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Behavioral and psychosocial correlates of HIV testing among male clients of female sex workers in Tijuana, Mexico

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Abstract

We use data collected from a sample of 400 male clients of female sex workers (FSW) to examine their HIV testing behavior. We present frequencies of HIV testing and used bivariate and multivariable analyses to assess its socio-demographic, behavioral, and psychosocial correlates. We found that the majority (55%) of male clients of FSW in Tijuana, Mexico had never had an HIV test and the prevalence of HIV testing within the past year was low (9%). In multivariable analyses, significant correlates of having ever tested for HIV were higher age, higher HIV knowledge score, lower sexual compulsiveness score, lower misogynistic attitudes score, having a condom break during sex with a FSW, and higher frequency of sex with a FSW while she was high. Our findings represent an important starting point for developing effective interventions to address the need to promote HIV testing among this population.

Keywords

female sex worker; FSW; HIV testing; non-commercial partner; steady partner; Mexico; substance use

Introduction

Promoting HIV testing among individuals at-risk for HIV and linking HIV-positive people to care has emerged globally as a key strategy to prevent ongoing transmission of HIV^{1,2}. With the aim of ending the global AIDS epidemic by 2030, UNAIDS recently established a new

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Compliance with Ethical Standards:

Informed consent: Informed consent was obtained from all individual participants included in the study.

Ethical approval: All procedures performed were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflicts of Interest: The authors have no conflicts of interest to declare.

global target: “By 2020, 90% of all people living with HIV will know their HIV status.” (p. 1)³. The World Health Organization recommends that members of key populations test at least once every year⁴. But, across the globe, key populations affected by HIV are often some of the populations least likely to test for HIV³. To achieve the UNAIDS targets for HIV testing, it is critical to assess and better understand low prevalence of testing among key affected populations.

Male clients of female sex workers (FSW) in low- and middle-income countries (LMIC) are a key population disproportionately affected by HIV^{5–8} and represent an important group to engage in HIV testing. Increasing HIV testing among this population can help prevent these men from transmitting HIV to sex partners and drug-use partners by linking male clients living with HIV to HIV care, treatment, and prevention services. Research estimating HIV prevalence among male clients is scarce, but recent studies in China and sub-Saharan Africa have shown that HIV prevalence among samples of male clients ranged between 1.5% (rural county of Guangxi, China) and 9.2% (Chinese border region with Vietnam)^{9–15}. Our previous research in Tijuana, Mexico found that 4.1% of a sample of male clients of FSW were living with HIV⁸, well above the national prevalence (0.3%) in Mexico¹⁶. Globally, FSW have a 13.5 times greater odds of living with HIV than non-FSW women¹⁷. Given that inconsistent condom use is prevalent among male clients in LMIC^{10,18–20}, ensuring that male clients who are infected with HIV are tested and connected to care and treatment may be one of the most effective ways to stem HIV transmission among male clients, their non-commercial sexual and drug partners, and FSW.

Despite the importance of HIV testing for male clients, there has been little research on HIV testing among this key population. Lahuerta and colleagues conducted qualitative interviews with male clients in Guatemala and found that men were reluctant to test because of fear of a positive result and a lack of awareness where to access free HIV testing²¹. They also reported fear of HIV-related stigma and discrimination as a barrier to getting tested. Two studies with male partners of FSW in the Dominican Republic by Fleming et al. suggest that HIV testing is still low among men with high-risk behaviors²² and that male partners of FSW may be reluctant to receive HIV testing or engage in medical care due to norms of masculinity that discourage men from seeking health care²³. To our knowledge, the only studies to look at correlates of HIV testing among male clients were conducted in Europe.^{24,25} Niccolai et al. found that 26% of male clients in St. Petersburg, Russia had never been tested, and the only reported association with HIV non-testing was having unprotected sex with both FSW and non-FSW partners²⁴. Darling et al. found that 42% of male clients of FSW in Lausanne, Switzerland had never had a previous HIV test²⁵. This study offered rapid HIV tests to male clients and found that two thirds of male clients ultimately declined to be tested. Key reasons for refusal were perceiving themselves as not at risk for HIV (26%), reporting having tested elsewhere recently (23%), not having time to test (20%), or fearing the result (10%)²⁵. Given this limited previous research, exploration of correlates of HIV testing for this population in other settings – especially LMIC – is necessary to develop interventions that improve HIV testing and improve the chances of meeting the UNAIDS target of 90% testing of all persons living with HIV.

Male clients of FSW in Tijuana, Mexico are the focus population of this study and are part of a unique geographical context that may elevate their risks for HIV. San Diego, US and Tijuana, Mexico share one of the world's busiest land border crossings and combine to form one of the largest bi-national metropolises²⁶. Because sex work is illegal in San Diego, some US citizens cross into Tijuana to find FSW in the quasilegal *zona roja* (red light zone). There are an estimated 6000 to 10,000 FSW in Tijuana²⁷. The first large study of male clients of FSW in Tijuana found that many engaged in sexual and drug use behaviors that put them at risk for contracting HIV: half reported unprotected sex with FSWs in the previous 4 months and 25% reported injecting drugs in the previous 4 months⁸. Research in this setting with key populations who were HIV-positive – including sex workers (male and female), men who have sex with men, and persons who inject drugs – show that only 48% had previously ever tested for HIV and that only 12% were aware they were living with HIV²⁸. Among a general population of FSW, an estimated 31% of FSW in Tijuana have never tested for HIV in their lifetime²⁹. Data collected in 2008 showed that 50% of male clients in Tijuana had never tested for HIV and that the majority of male clients living with HIV (56%) had never been tested prior to the study⁸. But, this study provided no further information on men's HIV testing history or a thorough exploration of socio-demographic, behavioral, or psychosocial correlates.

To inform future research and HIV testing interventions with male clients of FSW in Tijuana, Mexico, we aim to answer the following research questions: (a) What is the proportion of male clients in Tijuana who have tested for HIV in their lifetime and within the past year? (b) Are men who report recent HIV transmission risk behaviors (e.g., unprotected sex with FSW within the past 4 months) more likely to have tested for HIV in the past year?, and (c) What are the socio-demographic variables, HIV sexual risk behaviors (e.g., frequency of unprotected vaginal sex with FSW), substance use behaviors (e.g., injecting an illicit drug), and psychosocial factors (e.g., self-esteem) associated with HIV testing among this population?

Methods

Recruitment and Sample

We use baseline data collected from a sample of 400 male clients of Tijuana-based FSW; these men were enrolled in a sexual risk reduction intervention known as *Hombre Seguro* ("Safe Men")³⁰. By design, half of the participants were from San Diego, half from Tijuana. Between September 2010 and October 2012, we used time-location sampling³¹ within each *colonia* (neighborhood) in Tijuana to recruit male clients. For more details on sampling, see Pitpitan et al.³⁰. We included HIV-negative males who were at least 18 years old; living in either city; reported purchasing sex for money, drugs, shelter or goods; and reported having unprotected sex with an FSW in Tijuana in the last 4 months.

Survey and Measures

Interviews were conducted in either Spanish or English by trained, bilingual interviewers. The baseline interview took approximately 45 minutes to complete and translated into Spanish and back-translated into English by our bilingual and bicultural staff who reviewed

questions for cultural and linguistic appropriateness. Scales were selected based on theoretical and empirical evidence for factors contributing to sexual risk and substance use behaviors.³⁰ We administered measures using computer assisted personal interviewing (CAPI).

HIV Testing

We asked men “Have you ever been tested for HIV or AIDS?” For analyses, we used a dichotomous dependent variable where 1=ever tested and 0=never tested. If men had been tested, they were subsequently asked the date they were last tested. We calculated time since last HIV test by comparing the date of their last HIV test to the date the interview was conducted. In the descriptive statistics, we report on whether men were tested following CDC recommendations (within the past year), between 1 and 5 years ago, and more than 5 years ago.

Socio-demographic characteristics

We assessed age, education, ethnicity (Hispanic vs. non-Hispanic), place of residence (U.S. vs. Mexico), employment status, marital status, sexual orientation, and whether they have been incarcerated in the previous 4 months.

Sexual Risk Behaviors

In open-ended responses, participants were asked to report each of the following with FSW partners in the past 4 months: number of vaginal sex acts and number of times using a condom during vaginal sex. We computed proportion of vaginal sex acts that were unprotected in the past 4 months for each partner type. We also asked three yes/no questions about whether they have ever had sex with a man, ever had a sexually transmitted infection (STI) since sexual debut, and if they ever had a condom break while having sex with a FSW in the past 4 months.

Substance Use Behaviors

In separate items, we asked men if they used marijuana, methamphetamines, cocaine, or heroin within the previous 4 months. For our analyses, we use a composite measure from these responses to assess if men ‘ever used illicit drugs in the past 4 months.’ We also measured whether they had injected any illicit drugs (e.g., marijuana, cocaine, methamphetamine, Mexican speedball, and heroin) in the past 4 months. We asked how often they were drunk or high when they had sex with a FSW in the past 4 months, and how often the FSW was drunk or high when they had sex in the past 4 months. In each of these four variables (i.e., man drunk, man high, woman drunk, woman high), frequency was rated on a scale from 1 (never) to 6 (every day). Finally, we asked whether they traded drugs for sex in the previous 4 months.

Psychosocial Factors

Unless specifically noted, all scales described below were drawn from previous research studies; the text below includes references to original studies.

We measured four factors related to perceptions of risk. HIV knowledge was measured using an 18-item true/false scale³², whereby total number of correct responses was divided by total number of questions answered to determine a percentage score (Cronbach's $\alpha=0.89$). We also asked men how likely it was that they would get HIV/AIDS from a FSW in Tijuana and how likely it was they would get an STI other than HIV from a FSW in Tijuana. These items were developed specifically for this project based on formative research. Response categories ranged from 1 (Not very likely) to 4 (Very likely). Finally, a 7-item scale measured condom use attitudes ($\alpha=0.72$), where higher mean scores represented more negative attitudes toward condoms³³.

We measured three factors related to mental health and support. Depressed mood was measured using the 10-item Center for Epidemiologic Studies Depression Scale. Scale items are clinically derived and have undergone extensive reliability and validation testing ($\alpha=0.78$)³⁴. Social support was measured by the 7-item Emotional Support Scale³⁵. The response categories ranged from 1 (strongly disagree) to 4 (strongly agree) ($\alpha=0.89$). Higher mean scores represent a higher level of perceived social support. Self-esteem was measured using the eight item Rosenberg Self-Esteem scale ($\alpha=0.56$)³⁶.

We measured three factors related to sexual personality. Sexual compulsivity was measured using a 10-item scale that assesses "obsessive preoccupations with sexual acts and encounters"³⁷. Scores on items ranged from 1 (not at all like me) to 4 (very much like me) ($\alpha=0.86$). The Sexual Sensation Seeking Scale is a one-dimensional, 11-item measure developed to capture the constant seeking of unique sexual experiences ($\alpha=0.76$)^{37,38}. Social-sexual effectiveness is described as the ability to interact effectively with members of the opposite sex so as to attract sexual partners. This construct was assessed using the 14-item Male Social-sexual Effectiveness Scale ($\alpha=0.66$)³⁹.

Finally, we measured two factors related to gender and masculinity. The 6-item Misogyny scale measured dislike or strong prejudice against women simply because they are female (e.g. "Women are only good for one thing, and that is sex"). These items were developed specifically for this project based on formative research and a review of the literature. Items were rated on a scale from 1 (strongly disagree) to 4 (strongly agree) ($\alpha=0.71$). Attitudes toward male sexuality were assessed using 24 items from the Stereotypes About Male Sexuality Scale (SAMSS)⁴⁰, which measures participants' agreement or disagreement with certain stereotypic beliefs about males and their sexuality (e.g. "Men are always ready for sex"). Response categories ranged from 1 (disagree) to 5 (agree) ($\alpha=0.87$).

Analyses

Data were analyzed in four stages. First, we examined descriptive statistics on history of HIV testing among the sample. Because such a small number of men tested for HIV in the past year, subsequent analyses focused on reports of *ever* testing for HIV. We assessed demographic differences between male clients who had ever tested for HIV and those who had never tested for HIV. We then used bivariate logistic regressions to report odds ratios for having ever tested and significance level of ever having tested for HIV and socio-demographic variables, sexual behaviors variables, substance use variables, and psychosocial variables. For these analyses, we conducted separate logistic regressions for

each independent variable and having ever tested for HIV as the dependent variable. We did not adjust for multiple comparisons⁴¹. Finally, we examined independent correlates of having ever tested for HIV in a multivariable regression model. We used $p < 0.05$ as our criteria for assessing significance; though, variables that were associated with ever testing for HIV at the $p < 0.10$ level in bivariate analyses were included in the multivariable analyses. We used backwards stepwise regression to yield the final multivariable model. We removed non-significant variables one-by-one (with least significant variables removed first) until all independent variables were associated with ever HIV testing at $p < 0.10$.

Ethics Statement

The study protocol was submitted, reviewed and approved by Institutional Review Boards in the US (University of California, San Diego) and Mexico (Comite de Etica sobre Salud y Poblacion).

Results

Men in our sample ($n=400$) ranged in age between 18 and 73 (mean=38.0, SD=10.8) and most men had less than 12 years of schooling. The sample was predominantly Hispanic/Latino (88.0%). Almost two-thirds (62.6%) were currently employed and 18.6% of respondents had been to jail in the past 4 months. A third (30.6%) of men were married and 11.5% identified as bisexual (none identified as gay).

Table 1 summarizes lifetime HIV testing (i.e., ever), and testing in the past year by HIV risk behaviors. Prior to enrolling in our study, more than half (55.0%) of participants never had an HIV test and only 8.5% had an HIV test in the past year. Men who reported HIV transmission risk behaviors within the previous four months had similar low prevalence of HIV testing in the past year. For example, 10.8% of men who recently injected drugs tested within the previous year; 7.3% of men who always had unprotected sex with a FSW tested within the previous year, 6.2% of men who always had unprotected sex with casual partners tested within the previous year, and 12.4% of men who always had unprotected sex with their wife/steady partner had tested within the past year.

In bivariate analyses, men who were older had slightly greater odds of having ever been tested for HIV compared to younger men (OR: 1.02, 95% CI: 1.00–1.04) and men who had been to jail in the previous 4 months had nearly twice the odds of ever testing as men who had not been to jail (OR: 1.83, 95% CI: 1.11–3.03) (see Table 2). The positive relationship between education and likelihood of having ever tested for HIV was marginally non-significant ($p=0.07$; OR: 1.06, 95% CI: 0.99–1.12).

In terms of sexual risk behaviors, men with a higher proportion of unprotected sex acts with their steady/wife partner had greater odds of ever testing compared to men with a lower proportion of unprotected sex acts (OR: 3.21 95% CI: 1.03–9.98). Men who had an STI since their sexual debut had greater odds of ever testing (OR: 1.87, 95% CI: 1.24–2.80), as did men who had a condom break during sex with an FSW during the past 4 months (OR: 2.04, 95% CI: 1.20–3.49). For substance use behaviors, men who reported greater frequency of sex with FSW while being high on drugs had increased odds of ever testing (OR: 1.24,

95% CI: 1.05–1.46), as did men with greater frequency of sex with FSW while the FSW was high (OR: 1.27, 95% CI: 1.08–1.50) and men who traded drugs for sex with a FSW within the past 4 months (OR: 1.96, 95% CI: 1.32–2.93). Men who used any illicit drugs in the past 4 months had increased odds of having ever been tested (OR: 1.80, 95% CI: 1.08–3.00) compared to non-users. Men who had injected any drugs in the past 4 months had almost three times the odds of testing compared to men who did not inject drugs (OR: 2.82, 95% CI: 1.71–4.67).

For psychosocial variables, several factors were significantly associated with ever having had an HIV test. Men who had a higher HIV knowledge score had greater odds of ever having an HIV test than men who had never been tested (OR: 6.22, 95% CI: 1.82–21.22). Conversely, men with a higher score on the Misogyny Scale were less likely to have ever tested for HIV (OR: 0.28, 95% CI: 0.12–0.64) as were men who had a higher level of endorsement of male sexual stereotypes (OR: 0.32, 95% CI: 0.15–0.68). Having higher score on the sexual compulsivity scale was marginally non-significant at $p=0.09$ (OR: 0.65, 95% CI: 0.40–1.07).

Multivariable Analyses

Our first multivariable model included all independent variables that were associated ($p<0.10$) with having ever tested for HIV (Table 3). We then used a backwards stepwise approach to remove least significant variables one-by-one until all variables were $p<0.10$. Results from that model showed that eight variables were associated with ever having tested for HIV ($p<0.10$). Higher age was associated with greater odds of having ever tested for HIV (OR: 1.02, 95% CI: 1.00–1.04). Men who had a condom break during sex with a FSW within the past 4 months had over two times the odds of having ever tested for HIV (OR: 2.18, 95% CI: 1.22–3.88). Increased frequency of having sex with a FSW while she was high was also associated with increased odds of having ever tested (OR: 1.30, 95% CI: 1.08–1.58). Men who had injected any illicit drug within the past 4 months had more than twice the odds of having had an HIV test (OR: 2.46, 95% CI: 1.44–4.21). Men with increased HIV knowledge had increased odds of having ever been tested for HIV (OR: 4.78, 95% CI: 1.09–20.95). Men with more sexual compulsiveness had significantly lower odds of having ever been tested for HIV (OR: 0.55, 95% CI: 0.31–0.97), as did men with more misogynistic attitudes towards women (OR: 0.31, 95% CI: 0.11–0.84).

Discussion

We found that the majority (55%) of male clients of FSW in Tijuana, Mexico had never had an HIV test and the prevalence of HIV testing within the past year was low (8.5%). Additionally, the prevalence of testing was similarly low among the sub-population of male clients who engaged in key HIV transmission risk behaviors. Given the estimated 4.1% prevalence of HIV among this population⁸, these findings suggest that male clients of FSW in Tijuana are an important population to target for interventions that can increase coverage of HIV testing and meet UNAID goals³. Our findings also highlight several demographic, behavioral, and psychosocial factors that are associated with HIV testing among this

population. Below, we will interpret these findings and make recommendations for increasing coverage of HIV testing with male clients of FSW in Tijuana, Mexico.

We show that men who engaged in the risk behaviors of injecting illicit drugs and having a condom break during sex with a FSW in the previous 4 months were more likely to *ever* test for HIV. However, we also show that men who engage in these risk behaviors have similar low levels of *recent* testing (within the past year) as men who do not engage in those risk behaviors. Thus, it seems that increased odds of testing among men with these risk behaviors is not due to recent testing subsequent to engagement in risk behaviors. There may be alternative reasons for their increased likelihood of testing, such as access to mobile testing sites or exposure to HIV testing interventions. Future research would need to explore this more thoroughly.

Men who were older were also more likely to have ever tested for HIV, possibly because they have had more time in their life to receive a test. Importantly, men with higher HIV knowledge score were more likely to have tested for HIV even when controlling for other factors. This suggests that interventions aiming to increase testing should include basic information about HIV/AIDS.

Men who held misogynistic attitudes were *less* likely to test for HIV. Recent research has linked gender norms and gender inequalities with men's willingness to test for HIV. Two recent studies have shown that some perceive HIV testing to be feminized and conflict with a masculine identity^{42,43}. Similarly, masculine norms related to strength and denial of problems has also been shown to discourage HIV testing⁴⁴. In our study, these misogynistic attitudes emphasizing men's disrespect for women may also indicate men's support for a traditional masculine identity that emphasizes strength by refusing to seek help. Additionally, previous analyses by our team with the same population found that having a higher misogyny score was associated with having unprotected sex⁴⁵. Men who were higher on the Sexual Compulsivity scale were also less likely to have ever tested for HIV; this result may similarly be connected to endorsement of masculine norms since having a strong sexual appetite is considered masculine in many settings, including Mexico^{46,47}. Efforts to increase HIV testing with this population will need to acknowledge and address the influence of these gender norms.

The UNAIDS report highlights, "Tailored approaches and strategies, developed collaboratively with key populations themselves, will be needed to achieve treatment goals" (p. 13)³. Interventions addressing this population will need to consider the social context within which HIV testing occurs. Substance use, especially marijuana, methamphetamine, and heroin, are widely available and commonly used among this population in Tijuana⁴⁸. Further, cultural norms within Mexico encourage men to be strong-willed, have a large sexual appetite, and take risks⁴⁷. The specific context of the *zona roja* and commercial sex work are settings where these cultural norms are put into practice through men's interactions with FSW and their male peers⁴⁹. Further, availability, cost, and stigma of HIV testing for men in this setting may be limiting factors^{28,50,51}.

Historically, male clients of FSW – in Tijuana and elsewhere – are not populations that are specifically targeted for HIV testing interventions or by sites that offer HIV testing services^{30,52}. Instead, these efforts are typically focused on FSW populations or other key populations. The low prevalence of HIV testing among this group emphasizes the key need for interventions that target male clients.

Given our findings, we have several recommendations for future tailored interventions to increase male client's HIV testing in Tijuana, Mexico. First, a recent systematic review has shown that self-testing for HIV may be a promising approach for key populations⁵³. Because men tend to attend formal clinic services less than women⁵⁴, the feasibility of self-testing should be explored among male clients and potentially promoted as an important strategy to increase the reach of HIV testing among this population. Second, brief interventions increasing male client's HIV knowledge and highlighting risk may be particularly important for increasing testing. Third, given the link between HIV testing and misogynistic attitudes, gender-transformative interventions may be particularly useful^{55–57}. Gender-transformative interventions aim to democratize the relationship between men and women and have been shown effective at reducing men's sexual risk behaviors and violence behaviors⁵⁶ and one recent study demonstrated that it may be effective at increasing men's uptake of HIV testing⁵⁸.

Limitations

While ours is one of the first studies to assess the HIV testing behaviors of male clients of FSW, our findings should be interpreted with several limitations in mind. First, Tijuana is a unique context and our inclusion criteria requiring risky sexual behaviors skewed our sample to male clients with sexual and substance use behaviors that put them at greater risk for HIV. As a result, our findings should not be considered generalizable to other contexts or general populations of male clients. Second, given the low number of men who had tested in the past 1 year, we were unable to conduct reliable analyses assessing *recent* HIV testing. Recent HIV testing is a more appropriate outcome for identifying intervention opportunities. Third, a sizable proportion of men (11%) identified as bisexual and this group may differ significantly from heterosexual-identifying men who are clients of FSW. We attempted to conduct comparative analyses but the sample size of this sub-population was too small to yield meaningful results. Future research should explore what factors are associated with recent HIV testing among male clients of FSW and specific sub-populations within this group.

Conclusions

Achieving the UNAIDS goals of HIV testing for 90% of persons living with HIV will require coordinated efforts to promote testing among key populations. Male clients are a key population with low prevalence of HIV testing. Our findings represent an important starting point for developing effective evidence-based interventions to promote HIV testing among this population. But, to achieve our goals, sustained research and development of interventions is urgently needed with this population to quickly increase HIV testing among male clients of FSW.

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Table 1
Timing of last HIV test among male clients of FSW in Tijuana, Mexico, full sample and by HIV risk behavior.

	ALL MEN, n=399 ^a		Injected an illicit drug, past 4 months, n=83		Always unprotected sex with FSW, past 4 months, n=220		Always unprotected sex with casual, past 4 months, n=97		Always unprotected sex with wife, past 4 months, n=137	
HIV TESTING	N	%	N	%	N	%	N	%	N	%
<i>Never had an HIV test</i>	220	55.0	29	34.9	127	57.7	61	62.9	76	55.5
<i>Last HIV test 5+ years ago</i>	57	14.3	19	22.9	30	13.6	14	14.4	18	13.1
<i>Last HIV test between 1 and 5 years ago</i>	88	22.1	26	31.3	47	21.4	16	16.5	26	19.0
<i>Last HIV test within the past year</i>	34	8.5	9	10.8	16	7.3	6	6.2	17	12.4

^a n=399 instead of 400 because of an error for one man's date of last HIV test

Table 2

Sample characteristics of male clients of FSW in Tijuana, Mexico by whether or not they have ever tested for HIV, n=400

	ALL MEN		HIV Testing, ever					Odds (OR) of ever testing for HIV based on socio-demographic, behavioral, and psychosocial factors		
			NO		YES					
	n=400		n=220		n=180					
	N/ mean	%/ SD	N/ mean	%/ SD	N/ mean	%/ SD	OR	95% Confidence Interval	p	
SOCIO-DEMOGRAPHIC FACTORS										
Mean Age (mean, SD)	37.8	10.7	36.8	11.46	38.9	9.63	1.02	1.00 – 1.04	0.05	
Mean years of education (mean, SD)	9.2	3.4	8.95	3.19	9.55	3.58	1.06	0.99 – 1.12	0.07	
Hispanic/Latino (vs. non-Hispanic)	350	87.5	196	89.09	154	85.56	0.73	0.40 – 1.31	0.29	
Lives in U.S. (vs. Mexico)	197	49.3	111	50.45	92	51.11	0.97	0.66 – 1.44	0.90	
Employed	250	62.5	138	62.73	112	62.22	0.98	0.65 – 1.47	0.92	
Married/common law	126	31.5	71	32.27	55	30.56	0.92	0.60 – 1.41	0.71	
Bisexual	44	11.0	28	12.73	16	8.89	0.67	0.35 – 1.28	0.22	
Been to jail, past 4 months	77	19.3	33	15	44	24.44	1.83	1.11 – 3.03	0.02	
SEXUAL BEHAVIORS										
Mean proportion of unprotected sex with FSW (mean, SD)	0.76	0.30	0.79	0.29	0.73	0.32	0.56	0.29 – 1.08	0.08	
Mean proportion of unprotected sex acts Casual (mean, SD)	0.80	0.31	0.84	0.31	0.75	0.31	0.40	0.14 – 1.14	0.09	
Mean proportion of unprotected sex with wife (mean, SD)	0.86	0.30	0.82	0.35	0.92	0.21	3.21	1.03 – 9.98	0.04	
Has ever had oral/anal sex with another man	101	25.3	58	26.36	43	23.89	0.88	0.56 – 1.38	0.57	
Has had STD since sexual debut	156	39.1	71	32.42	85	47.22	1.87	1.24 – 2.80	<0.01	
Condom broke with FSW, within last 4 months	67	16.8	27	12.27	40	22.22	2.04	1.20 – 3.49	<0.01	
SUBSTANCE USE BEHAVIORS										
Mean freq. of sex with FSW while man drunk, past 4m	2.12	1.12	2.19	1.1	2.04	1.14	0.89	0.74 – 1.06	0.19	
Mean freq. of sex with FSW while FSW drunk, past 4m	1.71	0.93	1.69	0.92	1.73	0.94	1.05	0.85 – 1.30	0.65	
Mean freq. of sex with FSW while man high, past 4m	2.85	1.22	2.71	1.25	3.02	1.15	1.24	1.05 – 1.46	0.01	
Mean freq. of sex with FSW while FSW high, past 4m	2.51	1.24	2.34	1.25	2.71	1.20	1.27	1.08 – 1.50	<0.01	

	ALL MEN		HIV Testing, ever				Odds (OR) of ever testing for HIV based on socio-demographic, behavioral, and psychosocial factors		
			NO		YES				
	n=400		n=220		n=180				
	N / mean	% / SD	N / mean	% / SD	N / mean	% / SD	OR	95% Confidence Interval	p
Traded drugs for sex with FSW, past 4m	190	47.5	88	40.0	102	56.7	1.96	1.32 – 2.93	<0.01
Any illicit drug use, past 4m	320	80.0	167	75.9	153	85.0	1.80	1.08 – 3.00	0.02
Injected any illicit drug, past 4 m	83	20.8	29	13.2	54	30.0	2.82	1.71 – 4.67	<0.01
PSYCHOSOCIAL FACTORS									
HIV knowledge score (mean, SD)	73.5	16.8	0.71	0.17	0.76	0.16	6.22	1.82 – 21.22	<0.01
Perceived likelihood of getting AIDS from FSW (mean, SD)	2.89	0.86	2.85	0.89	2.93	0.86	1.10	0.88 – 1.38	0.41
Perceived Likelihood of getting STD from FSW (mean, SD)	2.97	0.89	2.9	0.9	3.05	0.87	1.21	0.97 – 1.52	0.09
Condom Attitudes Scale (mean, SD)	2.56	0.30	2.58	0.33	2.55	0.26	0.68	0.35 – 1.32	0.25
Depression Scale (mean, SD)	0.88	0.49	0.87	0.49	0.88	0.49	1.04	0.69 – 1.56	0.85
Social Support Scale (mean, SD)	3.03	0.44	3.01	0.43	3.05	0.45	1.23	0.79 – 1.93	0.36
Self-esteem Scale (mean, SD)	2.70	0.30	2.69	0.27	2.71	0.32	1.32	0.68 – 2.57	0.42
Sexual Compulsivity Scale (mean, SD)	2.34	0.40	2.37	0.43	2.30	0.36	0.65	0.40 – 1.07	0.09
Sexual Sensation Seeking Scale (mean, SD)	2.67	0.31	2.67	0.31	2.66	0.31	0.90	0.48 – 1.69	0.73
Social-Sexual Effectiveness Scale (mean, SD)	2.36	0.26	2.38	0.26	2.34	0.25	0.55	0.26 – 1.21	0.14
Misogyny Scale (mean, SD)	2.33	0.26	2.36	0.29	2.29	0.21	0.28	0.12 – 0.64	<0.01
Male Sexual Stereotypes Scale (mean, SD)	2.71	0.29	2.75	0.30	2.66	0.27	0.32	0.15 – 0.68	<0.01

Multivariable associations with ever having tested for HIV, all significant bivariate factors ($p < 0.10$) and results from backwards stepwise approach

Table 3

	All significant variables			Backwards stepwise results		
	AOR	95% CI	p	AOR	95% CI	p
Mean Age (SD, range)	1.02	1.00 – 1.04	0.07	1.02	1.00 – 1.04	0.04
Mean years of education (SD)	1.04	0.97 – 1.11	0.30			
Been to jail, past 4 months	1.50	0.84 – 2.68	0.17			
Mean proportion of unprotected sex acts with FSW (SD)	0.70	0.33 – 1.49	0.35			
Has had STD since sexual debut	1.45	0.90 – 2.35	0.13	1.51	0.95 – 2.40	0.08
Condom broke with FSW, within last 4 months	1.85	1.00 – 3.40	0.05	2.18	1.22 – 3.88	<0.01
Mean freq. of sex with FSW while man high, past 4 months	0.90	0.67 – 1.21	0.49			
Mean freq. of sex with FSW while FSW high, past 4 months	1.24	0.97 – 1.58	0.09	1.30	1.08 – 1.58	<0.01
Traded drugs for sex with FSW, past 4 months	1.36	0.79 – 2.35	0.26			
Any illicit drug use, past 4 months	1.12	0.50 – 2.53	0.78			
Injected any illicit drug, past 4 months	2.41	1.37 – 4.26	<0.01	2.46	1.44 – 4.21	<0.01
Mean HIV knowledge score (SD)	3.77	0.78 – 18.34	0.10	4.78	1.09 – 20.95	0.04
Mean Likelihood of getting STD from FSW (SD)	1.12	0.87 – 1.46	0.38			
Sexual Compulsivity Scale (mean, SD)	0.59	0.33 – 1.06	0.08	0.55	0.31 – 0.97	0.04
Misogyny Scale (mean, SD)	0.39	0.13 – 1.14	0.09	0.31	0.11 – 0.84	0.02
Male Sexual Stereotypes Scale (mean, SD)	0.76	0.32 – 1.80	0.53			