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## Sex workers' non-commercial male partners who inject drugs report higher risk sexual behaviors

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### Abstract

Female sex workers (FSWs) are less likely to use condoms with non-commercial male partners than clients. We compare non-commercial male partners who do and do not inject drugs in Tijuana and Ciudad Juárez, Mexico. Sexual risk behaviors were more prevalent among injectors, who could promote HIV/STI transmission in this region.

### Keywords

female sex workers; male partners; couples; sexually transmitted infections; injection drug use

Unprotected sex and risky drug use within commercial sexual encounters account for a substantial proportion of poor sexual health outcomes among female sex workers (FSWs).<sup>1</sup> Although targeted interventions have successfully improved FSWs' condom use with male clients,<sup>2–4</sup> 25–95% of FSWs have steady, non-commercial male partners (e.g., boyfriends, spouses)<sup>5–7</sup> with whom they are two to five times more likely to have unprotected sex compared with clients.<sup>5–10</sup> Limited research has identified high risk behaviors among FSWs' non-commercial male partners, including injection drug use and unprotected sex with concurrent sexual partners.<sup>8,11</sup> Studies among injection drug users (IDUs) in Vietnam,<sup>12</sup> England,<sup>13</sup> and the United States<sup>14</sup> suggest that relationship intimacy may reinforce sexual and drug-related HIV/STI risks. However, studies have not consistently assessed the risk profiles of FSWs' non-commercial partners in settings where drug abuse is prevalent.

In the Mexico-U.S. border region, there are burgeoning epidemics of HIV and sexually transmitted infections (STIs) among high risk populations of FSWs and IDUs. In many Mexican border cities, sex work is a historical institution that remains socially and legally tolerated.<sup>15</sup> In the two largest Mexico-U.S. border cities, Tijuana, Baja California, and Ciudad Juárez, Chihuahua, Mexico (adjacent to San Diego, California and El Paso, Texas), HIV prevalence among FSWs increased from <1% in the 1990s to nearly 6% in 2006 and has been closely associated with high prevalence of active syphilis (recently estimated at

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14%).<sup>16</sup> HIV prevalence is 12% among FSWs who inject drugs,<sup>15,17</sup> which is increasingly common due to drug trafficking routes toward the United States.<sup>18</sup>

Our binational research team found that FSWs in these cities were half as likely to use condoms with non-commercial male partners than clients.<sup>11</sup> Despite the prevalence of sexual partner concurrency among FSWs' non-commercial male partners,<sup>19</sup> a behavioral intervention that increased FSWs' condom use with clients had no effect on condom use with intimate partners.<sup>11</sup> FSWs who injected drugs were also more likely to report having partners who injected drugs.<sup>11</sup> Unfortunately, no studies have systematically described HIV/STI risk behavior profiles of FSWs' steady non-commercial male partners based on data collected from men themselves.<sup>20</sup> Thus, by collecting data directly from FSWs' non-commercial male partners, we sought to compare the demographic and risk behavior profiles of male partners who injected drugs to those who did not inject drugs in this setting.

We drew from a cohort of FSWs and their non-commercial male partners in Tijuana and Juárez, Mexico. As previously described,<sup>21</sup> we recruited women first from areas where sex work and drug abuse visibly occur (e.g., Tijuana's red light district). Eligible women were 18 years old, reported lifetime use of heroin, cocaine or methamphetamine, had recently exchanged sex with clients (past month), and were in verified non-commercial relationships for at least six months. Eligible men were 18 years old, but there was no requirement regarding drug abuse. Enrolled couples provided written informed consent. Institutional review boards of the University of California, San Diego, the Tijuana General Hospital, El Colegio de la Frontera Norte, and the Universidad Autónoma de Ciudad Juárez approved all protocols.

From 2010–2011, trained bilingual interviewers administered surveys in store front offices. Measures covered socio-demographics, intimate relationship dynamics, and drug and sexual risk behaviors within and outside of intimate (study) relationships. Descriptive statistics provided frequencies for overall sample characteristics and prevalence of risk behaviors. We compared demographic and sexual risk behaviors of men who injected drugs in the past six months to those who did not using *t*-tests or Wilcoxon rank sum tests for continuous outcomes and Pearson chi-square or Fisher exact tests for binary outcomes.

Among 214 non-commercial male partners of FSWs (Tijuana: n=106; Juárez: n=108), median age and educational attainment were 37 years (interquartile range [IQR]: 31–43) and 7 years (IQR: 6–9; Table 1). Nearly half (49%) reported earning less than U.S. \$200 per month (approximately 2500 pesos), and 131 (62%) earned income from informal jobs. Median relationship duration with steady FSW-partners was 3.0 years (IQR: 1.6–5.5) and condom use was rare: 152 (71%) reported “never” using condoms for vaginal sex with their steady partners in the past month. Nearly one third (30%) had sex with other women in the past year.

Nearly one quarter (n=52; 24%) had ever had sex with men in their lifetimes, and 10 (5%) self-identified as bisexual. During their lifetimes, 73 (34%) reported exchanging sex for money, drugs, or other material goods; 40 (19%) reported receiving payment/goods from women in exchange for sex and 34 (16%) gave payment/goods to other women in exchange for sex. Although only four reported ever paying to have sex with men, 21 (10%) received payment/goods from men in exchange for sex.

The majority (n=175; 82%) reported using “hard” drugs in the past six months, including heroin (61%), methamphetamine (29%), cocaine (19%), and crack (11%). While heroin use was equally common in both sites, methamphetamine was more prevalent in Tijuana than Juárez (58% vs. 2%,  $p<.001$ ) and cocaine and crack were more prevalent in Juárez than

Tijuana (29% vs. 8%,  $p<.001$ ; and 20% vs. 1%,  $p<.001$ ; respectively). In the past six months, 123 men (57%) injected any of these drugs.

Demographic and sexual risk profiles differed between men who did and did not inject drugs. Compared to non-injectors, IDUs were younger (36 vs. 40 years,  $p=.020$ ), more likely to rely on informal employment (75% vs. 43%,  $p=.001$ ), spent more hours per day on the street (10 vs. 8 hours,  $p=.057$ ), and report ever having been arrested (72% vs. 58%,  $p=.042$ ). IDUs were also more likely to self-identify as bisexual (7% vs. 1%,  $p=.033$ ), report ever having sex with men (31% vs. 15%,  $p=.009$ ), and ever receive payment/goods in exchange for having sex with men (14% vs. 4%,  $p=.022$ ).

In this study of FSWs' steady non-commercial male partners in Tijuana and Ciudad Juarez, a high proportion of men engaged in multiple risk behaviors that could promote HIV/STI transmission within their intimate relationships. Research among men in Mexico has suggested that bisexual behavior is prevalent but not openly discussed.<sup>22</sup> Although only 5% of male partners in our sample self-identified as bisexual, nearly one in four reported sex with men in their lifetimes. We also identified highly prevalent drug abuse, with over half of our sample currently injecting drugs. IDUs were more likely to report higher risk sexual behaviors including exchanging sex with men, further heightening their potential to introduce HIV/STIs into their intimate relationships and serve as a "bridge" for HIV/STI transmission to other populations (e.g., other sexual or injection partners).

This study has important implications for HIV/STI prevention programs in the Mexico-U.S. border region and possibly other settings. Our findings suggest that drug treatment and economic interventions are needed to reduce drug-related harms and financial need among FSWs' male partners. In particular, drug treatment and harm reduction services should provide information on sexual risk behaviors and improved access to HIV/STI counseling and testing. At the same time, this economically marginalized group of men would likely benefit from job training and assistance securing employment. Within intimate relationships, improving condom use may not be practical because FSWs often prioritize condom use with clients, reserving unprotected sex for intimate partners.<sup>23,24</sup> We recently identified poor communication regarding sex work-related risk within these couples, among whom condom use is rare.<sup>25</sup> This study provides additional evidence that prevention interventions should promote education on and disclosure of drug-related risks, albeit in a manner that does not lead to interpersonal violence.<sup>26</sup>

While our findings have limited generalizability due to our recruitment and screening strategies,<sup>21</sup> this is the first study to our knowledge to characterize the risk behavior profiles of FSWs' non-commercial male partners, who comprise a severely understudied population. The associations we identified do not explain why male partners who inject drugs are more likely to engage in higher risk sexual behaviors. Qualitative research could help contextualize these men's experiences within the social, political, and economic environments of the border region. Future research is also needed to explore couples' risk communication regarding injection drug use, drug-related financial need, and sexual risk behaviors outside of relationships.

This study extends previous research focused on FSWs' vulnerabilities by comparing the sexual risk profiles of their non-commercial male partners who did and did not inject drugs. Experts have called for HIV/STI prevention research to look beyond individual-level factors toward social determinants of risk.<sup>27</sup> We additionally argue that within couples-oriented research, the perspectives and experiences of men who are intimately involved with FSWs and also inject drugs must be included. Effective interventions for high risk, drug involved

FSWs will require a foundational understanding of how to reduce the harms associated with their intimate male partners' drug abuse and sexual related risk.

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**Table 1**

Comparison of characteristics among non-commercial male partners of female sex workers in two Mexico-U.S. border cities by injection use (n=214)

Characteristics	Injection drug use, past six months N (%) or Median (interquartile range)		
	Injected drugs (n=123; 57%)	Did not inject drugs (n=39; 43%)	Overall (n=214; 100%)
Resides in Tijuana (vs. Juarez)	59 (48%)	47 (52%)	106 (50%)
Age (in years)	36 (31–41)	40 (30–47)	37 (31–43) *
Educational attainment (in years)	8 (6–9)	7(6–9)	7(6–9)
Income <\$200 per month	64 (52%)	40 (44%)	104 (49%)
Earns income primarily from informal work (vs. formal employment)	92 (75%)	39 (43%)	131 (62%) ***
Time spent on street each day (in hours)	10 (8–12)	8 (7.5–12)	10 (8–12)
Ever been arrested (lifetime)	88 (72%)	53 (58%)	141 (66%) *
Duration of non-commercial relationship with FSW partner (in years)	3 (1.8–5)	3 (1.5–7)	3 (1.6–5.5)
Never used condoms for vaginal sex with steady FSW partner (past month)	92 (75%)	60 (66%)	152 (71%)
Had sex with other women (past 6 months)	38 (31%)	27 (30%)	65 (30%)
Total number of sexual partners (lifetime)	20 (9–35)	18 (8–30)	20 (8–35)
Ever had sex with men (lifetime)	38 (31%)	14 (15%)	52 (24%) **
Self-identified as bisexual (vs. heterosexual)	9 (7%)	1 (1%)	10 (5%) *
Ever traded sex for money, drugs, other material goods (lifetime)	47 (38%)	26 (29%)	73 (34%)
Ever gave money, drugs, etc. to women for sex (lifetime)	22 (18%)	12 (13%)	34 (16%)
Ever received money, drugs, etc. from women for sex (lifetime)	25 (20%)	15 (16%)	40 (19%)
Ever gave money, drugs, other goods to men for sex (lifetime)	2 (2%)	2 (2%)	4 (2%)
Ever received money, drugs, other goods from men for sex (lifetime)	17 (14%)	4 (4%)	21 (10%) *

\* p<.05,

\*\* p<.01,

\*\*\* p<.001