the survey. To be eligible, participants had to be at least 18 years old and self-identify as either MSM or transgender. The AIMSS questionnaire was adapted from the Gay Community Periodic Survey, developed by the National Center in HIV Social Research of the University of New South Wales.¹² The survey, estimated to take between 15–30 minutes to complete, included about 150 items and was available in English and 9 Asian languages and dialects. To ensure appropriateness to local cultural contexts, the community partners helped translate and back-translate the survey questions. Participation was anonymous, voluntary, and no incentives were offered. During the two-month period, 24,742 participants began the survey and 13,883 (56.1%) completed the online questionnaire. Of these, 416 self-reported being HIV-positive, 18 years old or above, male, and had one or more male sex partners in the past 6 months.

All participants were asked about their country of residence, age, employment status, educational level, sexual orientation, and relationship status. Measures of sexual transmission behaviors in the past 6 months included number of male sex partners, condom use during different types of anal intercourse with male partners, main way/venue of meeting sex partners, frequencies of drug and alcohol use before sex, and history of sexually transmitted diseases (genital herpes or syphilis). Participants self-reported their disease status including time of HIV diagnosis, if they were currently on antiretroviral therapy (ART), and their viral load (“Undetectable,” “Detectable,” or “Don’t know/unsure”).

For those who currently have regular partners, they were further asked if they were in a monogamous relationship with these partners, if they knew their regular partner’s HIV status (“Don’t Know” [potentially serodiscordant], “Yes-Negative” [serodiscordant], or “Yes-Positive” [seroconcordant]), and if they have a “clear (spoken) agreement” with their regular partners regarding sexual activities in their current relationship (“No agreement,” “No anal sex at all,” “All anal sex is with a condom,” or “Anal sex can be without a condom”).

To identify correlates significantly associated with UAI, bivariate and multivariable logistic regressions were conducted. Variables that were associated with UAI in the bivariate analysis ($p \leq 0.1$) were entered into a multivariable logistic regression model after controlling for education and relationship status. Next, we compared social and behavioral

characteristics of men who were in seroconcordant partnerships with those in serodiscordant or potentially serodiscordant partnerships using Pearson's chi-square tests. All analyses were conducted in STATA version 9.0. This study was conducted in concordance with the principles of the Declaration of Helsinki. The data analysis portion was approved by the University of Pittsburgh Institutional Review Board as non-human subjects research.

The 416 HIV-positive MSM participants were mostly from Taiwan (20.2%), Thailand (15.9%), Singapore (14.9%), Malaysia (11.1%), mainland China (10.1%), Japan (9.4%), and Hongkong (8.9%). About a third (27.6%) were under the age of 30 and 44.0% were between the ages of 30 and 39. A majority (81.5%) were employed full-time or were students and over half (60.4%) had a college or postgraduate degree. Almost all (92.6%) self-identified as gay.

Table 2 shows results from the bivariate and multivariable analyses. About three quarters of the sample (74.8%) reported having engaged in UAI in the past 6 months. In the multivariable analysis, increased number of male sex partners, using the Internet to meet sex partners, having used recreational drugs before sex more than monthly, and not knowing or unsure about one's viral load were significantly associated with UAI. Education, relationship status, and time of HIV diagnosis were not significantly associated with UAI.

Of the 162 participants who currently had a regular partner, 111 (68.5%) had a serodiscordant or potentially serodiscordant partner (Table 3). Compared to those in seroconcordant partnerships, participants in serodiscordant partnerships were significantly more likely to have negotiated with their partners that all anal intercourse should be protected ($\chi^2 = 33.81, p < .01$). Practices of anal sex were in concordance with such sexual negotiation. Of the 138 (85.2%) men who reported anal intercourse, those in serodiscordant partnerships were significantly more likely to report always using a condom during insertive and receptive anal intercourse than those in seroconcordant partnerships. However, it should be noted that 34.2% of participants had no sexual negotiation with their serodiscordant partners and about 60.0% reported either UIAI or URAI with these partners.

Among this online sample of HIV-positive MSM in Asia, we found high prevalence of overall UAI, serodiscordant partnerships, and unprotected sex with serodiscordant regular partners. These findings suggest that serosorting, which has been widely adopted and practiced by HIV-positive MSM in Western countries,^{13–15} may be less common among HIV-positive MSM in Asia. This could possibly be attributed to the high level of stigma associated with HIV in Asia, which in turn leads to a lack of status disclosure and discussions around HIV status in general. But we also found that a significant proportion of these men took actions to protect their serodiscordant regular partners from HIV by negotiating condom use during anal sex. Risk reduction interventions among HIV-positive MSM should thus take into consideration the types of relationships these men are in, improve their communication skills not only around HIV status but also sexual risk negotiation, and educate them about different types of sexual practices that can reduce transmission risk to their partners.

Not knowing one's viral load was found to be associated with engaging in UAI. This suggests that these men may not be linked to care. Increasing empirical evidence has shown that suppression of viral load can significantly reduce sexual transmission risk of HIV.¹⁶ Therefore, linkage and retention in care interventions or programs for HIV-positive individuals are crucial in preventing HIV transmission to their negative partners. Men who reported higher number of partners and more frequent drug use before sex were also more likely to engage in UAI. For these men, cognitive behavioral therapies that incorporate

appropriate cultural components are most likely to be effective in reducing their sexual transmission behaviors and substance use.

This study is not without limitations. First, our findings should be interpreted with caution. This was a small sample of mostly gay-identified HIV-positive MSM, which may not be reflective of the general HIV-positive MSM in Asia. Sexual or social network-based sampling approaches might be better strategies to reach the more hidden segments of this population. Furthermore, our findings may not be generalizable to HIV-positive MSM who do not have access to the Internet or those who chose not to identify their HIV-positive status. Second, we were only able to examine serodiscordancy among participants who currently had a regular partner. Future surveys should also investigate serodiscordancy behaviors among men with casual partners as well as serosorting practices. Finally, participants could have completed the survey multiple times. But we believe that duplicate participation was minimal as the study did not offer any incentives.

Efforts to develop and scale up interventions for HIV-positive MSM in Asia are needed. Such interventions should incorporate both biomedical and behavioral components. For example, venue-based or network-based testing strategies can be employed to identify undiagnosed HIV-infected MSM; providers should adopt a patient-centered approach to treatment and care, and improve the quality of patient-provider relationship; behavioral interventions to reduce HIV-related risk behaviors need to be tailored to individual needs and delivered during multiple sessions over time. Finally, reducing and combating community-wide HIV/AIDS-related stigma and discrimination need to be an on-going prevention activity.

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Bivariate and multivariable correlates of unprotected anal intercourse (UAI) among HIV-positive MSM in the 2010 AIMSS study (N = 416)

Table 1

	Engaged in UAI in the past 6 months (n = 311; 74.8%)			
	n/N (%)	OR (95% CI)	p Value	AOR (95% CI) ^a p Value
Age				
18–29	87/115 (75.7%)	1.0	–	–
30–39	135/183 (73.8%)	0.91 (0.53, 1.55)	0.717	
40+	89/118 (75.4%)	0.99 (0.54, 1.80)	0.968	
Employment				
Fulltime/Student	251/339 (74.0%)	1.0	–	–
Unemployed/Social Security	27/35 (77.1%)	1.18 (0.52, 2.70)	0.689	
Other	33/42 (78.6%)	1.29 (0.59, 2.79)	0.526	
Education				
College/postgraduate	193/251 (76.9%)	1.0	–	1.0
Tech/some college	86/117 (73.5%)	0.83 (0.50, 1.38)	0.480	0.85 (0.49, 1.48) 0.575
High school or less	32/48 (66.7%)	0.60 (0.31, 1.17)	0.135	0.55 (0.26, 1.15) 0.114
Sexual orientation				
Gay	288/385 (74.8%)	1.0	–	–
Bi/Hetero/Other	23/31 (74.2%)	0.97 (0.42, 2.24)	0.940	
Current relationship status				
Regular male partner only	28/40 (70.0%)	1.0	–	1.0
Casual male partners only	184/254 (72.4%)	1.13 (0.54, 2.34)	0.749	0.41 (0.16, 1.05) 0.062
Both regular and casual	99/122 (81.2%)	1.84 (0.82, 4.16)	0.141	0.60 (0.22, 1.67) 0.329
Number of partners				
One	28/56 (50.0%)	1.0	–	1.0
2–5	135/181 (74.6%)	2.93 (1.58, 5.46)	0.001	2.50 (1.16, 5.39) 0.019
6–10	63/77 (81.8%)	4.50 (2.06, 9.83)	<0.001	3.81 (1.50, 9.67) 0.005
More than 11	85/102 (83.3%)	5.00 (2.39, 10.47)	<0.001	3.83 (1.53, 9.57) 0.004
Main way meeting partner				
Bar/Dance party/Gym/Friend	19/33 (57.6%)	1.0	–	1.0
Internet	200/263 (76.1%)	2.34 (1.11, 4.93)	0.026	2.58 (1.08, 6.15) 0.032

Engaged in UAI in the past 6 months (n = 311; 74.8%)					
	n/N (%)	OR (95% CI)	p Value	AOR (95% CI) ^a	p Value
Public cruising/Sex party/Gay sauna	92/120 (76.7%)	2.42 (1.08, 5.44)	0.032	2.43 (0.94, 6.29)	0.067
Drug before sex					
Never	167/249 (67.1%)	1.0		1.0	
Once or a few times	85/104 (81.7%)	2.20 (1.25, 3.86)	0.006	1.76 (0.96, 3.22)	0.067
More than monthly	59/48 (93.7%)	7.24 (2.54, 20.63)	<0.001	4.86 (1.64, 14.40)	0.004
Alcohol before sex					
Never	178/246 (72.4%)	1.0	0.317	–	
Once or a few times	98/127 (77.2%)	1.29 (0.78, 2.13)	0.217		
At least monthly	21/25 (84.0%)	2.01 (0.66, 6.06)	0.619		
Every week	14/18 (77.8%)	1.34 (0.43, 4.20)			
Time of diagnosis					
>=5 years ago	84/106 (79.3%)	1.0		1.0	
Between 1–5 years ago	137/192 (71.4%)	0.65 (0.37, 1.15)	0.138	0.61 (0.32, 1.14)	0.120
Within the past 12 months	90/118 (76.3%)	0.84 (0.45, 1.58)	0.594	0.75 (0.36, 1.56)	0.437
On ART					
Yes	172/235 (73.2%)	1.0		–	
No	139/181 (76.8%)	1.21 (0.77, 1.90)	0.402		
Viral load					
Undetectable	129/177 (72.9%)	1.0		1.0	
Detectable	116/162 (71.6%)	0.94 (0.58, 1.51)	0.793	1.04 (0.61, 1.78)	0.883
DK/Unsure	66/77 (85.7%)	2.23 (1.09, 4.58)	0.029	2.66 (1.20, 5.93)	0.016
History of Herpes or Syphilis					
No	267/356 (75.0%)	1.0		–	
Yes	44/60 (73.3%)	0.92 (0.49, 1.70)	0.783		

Note:

^aVariables with $p \leq 0.1$ at the bivariate level were entered into the multivariable model after controlling for education and relationship status.

Table 2

Social and behavioral characteristics between HIV-positive MSM in serodiscordant versus seroconcordant partnerships (N = 162)

Relationship status	Seroconcordant n = 51 (31.5%)	Serodiscordant n = 111 (68.5%)	χ^2	p Value
Monogamous	14 (27.5%)	33 (29.7%)	0.09	0.767
Non-monogamous	37 (72.5%)	78 (70.3%)		
On ART			0.25	0.616
Yes	31 (60.8%)	72 (64.9%)		
No	20 (39.2%)	39 (35.1%)		
Viral load			0.86	0.651
Undetectable	22 (43.1%)	56 (50.5%)		
Detectable	20 (39.2%)	36 (32.4%)		
DK/Unsure	9 (17.7%)	19 (17.1%)		
Sexual negotiation			33.81	<0.001
No anal sex	2 (3.9%)	3 (2.7%)		
Anal sex with condom	14 (27.5%)	63 (56.8%)		
Anal sex without condom	22 (43.1%)	7 (6.3%)		
No agreement	13 (25.5%)	38 (34.2%)		
Condom use with IAI			22.34	<0.001
Always	4 (9.3%)	39 (41.1%)		
Most of the time	4 (9.3%)	15 (15.8%)		
Sometimes	9 (20.9%)	19 (20.0%)		
Never	26 (60.5%)	22 (23.2%)		
Condom use with RAI			13.17	0.004
Always	5 (11.6%)	34 (35.8%)		
Most of the time	7 (16.3%)	17 (17.9%)		
Sometimes	8 (18.6%)	20 (21.1%)		
Never	23 (53.5%)	24 (25.3%)		

Note: IAI = insertive anal intercourse; RAI = receptive anal intercourse.