



NIH PUBLIC ACCESS

Author Manuscript

Sex Transm Dis. Author manuscript; available in PMC 2013 March 1.

Published in final edited form as:

Sex Transm Dis. 2012 March ; 39(3): 182–187. doi:10.1097/OLQ.0b013e318237b3b4.

Prior HIV Testing among STD Patients in Guangdong Province, China: Opportunities for Expanding Detection of Sexually Transmitted HIV Infection

Joseph D Tucker, MD, MA^{*,†,‡}, Li-Gang Yang, MD, MSc^{*}, Bin Yang, MD, PhD^{*}, Darwin Young, BA[‡], Gail E Henderson, PhD[‡], Shu-Jie Huang[§], He-Kun Lu[§], Xiang-Sheng Chen, MD, PhD[¶], and Myron S Cohen, MD[‡]

^{*}STD Control Department, Guangdong Provincial Center for Skin Diseases and STD Control, Guangzhou, China

[†]Department of Medicine, Massachusetts General Hospital, Boston, US

[‡]Department of Medicine, University of North Carolina Chapel Hill School of Medicine, Chapel Hill, US

[§]Jiangmen Municipal Skin Hospital, Jiangmen, China

[¶]National Center for STD Control, Chinese Academy of Medical Sciences and Peking Union Medical College Institute of Dermatology, Nanjing, China

Abstract

Background—Expanding HIV testing is important among individuals at increased risk for sexual HIV transmission in China, but little is known about prior HIV testing experiences among sexually transmitted disease (STD) patients.

Methods—This cross-sectional study of 1792 outpatients from six public sexually transmitted disease (STD) clinics in Guangdong Province recorded detailed information about ever having been tested for HIV infection in addition to socio-demographic variables, health seeking, clinical STD history, and HIV stigma using a validated survey instrument.

Results—456 (25.4%) of the STD patients in this sample had ever been tested for HIV infection. STD patients who were male, had higher income, more education, were at City A and City C, received STD services at public facilities, had used intravenous drugs, and had a history of an STD were more likely to ever receive an HIV test in multivariate analysis. Low perceived HIV risk was the most common reason for not receiving an HIV test. Only 7.7% of the sample reported fear of discrimination or loss of face as influencing their lack of HIV testing.

Conclusion—Incomplete prior HIV screening among STD patients in China suggests the need for broadening HIV testing opportunities at STD clinics and similar clinical settings attended by those with increased sexual risk.

Keywords

HIV testing; syphilis; China; STD

corresponding author: Joseph D. Tucker, Division of Infectious Diseases, 55 Fruit Street, GRJ 504, Massachusetts General Hospital, Boston, USA, 02114, Tel: 617-726-3906; Fax: 617-726-2241, jtucker4@partners.org.

None of the authors have conflicts of interest.

Introduction

Over three-quarters of new HIV infections in China during 2009 were estimated to be from sexual transmission.¹ However, over half of those living with HIV do not know their serostatus¹ and low levels of HIV test uptake have been noted among many Chinese with increased sexual risk.² In response to the need to scale up routine HIV testing in China, the government established free HIV VCT testing sites and piloted HIV provider-initiated testing and counseling (PITC).³ But VCT sites have not been successful in expanding HIV test uptake, averaging two tests per day per site.⁴ One operational research study in China found that less than 20% of general hospital patients accepted an HIV test, with test uptake at STD clinics in general hospitals particularly low.⁵ Similar problems with HIV VCT uptake have been noted in national sex worker sentinel surveillance data⁶ and qualitative research.⁷ Routine HIV screening among groups at increased risk for sexual HIV transmission in China has remained elusive.

There are several potential explanations for low HIV test uptake among high risk individuals in China. Failure of high risk individuals to reach clinics with HIV test capacity and failure to receive testing at clinics with capacity are two separate reasons for the low HIV test uptake. A number of research studies in China have shown that high risk individuals may not directly seek care at public clinics,^{8, 9} complicating routine HIV screening programs. In addition, other work has revealed high perceived HIV stigma at public clinics in China¹⁰⁻¹³ which could serve to discourage high risk individuals from disclosing HIV risk behaviors and receiving appropriate screening. Understanding why individuals at increased risk of sexually transmitted HIV infection never receive HIV testing is critical for expanding routine testing programs.

Especially in light of China's expanding sexually transmitted HIV epidemic, further understanding HIV testing at public STD services is essential for expanding HIV testing services. There have been no studies assessing HIV stigma among Chinese STD clinic patients. Understanding HIV stigma at STD clinics is particularly important because these sites consistently serve individuals at increased risk for HIV and other STDs. South China has recently had an increase in reported syphilis¹⁴ and sexually transmitted HIV infection cases.^{15, 16} The major goal of this study was to analyze predictors of ever having HIV testing among STD patients in Guangdong China and the secondary goal was to examine reasons for not HIV testing including stigma.

Methods

Study Participants

The Plum Blossom Project started in 2009 in the urban coastal region of Guangdong Province. The project worked alongside provincial, national, and international projects focused on increasing routine syphilis/HIV testing at public STD clinics in selected Guangdong cities. Details of the Plum Blossom Project have been described elsewhere.^{17, 18} Briefly, public STD clinics in four cities of the Pearl River Delta region of Guangdong Province were selected using a probability proportional-to-size sampling method.¹⁹ Cities A and C were larger (greater than five million residents) and had more local HIV programs compared to Cities B and D. Administrative data were used to estimate the number of public STD patients evaluated per day at each site. Each STD clinic evaluated approximately five to ten STD patients per day.

Survey Development

A written survey for public STD outpatients was field tested among 12 patients in one of the cities. The survey had 58 items, with most items coming from the China Family Health and

Life Survey, a population-representative study of sexual behaviors in China.²⁰ The survey included domains on sociodemographic information and HIV risk, HIV/syphilis test refusal, sexual health seeking, and HIV stigma.

All socio-demographic and HIV risk behavior items came from the China Family Health and Life Survey.²⁰ Participants were asked about whether they were alone or accompanied to the STD clinic during the current visit. Reasons for refusing HIV and syphilis testing in the past were developed based on qualitative field testing, with the most common reasons for refusal including the following seven responses: “I don’t have risk factors,” “I don’t have time,” “Follow-up plan or next steps unclear,” “I don’t have the money,” “Fear of loss of face or discrimination,” “Fear of loss of confidentiality.” The additional category of “Doubt the test results” was added based on input from local STD physicians. Participants were allowed to check more than one reason.

Sexual health seeking items focused on seeking STD treatment. Sexual health seeking items were developed based on a formative qualitative analysis of discussions with local public STD doctors, private STD doctors, and STD clinic managers.¹⁸ Health seeking items included prior experience of seeking STD treatment in clinics, preferred STD treatment clinic, and reason for choosing preferred clinic. Those seeking sexual health services can obtain services at a number of sites. Potential responses to sexual health seeking questions included public STD clinic, public gynecological clinic, public urology clinic, private clinic, pharmacy, or not seeking treatment.

HIV stigma questions included seven items assessing perceived HIV stigma that have been validated in China before (Cronbach’s alpha = 0.79).²¹ These items included statements about individuals with HIV and asked participants to respond marking a Likert scale with four options: 1) strongly disagree; 2) disagree; 3) agree; 4) strongly agree. Surveys were self-administered and checked by a trained research assistant for completeness.

Study Procedure

From September 2009 until January 2010, potential study subjects were recruited by physicians and nurses at selected STD clinics. All STD patients older than 17 years old were eligible for participation, regardless of their interest in receiving syphilis or HIV testing. Potential participants were referred to a separate, quiet room to speak with a research assistant about joining the study. Participation in the survey was voluntary and no incentives were given to patients to participate in the study. Those who agreed to participate in the study were given STD/HIV counseling after providing verbal informed consent to a trained research assistant. STD patients were offered testing and then entered the study. All patients received medical care for STD/HIV according to national guidelines.

Ethical Review

This research protocol was approved by the Medical Ethics Committee of Chinese Academy of Medical Sciences Institute of Dermatology (Nanjing, China), the University of North Carolina Institutional Review Board (Chapel Hill, USA), and the Partners Committee on Human Subjects Research (Boston, USA).

Analysis Plan

The primary outcome of the study was ever receiving an HIV test as a dichotomous outcome. Missing values for all variables accounted for less than 5% of this outcome with the exception of the variable focused on income that elicited 10% missing. Predictor variables were dichotomized except for city which was retained as four separate categories. A single dichotomous health seeking variable was created by combining responses focused

on history of health seeking and responses on preferred clinic system (private versus public). Occupation was dichotomized into entertainment and non-entertainment based on earlier work supporting higher sexual risk at entertainment establishments.²² Bivariate relationships were analyzed and unadjusted odds ratios with 95% confidence intervals were reported. A multivariate logistic regression model was developed by taking all bivariate relationships found to be associated with HIV testing with $p < 0.05$. Although there was some clustering of observations at the city-level, city-level variance accounted for 3.7% of the total variance so generalized estimating equations or multi-level modeling were not used.

Results

A total of 2061 STD patients were approached and 1792 (86.9%) of STD patients completed the survey. A more detailed analysis of those who refused to participate is described elsewhere.¹⁹ Four cities were represented with between 336–628 respondents each (Table 1). The mean age of respondents was 33.1 years old with 1163 (65.0%) men (Table 1). Most STD patients were married, had an income of less than \$3700 USD per year, had high school or less education, were local residents for greater than one year, were employed in non-entertainment industries, and were unaccompanied to the STD clinic. HIV risk behaviors are reported in Table 2. 721 (40.3%) of respondents reported having a history of a sexually transmitted infection.

A total of 456 (25.4%) STD patients had received an HIV test in the past and 484 (27.0%) STD patients received a syphilis test in the past. Among those who received at least one test during the visit, 369 (76.9%) received both syphilis and HIV testing, 111 (23.1%) received only syphilis testing, and 82 (17.1%) received only HIV testing. 652 (50.2%) of respondents reported that they had not received an HIV test because they did not think they had HIV risk factors; other factors are listed in Table 3. Only 100 (7.7%) of those who had not received HIV testing reported that discrimination or loss of face was a concern. 118 (6.6%) reported more than one reason and no reason was marked for 36 (2.0%) of participants.

Bivariate analyses identified factors associated with ever having received an HIV test. Among socio-demographic variables, being male, annual income greater than \$3700 USD, education greater than high school, and working in entertainment were associated with HIV testing (Table 1). Among sexual health seeking and other behaviors, receiving STD treatment from a public clinic, having a history of an STD, and having a history of intravenous drug use were all associated with HIV testing (Table 2). Multivariate analysis identified the following factors associated with HIV testing: being male, annual income greater than \$3700 USD, education greater than high school, receiving STD treatment from a public clinic, working in entertainment, attending an STD clinic in City A and City C, having a history of an STD, and having a history of intravenous drug use (Table 4).

Sexual health seeking and other behaviors were recorded in greater detail. 1670 (93.7%) of respondents reported attending a public clinic in the past for STDs and 113 (6.3%) of respondents had seen a private physician in the past for STD treatment (Table 2). The most commonly preferred clinic was public STD clinic (1701, 94.9%) followed by obstetrics/gynecology (38, 2.1%) and urology (16, 0.9%). Factors identified with choosing the preferred STD clinic included doctor trust (918, 51.2%), doctor training (811, 45.3%), service quality (387, 21.6%), price (292, 16.3%), clinic location (201, 11.2%), and nurse/administration trust (168, 9.4%). HIV risk behaviors are presented in Table 2.

Within the HIV stigma domain, 69–94% of participants disagreed with various discriminatory statements about people with HIV infection (Table 5). Five of the seven stigma measures were not associated with ever HIV testing. Among the two stigma

measures that were significantly related to ever HIV testing, one item suggested greater stigma among those who received HIV testing (children schooling item) and one item suggested greater stigma among those who did not receive HIV testing (employment item). Two items assessed STD patients' responses to punishment of sex workers and clients respectively. 1182 (66.0%) of respondents thought that current sex worker punishments were too severe and 1158 (64.6%) thought that current client punishments were too severe.

Discussion

Responding to China's sexually transmitted HIV and syphilis epidemics are critical public health priorities. Early HIV diagnosis and entry to care in low-income nations are associated with improved prognosis and survival, increasing the importance of HIV testing.^{23, 24} Yet there have been few studies analyzing HIV testing in Chinese clinical settings that routinely serve individuals with higher sexual risk such as STD clinics. The large number of STD patients (74.6%) who had never received an HIV test in the past highlights a major missed opportunity for HIV case identification and entry into care.

Our finding that only one-quarter of STD patients had been tested for HIV is similar to other research from public STD clinics in China.²⁵ Approximately one-half of STD patients did not believe they had HIV risk factors, despite 40% reporting a previous STD and an increasing burden of HIV in the region.¹⁵ This trend towards low perceived risk may be related to misperceptions about HIV transmission, as other Chinese research has suggested.²⁶

Correlates of HIV testing largely tracked along with one's sexual risk, with greater sexual risk associated with a higher likelihood of being tested for HIV. This extends previous research outside of clinics showing that those with higher sexual risk^{27, 28} are more likely to receive HIV testing. This is the first study to find that those with higher education and higher income at STD clinics are more likely to be tested for HIV infection. While other studies have found a relationship between high income and increased sexual risk in China,^{20, 29} these investigations did not assess HIV testing. In addition, seeking testing at public versus private STD clinics has not been assessed in previous HIV testing research.^{27, 28}

This study found higher levels of HIV test uptake in the two larger cities (A and C) that had more ongoing HIV programs. China's response to the HIV epidemic has been far-reaching, but this data suggest that smaller cities in China may have fewer HIV testing programs and related opportunities for routine HIV testing. Our study did not include a sufficient number of cities to investigate city-level determinants of HIV testing, but differences in HIV testing programs, routine HIV testing guidelines, and the involvement of local public health officials may partly explain these difference in HIV testing. Extending HIV testing programs into smaller cities in China will be important for the success of clinic-based testing efforts. More operational and policy research may help to elucidate how some cities have been more successful than others in achieving widespread HIV testing.

Fear of discrimination and loss of face was infrequently reported as a reason to refuse HIV testing at STD clinics. In addition to the HIV stigma measures consistent with minimal HIV-specific stigma, this trend suggests that perceived HIV stigma is unlikely a major contributor to low HIV testing at public STD clinics. This is surprising given the literature on HIV stigma among health care workers,^{12, 13} high risk groups,²¹ and the general population³⁰ in China. As demonstrated in divergent STI patient responses to the HIV stigma items, HIV stigma may influence testing in two counterbalancing ways. Having greater perceived HIV

stigma could encourage high risk individuals to seek care and know their serostatus or avoid clinics and other HIV testing sites.

Our study has several limitations. First, our study only sampled urban STD patients in a more developed region of China and may not be generalized to other Chinese contexts. At the same time, these urban coastal regions also have had the most prominent increases in syphilis and sexually transmitted HIV in China.³¹ Second, the study included only self-reported HIV testing behaviors and may be subject to reporting bias. Third, this data is cross-sectional and cannot draw conclusions about how perceptions of behaviors and HIV testing change over time. Finally, our stigma assessment focused on perceptions of HIV-infected individuals and not HIV testing, so would not capture all elements related to how stigma influences HIV testing.

Expanding HIV testing in China is a critical public health priority. Comprehensive HIV treatment and care programs organized by the Chinese government demonstrate high-level commitment to HIV control. Promising pilot programs integrating HIV testing at STD clinics have been implemented in the US³² and Europe.³³ As China's HIV epidemic increasingly involves sexual transmission, HIV testing at STD clinics and other locations where high-risk individuals seek sexual health services is important. This analysis of HIV testing at public STD clinics shows an untapped opportunity for expanding provider-initiated HIV testing. Further operational research is necessary to show how HIV testing can be scaled up among individuals at increased risk for sexually transmitted HIV infection.

Acknowledgments

Part of this work was presented at the Massachusetts General Hospital Center for AIDS Research Conference on October 1st, 2010. We would like to thank all the participants and members of the Plum Blossom team who made this possible. Thanks to Frank Wong and Eric Nehl of Emory University for making comments on an earlier draft of this manuscript.

Financial support for this research came from an NIH Fogarty K01 Award (US NIH 1K01TW008200-01A1; JT), the UNC Fogarty AIDS International Research and Training Program (NIH FIC D43 TW01039), the UNC Social Science Research on HIV/AIDS in China (NIH NICHD R24 HD056670-01), the UNC Center for AIDS Research, the China-Australia Health and HIV/AIDS Facility Project (HIV 04), the WHO Rapid Syphilis Test Project (UNICEF/UNDP/World Bank/WHO A70577), the Harvard Institute for Global Health, and Burroughs Wellcome Fund/American Society of Tropical Medicine and Hygiene Wellcome Postdoctoral Fellowship in Tropical Infectious Diseases.

References

1. 2009 Estimates for the HIV/AIDS Epidemic in China. Beijing: Ministry of Health/UNAIDS/WHO; 2010.
2. He N, Zhang J, Yao J, Tian X, Zhao G, Jiang Q, et al. Knowledge, attitudes, and practices of voluntary HIV counseling and testing among rural migrants in Shanghai, China. *AIDS Educ Prev*. 2009; 21(6):570–81. [PubMed: 20030500]
3. Tucker JD, Wong FY, Nehl EJ, Zhang FJ. HIV testing and care systems focused on sexually transmitted HIV in China *Sexually Transmitted Infection*. 2011 In Press.
4. UNAIDS/StateCouncil. A Joint Assessment of HIV/AIDS Prevention, Treatment and Care in China. 2007.
5. Liu L, Hu Y, Huang C. HIV ELISA Testing at General Hospital in Sichuan Province. *Modern Preventive Medicine (Chinese)*. 2007; 34:3356–7.
6. Wang L, Ding ZW, Ding GW, Guo W, Qin QQ, Li DM, et al. Data analysis of national HIV comprehensive surveillance sites among female sex workers from 2004 to 2008. *Zhonghua Yu Fang Yi Xue Za Zhi*. 2009; 43(11):1009–15. [PubMed: 20137527]

7. Wang Y, Li B, Zheng J, Sengupta S, Emrick CB, Cohen MS, et al. Factors Related to Female Sex Workers' Willingness to Utilize VCT Service: A Qualitative Study in Jinan City, Northern China. *AIDS Behav.* 2008
8. Choi KH, Zheng X, Zhou H, Chen W, Mandel J. Treatment delay and reliance on private physicians among patients with sexually transmitted diseases in China. *Int J STD AIDS.* 1999; 10 (5):309–15. [PubMed: 10361920]
9. Ma JM, Liu N, Chen AP, Yang GH. Study on knowledge, attitudes and behaviors regarding infectious diseases among Chinese people in 2002. *Zhonghua Liu Xing Bing Xue Za Zhi.* 2005; 26(6):389–93. [PubMed: 16185442]
10. Li L, Liang LJ, Wu Z, Lin C, Wen Y. Individual attitudes and perceived social norms: Reports on HIV/AIDS-related stigma among service providers in China. *Int J Psychol.* 2009; 44 (6):443–50. [PubMed: 20090857]
11. Wang D, Operario D, Hong Q, Zhang H, Coates TJ. Intervention to train physicians in rural China on HIV/STI knowledge and risk reduction counseling: preliminary findings. *AIDS Care.* 2009; 21(4):468–72. [PubMed: 19266406]
12. Li L, Wu Z, Wu S, Zhaoc Y, Jia M, Yan Z. HIV-related stigma in health care settings: a survey of service providers in China. *AIDS Patient Care STDS.* 2007; 21(10):753–62. [PubMed: 17949274]
13. Hesketh T, Duo L, Li H, Tomkins AM. Attitudes to HIV and HIV testing in high prevalence areas of China: informing the introduction of voluntary counselling and testing programmes. *Sex Transm Infect.* 2005; 81(2):108–12. [PubMed: 15800085]
14. Yang LG, Tucker J, Yang B, Shen SY, Sun XF, Chen YF, et al. Primary syphilis cases in Guangdong Province 1995–2008: Opportunities for linking syphilis control and regional development. *BMC Public Health.* 2010; 10(1):793. [PubMed: 21192782]
15. HIV Infection--Guangdong Province, China 1997–2007. *MMWR Morb Mortal Wkly Rep.* 2009; 58(15):396–400. [PubMed: 19390507]
16. Lu L, Jia M, Ma Y, Yang L, Chen Z, Ho DD, et al. The changing face of HIV in China. *Nature.* 2008; 455(7213):609–11. [PubMed: 1883270]
17. Yang, LG.; Tucker, JD.; Yang, B. Twin response to twin epidemics: Integrated HIV/syphilis testing at STI clinics in South China. Late breaker oral presentation FRLBE106. XVIII International AIDS Conference; Vienna: International AIDS Society; 2010.
18. Tucker JD, Yang LG, Zhu ZJ, Yang B, Yin YP, Cohen MS, et al. Integrated syphilis/HIV screening in China: a qualitative analysis. *BMC Health Services Research.* 2010; 10:58. [PubMed: 20205942]
19. Tucker JD, Yang LG, Yang B, Zheng HP, Chang H, Wang C, et al. A Twin Response to Twin Epidemics: Integrated HIV/Syphilis Testing at STI clinics in South China. *J Acquir Immune Defic Syndr.* 2011
20. Parish WL, Laumann EO, Cohen MS, Pan S, Zheng H, Hoffman I, et al. Population-based study of chlamydial infection in China: a hidden epidemic. *JAMA.* 2003; 289(10):1265–73. [PubMed: 12633188]
21. Liu H, Feng T, Rhodes AG. Assessment of the Chinese version of HIV and homosexuality related stigma scales. *Sex Transm Infect.* 2009; 85(1):65–9. [PubMed: 18790858]
22. Li L, Wu Z, Rotheram-Borus MJ, Guan J, Yin Y, Detels R, et al. Visiting entertainment venues and sexual health in China. *Arch Sex Behav.* 2009; 38(5):814–20. [PubMed: 18256918]
23. Palella FJ Jr, Deloria-Knoll M, Chmiel JS, Moorman AC, Wood KC, Greenberg AE, et al. Survival benefit of initiating antiretroviral therapy in HIV-infected persons in different CD4+ cell strata. *Ann Intern Med.* 2003; 138(8):620–6. [PubMed: 12693883]
24. Mocroft A, Ledergerber B, Katlama C, Kirk O, Reiss P, d'Arminio Monforte A, et al. Decline in the AIDS and death rates in the EuroSIDA study: an observational study. *Lancet.* 2003; 362(9377):22–9. [PubMed: 12853195]
25. Chen, S-M.; Liu, D-C.; Zhang, FR. STD Clinic Provider-Initiated HIV Testing and Counseling Analysis. 5th National STD Conference; 2010 May 2010; Haikou, China. 2010.
26. Derlega VJ, Yang X, Luo H. Misconceptions about HIV transmission, stigma and willingness to take sexual risks in southwestern China. *Int J STD AIDS.* 2006; 17(6):406–9. [PubMed: 16734964]

27. Rou K, Guan J, Wu Z, Li L, Rotheram MJ, Detels R, et al. Demographic and behavioral factors associated with HIV testing in China. *J Acquir Immune Defic Syndr*. 2009; 50(4):432–4. [PubMed: 19322039]
28. Ma W, Detels R, Feng Y, Wu Z, Shen L, Li Y, et al. Acceptance of and barriers to voluntary HIV counselling and testing among adults in Guizhou province, China. *Aids*. 2007; 21 (Suppl 8):S129–35. [PubMed: 18172381]
29. Uretsky E. ‘Mobile men with money’: the socio-cultural and politico-economic context of ‘high-risk’ behaviour among wealthy businessmen and government officials in urban China. *Cult Health Sex*. 2008; 10(8):801–14. [PubMed: 18975228]
30. Sullivan SG, Xu J, Feng Y, Su S, Xu C, Ding X, et al. Stigmatizing attitudes and behaviors toward PLHA in rural China. *AIDS Care*. 2010; 22(1):104–11. [PubMed: 20390487]
31. Chen ZQ, Zhang GC, Gong XD, Lin C, Gao X, Liang GJ, et al. Syphilis in China: results of a national surveillance programme. *Lancet*. 2007; 369(9556):132–8. [PubMed: 17223476]
32. Brooks L, Rietmeijer CA, McEwen D, Subiadur JA, Mettenbrink CJ. Normalizing HIV Testing in a Busy Urban Sexually Transmitted Infections Clinic. *Sex Transm Dis*. 2009
33. Heijman RL, Stolte IG, Thiesbrummel HF, van Leent E, Coutinho RA, Fennema JS, et al. Opting out increases HIV testing in a large sexually transmitted infections outpatient clinic. *Sex Transm Infect*. 2009; 85(4):249–55. [PubMed: 19103642]

Table 1

Socio-demographic characteristics associated with having prior HIV testing(N = 1792).

Variable	N (%)		Tested for HIV (%)	Unadjusted OR (95% CI)
	Overall	1792 (100%)		
Age	>40 years old	412 (23.0)	100 (24.6)	-
	≤40 years old	1380 (77.0)	356 (26.1)	1.07 (0.83–1.40)
Sex	Female	626 (35.0)	136 (22.0)	-
	Male	1163 (65.0)	320 (27.9)	1.38 (1.10–1.73)^a
Marital Status	Unmarried	663 (38.2)	167 (25.4)	-
	Married	1075 (61.9)	227 (26.1)	1.04 (0.83–1.30)
Annual Income	≤ 3700 USD	934 (57.7)	199 (21.5)	-
	>3700 USD	686 (42.4)	224 (33.0)	1.80 (1.44–2.25)
Education completed	≤ High school	1254 (71.1)	285 (22.9)	-
	> High school	510 (28.9)	164 (32.6)	1.62 (1.30–2.04)
City	City D	336 (18.8)	54 (16.1)	-
	City B	461 (25.7)	107 (23.3)	1.59 (1.10–2.28)
	City C	628 (35.0)	176 (28.5)	2.08 (1.48–2.93)
	City A	367 (20.5)	119 (33.1)	2.58 (1.79–3.71)
Local Resident	< 1 year	226 (13.4)	55 (24.6)	-
	≥ 1 year	1461 (86.6)	376 (25.1)	1.08 (0.78–1.49)
Occupation	Non-entertainment	1696 (96.0)	429 (25.6)	-
	Entertainment	70 (4.0)	25 (36.2)	1.66 (1.10–2.74)
Accompanied at STD clinic	Accompanied	492 (28.2)	115 (23.8)	-
	Unaccompanied	1254 (71.8)	335 (27.0)	1.18 (0.93–1.51)

^a Significant results in bold.

Table 2

Sexual health behaviors and HIV risk behaviors associated with prior HIV testing (N = 1792).

Variable		N (%)	Tested for HIV (%)	Unadjusted OR (95% CI)
STD treatment history^a	Private clinic	113 (6.3)	18 (15.9)	-
	Public clinic	1670 (93.7)	435 (26.4)	1.88 (1.13–3.16)^b
Ever had STD	No	1071 (59.8)	204 (19.3)	-
	Yes	721 (40.3)	252 (35.2)	2.28 (1.83–2.83)
Condom use at last sex	No	1087 (63.2)	276 (25.6)	-
	Yes	633 (36.8)	167 (26.6)	1.05 (0.84–1.32)
Ever had commercial sex	No	1204 (71.0)	294 (24.6)	-
	Yes	492 (29.0)	137 (28.1)	1.19 (0.94–1.51)
Ever had IDU^c use	No	1759 (99.3)	440 (25.2)	-
	Yes	13 (0.7)	10 (76.9)	9.87 (2.70–36.03)
MSM^d behaviors	No	1209 (98.6)	329 (27.6)	-
	Yes	17 (1.4)	8 (47.1)	2.3 (0.90–6.10)

^aHistory of seeking STD treatment at only private clinics compared to public clinics.

^bSignificant results in bold.

^cIDU – intravenous drug use

^dMSM – men who have sex with men.

Table 3

Patient-reported reasons for no prior HIV testing and no prior syphilis testing (N = 1298 for HIV, N = 1283 for syphilis).^a

	Reason not HIV testing (%)	Reason for not syphilis testing (%)
<i>I don't have risk factors</i>	652 (50.2)	794 (61.9)
<i>I don't have time</i>	315 (24.3)	272 (21.2)
<i>Follow-up plan or next steps unclear</i>	203 (15.6)	149 (11.6)
<i>I don't have the money</i>	122 (9.4)	112 (8.7)
<i>Fear loss of face, discrimination</i>	100 (7.7)	71 (5.5)
<i>Fear loss of confidentiality</i>	23 (1.8)	0
<i>Doubt the test results</i>	25 (1.9)	10 (0.8)

^aParticipants could list more than one reason and so the percentages do not add up to 100%.

Table 4

Multivariate model predicting ever HIV tested among STD patients.

Variable	p-value	Adjusted OR	95% CI
Male sex	0.0246	1.36	1.04–1.79
Annual income greater than \$3700 USD	0.0121	1.41	1.08–1.85
Education greater than high school	0.0084	1.48	1.11–1.98
City A	0.0229	1.63	1.07–2.48
City B	0.6021	1.12	0.74–1.68
City C	0.0018	1.82	1.25–2.65
Employed in entertainment	0.0448	1.78	1.01–3.10
Received STD treatment from a public clinic	0.0029	2.32	1.33–4.05
History of STD	<.0001	2.67	2.08–3.43
History of intravenous drug use	0.0048	10.90	2.08–57.23

Table 5

Perceived HIV stigma measures and their relationship to prior HIV testing (N = 1792)

Variable		N (%)	Tested for HIV (%)	Unadjusted OR, 95% CI
HIV infected people should be ostracized by their spouse and family members.	Agree	344 (19.2)	91 (26.6)	-
	Disagree	1440 (80.4)	363 (25.5)	0.95 (0.72–1.23)
HIV infected people should lose their friends if they knew their HIV status.	Agree	566 (31.6)	134 (24.0)	-
	Disagree	1216 (67.9)	321 (27.0)	1.12 (0.92–1.46)
HIV infected people should be forced to leave their villages.	Agree	329 (18.4)	76 (23.3)	-
	Disagree	1454 (81.1)	378 (26.3)	1.17 (0.88–1.56)
HIV infected people's family should not care for them	Agree	284 (15.9)	83 (29.4)	-
	Disagree	1493 (83.3)	370 (25.1)	0.61 (0.61–1.06)
No one should be willing to take care of their children when HIV infected people die from AIDS	Agree	125 (7.0)	35 (28.7)	-
	Disagree	1641 (91.6)	416 (25.6)	0.86 (0.57–1.28)
Children should not go to school because their parents are infected with HIV	Agree	109 (6.1)	38 (35.2)	-
	Disagree	1670 (93.2)	416 (25.2)	0.62 (0.41–0.94)^a
HIV infected people should not have the same rights to education and employment as others	Agree	426 (23.8)	90 (21.2)	-
	Disagree	1341 (74.8)	363 (27.4)	1.40 (1.08–1.83)

^aSignificant results in bold.