HIV antibody testing among male commercial sex networkers, men who have sex with men and the male general population in Hong Kong

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Abstract

The present study examined the prevalence and factors that are associated with actual HIV testing behavior among the MSM population, the male clients of female sex workers (FSW) population and the lower-risk male population in Hong Kong. Results revealed that of the 2,074 male respondents surveyed, 7.3% indicated that they had been tested for HIV antibody in the past 6 months. The prevalence of HIV antibody testing among those who had ever had sex with the same sex (MSM) and those who had visited one or more female sex workers (FSWs) in the past 6 months were 15.5% and 16.1% respectively. Private clinic was found as the most popular site of testing. Factors associated with HIV testing include whether the respondent had had sexual intercourse with FSWs in the 6 months, MSM behavior, and number of female sex partners in the past 6 months. Possible reasons for the low prevalence of HIV antibody testing in Hong Kong and the implication of the findings were discussed.

Introduction

Early detection and early treatment programs can greatly enhance the survival and quality of life of the people infected by HIV. However, some studies indicated that 30 to 50% of the HIV-infected persons do not seek or accept testing until their disease progresses to show symptoms or become an AIDS-defining illness (Hecht, Wachter & Heller, 1994; Wortley, Chu & Diaz, et al., 1995).

The prevalence of HIV testing varies considerably in different countries and in different populations. In the United States, it was estimated that 34 to 64 million HIV antibody testing were performed by the Centers for Disease Control in 1997 (Piliero & Libman, 1996). It was estimated that 60% of the homosexual population and 55% of intravenous drug abusers had been tested and knew their HIV status. In a sample of 7,832 people drawn from 22 high-risk cities, Berrios, Hearst & Coates, et al. (1993) reported that 60% of men who had had same-sex sexual activity in the past 5 years indicated that they had been tested for HIV antibody in the United States. 46% of male and 75% of female drug users reported that they had been tested. For respondents with one or more risk factors, 37% had been tested. Compared with those with no identifiable risk factors, gay or bisexual men and multiple-partnered heterosexuals practicing unsafe sex were more likely to have been tested.

Compared with the United States, the prevalence of HIV testing in Switzerland has been very high. In Dubois-Arber's (1998) study, 47% of the general population of age 17 to 45, 72% of homosexuals and 87.9% of injection drug users reported having undergone an HIV antibody test in Switzerland in 1992. Another study reported that the percentage of accepting a voluntary confidential HIV test offered by the Swiss Network of Dermatovenereology Policlinics (SNDP) was 82.5% among heterosexuals and 84% among homo/bisexual men (Paget, Zwahlen & Eichmann, 1997). In 1993, 87.9% of injection drug users in Switzerland had been tested (Dubois, Konings & Koffi-Blanchard et al., 1995).

Other studies have investigated factors that are associated with HIV testing. In Povinielli, Remafedi & Tao's (1996) study, significant associations were found between testing and age and living situation in a group of adolescent and adult males aged 13 to 21, who self-reported to be homosexual or bisexual. Subjects who were older and lived away from parents were significantly associated with testing. People originating in developing countries were also found especially unlikely to seek diagnostic HIV testing (Paine, Pozniak & Chisholm et al., 1997). Mainous, Neill and Matheny (1995) found that there were significant differences between urban residents and rural residents in having had an HIV antibody test and intention for having an HIV antibody test. Mixed findings have been

obtained regarding the power of using HIV-related knowledge to predict the likelihood of HIV testing. In the Povinelli et al.'s (1996) study, respondents who had discussed about sexual feelings with counselors and physicians were more likely to have been tested. Goodman, Chesney and Tipton (1995) however reported that HIV-related knowledge, attitudes and beliefs were not associated with testing among a group of teenage girls.

Several studies have found that the form of testing is a factor affecting people's testing behavior. In Hecht et al.'s (1997) study, of 2,387 surveyed participants, 84% indicated that they would be likely to take an HIV test in the next year if anonymous testing is available; 73% said they would be more likely to undergo HIV testing if the government adopt the HIV reporting policy of their using a unique code instead of names of testers; and about 62% would be likely to take a test if the government adopt a HIV reporting policy with the names of testers reported.

There are some limitations in the previous studies on HIV testing. First, the study populations have been focused on drug users, homosexual and bisexual men; other populations, such as commercial sex clients have not been examined. Second, no data pertaining to the prevalence of testing in Asian countries or in the Chinese population has been documented.

Objectives

The aim of the study is to examine the prevalence and factors that are associated with actual HIV testing behavior among the MSM population, the male clients of female sex workers (FSW) population and the general male population in Hong Kong. The study tested the hypotheses that attitudinal/knowledge-related factors are more important than behavioral factors in predicting HIV testing or vice versa.

Subjects and Methods

This study was carried out using telephone interviews. The first part of the questionnaire was related to demographic background (age and education level) and AIDS-related knowledge/attitudes (modes of HIV transmission, perceived efficacy of condom use in preventing AIDS). These questions were asked by the telephone interviewers. The second part of the questionnaire contained sensitive questions (including whether they had had a blood test for HIV status in the past 6 months, their self-perceived chance of contracting HIV in the future, whether they had always been using condom during sexual intercourse with FSWs in the past 6 months and with non-regular partners, the number of FSWs and non-

regular sexual partners they had in mainland China in the past 6 months, whether they had contracted sexually transmitted diseases (STD) in the past 6 months, whether they had sexual intercourse with the same sex, and whether they had anal sex with a man in the past 6 months). Questions in this part were recorded by the Hong Kong Telecom's 'Wui Ying Tung Service'. After completing the first part, respondents were invited to participate in the second part. Those who agreed to enter the second part were connected to the "Wui Ying Tung Service" via the "Conference Line Service" (which allows three parties to converse simultaneously). The interviewer left the line after a connection was being made. Respondents keyed in their responses after listening to the pre-recorded questions.

A total of 2,074 male respondents were interviewed in this survey, which formed a benchmark behavioral surveillance study (Lau & Siah, in press). 252 (11.4%) of them reported they had sexual intercourse with a FSW in the past 6 months in mainland China, 85 (4.1%) reported that they had ever had sex with a man.

Data analysis method

The prevalence and 95% confidence intervals of actual HIV testing in the past 6 months were reported. The associations between the studied factors and actual HIV antibody testing were described by odds ratios and chi-square test in the univariate analysis. Multiple logistic regression models were fitted to summarize the predictive factors. $p < .05$ is seen as statistically significant.

Results

Prevalence of HIV testing in different subgroups

The respondents were asked whether they had performed an HIV testing in the past 6 months. Results indicated that the prevalence of HIV testing was low in the present sample - only 7.3% (95% confidence interval = 6.1-8.4%) of all the respondents had been tested for HIV antibody in the past 6 months (Table 1).

15.5% (95% confidence interval = 13.4-16.7%) of whom had ever had sex with the same sex (MSM) had performed an HIV testing in the past 6 months. Within this MSM sub-sample, 13.3% who had had anal intercourse with male sex partners in the past 6 months and 16.1 % who perceived high or moderate chance of contracting HIV in the future had undergone an HIV testing in the past 6 months (Table 1).

There was 16.1% (95% confidence interval = 7.1-18.2%) who had visited one or more female sex workers (FSWs) in the past 6 months (but did not have any sexual intercourse with a male partner) had undergone an HIV testing in the past 6 months. 17% of the respondents who had not always been using condom while having sexual intercourse with FSW in the past 6 months had undergone an HIV testing in the past 6 months (Table 1).

Among the "lower risk population" (defined as not having visited a FSW in the past 6 months and had never had sex with a male partner), 5.7% (95% confidence interval = 5.0-6.4%) had undergone an HIV testing in the past 6 months (Table 1).

Site of testing

Private clinic (45.3%) was the most popular place for HIV testing, whereas AIDS NGOs is the least utilized for HIV testing (1.3%, Table 2). About one forth of the testing took place in government hospitals. A noticeable percentage (19.3%) reported that they were tested in Red Cross's Blood Transfusion Centers.

Among those who ever had sex with the same sex, 4 respondents had their HIV testing in private clinics, government hospitals, and Red Cross Centres respectively. No respondent was tested in any AIDS NGO. As for the FSWs client population, the majority who had visited FSWs in the past 6 months (but had not had sexual intercourse with male sex partners) went to private clinics (51.4%) for HIV testing. 27% and 18.9% of this population had their HIV testing in government hospitals and Red Cross Blood Transfusion Centre respectively. 51.2% of those who had not always been using condom while having sexual intercourse with FSW in the past 6 months were tested in private clinics.

Private clinic was the most popular place of HIV testing among the lower risk population (45%). There was only 1 respondent in this population who reported having an HIV test in AIDS NGO. The choices between the FSW client population and the lower-risk population in the site for HIV testing was not of statistical significance ($p > .05$).

Factors associated with HIV testing

The results of the univariate analyses (chi-square test) indicated age and educational level were not significantly associated with the incidence of HIV testing. Attitudinal variables

(including knowledge about modes of HIV transmission and perceived efficacy of condom in preventing HIV infection) and risk behavior variables (including whether had regular female sex partners in the past 6 months, whether had always been using condom with FSW in the past 6 months, and whether had always been using condom when having sexual intercourse with a non-regular partner) were also not significantly associated with the incidence of HIV testing (Table 3). Self-perceived chance of HIV infection in the future, number of female sex partners in the past 6 months, whether had intercourse with FSWs in the past 6 months, whether had regular female sex partners in the past 6 months, and MSM behavior were significant univariately (Table 3). Whether contracted STD before was marginally significant ($p = .055$)

A stepwise logistic regression was performed for the 5 variables which were significantly related to HIV testing in the univariate analyses and STD history (Table 4). Results indicated that having sexual intercourse with FSWs in the past 6 months (OR = 2.0, $p = .002$), having more than one female sex partners in the past 6 months (OR = 2.32, $p = .001$), and having MSM behavior (OR = 2.00, $p = .033$) were associated with actual HIV testing behavior. What is also of importance is that knowledge/attitudinal factors and condom use were not significant.

Discussion

The results of the present study indicated that the prevalence of HIV antibody testing for the lower risk population, the MSM population and the FSWs visit population were 5.7%, 15.5% and 16.4% respectively. Private clinic was the major place for testing. The FSW clients and the lower risk population did choose the similar sites for testing. The number of female sex partners reported in the past 6 months, commercial sex experience in the past 6 months, and MSM behavior were the independent predictors for the incidence of an HIV testing.

The prevalence of HIV testing in the present study is low compared with some western countries. For instance, 60% of the MSM population and 46% of male drug users had been tested in the United States (Berrios et al., 1993). In Switzerland, 47% and 56% of the general population 17 to 46 years of age reported having undergone an HIV test in 1992 and 1994 respectively. The findings suggest that a large proportion of the at-risk male population in Hong Kong did not get tested for HIV antibody. This is reducing the effectiveness of AIDS prevention in Hong Kong.

Results of the present study have raised the concern about a possible delay in the diagnosis and treatment of HIV/AIDS in Hong Kong. A QOL study in Hong Kong (Lau & Tsui, 2000) reported that of 286 HIV/AIDS patients surveyed, 32% had waited more than a year since they suspect themselves having contracted the HIV till they took an HIV test. 31.5% of the respondents reported that the reasons for not taking a HIV test immediately was being frightened for a positive result. 23.8% thought that the chance of being infected was very low and 11.9% frightened of being identified. These data suggest that counseling service and educational program should be vigorously reinforced to higher risk groups so that they would have better psychological preparation to face a positive result and that the optimistic bias of perceived susceptibility could be removed among those high-risk individuals.

Moreover, the low prevalence of HIV antibody testing in Hong Kong may be related to the inadequacy of relevant AIDS education/prevention programs. A review of the education/prevention programs that took place from 1996 to 1998 published by the Committee of Education & Publicity on AIDS indicated that none of these events mentioned HIV testing explicitly and no API (Announcement of Public Interest) had even been dealing with the promotion of HIV antibody testing. In this regard, the low prevalence might be due to the lack of emphasis in the local education campaigns directed toward different risk-groups.

The present study did not replicate the previous finding that perceived susceptibility was associated significantly with HIV testing (Povinelli, Remafedi, & Tao, 1996). This study found that respondents who had sexual intercourse with FSWs in the past 6 months, had more than one female sex partners in the past months, and had MSM behavior were more likely to had been tested for HIV status. However, self-perceived chance of HIV infection in the future was not a predictor for actual HIV testing in he multiple logistic regression analysis. These findings thus suggest that decision on HIV testing respondents were based on personal sex behaviors rather than knowledge/attitudinal variables such as the estimate of personal risk.

It is interesting to note that about 20% of those who received the test reported that it took place at the Red Cross Blood Transfusion Centres. Other studies in the United States (Williams, Thomson, Schreiber, Watanabe, Bethel, Lo, et al., 1997) and in Hong Kong (Lau, Thomas & Lin, 1998) had documented a fairly high percentage of the voluntary blood donors had practised some risk behaviors (known as deferrable risk, William, et al., 1997). The data hence seem to reinforce the earlier findings. However, this should be interpreted with caution as the study did not ask about whether the respondents purposively used the Red

Cross Centres as a testing site, or that they simply donated blood (without an intention of HIV testing) and referred themselves as having undergone a HIV antibody test in this study.

The low prevalence of testing further poses a question on the degree of under-reporting of HIV cases in Hong Kong. If the HIV prevalence had been increasing rapidly in some sub-populations which have low testing rates, the change would be much less likely to be detected till they convert into AIDS cases.

The present study has been limited by the relatively small sample size of the MSM population. The estimates of HIV testing prevalence therefore have relatively a wide confidence interval.

In all, despite of the above limitations, the study has been the first attempt to examine the HIV testing patterns of different subgroups of the Hong Kong male populations in Hong Kong and possibly in Asia. The method used by this study has also attempted to ensure confidentiality and minimizing reporting bias.

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Table 1: The prevalence of HIV testing among MSM, FSWs clients and the lower-risk population

	Had HIV testing in the past 6 months	
	Yes (row%)	No (row%)
MSM population		
Ever have sex with the same sex	13 (15.5)	71 (84.5)
Had anal intercourse with male sex partners in the past 6 months	2 (13.3)	13 (86.7)
Perceived high or moderate chance of contracting HIV in the future	5 (16.1)	26 (83.9)
FSWs client population		
Had visited FSWs in the past 6 months but had not had sexual intercourse with male partner	37 (16.1)	193 (83.9)
Had not always been using condom while having sexual intercourse with FSW in the past 6 months	41 (17.0)	200 (83.0)
Lower risk male population		
Had not visited FSWs in the past 6 months and had not ever had sex with male partner	101 (5.7)	1656 (94.3)
All respondents	151 (7.3)	1920 (92.7)

Table 2: Site of HIV testing used by MSM, FSWs clients and the lower-risk population

	Site of testing				
	Private Clinic	Government Hospital	Red Cross	AIDS NGOs	Others
	% (n)	% (n)	% (n)	% (n)	% (n)
MSM population					
Ever have sex with the same sex	30.8 (4)	30.8 (4)	30.8 (4)	0.0 (0)	7.7 (1)
FSWs client population					
Had visited FSWs in the past 6 months but had not had sexual intercourse with male partner	51.4 (19)	27.0 (10)	18.9 (7)	2.7 (1)	0.0 (0)
Had not always been using condom while having sexual intercourse with FSW in the past 6 months	51.2 (21)	24.4 (10)	22.0 (9)	2.4 (1)	0.0 (0)
Lower risk population					
Had not visited FSWs in the past 6 months and have not ever had sex with male partner	45.0 (45)	24.0 (24)	18.0 (18)	1.0 (1)	12.0 (12)
All respondents	45.3 (68)	25.3 (38)	19.3 (29)	1.3 (2)	8.7 (13)

Table 3: Univariate analyses of factors predictive of the incidence of HIV testing

Factors	HIV testing in the past 6 months: Yes %	Yes n	No %	No n	p value (χ^2)
Knowledge about modes of HIV transmission					0.994
Mentioned 0 or 1 of the 4 channels*	7.2	61	92.8	784	
Mentioned 2 of the 4 channels	7.4	62	92.6	781	
Mentioned 3 of the 4 channels	7.3	28	92.7	355	
Total	7.3	151	92.7	1920	
Perceived efficacy of condom in preventing HIV infection					0.152
Moderate to high efficacy	6.9	130	93.1	1747	
Low to no efficacy	10.1	15	89.9	134	
Total	7.2	145	92.8	1881	
Self-perceived chance of contracting AIDS in the future					0.033
Moderate to high chance	6.5	91	93.5	1318	
Little to no chance	9.1	60	90.9	602	
Total	7.3	151	92.7	1920	
Whether had contracted STD in the past 6 months					0.055
Yes	17.2	5	82.8	24	
No	7.1	146	92.9	1896	
Total	7.3	151	92.7	1920	
Number of female sex partners in the past 6 months					$p < 0.001$
None	6.2	57	93.8	863	
One	5.9	56	94.1	891	
More than one	18.6	38	81.4	166	
Total	7.3	151	92.7	1920	
Had intercourse with FSWs in the past 6 months					$p < 0.001$
Yes	16.4	41	83.6	209	
No	6.0	110	94.0	1711	
Total	7.3	151	92.7	1920	
Had regular female sex partners in the past 6 months					0.0773
Yes	7.5	76	92.5	943	
No	7.1	75	92.9	977	
Total	7.3	151	92.7	1920	
Had non-regular female sex partners in the past 6 months					0.049
Yes	11.9	16	88.1	118	
No	7.0	135	93.0	1802	
Total	7.6	151	92.7	1920	
Had MSM behavior					0.006
Yes	15.5	13	84.5	71	
No	6.9	138	93.1	1849	
Total	7.3	151	92.7	1920	

Note: *Respondents were asked to name 4 channels for HIV transmission as possible by an open-ended question. The number of correct answers (including sexual intercourse, vertical transmission of HIV to the fetus, sharing needle, and blood transfusion) was coded.

Table 4: Factors Associated with actual HIV testing behavior (Stepwise Multiple Logistic Regression Models)

Independent Variable	HIV testing		
	OR	95% CI	*p*
Had intercourse with FSWs in the past 6 months			
(Ref = No)	1.00		
Yes	2.0	1.28-3.12	0.002
Number of female sex partners in the past 6 months			
(Ref = None)	1.00		
One	0.92	.62-1.34	0.647
More than one	2.32	1.40-3.86	0.001
Had MSM behavior			
(Ref = No)	1.00		
Yes	2.00	1.06-3.78	0.033

Note: Variables that were significant in univariate analyses but were not significant to enter the model included, had non-regular female sex partner(s), had contracted STD in the past 6 months, and self-perceived chance of HIV infection in the future.