Published in final edited form as:

Sex Transm Dis. 2017 August ; 44(8): 477–482. doi:10.1097/OLQ.0000000000000634.

Motherhood and Risk for HIV/STIs among Female Sex Workers in the Mexico – U.S. border region

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Abstract

Background—Globally, female sex workers (FSWs) have been identified as a high-risk group for HIV and sexually transmitted infections (STIs). However, as women of reproductive age,

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FSWs also have children. Few studies have investigated if financial responsibilities associated with motherhood increase women's vulnerability to HIV and STIs among FSWs.

Methods—From March 2013 to March 2014, 603 FSWs 18 years of age were recruited from Tijuana and Ciudad Juarez (Mexico) to participate in a study assessing HIV/STI risk environments.

Results—Findings from logistic regression models indicate that FSWs who reported motherhood were more likely to report (in the past 30 days): a higher client volume (>30 clients) (adjusted odds ratio [AOR]= 1.91; 95% confidence interval (CI) 1.27–2.87) and always using alcohol right before or during sex with clients in the past 30 days (AOR=1.77; 95%CI 1.19–2.61). In contrast, they were more likely to report consistent condom use for vaginal or anal sex with clients (AOR=1.68; 95% CI 1.10–2.55), less likely to report using drugs right before or during sex with clients (AOR=0.38; 95%CI 0.26–0.56) and less likely to have tested positive for STIs at baseline (AOR=0.63; 95% CI: 0.43–0.91).

Conclusions—These results provide a glimpse of the complex relationship between motherhood and women who are sex workers. Understanding the convergence of motherhood and sex work and how this can influence a woman's decision when engaging in sex work and affect her health, is essential to designing effective programs addressing reduce risk for HIV and STIs among FSWs in this region and elsewhere.

Keywords

Motherhood; HIV/STI risk; female sex workers; HIV/STI prevention

Background

Globally, female sex workers (FSWs) have been identified as a high-risk population who can acquire and transmit HIV and other sexual transmitted infections (STIs) via engagement in multiple risk behaviors that often occur simultaneously such as inconsistent condom use, sex with partners of unknown HIV status, concurrent sexual partnerships with risky sexual partners, and engagement in poly-drug use including injection drug and non-injection drug use^{1–3} There is extensive literature on the various risk factors associated with acquiring HIV/STIs among FSWs and the majority of the interventions among FSWs are focused on lowering their HIV/STI rates and risk factors.^{4,5} However, as women of reproductive age, FSWs also have reproductive needs, fertility intentions and children. The same behaviors that place FSWs at risk for HIV and STIs can also place them at risk for unwanted pregnancy, but only a small body of literature has considered their reproductive health such as pregnancy histories and contraceptive use.⁶ Research on their desires for or experiences with intended pregnancy and motherhood are limited.⁷ Characterization of the needs of these women is important, given their unique occupational risks, fertility-related concerns, child-care needs and potential barriers to accessing support services and health care emanating from social stigma and discrimination.^{8,9}

Furthermore, while the need to financially support children has been well-documented as a major reason for initiating and continuing sex work among women,¹⁰ few studies have

investigated if the challenges of motherhood also increase women's vulnerability to HIV and STIs among FSWs.

Mexico is considered a country with a low HIV prevalence, with an average of 0.2% of 15–49 year olds infected.¹¹ However, HIV prevalence among sub-groups such as FSWs has been reported to be 7.6% in Tijuana and 4.2% in Ciudad (Cd.) Juarez; with prevalence reaching up to 12% among FSWs who also injected drugs.^{12,13} Likewise, the prevalence of STIs such as gonorrhea, chlamydia and active syphilis (titers 1:8) has been estimated 6%, 13% and 14%, respectively.^{3,12,13} Subsequently, HIV and STI prevention programs for this population are currently being implemented. However, to date, there has been relatively limited studies on motherhood and how it relates to the practice of sex work among FSWs in these two border region cities,¹⁴ both popular international sex tourism destinations.

Emerging data from research conducted elsewhere on how certain social and economic challenges may increase vulnerability to HIV/STIs among FSWs has suggested that a reliance on sex work as a form of income to provide for dependents can reduce a woman's condom negotiating capacity and increase risky sexual behaviors to achieve greater financial benefits from sex trades.^{15,16} This in turn can increase a woman's vulnerability to HIV and STIs. Hence, more studies are needed to investigate whether motherhood may be associated with women's vulnerability to HIV and STIs. Thus, the current study examines whether motherhood is associated with increased HIV/STI-related sexual risk behaviors with clients among FSW in Tijuana and Cd. Juarez, Mexico. Specifically, motherhood (reporting one or more children supported per household) will be examined in relation to HIV and STI-related risk behaviors, including: high client volume, consistent condom use with clients, alcohol or drug use right before or during sex with clients, and testing positive for HIV or STI (e.g., syphilis, gonorrhea, chlamydia and genital warts/HPV) according to the laboratory results taken at baseline and self-reports of a previous diagnosis for Hepatitis (B and/or C). These findings have implications for evidence-based efforts concerning whether assisting FSWs as mothers may be among the binding strategies to reduce women's risk for HIV and STIs in this region.

Methods

Study Settings

Along the Northern border of Mexico lie the cities of Tijuana (Baja California) and Cd. Juarez (Chihuahua). These cities share their borders with the U.S. cities of San Diego (California) and El Paso (Texas), both are well known international sex tourism destinations that also attract a great number of clients from the US.¹⁷ In Tijuana, commercial sex work is quasi – legal and is concentrated in the center of the city in a tolerance zone known as *Zona Roja*. The government requires all women who engage in commercial sex work to undergo HIV and STI testing on a regular basis in order to obtain sex work permits. Despite this, in Tijuana, it is estimated that approximately half of all FSWs work without a permit.¹⁸ In Cd. Juarez, sex work is not legal and there is no tolerance zone, therefore a permit is not required to work. The majority of the sex work and sex workers are concentrated in Cd. Juarez's downtown area, known as the *Zona Centro*.¹⁹ The *Zona Centro* is a commercial zone for the

whole city, not just sex work. The bars and hotels where most of the sex work is done are scattered between markets, hair salons, restaurants, and other retail shops.

Data Collection

We conducted a cross-sectional analysis drawing on the baseline data from a longitudinal study among FSWs (n=603) examining social, spatial and physical factors affecting HIV and STI risk and infection in Tijuana and Cd. Juarez (“*Mapa de Salud*”). Data were collected from March 2013 to March 2014. As published elsewhere,²⁰ participants were selected through modified time-location sampling (TLS) within both indoor and street venues throughout both cities. In Tijuana, women were sampled from both the *Zona Roja* and from sex work venues dispersed throughout the city. In Cd. Juarez, *promotoras* recruited women throughout the city, with interviews taking place at a centrally located clinic. In both cities, recruiters were trained local Mexican field staff with previous experience working with FSWs and other vulnerable populations. Eligibility criteria included being at least 18 years of age, biologically female, reporting having exchanged sex for money or goods at least 4 times in the past month with at least 4 different clients, agreeing to treatment if tested positive for HIV or STIs detected, and residing in Tijuana or Cd. Juarez with no plans to move out of these cities in the next 18 months. All participants completed a questionnaire and underwent biological testing for HIV and STIs (syphilis, gonorrhea, chlamydia and genital warts/HPV) at baseline. Women received a reimbursement for their time and travel costs, HIV/STI information, and free condoms. The study was approved by institutional review boards (IRB) at the University of California, San Diego (UCSD), El Colegio de la Frontera Norte (El COLEF) in Tijuana and Universidad Autonoma de Ciudad Juarez (UACJ) in Cd. Juarez.

Measures

Demographic characteristics—Age was measured continuously and grouped into five categories (18–24, 25–29, 30–34, 35–39, 40 and older). *Educational attainment* (Primary school or less, some middle/secondary school, completed middle/secondary school or more), *marital status* (single, married/common law, divorced/widowed), *financial support* (reported being the sole provider for the household or report support from partner or someone else), *age when first began working as a sex worker* (<18 years old or >18 years old) and *debt* (e.g., whether participants reported current debt) were also assessed. Additionally, women were asked the type of place (*Type of Venue*) they had worked at in the past 30 days (street-based vs. venue based).

Motherhood—Participants were asked whether they had children or not, each of their ages and how many of their children reside in their household with them. A variable was created to represent women’s need to support one or more children (18 years and under) in their household versus having no children to support in their household; this categorization was based on the distribution of the number of children (18 and under) reported among the sample (ranging from zero/no children to ten children), as well as our hypothesis that having one child or more within a household may afford significant challenges for women (compared to only having to care for herself), especially given that most do not have financial support of family or husbands.

HIV/STI Risk Behaviors—*High client volume* was defined as having vaginal or anal sex with more than 30 different clients in the past 30 days. *Consistent condom use* was measured by asking participants how often they used condoms for vaginal or anal sex with regular and irregular/new clients in the past 30 days; participants who reported “always” using condoms with each type of client were categorized as consistent condom users. *Alcohol use and/or Illicit drug use (excluding marijuana) right before or during sex with clients* was measured by asking participants whether this happened in the past 30 days (yes/no). Lastly, participants were grouped as testing positive or negative for HIV and STIs (e.g., syphilis, gonorrhea, chlamydia and genital warts/HPV) based on the laboratory results taken at baseline and self-reports of a previous diagnosis (e.g., Hepatitis B or C).

Data Analysis—Sample characteristics were assessed to identify factors that differed between women reporting and not reporting motherhood (based on the variable we created to represent women’s need to support one or more children 18 years or under living at home). We used separate logistic regression models to analyze motherhood in relation to each of the six outcomes of interest: high client volume, consistent condom use with clients, alcohol use right before or during sex with clients, illicit drug use (excluding marijuana) right before or during sex with clients, testing positive for HIV and testing positive for an STI. Variables significantly associated at a *P* value of <0.10 in the bivariable models (Table 2) were retained in multivariable logistic regressions. We constructed multivariable models using a manual procedure; variables with *P*<0.05 were considered significant. For logistic regression findings, odds ratios are presented with associated 95 % confidence intervals (CI). Confounding was assessed by determining changes in the odds ratio of greater than 10%. Analyses were conducted using STATA statistical package version 13.1.

Results

Sample Characteristics

The mean age of women in the sample (*n*=603) was 34.3 years (10.4 standard deviation [SD]). Almost two-fifths of the women (43.9%) reported six years of formal education or less (the equivalent to primary/elementary school) and 47.9% reported being single or never married. Most women (92.0%) reported being the sole provider for their household and half (50.4%) reported having debt. The mean years of duration in sex work was 11.7 (SD 9.7), 25.4% reported working regularly as a sex worker as a minor (<18 years of age) and 56.6% reported working in a venue (i.e., bar or club, brothel, hotel/pension, massage parlor, shooting gallery, etc.) in the past 30 days (Table 1).

Characteristics of Motherhood and Risk for HIV and STIs

Most women (92%) reported having children; 62.5% reported having children younger than 18 years of age living with them. Half of the sample (54.5%) reported having their first pregnancy under the age of 18 and the median number of children was two. Most women with children in their household reported one or two children (42%) living with them and 26% reported having three or more children living with them.

Regarding women's HIV and STI-related risk behaviors, the median number of different clients in the past 30 days reported was 27 and 70.3% reported consistent condom use with clients in the past 30 days. Over half (63.7%) reported using alcohol right before or during sex with clients and 36.3% reported illicit drug use (excluding marijuana) right before or during sex with clients. Based on the laboratory testing at baseline for HIV and STIs, 2.7% tested positive for HIV, 17.7% tested positive for active syphilis, 4.8% tested positive for gonorrhea, 19.7% tested positive for chlamydia and 7.6% had genital warts/HPV. Additionally, 6.1% of the overall sample reported being previously diagnosed by a doctor or nurse with Hepatitis (B and/or C).

Motherhood and Risk Factors for HIV and STIs: Findings from Adjusted Logistic Regression Models

The results from the logistic regression models adjusted for relevant demographic variables (e.g., age, marital status and education) assessing the relationship between motherhood and engaging in high-risk behaviors indicate that FSWs who reported motherhood were more likely to report a higher client volume (≥ 30 clients) in the past 30 days (adjusted odds ratio [AOR]= 1.91; 95% confidence interval (CI) 1.27–2.87) and more likely to report always using alcohol right before or during sex with clients in the past 30 days (AOR=1.77; 95% CI 1.19–2.61). In contrast to these previous findings, they were more likely to report consistent condom use for vaginal or anal sex with clients in the past 30 days (AOR= 1.68; 95% CI 1.10–2.55) compared to FSWs who did not report motherhood. They were also significantly less likely to report using drugs right before or during sex with clients in the past 30 days (AOR=0.38; 95% CI 0.26–0.56) and less likely to have tested positive for STIs (AOR=0.63; 95% CI: 0.43–0.91) (Table 2). Testing positive for HIV was not significant (AOR=0.69; 95% CI: 0.23–2.10). Furthermore, exploratory analyses indicated that there were no significant relations between having one or more children living at home (one child vs. two children vs. three or more children) and reported higher engagement in HIV/STI risk behaviors (all *p* values >0.10).

Discussion

The results from this study highlight the high proportion of FSWs who are mothers and financially responsible for their household in these two Mexico-U.S. border cities. Further, our findings suggest that motherhood is associated with some increased risk behaviors for HIV and STIs, such as having a high client volume and using alcohol before or during sex with clients. Nevertheless, we also found that motherhood was also associated with several protective factors for HIV and STIs, such as consistent condom use. Implications of these findings are discussed below.

We found that motherhood was associated with consistent condom use with clients in the past 30 days. Given the higher economic compensation for unprotected sex and the financial burden of children these women have, we would have expected the opposite. A possible explanation for this could be that precisely because they are mothers and have child caring responsibilities that go beyond the economic spectrum, their health is important to continue taking care of their children's needs. In a previous study conducted in Andhra Pradesh,

FSWs with children were significantly less likely to use condoms consistently and more likely to accept more money for sex without a condom,²¹ suggesting that the financial burdens of motherhood increased HIV/STI risk behaviors. It is evident that socio-cultural and individual structural factors (e.g., low self-perceived HIV/STI risk) affect the ways in which FSWs who are mothers understand, articulate, and practice health in their lives. Another potential explanation for these differences is that perhaps the sample of FSWs in India were an especially vulnerable and poor population more likely to be facing life-threatening decisions (e.g. weighing occupational risks versus being able to provide food for their children). More research is needed to better understand the various mechanisms explaining these significant relationships and to help reconcile these different findings.

Likewise, women who reported motherhood were less likely to use drugs right before or during sex with clients in the past 30 days. It has been well documented that women who trade sex and inject or use drugs experience heightened risk for HIV/STI infection because of unprotected sex and unsafe drug use practices.²² These results suggest that motherhood could be a protective factor against these drug-related risk behaviors among FSWs in this region. While further research is needed, future interventions targeting FSWs should take into consideration other aspects of women's lives, such as motherhood, that presumably are associated with decreased drug-related risk behaviors.

Simultaneously, women reporting motherhood were more likely to report alcohol use right before or during sex with clients in the past 30 days. Alcohol use in the context of sex work is common;²³ many women turn to alcohol to cope with the challenging lifestyles associated with sex work. Previous studies have also found that FSWs drink higher levels of alcohol in alcohol-selling venues or are willing to engage in hazardous drinking because of greater economic compensation.²⁴ This leads us to believe that perhaps women who reported motherhood are consuming more alcohol during sex with clients due to the economic remuneration, given they have greater economic responsibilities.

However, drinking in the context of sex work is particularly problematic given alcohol's association with increased sexual risk-taking and higher incidence of physical abuse and forced sex among FSWs.^{24,25} These findings, while preliminary, provide insight into alcohol consumption patterns and factors that are influencing heavy and/or harmful alcohol use among women working as sex workers in this region.

Additionally, motherhood was associated with a greater likelihood of reporting a higher client volume (>30 different clients in the past 30 days). This could be indicative that women with greater demands in terms of time and economic burden (such as mothers) may feel heightened pressures to maximize economic gains from sex work leading to an increased number of sex trades. This is consistent with prior studies conducted in other regions indicating that economic responsibilities related to motherhood create an urgency in women's work, influencing HIV/STI risk related behaviors such as a high volume of clients.^{21,15} These results further suggest that the financial demands related to motherhood can play an important role in explaining women's engagement in increased or decreased HIV and STI risk behaviors.

Lastly, motherhood was associated with women being less likely to test positive for STIs based on the laboratory results taken at baseline. While contrary to our initial hypotheses, this is in agreement with our results suggesting that FSWs in this study who experienced motherhood, were overall less likely to engage in several high HIV/STI-risk behaviors. Further, testing positive for HIV was not significant. The lower prevalence of HIV (2.7%) and STIs (42.1%) among FSWs in Tijuana and Cd. Juarez, shown in the current study compared with the previously reported rates,^{3,29} possibly corresponds to a low participation of FSWs who injected drugs as well as the ongoing behavioral interventions developed to increase condom use and decrease syringe and paraphernalia sharing since 2004, suggesting a beneficial effect of the interventions.^{26–28}

Although our findings provide insight into the potential HIV/STI risk among FSW's who are experiencing motherhood, our study has limitations worth noting. The self-reports of sexual and substance use behaviors are subject to social desirability bias. Furthermore, given the limitation on the questionnaires length, we did not investigate the impact of specific child-caring needs or scenarios such as a child medical emergency that may influence their decision-making and HIV/STI-related behaviors because of the increased financial urgency. Likewise, because this was a cross-sectional analysis, we cannot assess the temporality on the timing of motherhood and if entering sex work happened before or as a consequence of experiencing motherhood. Overall, more work is needed to understand how women balance their health, caring for their children and the decisions they make when engaging in sex work (i.e., condom utilization, drug and alcohol use, testing for HIV/STI, etc.) to support their family. Lastly, the current study findings are most applicable to the populations of FSWs working in these two Mexico – U.S. border cities and may not be generalizable to other populations of sex workers from other regions. Nevertheless, these results provide a glimpse of the complex relationship between motherhood and women who are sex workers.

This study adds to the cumulating evidence urging the need to assess the various contexts of women's lives in order to effectively develop HIV and STI prevention programs for FSWs in this border region and elsewhere.

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Summary

Motherhood was associated with both protective and higher risk behaviors for HIV/STI risk and infection among FSWs in two Mexico-U.S. border cities.

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Table I

Descriptive Characteristics among FSWs from Tijuana and Ciudad Juarez, Mexico (n=603)

Sample characteristics	Total Sample 100% (n=603)
Age	
18–24 years	21.0% (127)
25–29 years	16.2% (98)
30–34 years	18.5% (112)
35–39 years	13.6% (82)
40 and older	30.5% (184)
Education	
Primary school or less	43.9% (265)
Incomplete/complete secondary/middle school	39.1% (236)
More than secondary /middle school	16.2% (102)
Marital Status	
Single/never married	47.1% (284)
Divorced/separated/widowed	28.5% (172)
Married/common law	24.3% (147)
City interviewed	
Tijuana	49.9% (301)
Cd. Juarez	50.0% (302)
Report being the sole provider for their household	
Yes	92.0% (555)
No	7.9% (48)
Report they are in debt	
Yes	50.4% (304)
No	49.5% (299)
Age at first pregnancy	
<18 years old	54.5% (329)
18 years old	45.5% (274)
Children ^a	
At least one child, any age	62.5% (377)
Under 5 years old	34.5% (261)
Between 5 – 18 years old	71.9% (519)
Age when began working as a sex worker	

Sample characteristics	Total Sample 100% (n=603)
<18 years old	25.4% (153)
18 years old	74.6% (450)
Sex work duration (years)	
Mean (SD)	11.7 (9.7)
Type of Venue ^b	
Street Based	43.4%(204)
Venue Based	56.6%(266)

SD, standard deviation;

^a Responses may not add up to 100%; respondents could check more than one response

^b In the past 30 days

Bivariate analysis examining the relation between motherhood and indicators for HIV and STI risk behaviors among FSWs in Tijuana and Ciudad Juarez, Mexico (n=603)

Table II

HIV and STI Risk Behaviors	Total sample % (N)	Motherhood % (N)	OR (95% IC)	P value
High client volume in the past 30 days ^a	34.6% (209)	38.5% (145)	1.58 (1.10 – 2.25)	0.01
Consistent condom use with clients in the past 30 days	70.3% (389)	73.6% (257)	1.52 (1.04 – 2.21)	<0.05
Always used alcohol right before or during sex with clients, past 30 days	63.7% (381)	67.7% (253)	1.56 (1.11 – 2.20)	0.01
Always used drugs right before or during sex with clients, past 30 days	36.3% (217)	28.3% (106)	0.39 (0.28 – 0.56)	0.001
Tested positive for HIV	2.7% (16)	1.9% (7)	0.45 (0.16 – 1.24)	0.1
Tested positive for STIs ^b	42.1% (253)	36.4% (137)	0.53 (0.38 – 0.75)	0.001

^a 30 different male clients

^b Syphilis, gonorrhea, chlamydia, HPV/warts and/or hepatitis (B or C)

Table III

The relation between motherhood and indicators for HIV and STI risk behaviors among FSWs in Tijuana and Ciudad Juarez, Mexico (n=603)

Motherhood	Total sample	High client volume in the past 30 days ^a	Consistent condom use with clients in the past 30 days	Always used alcohol right before or during sex with clients, past 30 days	Always used drugs right before or during sex with clients, past 30 days	Tested positive for HIV	Tested positive for STIs [^]
	% (N)	Adjusted OR [†] (95% CI)	Adjusted OR [†] (95% CI)	Adjusted OR [†] (95% CI)	Adjusted OR [†] (95% CI)	Adjusted OR [†] (95% CI)	Adjusted OR [†] (95% CI)
Yes	63% (N=377)	1.91 (1.27 – 2.87) **	1.68 (1.10 – 2.55) **	1.77 (1.19 – 2.61) **	0.38 (0.26 – 0.56) ****	0.69 (0.23 – 2.10)	0.63 (0.43 – 0.91) **
No	37% (N=226)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)

[†] Adjusted for age, marital status, and education

^a 30 different male clients

[^] Syphilis, gonorrhea, chlamydia, HPV/warts and/or hepatitis (B or C)

* $p < 0.05$;

** $p < 0.01$;

*** $p = 0.001$