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Sexual and Drug Use Behaviors Associated with HIV and Other Sexually Transmitted Infections among Female Sex Workers in the Mexico-U.S. Border Region

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Abstract

Purpose of review—The purpose of this review is to summarize the latest research regarding HIV/STI risk among female sex workers (FSWs) along the Mexico-U.S. border. Although Mexico has a low prevalence of HIV overall, HIV prevalence among FSWs in Tijuana is quite high, and even higher among FSWs who inject drugs (FSW-IDUs). Efforts to better understand and curtail the HIV epidemic among FSWs in this region are greatly needed.

Recent findings—A brief HIV/STI risk reduction intervention for FSWs was successful in decreasing HIV/STI sexual risk behavior with clients among FSWs in Tijuana and Ciudad Juarez, Mexico. However, the intervention was less effective among FSW-IDUs, and had no effect on FSWs' condom use with their non-commercial partners. While the majority of research thus far has focused on FSWs' individual-level risk factors, comparatively less is known about their clients and non-commercial sexual partners who may heavily influence their behavior, and engage in high risk behaviors themselves.

Summary—Further studies including FSWs' intimate partners and clients are needed as well as interventions specific to FSW-IDUs. Targeting the most at risk populations and reducing both sexual and injection risk behaviors simultaneously may curb the growing HIV epidemic in the Mexico-U.S. border region.

Keywords

female sex workers; HIV/STIs; Mexico-U.S.; border

Introduction

Globally, female sex workers (FSWs) are considered a “bridge” population who may transmit HIV/STIs to the general population.[1] FSWs in major Mexico-U.S. border cities such as Tijuana and Ciudad Juarez annually attract thousands of “sex tourists” from the U.S. and abroad. Although Mexico has a low prevalence of HIV overall, recently, HIV prevalence among FSWs in Tijuana has increased from 2% to 6%, and to 12% among FSWs who inject drugs (FSW-IDUs).[1–2] Because of poverty and the presence of the drug trafficking trade along the Mexico-U.S. border, cities like Tijuana and Ciudad Juarez have

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disproportionate rates of violence, drug abuse, prostitution, and HIV/STIs compared to the larger Mexican population.[3–5]

For our review of sexual and drug use behaviors associated with HIV and STIs among FSWs in the Mexico-U.S. border region, we conducted a literature search for peer-reviewed publications in the past 12 to 18 months using Pub Med and PsycInfo using combinations of the key words, “prostitution,” “female sex workers,” “HIV,” “sexually transmitted infections,” “Mexico” and “Mexico-U.S. border,” yielding 24 citations. Dissertations and publications outside of the past 12 to18- month time range were excluded resulting in 6 journal articles included in this review. An additional 3 publications in press which met study criteria were included, resulting in the final 9 journal articles identified of particular interest in this paper.

Sex Work in Mexico

Sex work is legally permitted within designated areas known as “*Zonas Rojas*” (red light zones) in many Mexican border cities. Tijuana and Ciudad Juarez are the two largest Mexico-U.S. border cities located in the Mexican states of Baja California (B.C.) and Chihuahua respectively. Smaller Mexico-U.S. border cities such as Mexicali (B.C.) Nuevo Laredo, and Matamoros (both in the state of Tamaulipas), also have *Zonas Rojas*, but the majority of research with FSWs has been conducted in Tijuana and Ciudad Juarez. In Tijuana, FSWs are required to be aged 18 or older and obtain permits if they wish to practice sex work, but in practice, more than half of FSWs operate without a permit. Sex work occurs both within and outside of the *Zona Roja*.[6] Historically, Ciudad Juarez has had two red light zones, neither of which require a permit, however one zone has recently undergone urban renewal displacing sex workers from that area. The quasi-legal status of sex work in these border cities attracts a large number of clientele from the U.S. and other countries.[6] FSWs in these cities work out of cantinas, bars, nightclubs and street corners, and very few (3%) report having pimps.[1] Usually, FSWs are of low socioeconomic status and report entering sex work out of necessity to support their families. Approximately two-thirds of FSWs in the border region have husbands and steady partners, 95% have dependent children, and many are the main provider for their families.[6–8] Human trafficking for the purposes of sexual and labor exploitation also occurs along the Mexico-U.S. border,[9] but it has not been well studied in this context. Further research identifying trafficked victims among vulnerable populations, enforcement of anti-trafficking laws, and more resources for victim assistance is greatly needed.[9]

Prevalence of HIV and STIs along the Mexico-U.S. border

In 2007, the estimated number of HIV-infected persons in Mexico was 200,000 with HIV prevalence approximately 0.3% among adults.[10] However, HIV/AIDS prevalence in border states with large cities such as Baja California, Chihuahua, and Tamaulipas is higher.[10] As of March 2009, Baja California ranked 6th out of Mexico's 32 states in terms of cumulative AIDS incidence (4.7%), Chihuahua ranked 11th (2.7%), and Tamaulipas ranked 12th (2.5%).[10] As many as 1 in 125 persons aged 15–49 in Tijuana were estimated to be HIV infected in 2005,[11] but by 2006, this rose to 1 in 116.[12*] HIV prevalence among FSWs in Tijuana and Ciudad Juarez has been rising steadily since the 1990s. HIV prevalence among FSWs in these cities was estimated at 1% in the 1990s and 6% in 2006.[1]

Factors independently associated with HIV-positive serostatus among FSWs in Tijuana and Ciudad Juarez include injection cocaine use, methamphetamine use (smoked, inhaled, or snorted), and active syphilis infections.[13] Elevated HIV risk among FSWs who inject drugs was consistent with previous research with other samples of FSWs worldwide,

however, the independent association between non-injection methamphetamine use and HIV infection was unexpected.[13] Although this study did not observe an independent association between HIV infection and unprotected sex, methamphetamine use was posited as a proxy measure of high-risk sexual behaviors through sensation seeking, increased libido, uninhibitedness or other personal attributes that are associated with methamphetamine use.[14] The authors concluded that FSWs who use drugs could be at higher risk for HIV through sharing of needles or other injection paraphernalia. Alternatively, cocaine injection and methamphetamine use could also be markers of high risk sexual behaviors such as exchanging sex for drugs, which can adversely affect women's ability to negotiate safer sex. Findings from this study underscored the need for interventions that target both sexual and injection risks among FSWs in this region.[13]

While HIV prevalence among FSWs has been rising on the northern Mexican border, STI prevalence among FSWs has been high in other Mexican cities for at least a decade. Prevalence of active syphilis, gonorrhea, and Chlamydia, were 23.7%, 11.6%, and 12.8% respectively, in a 1995 study of FSWs in Mexico City[15]. In 2006, prevalence of acute syphilis, gonorrhea and Chlamydia among FSWs in Tijuana and Ciudad Juarez were 14%, 6%, and 13% respectively.[13] The authors noted that few FSWs in the Tijuana and Ciudad Juarez study reported being aware of having a STI, which could suggest the majority of these infections were chronic and untreated or acute, incident infections.[13] High prevalence of STIs, particularly syphilis, among FSWs is of great concern since syphilis and other STIs are known to increase the risk of HIV transmission.[16–18] Mexico provides free treatment for STIs under the country's universal health system, but the lack of sufficient resources limits the ability to conduct more widespread surveillance and treatment among high risk populations. Since FSWs may be less likely to seek services out of distrust for governmental agencies, Mexico's federal and state ministries have made efforts to reach high-risk populations by providing mobile HIV/STI health clinics. [13]

Drug use in the Mexico-U.S. border region

Tijuana and Ciudad Juarez have the highest rates of drug use in Mexico.[3, 19] Tijuana has three times the national average illegal drug use among persons aged 12–65,[4] and one of the fastest growing IDU populations.[19] Ciudad Juarez is ranked 2nd to Tijuana in illegal drug consumption.[19] Many FSWs in these cities engage in drug use, especially stimulants, which may help them stay awake while working or cope emotionally with sex work. [13, 20]

FSW-IDUs have higher risk profiles compared to other FSWs in Tijuana and Ciudad Juarez. [1] HIV prevalence among FSW-IDUs was more than twice that of FSWs who did not inject drugs (12% versus 5%).[1] In addition, FSW-IDUs were more likely to live in Tijuana, be younger, be married or in a common-law relationship, have worked longer in the sex trade, speak English, earn less for sex without condoms, use drugs before sex, and know other FSWIDUs. These results suggest that sociodemographic and sociocultural influences may interact with drug and sex risk behaviors to increase susceptibility to HIV infection. FSW-IDUs who speak English may be more acculturated which may expose them to higher rates of drug use than that of traditional Mexican culture.[21] The higher proportion of FSW-IDUs in Tijuana is consistent with Baja California having the highest prevalence of substance abuse across Mexico.[4] Results from this study indicate that FSW-IDUs are an especially high risk group in the Mexico-U.S. border region requiring more focused prevention. Interventions that focus only on safer sex or safer injection will be of limited effectiveness in HIV prevention. Further studies are needed to understand the overlap between drug and sex risk behaviors among FSWs in this region, and the sociocultural influences that perpetuate risk or serve as protective factors.

HIV/STI Prevention Interventions among FSWs in the Mexico-U.S. Border Region

Patterson and colleagues designed a behavioral intervention (*Mujer Segura*) for FSWs in four Mexico-U.S. border cities (Tijuana, Ciudad Juarez, Nuevo Laredo, and Mexicali).[20] The intervention consisted of a single individual counseling session based on Social Cognitive Theory, and utilized motivational interviewing techniques to promote condom use with clients. However, the high prevalence of substance use was not originally known about this sample, and the intervention did not address safer sex within the context of substance use or safer injection practices.[22*] FSWs reported using condoms a little more than half of the time (56% for the intervention group, and 58% for the control group) in the 6 months prior to baseline interviews.[23**] Results from the *Mujer Segura* study indicated that the intervention reduced HIV/STI incidence by 40% and increased the number of protected sex acts with male clients among FSWs in Tijuana and Ciudad Juarez.[23**]

Strathdee et al.[22*] subsequently examined the efficacy of the theoretical components of the *Mujer Segura* intervention on FSWs' condom use with clients. Improvements in condom use self-efficacy were predictive of increases in condom use with clients among FSWs receiving the intervention.[22*] Although FSW-IDUs also reported increased condom use, this subgroup benefited less from the intervention than non-injectors, which was not surprising since this intervention did not address drug use in the context of sex work.[22*] Interestingly, the relationship between HIV knowledge and condom use was moderated by injection drug use status. FSW-IDUs who demonstrated increases in HIV knowledge were significantly more likely to report increased condom use at follow-up, but this was not the case among non-injectors. The authors suggested that because FSW-IDUs are more marginalized, they may have been more receptive to educational messages because they tend to encounter the health care system less frequently. Findings from the *Mujer Segura* study indicate that a brief behavioral intervention to reduce HIV/STIs among FSWs is feasible and effective, and may be transferable to other resource-constrained settings. However, future interventions will need to address the overlap between drug use and sex work and how substance use may compromise the ability to negotiate safer sex. An intervention is currently underway that is specifically tailored for FSWIDUs, taking into account the disinhibiting effects of substance use on safer sex behavior.

Characteristics of Clients and Non-commercial partners of FSWs

The majority of research has focused on FSWs' individual-level risk behaviors, however, FSWs may also be at risk for HIV and STIs through drug and sex risk behaviors of their clients and non-commercial sex partners. Nearly three-quarters (73%) of FSWs in Tijuana and Ciudad Juarez reported that their male clients used drugs and one third (32%) reported that their clients injected drugs.[24] Of 924 FSWs in Tijuana and Ciudad Juarez, 69% had U.S. clients. Compared with FSWs without U.S. clients, FSWs with U.S. clients were more likely to have syphilis titers ≥ 1:8, gonorrhea, or any STI including HIV. Factors independently associated with having U.S. clients were: living in Tijuana, being younger, speaking English, being paid more for having sex without a condom, having more than 250 clients in the last 6 months, having syphilis titers ≥1:8, and injecting drugs. The findings from this study suggest that binational prevention efforts involving both FSWs and their clients are urgently needed.

In the *Mujer Segura* study, 32% of the FSWs reported that they had a spouse or common-law partner. Among 247 FSWs with a spouse or common law partner, 50% knew that their partners had a concurrent sexual partnership; 71% of these FSWs had unprotected vaginal sex and 22% had unprotected anal sex with these partners in the last month.[7*] FSWs were

twice as likely to engage in unprotected sex with their spouse/common law partners compared to their clients. Although the *Mujer Segura* intervention was successful in reducing FSWs' condom use with clients, the intervention had no impact on FSWs' condom use with their noncommercial partners.[25] Among FSWs who reported consistent condom use with clients, STI incidence at follow-up remained high, yet STI prevalence among clients has been shown to be <5%.[25–26**] FSWs' lack of condom use with their main partners and the ongoing high HIV/STI incidence in this sample suggest that the high rates of re-infection may arise from their intimate partners.[25]

Recently, Patterson and colleagues conducted a study of the prevalence of HIV, STIs, and high risk behaviors among 400 male clients of FSWs in Tijuana, Mexico.[26**–27*] They found that clients had high sex and drug risk profiles. One-quarter reported injecting drugs within the previous 4 months; one-half reported having unprotected vaginal or anal sex with FSWs in the past 4 months; and 46% reported being high fairly or very often when having sex with a FSW.[26**–27*] Prevalence of HIV, syphilis, gonorrhea, and Chlamydia was 4%, 2%, 2.5%, and 7.5% respectively.[26**] Factors independently associated with unprotected sex with FSWs were using drugs during sex, visiting the same FSW, being married, and being unemployed.[27*] Factors independently associated with HIV infection were living in Mexico, ever using methamphetamine, living alone, and testing positive for syphilis.[26**] Findings indicate that clients of FSWs are a group at very high risk of acquiring and transmitting STIs and HIV through unprotected sex with FSWs and their other sexual partners. Tailored interventions to promote consistent condom use are needed for clients, especially within the context of drug use and multiple sexual relationships.

Psychological Distress and Violence against FSWs

Psychological distress[28–30] and gender-based violence such as history of child abuse,[31–32] intimate partner violence (IPV),[33] and client-perpetrated violence[34–35] have been associated with HIV risk among FSWs in various international settings. Using *Mujer Segura* baseline data, Ulibarri et al.[36*] examined correlates of IPV among FSWs with spouses or common-law partners in Tijuana and Ciudad Juarez. Prevalence of IPV in the 6 months prior to their baseline interviews was 35%. Factors independently associated with IPV included having experienced abuse as a child, having a partner with concurrent sex partners, and lower sexual relationship power. HIV serostatus among FSWs was not associated with IPV. However, this study utilized a rudimentary, “yes” or “no” dichotomous measure of IPV. Research has shown that multi-level behavioral measures of abuse yield better information regarding women's abuse experiences.[37] Therefore, future research with FSWs in this region should utilize a more comprehensive measure of IPV to further explore the possible relationship between IPV and HIV risk, which has been documented among other populations of heterosexual women.[38] A better understanding of the multitude of risk factors that FSWs face such as psychological distress and gender-based violence may help improve the effectiveness of HIV risk interventions for FSWs.

Ulibarri et al. [39*] also examined prevalence of lifetime abuse and psychological distress among FSWs in Tijuana and Ciudad Juarez. The prevalence of lifetime abuse was very high: 78% for emotional abuse, 74% for physical abuse, and 44% for sexual abuse. Results showed that all forms of past abuse were associated with higher levels of depressive symptoms. In addition, Loza et al.[40*] found that FSWs who reported being abused as children were more likely to initiate into sex work at an earlier age (<18 years). Findings from these studies underscore the seriousness of gender-based violence among FSWs along the Mexico-U.S. border. Unfortunately, empirically-tested interventions designed to address violence among FSWs are lacking. Furthermore, additional research is needed to address

how these factors may influence violence re-victimization, drug use, and HIV/STI risk among FSWs.

Conclusion

HIV prevalence among FSWs in the Mexico-U.S. border region is increasing rapidly, whereas the prevalence of STIs remains stable but extremely high. Drug use is reliably associated with HIV/STI risk among FSWs and their clients in this region which is not surprising given the unique environment of the Mexico-U.S. border in which drug trafficking, sex work, and violence often occur. The prevalence of HIV/STIs and drug use along the Mexico-U.S. border does not reflect the rest of Mexico or the United States, yet these two countries must share the responsibility in curtailing the growing HIV/STI epidemic in this region to promote better health in this region as a whole. The Mexico-U.S. border is porous and densely populated with people who move fluidly back and forth between each county on a daily basis. Rising levels of HIV, STIs, drug use, and violence along the Mexico-U.S. border inevitably affect both the United States and Mexico. A multilevel approach to HIV/STI prevention in this region is urgently needed in which multiple risks such as drug use, sex risk, gender-based violence, and partner risk are addressed.

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