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Short-term cessation of sex work and injection drug use: Evidence from a recurrent event survival analysis

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HIGHLIGHTS

- We examined factors related to stopping sex work among female injection drug users.
- A survival analysis was applied to account for quit–re-entry patterns of sex work.
- Over half of participants stopped sex work during a 1-year period.
- Injection drug use was inversely associated with stopping sex work.
- Drug treatment and counseling combined with other supportive services are needed.

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ABSTRACT

Objective: This study quantitatively examined the prevalence and correlates of short-term sex work cessation among female sex workers who inject drugs (FSW-IDUs) and determined whether injection drug use was independently associated with cessation.
Methods: We used data from FSW-IDUs (n = 467) enrolled into an intervention designed to increase condom use and decrease sharing of injection equipment but was not designed to promote sex work cessation. We applied a survival analysis that accounted for quit–re-entry patterns of sex work over 1-year stratified by city, Tijuana and Ciudad Juarez, Mexico.
Results: Overall, 55% of participants stopped sex work at least once during follow-up. Controlling for other characteristics and intervention assignment, injection drug use was inversely associated with short-term sex work cessation in both cities. In Ciudad Juarez, women receiving drug treatment during follow-up had a 2-fold increase in the hazard of stopping sex work. In both cities, income from sources other than sex work, police interactions and healthcare access were independently and significantly associated with shorter-term cessation.
Conclusions: Short-term sex work cessation was significantly affected by injection drug use. Expanded drug treatment and counseling coupled with supportive services such as relapse prevention, job training, and provision of alternate employment opportunities may promote longer-term cessation among women motivated to leave the sex industry.

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1. Introduction

Female sex workers (FSWs) experience increased rates of HIV and other sexually transmitted or blood-borne infections, which is elevated among FSWs who inject drugs (FSW-IDUs) (Strathdee et al., 2008). Given the nature of their work, FSWs are likely to experience violence, including physical and sexual abuses (Ulibarri et al., 2011; Urada et al., 2013) and isolation from health and social services (Rekart, 2005). As a result of experiences with psychological trauma, many women use substances as a coping mechanism (Ulibarri et al., 2013). For some, sex is primarily exchanged to finance a substance dependency (Ohlund & Gronbladh, 2009; Potterat, Rothenberg, Muth, Darrow, & Phillips-Plummer, 1998).

However, among women that desire to leave the sex industry, multiple barriers exist (Sanders, 2007). Studies have described a

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combination of factors including financial necessity, drug addictions, intimate relationships, having children, coercion from others, criminal records, and lack of resources as reasons to remain in sex work (Baker, Dalla, & Williamson, 2010; Cimino, 2012; Ingabire et al., 2012; Manopaiboon et al., 2003). Absent is an empirical assessment on the extent to which these factors independently predict cessation. Understanding this information may inform interventions addressing the health and social needs of women who use drugs and are attempting to leave the sex industry.

In cities situated along the Mexico–U.S. border sex work is quasi-legal. An estimated 9000 FSWs in Tijuana, Mexico (adjacent to San Diego, California) and 4000 FSWs in Ciudad Juarez, Mexico (adjacent to El Paso, Texas) operate from a mix of establishments (Patterson et al., 2008a). In Tijuana, sex work is tolerated in the city's red-light district (Curtis & Arreola, 1991), whereas Ciudad Juarez dismantled its red-light district and displaced sex workers to more hidden locations (Wright, 2004). In 2006, HIV prevalence was estimated at 6% among FSWs and 12% among FSWs that injected drugs in these two cities (Patterson et al., 2008b).

Tijuana and Ciudad Juarez are also situated along major drug trafficking routes into the United States. Both cities have experienced a rise in HIV prevalence and injection drug use (Bucardo et al., 2005) with IDUs estimated at 10,000 and 6500, respectively (Ramos et al., 2009). Mexico's growing HIV epidemic has been linked to structural conditions that increase HIV risk behaviors and other adverse outcomes among IDUs (Beletsky et al., 2013). Therefore, it is important to understand the context in which sex work and drug use are co-occurring in order to inform efforts that address sex work cessation.

Given that previous studies have primarily been qualitative with small sample sizes (Baker et al., 2010; Cimino, 2012; Ingabire et al., 2012; Manopaiboon et al., 2003), the goal of this study is to empirically examine the prevalence and correlates of stopping sex work during a one-year period among FSW-IDUs participating in an HIV prevention intervention to reduce sexual and injection risk behaviors, and determine whether injection drug use independently associates with cessation after controlling for other characteristics. Knowledge gained may aid in the development of support services promoting longer-term sex work cessation.

2. Methods

2.1. Study population

From October 2008 to 2009, outreach workers recruited 584 HIV-negative FSW-IDUs into a behavioral intervention to reduce high risk HIV-related behaviors. Briefly, women were randomized into one of four groups combining either an interactive or didactic version of an intervention to promote condom use and the reduction of injection paraphernalia sharing. The interactive intervention incorporated theory-driven skill-building elements that focused on: 1) improving one's ability to negotiate condom use within the context of her or her partner's substance use and/or 2) reduce receptive and/or distributive sharing of injection equipment. Under the didactic version, women received information on safer sex and/or safer injection in lecture-style formatted using printed materials provided from a local health center; there were no theory-driven skills-building elements under this version (see Vera et al., 2012 for a detailed description of the intervention).

Eligibility criteria included being ≥18 years; having unprotected vaginal or anal sex with a male client in the previous month; injecting illicit drugs and sharing injection equipment in the past month; test HIV-negative at baseline; speaking Spanish or English; no plans to move out of the city for a 12-month period; providing informed consent; and accepting free sexually transmitted infection (STI) testing and treatment. The present study includes an additional 33 participants that were HIV-positive at baseline who were randomized into an intervention group.

2.2. Data collection

Participants were administered face-to-face interviews and biological testing for HIV/STIs at baseline with 3 follow-up visits occurring approximately at 4, 8, and 12 months after enrollment. Interviews covered a range of questions, including sociodemographics, health, sexual and drug using behaviors. Follow-up rates were 89.6% at 4-month, 87.7% at 8-month, and 87.1% at 12-month visits.

Trained nurses obtained biological samples from participants at each visit. HIV status was ascertained using the "Determine"® rapid HIV antibody test (Abbott Pharmaceuticals, Boston, MA). Syphilis serology was conducted using the rapid plasma regain test (Determine™ Syphilis TP; Abbott Pharmaceuticals, Boston, MA). Positive samples were subject to confirmatory testing. *Neisseria gonorrhea* (GC) and *Chlamydia trachomatis* (CT) were detected from vaginal swabs using a rapid test kit (BioStar® OIA® GC and CHLAMYDIA). Participants with a positive GC/CT test or symptoms were treated free on-site. The study was approved by the Institutional Review Boards at the University of California San Diego, the General Hospital in Tijuana, and the Universidad Autonoma de Ciudad Juarez.

2.3. Measures

2.3.1. Outcome

The outcome was short-term cessation of sex work, measured in days. Participants were identified as leaving sex work if they answered yes to the following question during follow-up "In the past 4 months, have you stopped trading sex for money, drugs, or other goods (food, clothing, etc.) for a period of at least 30 days?". Of the n = 617 participants, we excluded 27% for the following reasons: 1) completed baseline interview only n = 19, 2) death for reasons unrelated to study participation n = 10 or 3) missed at least one follow-up visit n = 140. As these women were engaged in sex work and drug use, we could not assume their missed visits were random events; a requirement for censoring observations (see, for example, Ranganathan & Pramesh, 2012). Our concern was that participants missed follow-up visits for reasons related to the study such as they had stopped sex work, they were institutionalized (e.g., incarcerated or in drug treatment), or they were entrenched in sex work and drug use; although reasons for missed visits were not assessed. Therefore, a total of 467 participants were included in the current analysis. Lastly, we allowed for recurrent events since 28% of the participants (n = 132) stopped sex work more than once during follow-up.

2.3.2. Independent variables

Several baseline covariates were considered: sociodemographics, years injecting drugs, sex work history, testing positive for HIV, Chlamydia, gonorrhea, and/or active syphilis (titers ≥ 1:8), lifetime pregnancies or induced abortions, condom availability, police extortion, history of forced/coerced sex with client, and history of physical abuse and rape. We only considered what was reported at study enrollment since there was little variation over time among these covariates.

Due to skip patterns in questionnaire items measuring substance use behavior among those who had not injected drugs between follow-up visits, we only included what was reported at baseline for the following: heroin, methamphetamine and cocaine use in the month prior to study enrollment, drug use with clients in the month prior to study enrollment, and a continuous measure of safer injection self-efficacy previously developed by a U.S. intervention study (Garfein et al., 2007).

Covariates that varied over the study period included housing status, injection frequency, income outside of sex work, healthcare access, drug treatment, police confiscation of drug paraphernalia, increased police presence, incarceration, and a continuous measure of condom use self-efficacy previously developed by a Mexico intervention study (Patterson et al., 2008a).

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