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Correlates of unprotected sex with male clients among female sex workers in 13 Mexican cities

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Abstract

This study examined correlates of unprotected vaginal and anal sex (UVA) with male clients among female sex workers (FSWs). Baseline data were gathered from 1,089 FSWs recruited from 13 cities across Mexico enrolled in an evidence-based sexual risk reduction intervention. We used generalized estimating equations (GEE) to predict total UVA while controlling for the nested structure of the data. Total UVA with clients in the past month was examined in relation to selected sociodemographic, substance-use, and micro- and macro-environmental factors. Greater number of UVA acts was associated with three micro-level environmental factors (i.e., never getting condoms for free, unaffordability of condoms, greater number of clients per month), and three macro-level environmental factors (i.e., lower health and higher education indices, greater population size of city). These findings suggest the development of social and structural approaches to HIV prevention for FSWs in Mexico, including modification of venue-based policies that pressure FSWs to maximize client volume, changes to the work environment that promote availability and affordability of condoms, and improved population health. Moreover, our findings call for the development of context-specific HIV interventions that take into account variations in the sexual risk behaviors and HIV risk environments of FSWs throughout Mexico.

Keywords

Female sex workers; Mexico; sex work environment; sexual risk behavior; substance use

Introduction

Worldwide, the burden of HIV infection borne by female sex workers (FSWs) is significant. In a meta-analysis, FSWs had 13.5 times the odds of being infected with HIV compared to the general population of reproductive-age women in lower and middle income countries (LMIC); globally, HIV prevalence among FSWs has been estimated at 12% (Baral et al.,

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2012). High rates of unprotected sex and low rates of condom negotiation with clients have also been documented among FSWs in LMIC around the globe, including Mexico (Munkhbaatar et al., 2014; Patterson, Mausbach, et al., 2008; Pitche et al., 2013; Saggurti et al., 2012).

Sex work in most cities in Mexico is tolerated in *zonas rojas* (red light districts). The quasi-legal status of sex work requires that FSWs obtain a permit and submit to regular STI/HIV testing to maintain their permit (Goldenberg et al., 2011). Research on sex work along the busy US-Mexico border has documented an HIV prevalence of 6% among FSWs compared to less than 1% in the general population (Patterson, Semple, et al., 2008). FSWs in Tijuana and Ciudad Juarez reported using condoms inconsistently with clients and having many clients (Patterson, Semple, et al., 2008). The sexual risk behaviors of FSWs in settings elsewhere in Mexico, such as Guadalajara and Hermosillo, where HIV prevalence among risk groups (e.g., IDUs) has begun to increase, have been less well studied (Strathdee, Magis-Rodriguez, Mays, Jimenez, & Patterson, 2012). The purpose of the present study was to identify correlates of unprotected vaginal and anal sex (UVA) with clients among FSWs in 13 cities across eight states in Mexico.

To develop effective interventions, HIV prevention researchers must have an empirically-based understanding of social, behavioral, and macro- and micro- environmental factors associated with unprotected sex in this high-risk population. Our conceptual model of determinants of sexual risk behavior among FSWs focuses on three broad types of factors that are believed to heighten vulnerability to HIV/STIs (Scorgie et al., 2012). They include sociodemographic, substance-use, and environmental factors, both micro-level (e.g., type of sex worker) and macro-level (e.g., city size).

Sociodemographic characteristics such as gender, race, ethnicity, age, and marital status can influence sex workers' motivations for risk behavior and shape reactions to situational and environmental factors (Galea & Vlahov, 2002). Previous research has shown associations between sexual risk behavior with clients and lower education (Fernandes et al., 2014), older age (Hao et al., 2014), being married (Kamal, Hassan, & Salikon, 2013), and having dependent children (Reed et al., 2013; Tsai et al., 2013; Witte, Batsukh, & Chang, 2010). Substance use has also been associated with increased vulnerability among FSWs to HIV/STIs (Medhi et al., 2013; Strathdee et al., 2008). Most studies report that two-thirds or more of FSWs have used alcohol in recent months (Chersich, Bosire, King'ola, Temmerman, & Luchters, 2014; Fernandes et al., 2014; Leslie, Ahern, Chinaglia, Kerrigan, & Lippman, 2013; Odukoya, Sekoni, Onajole, & Upadhyay, 2013), and a significant percentage meet criteria for hazardous and harmful drinking (Chersich et al., 2014). The use of alcohol and other substances increases HIV susceptibility by lowering self-efficacy for negotiating condom use and increasing the risk of exposure to violence (Chersich et al., 2014; Chersich et al., 2013; Larios et al., 2009).

Factors associated with the work environment can also place FSWs at high risk for HIV infection and other STIs (Pitpitan, Kalichman, Eaton, Strathdee, & Patterson, 2013; Urada, Morisky, Hernandez, & Strathdee, 2013; Urada, Morisky, Pimentel-Simbulan, Silverman, & Strathdee, 2012). FSWs who work with a pimp or manager often suffer financial

exploitation and violence (Sanders, 2005), in particular in environments where aspects of sex work are criminalized (Sanders & Campbell, 2014; Shannon et al., 2015). In some studies of FSWs in LMIC, a number of work-environment factors have been associated with inconsistent condom use, including number of clients served in a day (Fernandes et al., 2014), work based in establishments that serve alcohol or offer entertainment (Safika, Johnson, & Levy, 2011; Urada et al., 2013), and limited access to free condoms (Kayembe et al., 2008). Although substance use by FSWs is not restricted to establishment settings, our previous research with FSWs and their male clients in Tijuana demonstrated the important moderating role of bar context in the association between substance use and condomless sex (Pitpitan, Kalichman, et al., 2013), thereby suggesting a focus on barmaids and hostesses compared to other FSW types.

FSWs who work in alcohol-serving establishments (i.e., *ficheras*) sit with customers, encourage them to drink alcohol (Pitpitan, Wagner, et al., 2013; Roebuck & McNamara, 1973), and typically offer sex on premises, with the establishment taking a fee (Bucardo, Semple, Fraga-Vallejo, Davila, & Patterson, 2004). The organization of this work environment affects both substance use and sexual risk behavior of FSWs. In a Tijuana-based study, male clients reported that FSWs were often pressured by bar owners and managers to earn more money by serving more clients and engaging in unprotected sex (Goldenberg et al., 2011). Yet, in another Tijuana study, Katsulis et al. (2010) reported that working indoors with a third party offered physical protection to FSWs and supported the consistent use of condoms.

At the environmental macro-level, a number of factors have been linked to reductions in HIV/STI risk among FSWs, including community mobilization (Blankenship, West, Kershaw, & Biradavolu, 2008; Jana, Basu, Rotheram-Borus, & Newman, 2004), safer sex government policy (Kerrigan et al., 2006), social cohesion and community aid (Kerrigan, Telles, Torres, Overs, & Castle, 2008), and decriminalization of sex work (Shannon et al., 2015). Government-reported indices of health, education, income, and marginalization as well as the population size of the city in which FSWs work are other macro-level environmental factors that potentially affect the sexual risk behaviors of FSWs, but have not been examined in previous studies. We reasoned that FSWs in cities with larger populations would have greater sexual risk behaviors than FSWs in smaller cities since larger cities are more likely to have more sexual venues as well as a thriving commercial sex scene that draws both locals and sexual tourists. Also, we reasoned that FSWs in cities with low income, poor health, low education, and high marginalization (i.e., social and economic disadvantage) indices would report greater levels of unprotected sex with clients.

Based on our conceptual framework and our review of the literature, we hypothesized that higher levels of unprotected sex with clients would be associated with (a) more-impooverished sociodemographic characteristics (e.g., lower education, more financial dependents), (b) greater use of substances in the context of sexual encounters with clients, and (c) a higher-risk work environment (e.g., bars and dance clubs, venues in which free condoms are scarce or unavailable). Further, we hypothesized that micro- and macro-level environmental factors, which comprise physical, social, economic, and policy and legal influences, would have the strongest association with sexual risk behavior (Urada et al.,

2012), after controlling for substance use and sociodemographic factors. By studying FSWs in 13 different cities, we were also able to explore indices of education, health, and marginalization as well as population size of city as potential macro-level factors predicting unprotected sex with clients.

Methods

Study cities

The study was conducted at 13 community-based clinics operated by the Mexican Foundation for Family Planning (Mexfam)—a non-profit, non-governmental organization headquartered in Mexico City. The 13 municipalities were: Cuauhtémoc, Distrito Federal; Ciudad Nezahualcóyotl, México; Huajuapán, Oaxaca; Iguala, Guerrero; Ixtaltepec, Oaxaca; Naranjos, Veracruz; Guadalajara, Jalisco; San Luis de la Paz, Guanajuato; San Luis Potosí, San Luis Potosí; Tlapa, Guerrero; Veracruz, Veracruz; Tepeji del Río, Hidalgo; and Tuxtla Gutiérrez, Chiapas.

Participants and setting

Participants were 1,089 female sex workers recruited for a hybrid type-2 study, which simultaneously tests an evidence-based intervention and the influence that provider and organizational factors have on the intervention's effectiveness (Curran, Bauer, Mittman, Pyne, & Stetler, 2012). Our intervention, *Mujer Segura* (Safe Woman), focused on HIV prevention for HIV-negative female sex workers (Patterson et al., 2012). To be eligible, women had to be biologically female, at least 18 years of age, self-identify as a female sex worker, report having traded sex for drugs, money, shelter or other material benefit in the previous month, have had unprotected vaginal or anal sex with a client at least once during the previous month, and HIV-negative. Baseline data were collected between June, 2011 and December, 2013.

Recruitment

Time-location sampling was used to recruit in each city (Strathdee et al., 2013). Outreach workers in each city compiled a map of bars, brothels, hotels and motels, shooting galleries, alleys, and street corners, and subsequently canvassed those venues. Interested women were referred to the local Mexfam clinic, and, if eligible, provided written informed consent and proceeded to a face-to-face interview, followed by the *Mujer Segura* intervention or a time-equivalent, standard-counseling comparison condition (Patterson et al., 2012).

Procedure

The baseline interview was conducted in Spanish by trained outreach workers using computer-assisted personal interviewing (CAPI, NOVA software, USA). All study measures and procedures were approved by Institutional Review Boards at the University of California, San Diego and at Mexfam's central office in Mexico City.

Measures

Sexual risk behavior—*Number of unprotected vaginal and anal sex acts with male clients in the past month:* We subtracted the total number of times a condom was used during vaginal and anal sex from the total number of vaginal and anal sex acts to calculate total number of unprotected vaginal and anal sex acts in the past month, which we defined as the dependent variable.

Sociodemographics—Age, number of years of education, number of years as a sex worker, and number of financial dependents were treated as continuous variables. Marital status (married or common law = 1, other marital status = 0) and whether FSWs had children (yes = 1, no = 0) were treated as categorical variables. Number and type of financial dependents was assessed using two items: How many people depend on you for financial support? Who are the people that you are financially responsible for? Response categories included: Husband/steady partner, children, parents, siblings, and other (specify).

Substance use factors—*Alcohol and drug use:* The AUDIT-C scale is a 3-item, reliable alcohol screening instrument that measures frequency and quantity of alcohol consumption using a 5-point scale for each item. Summary scores were used to create a dichotomous variable (hazardous vs. non-hazardous drinking). Based on validation studies, a score of 3 or more for women was used to identify risky or hazardous drinking (Bradley et al., 2007; Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). Participants were also asked to report on their use of 13 drugs in the past month. Frequency of use was rated on a scale from 1 (never) to 6 (every day), and responses were recoded as 1 (does use) or 0 (does not use). A summary variable was created to indicate total number of drugs used in the past month. *Injected drug use:* For each of the 13 drugs queried, participants were asked to report the method of administration. We coded injection in the past month as 1, no injection as 0. *Use of alcohol or drugs before or during sex with clients:* Participants were asked how often in the past month they had used (1) alcohol or (2) drugs before or during sex with a client. Response categories (never, sometimes, often, always) were recoded (1 = did use, 0 = did not use).

Micro-level environment—*Type of sex worker:* Participants were asked to indicate which of nine types of sex worker (barmaid, dance hostess, taxi girl, brothel worker, street worker, lover, call girl or escort, companion for parties and vacations, other) best described their work situation. The type was dichotomized as barmaid or dance hostess = 1, other type = 0. *FSW has a pimp:* Participants were asked if any of the money they earned for various sex acts went to someone else. If the answer was yes, that person's relationship to the FSW was queried; among the response categories was "pimp." The computed variable (FSW has a pimp) was coded yes = 1, no = 0. *Affordability of condoms:* Participants were asked whether they could afford to buy their own condoms (yes = 1, no = 0). *Free condoms:* A single item queried how often FSWs were able to get condoms for free. Response categories (never, sometimes, often, always) were recoded (ever get condoms for free; yes = 1, no = 0). *Total number of clients in the past month:* The numbers of regular and non-regular partners reported by participants were summed to create the variable for total number of clients.

Macro-level environment—Population size of city: We created a dichotomously-scored variable representing the population size of the 13 cities involved in the study. Categories were based on a cut point of 500,000 ($\geq 500,000 = 1$, $< 500,000 = 0$). Population figures were drawn from 2010 government census data (INEGI, 2015). Although certain types of persons (e.g., transients) are often not included in official estimates, these census data provide an understanding of the basic scope of the population and allow for city size comparisons. *Human Development Indices:* The United Nations Human Development Index combines indices for health, education, and income. Scores for each city were drawn from data available for each Mexican state (United Nations Program for Development, 2015). The health index is calculated from infant mortality rate, education is calculated from rates of literacy and school attendance, and income is calculated from annual per capita income. *Marginalization Index:* This index consolidates 9 socioeconomic indicators (e.g., overcrowding, lack of access to water) and is calculated by the Mexican National Council of Population (CONAPO, 2010). The higher the score, the greater the degree of disadvantage.

Data analyses

Since data were collected in 13 cities, each FSW participant is clustered within a city. We used generalized estimating equations (GEE) to control for this nested structure by specifying city as the cluster variable. We modeled three separate GEEs, with each subsequent model adding a new set of variables. The dependent variable (DV) was defined as the total number of unprotected vaginal and anal sex acts with clients in the past month. For each model, we specified an exchangeable covariance structure and a linear negative binomial (for overdispersed count data) distribution and log link function for the outcome. As predictors, in the first model we entered sociodemographic variables, in the second substance use variables, and in the third environmental (micro-and macro-level) factors. Two predictors (number of clients and number of drugs used in the past month) were positively skewed and thus log-10 transformed. Variables that were significant at $p < .05$ in the regression model were retained.

Results

Participant screening and enrollment

A total of 2,038 women were screened, of whom 560 were excluded: 434 (78%) reported no UVA acts with a male client in the past month, 113 (20%) were currently not employed as a FSW, 8 (1%) reported being told by a health care professional that they were HIV-positive or had AIDS, and 5 (1%) opted to not complete the screening. An additional 389 FSWs (22%) who were eligible failed to show up for their baseline interview. The rate of “no shows” did not differ by city. Among enrolled participants ($n = 1,089$), recruitment venues were: bar or nightclub (47%; $n = 514$), Mexfam clinic (17%, $n = 188$), street (16%; $n = 170$) and other (20%, $n = 217$), mainly brothels, massage parlors, and hotels.

Description of the sample

Of 1,089 FSWs, the majority were born in Mexico (90%) and were either never married or living common-law (50% and 20%, respectively). The average age was 32.9 (SD = 9.7, median = 32.0, range 18–67) and the average years of education was 7.1 (SD = 3.3, median

= 8.0, range 0–21). Eighty-eight percent of FSWs had at least one child. The average number of children was 2.8 (SD = 1.5, range 1–11). The average number of financial dependents was 2.7 (SD = 1.8, range 0–13); financial dependents were: children (60%), parents (32%), siblings (6%), husband (1%), and grandparents (1%). On average, FSWs had been employed in the sex trade for 6.4 years (SD = 6.8, range = 1–45). Table 1 summarizes participants' baseline characteristics.

Generalized Estimating Equations

In the first GEE model we entered age, years of education, marital status, and number of financial dependents as predictors of total unprotected sex acts with clients. Age was significant, with older participants reporting fewer unprotected sex acts. In the second GEE model we added substance use variables as predictors and found that using drugs with clients in the past month was significant, with FSWs who used drugs reporting a greater number of unprotected sex acts. In the last GEE model we added environmental variables as predictors. FSWs who reported never getting condoms for free and not being able to afford their own condoms had more unprotected sex with clients. Moreover, FSWs who reported a greater number of clients in the past month reported more unprotected sex. Finally, FSWs in cities with a greater population size, poorer health, and higher education reported more unprotected sex. Based on the corrected quasi-likelihood under independence model criterion, which compares the fit of models with different predictors but assumes the same correlational structure and outcome distribution, the model with the best fit to the data was Model 3, which included environmental variables in addition to substance use and sociodemographic variables. The model with only sociodemographic predictors had the worst fit (see Table 2).

Discussion

In this study of 1,089 FSWs in Mexico, environmental factors had the strongest association with sexual risk behavior. In the micro-level work environment, lack of free condoms, unaffordability of condoms, and number of clients served in the past 30 days were identified as risk factors for UVA with clients. In previous studies in LMIC, HIV prevention programs that provided free condoms have been shown effective in reducing risk behaviors (Larios et al., 2009). For example, the Sonagachi Project in Kolkata, India, which was based on a community empowerment model, provided access to free condoms and promoted condom-positive norms for brothel-based FSWs (Basu et al., 2004; Ghose, Swendeman, & George, 2011). A similar approach could be implemented in Mexico. Also, peer-based outreach to promote condom distribution among street-based FSWs in LMIC has been shown to be successful in a number of studies (Moore et al., 2014).

Although free condoms are available in Mexico through government clinics, outside that system, structural barriers to condom availability, quality, and distribution remain. In particular, FSWs may have limited knowledge of where to acquire free condoms or have poor access to distribution programs (Munoz et al., 2010). Successful prevention strategies need to increase awareness of condom availability, address social and structural barriers to

attending distribution clinics, and ensure that FSWs in diverse locations throughout Mexico can readily access these and other HIV prevention resources.

The number of clients served in the past 30 days, another micro-level environmental factor, had the strongest association with unprotected sex in the expected, positive direction. This finding is consistent with previous studies of FSWs in LMIC (Fernandes et al., 2014). Saggurti et al. (2012) proposed that a greater number of clients may be a marker for high economic need, which may incentivize unprotected sex in work settings. Another explanation may be “market demand” among clients who do not want to use condoms and thus seek out FSWs in venues where condom use is discouraged by establishment owners or others (Adriaenssens & Hendrickx, 2012). High client volume is likely to entail a diverse range of clients, which suggests that FSWs could benefit from learning condom negotiation skills for different client types (e.g., regular versus non-regular). Moreover, individual-level interventions must be coupled with structural interventions that target sex work venues whose policies (e.g., no free condoms, minimum number of clients) exacerbate HIV/STI risk among FSWs (Gurnani et al., 2011; Strathdee et al., 2015). For example, modifying policies that require FSWs to serve a high volume of clients will need the support of establishment owners. Securing owners’ compliance might be accomplished by casting worker-friendly policies as a component of occupational health (Padilla, Guilamo-Ramos, & Godbole, 2012) and of a positive business image (Goldenberg et al., 2011). To inform such policy changes, future research needs to examine the contextual relationship between state regulations of sex establishments and sex workers (Decker et al., 2014) and venue-based policies regarding number of clients served and high risk sex among FSWs.

We found that greater population size of the city was associated with more unprotected sex with clients. Future research is needed to replicate this finding and to identify the reasons. A growing body of research suggests that other city characteristics also correlate with sexual risk behaviors of FSWs. Studies conducted in a popular beach community in the Dominican Republic with a population < 50,000 found an association between high-risk clients (mostly foreign tourists), alcohol use, and HIV/STI risk among sex workers (Guilamo-Ramos et al., 2013) and tourism employees (Padilla et al., 2012). Our finding regarding population size of city also suggests the development of city- or context-specific interventions that incorporate community characteristics. As expected, the health index was inversely associated with sexual risk behaviors. Government investment in health care reform may help to prevent expansion of Mexico’s HIV epidemic, particularly among FSWs. The relationship between higher education index and greater UVA was contrary to expectation. This relationship needs to be explored in future studies; however, previous research has suggested that the association between higher education and sexual risk behavior might be explained by the mediating or moderating effects of certain drugs (e.g., poppers) or personality characteristics, such as risktaking (Stahlman et al., 2015; Zhang et al., 2016). It is also possible that cities with a higher level of education have more income inequality, which has been associated with risk behaviors and other health inequalities among disadvantaged groups (Bortz et al., 2015).

While interventions that focus on individual change have had some success, their impact is likely to be short-lived. In recent years, structural interventions that modify aspects of the

HIV risk environment for FSWs, including the physical, social, economic, and policy and legal environments, have been shown effective in improving HIV prevention and treatment for FSWs in LMIC (Cornish & Campbell, 2009; Dworkin & Ehrhardt, 2007; Kerrigan et al., 2015; Kerrigan, Fonner, Stromdahl, & Kennedy, 2013; Leslie et al., 2013; Lippman et al., 2012; Lippman et al., 2010; Shannon et al., 2015).

Contrary to expectation, even after controlling for sociodemographic factors, alcohol and drug use variables were not associated with FSWs' sexual risk behaviors. It is plausible that this relationship is moderated or mediated by variables that were not considered (e.g., sensation seeking) (Newcomb, Clerkin, & Mustanski, 2011). The lack of association between FSWs' drug use and sexual risk behavior is most likely explained by the low frequency of reported drug use (<10%), resulting in insufficient power to find an association.

Limitations

This study has some methodological limitations. It is unclear whether the current sample is representative of all FSWs in the participating cities. In particular, the findings should not be generalized to non-volunteers or to FSWs who refrained from unprotected vaginal or anal sex with their clients. In the latter regard, we note that only 21% of screened participants were excluded based on this criterion. Also, in the absence of longitudinal data, we are unable to make causal inferences between sexual risk behavior and the correlates identified. Our data were self-reported and therefore subject to social desirability and memory bias. Indeed, we suspect that underreporting of alcohol use by higher-risk FSWs may be responsible for the negative correlation observed between AUDIT-C scores and unprotected sex. An examination of the correlations among alcohol use variables revealed some associations in the range of .60, making it plausible that collinearity was affecting the direction of this relationship. The demands of implementing this study in 13 cities also resulted in limited data on macro-level environmental factors. We focused on population size of city and indices of human development and marginalization since those data were readily available. Future studies in Mexico should include a broader range of macro-level factors, including ones that have been previously shown to influence FSWs' sexual risk behaviors in LMIC (e.g., housing instability, police policies, community empowerment) (Blankenship et al., 2008; Jana et al., 2004; Kerrigan et al., 2006; Reed et al., 2013). Also, further evaluations are needed to determine the extent of differences in sexual risk behavior across cities in order to identify potential city-specific escalations of the HIV epidemic among FSWs.

Conclusion

Based on this research, several types of services for FSWs could be developed or augmented in an effort to curtail an HIV epidemic in Mexico. These include both individual approaches (e.g., promoting condom use) and structural approaches (e.g., modifying venue-based policies); the latter, along with longer term empowerment approaches, have demonstrated the largest impact on HIV prevention and treatment for FSWs (Blanchard et al., 2013; Kerrigan et al., 2013; Moore et al., 2014). Finally, men and transgender sex workers who carry a high burden of HIV/STI risk have been underrepresented in sex work research in Mexico and other LMIC (Bungay, Oliffe, & Atchison, 2015). Future studies should address

heterogeneity among sex workers by including these subgroups and developing targeted interventions and services.

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Table 1Characteristics of participants ($n = 1,089$)

Characteristic	<i>n</i> (%)
Age (<i>M, SD, range</i>)	32.9 (9.7) (18–67)
Number of years of education (<i>M, SD, range</i>)	7.1 (3.3) (0–21)
Marital status	
Married or cohabiting	297 (27.3)
Other marital status	792 (72.7)
Percent living alone	117 (10.7)
Percent with children	952 (87.4)
Number of children (<i>M, SD, range</i>)	2.8 (1.5) (1–11)
Number of financial dependents (<i>M, SD, range</i>)	2.7 (1.8) (0–13)
Number of years employed as a sex worker (<i>M, SD, range</i>)	6.4 (6.8) (1–45)
Used drugs with client in past month	76 (7.0)
Used alcohol with client in past month	661 (60.7)
Alcohol use severity (AUDIT-C) (<i>M, SD, range</i>)	6.9 (4.5) (0–12)
Hazardous alcohol use (AUDIT-C score ≥ 3)	835 (76.7)
Percent used drugs in past month	108 (9.9)
Number of drugs used in the past month (<i>M, SD, range</i>)	(.13) (.43) (0–4)
Injected drugs or vitamins in the past month	112 (10.3)
Percent who identify as a barmaid or dance hostess	520 (47.8)
Percent who identify as a street worker	278 (25.5)
Percent reporting a pimp	152 (14.0)
Ever get condoms for free	904 (83.0)
Condoms reported as affordable	731 (67.2)
Number of clients in the past month (<i>M, SD, median, range</i>)	44.1 (58.1)(24.0)(1–727)
Number of unprotected vaginal and anal sex acts with clients in the past month (<i>M, SD, median, range</i>)	16.8 (22.8)(8.0)(1–166)

Note: *M* = mean; *SD* = standard deviation

Table 2

Predicting number of unprotected vaginal and anal sex acts with clients with sociodemographic variables (Model 1), adding substance use variables (Model 2), and adding environment variables (Model 3) among FSWs in Mexico ($N = 1,082$)^a

Variable	Model 1			Model 2			Model 3		
	beta ^b	Wald χ^2		beta ^b	Wald χ^2		beta ^b	Wald χ^2	
Age	-0.01	7.56**		-0.01	7.82**		-0.00	0.70	
Years of education	0.00	0.08		0.00	0.08		-0.00	0.05	
Marital status (married or cohabiting versus other)	-0.02	0.07		-0.04	0.41		-0.03	0.51	
Number of financial dependents	-0.03	1.46		-0.03	1.20		-0.02	0.88	
Used drugs ^c with clients ^d				0.42	9.58**		0.19	2.33	
Used alcohol with clients ^c				-0.09	0.70		0.04	0.40	
Hazardous alcohol use (AUDIT-C 3)				-0.15	0.74		-0.08	0.89	
Number of drugs ^c used ^d				-0.47	2.41		-0.23	0.62	
Injected drugs or vitamins ^d				-0.14	1.73		0.02	0.07	
Type of sex worker (barmaid or dance hostess versus other)							-0.11	1.06	
FSW has a pimp							-0.20	3.20	
Ever get condoms for free							-0.25	18.73***	
Condoms reported as affordable							-0.27	6.50**	
Number of clients ^d							1.52	306.12***	
City population							0.24	4.77*	
Health index							-4.97	8.40**	
Education index							18.56	9.16**	
Income index							1.62	0.06	
Marginalization index							1.61	2.81	
QICC ^e		1486.05			1459.24			856.71	

Note:

^a seven cases missing data;

^b standardized regression coefficient;

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, Mexico's reformed drug policy does not consider possession illegal unless the quantity possessed exceeds a certain threshold;

d in past month;

e corrected quasi-likelihood under independence (smaller-is-better model fit statistic)

$p < .05$;

*

**

$p < .01$;

$p < .001$ (2-tailed tests)