



Published in final edited form as:

Subst Abus. 2021 ; 42(4): 821–831. doi:10.1080/08897077.2020.1865242.

“Violence and love and drugs...it all goes hand in hand”: A mixed methods analysis of the substance abuse, violence, and HIV/AIDS syndemic among women who use methamphetamine

Jamila K. Stockman, Ph.D., M.P.H.¹, Jennifer L. Syvertsen, Ph.D., M.P.H.², Hitomi D. Hayashi, Dr.P.H., M.P.H.³, Natasha Ludwig-Barron, M.P.H.¹, Kiyomi Tsuyuki, Ph.D., M.P.H.¹, Meghan D. Morris, Ph.D., M.P.H.⁴, Lawrence A. Palinkas, Ph.D.⁵

¹Division of Infectious Diseases and Global Public Health, Department of Medicine, University of California, San Diego, La Jolla, CA, USA

²Department of Anthropology, University of California, Riverside, Riverside, CA, USA

³Department of Health Promotion and Behavioral Sciences, University of Texas School of Public Health, Houston, TX, USA

⁴Department of Epidemiology and Biostatistics, University of California, San Francisco, San Francisco, CA, USA

⁵School of Social Work, University of Southern California, Los Angeles, CA, USA

Abstract

Background: The synergistic epidemics of substance use, violence, and HIV/AIDS, also known as the SAVA syndemic, disproportionately affects vulnerable women in the United States. Methamphetamine use is closely linked with physical and sexual violence, including intimate partner violence (IPV), which heightens women’s vulnerability to HIV. This mixed methods study examined the prevalence and correlates of violence among women who use methamphetamine, (n=209) enrolled in an HIV intervention study in San Diego, California.

Methods: At baseline, 209 women completed an interviewer-administered computer-assisted survey. A sub-set of women who reported lifetime IPV (n=18) also participated in qualitative interviews to contextualize our understanding of patterns of violence over time.

Results: In the overall cohort, reports of lifetime (66.0%) and past two-month (19.6%) IPV were prevalent. Moreover, women reported lifetime physical only (27.3%), sexual only (6.2%), or

Corresponding author: Jamila K. Stockman, Ph.D., M.P.H., Division of Infectious Diseases and Global Public Health, Department of Medicine, School of Medicine, University of California, San Diego, 9500 Gilman Drive, MC 0507, La Jolla, CA 92093-0507, Tel: 858-822-4652; Fax: 858-534-7566; jstockman@ucsd.edu.

Author Contributions

Jamila K. Stockman, PhD, MPH was responsible for the conceptualization of the secondary analysis, interpretation of the results, and drafting and finalizing the manuscript. Jennifer L. Syvertsen, PhD, MPH conducted the qualitative data collection and analysis, assisted in the interpretation of the results, drafting and finalizing the manuscript. Hitomi D. Hayashi, DrPH, MPH conducted the qualitative data collection, assisted in the interpretation of the results, and participated in drafting and finalizing the manuscript. Natasha Ludwig-Barron, MPH conducted the qualitative data collection and analysis, assisted in the interpretation of the results, and participated in drafting and editing the manuscript. Kiyomi Tsuyuki, PhD, MPH participated in the editing of the manuscript. Meghan D. Morris, PhD, MPH participated in the editing of the manuscript. Lawrence A. Palinkas, PhD participated in conceiving the mixed methods analysis and editing the manuscript.

both forms of violence (50.7%) by multiple perpetrators. Factors independently associated with lifetime IPV were having unprotected sex with a steady partner (odds ratio [OR]: 2.50, 95% confidence interval [CI]: 1.04, 6.00) and being high on methamphetamine during unprotected sex with a steady partner (OR: 2.56, 95% CI: 1.30, 5.09) within the past two months. Our qualitative narratives illuminated how IPV in women's steady relationships often reflects a culmination of violent victimization throughout their lifetime which is further exacerbated by methamphetamine use and sexual risk through gendered power dynamics.

Conclusions: HIV prevention interventions should address the SAVA syndemic in a holistic manner, including the role of methamphetamine use in the context of women's abusive steady relationships.

Keywords

women; methamphetamine; intimate partner violence; physical violence; sexual violence; HIV risk

Introduction

The synergistic epidemics of substance use, violence, and HIV/AIDS, also known as the SAVA syndemic, disproportionately affects marginalized women in the United States.¹⁻⁵ First proposed by Merrill Singer,⁶ a syndemic refers to the constellation of two or more epidemics that interact to exacerbate each other.^{6,7} Taken from the Greek words *synergos*, meaning working together toward a stronger effect, and *demos*, meaning people, a syndemic framework creates a common conceptual language to bridge multidisciplinary perspectives and illustrates how mutually reinforcing health and social factors impinge on the wellbeing of vulnerable populations.⁷ Specific to the SAVA syndemic, HIV infections continue to rise among women who use drugs,^{8,9} whom are doubly at risk for HIV infection through unprotected sex and unsafe injection.¹⁰ These transmission routes may be influenced by physical and/or sexual violence by intimate or transactional sex partners.^{11,12} Taken together, the SAVA syndemic describes how the confluence of substance use, violence, and HIV/AIDS epidemics interact to create excess burden on vulnerable populations.^{2,13,14}

The mechanistic pathways that define the SAVA syndemic include direct, indirect, and bidirectional relationships between components of these epidemics.^{1,2,15} For example, previous literature has supported a bidirectional relationship between drug use and IPV, where drug use may facilitate partner violence and whereby IPV may facilitate drug use.¹⁶⁻¹⁸ Substance use and IPV perpetration has been qualitatively shown to be rooted in power and control differentials.¹⁹ Additionally, power differentials are influenced by, and also a risk factor for substance use.²⁰

The prevalence of lifetime sexual and physical IPV among women who use drugs, particularly crack cocaine, are three times higher than women who do not use drugs.¹⁰ In the limited data that is specific to methamphetamine use, the focus of the current investigation, intimate and non-intimate partner violence victimization and perpetration is commonly reported by women who use methamphetamine.²¹⁻²⁴ It has been documented that cognitive effects of methamphetamine use include inhibition of cues that normally control behavior,

increased arousability, interference with communication and interpersonal interactions, and intensification of emotions.¹⁸ Further, methamphetamine use among women has been associated with greater risky sexual behavior and HIV/STIs.^{25–28} Increased HIV risk among women who use methamphetamine may be caused by the direct pathway between injection drug use and HIV or indirectly via sexual risk behaviors (e.g. unprotected sex, transactional and/or concurrent sex partners, sex work, HIV-positive or unknown-status partners).^{24,29–34} A number of systematic reviews addressing the SAVA syndemic support the mutually reinforcing nature of these epidemics.^{1,2}

The current study focuses on a sample of heterosexual women who use methamphetamine in San Diego, CA, USA, a setting with high rates of methamphetamine use, violence, and HIV. From 2014-2018, rates of methamphetamine-caused deaths and emergency room visits due to methamphetamine use in San Diego have steadily increased (5.4 to 9.8 per 100,000 and 1,260 to 1,469 per 100,000, respectively).³⁵ Fifty-five percent of methamphetamine users are female.³² In San Diego, methamphetamine has become cheaper and easier to access, in part due to close proximity to the Mexican border, a port of entry for illegal methamphetamine.³⁵ Methamphetamine seizures at the Mexican border port of entry have increased from 5,862 kilograms in 2014 to 19,171 kilograms in 2018.³⁵ An indication that methamphetamine use and violent behaviors intersect is that, among 77 cases reviewed by the San Diego Domestic Violence Fatality Review Team between 2006 and 2014, 26% of victims and 34% of perpetrators had a known history of methamphetamine use.³⁶ San Diego County has the third largest population of HIV/AIDS cases in California. In San Diego County, the majority of women living with HIV acquired the infection through heterosexual sex (69%) and injection drug use (22%);³⁷ however, it is important to note that these statistics do not fully take into account the overlap between heterosexual sex and drug use.

The overall objective of our mixed methods study was to examine the prevalence and correlates of violence among women who use methamphetamine enrolled in an HIV prevention intervention study and draw upon qualitative interviews with a subset of women to contextualize patterns of violence over time. We framed our analysis within a SAVA syndemic perspective to link the sexual risk behavior and drug use contexts in which physical and/or sexual violence occurs by intimate and/or non-intimate partners. Findings from this mixed methods study may help inform integrated programs and policies that holistically address the SAVA syndemic among women who use methamphetamine.

Methods

This mixed methods study began with a baseline survey from *FASTLANE-II*, an HIV behavioral intervention trial of HIV-negative, heterosexual men and women who use methamphetamine in San Diego, CA, followed by semi-structured qualitative interviews with a sub-sample of women from *FASTLANE-II* who reported a lifetime history of physical or sexual violence by a current or former intimate partner. We analyzed *FASTLANE-II* quantitative data to examine the prevalence of physical and sexual violence and HIV risk correlates of lifetime IPV, then triangulated our findings with the qualitative data to understand the lived experience of violence and its intersection with sexual and drug-related risk for HIV. Representative excerpts were selected from the qualitative transcripts to

provide context for the quantitative findings through women's perspectives. All participants were given pseudonyms to protect confidentiality. All participants provided written consent and all study procedures received Institutional Review Board approval.

Quantitative Sample and Data Collection (FASTLANE-II)

The *FASTLANE-II* intervention trial was conducted between 2006 and 2011 and consisted of a nine-session, individualized counseling program that used motivational interviewing concepts, cognitive behavioral therapy, and social cognitive strategies to reduce sexual risk behaviors, methamphetamine use, and depressive symptoms among HIV-negative heterosexual men and women who use methamphetamine. Eligible participants were aged 18 years, self-identified as heterosexual, reported having unprotected vaginal, anal or oral sex with at least one opposite sex partner during the past two months, reported using methamphetamine at least twice during the past two months and at least once during the past 30 days, and tested HIV-negative at the baseline visit. HIV testing was conducted using the OraSure HIV-1 Oral Collection Specimen Device. Recruitment occurred primarily through targeted community outreach efforts in areas identified as having high concentration of people who use methamphetamine, social marketing (e.g., targeted advertisements in newspapers and magazines), and chain referrals. A total of 432 men and women were enrolled into the study and completed baseline and follow-up audio computer-assisted self-interviews (ACASI) questionnaires at 4, 8, and 12 months. Participants were compensated \$30 at the completion of each interview.

The present study analyzed baseline *FASTLANE-II* survey data from women only (n=209). We examined sociodemographic characteristics, drug use behaviors, sexual risk behaviors, physical and sexual violence history, and mental health outcomes. Drug use behaviors included type of illicit drugs used, frequency of use, route of administration, and syringe sharing practices. Sexual risk behaviors assessed in the past two months included the frequency of unprotected vaginal and anal sex acts with spouse/steady partners and casual/anonymous partners, substance use before/during unprotected sex with spouse/steady partners and casual/anonymous partners, risky sex partners (i.e., HIV-positive, transactional, anonymous), and reporting two or more sex partners. Lifetime and recent (i.e., past two months) physical and sexual violence was assessed by a series of questions. Lifetime physical violence was measured by a single question that asked if the participant "*has ever been physically abused (hit or assaulted)?*" Lifetime sexual violence was measured by a single question that asked if the participant "*has ever been forced or coerced to have sex against their will?*" Women with experiences of physical and/or sexual violence reported their age and type of perpetrator at first incident, number of violent episodes, and relationship to perpetrator for each episode. Lifetime IPV was defined as ever having an experience of physical and/or sexual violence by a current or former spouse, live-in, or steady partner. Recent physical and sexual violence were defined as having occurred in the past two months by a partner (intimate or non-intimate such as casual or anonymous sex partner).

Qualitative Sub-Sample and Data Collection

Between February and September 2011, we recruited women who reported lifetime physical and/or sexual IPV in *FASTLANE-II* to participate in a qualitative study on experiences and attitudes toward female-initiated barrier methods (i.e., female condoms, vaginal microbicides). We used a two-step process to create a sampling frame. First, we generated a list of all women who reported ever experiencing physical and/or sexual violence by a current or former intimate partner (i.e., spouse, live-in, or steady partner) in the *FASTLANE-II* baseline assessment. Based on this list, women were then purposively sampled to represent maximum variation in ethnicity (i.e., White, African American, and Hispanic) and experience using a female condom (those who had reported ever using a female condom versus those who had not). Variation in ethnicity was important as the *FASTLANE-II* parent study recruited an ethnically diverse sample. A standard script was used to contact eligible participants through phone and/or email to explain the study and request participation. Those agreeing to participate provided additional written consent and completed the interviews at the *FASTLANE-II* project offices. While all participants enrolled into the qualitative study had a lifetime history of methamphetamine use, some participants did not report current methamphetamine use at the time of their participation, as required for the *FASTLANE-II* parent study. This was due to the fact that the qualitative study was conducted following the *FASTLANE-II* intervention, designed to in part, reduce methamphetamine use. Hence, some women successfully reduced or stopped using methamphetamine following their participation in *FASTLANE-II* and prior to the qualitative study.

We conducted semi-structured interviews on topics that included histories of sexual relationships, drug use, partner violence and/or other abusive experiences, contraception and HIV prevention, and attitudes towards the female condom and vaginal microbicides. Each in-depth interview was digitally recorded and lasted approximately 30-90 minutes. Interviewers wrote detailed notes after each interview to summarize key topics and assessed the physical and mental health condition of participants. Women were compensated \$25 for their time, given a transportation day pass, and referred to local support services. After completing 18 interviews, discussions among the research team concluded that conceptual saturation had been reached, whereby we repeatedly heard similar stories and opinions about primary and secondary topics of interest and no new information would be elicited through further interviews.

Data analysis

Quantitative Analyses—First, we conducted descriptive analyses of prevalence and patterns of physical and sexual violence. We then compared the characteristics of women who use methamphetamine and who ever experienced lifetime IPV to those who did not, using Pearson's chi-square tests for categorical variables and Wilcoxon rank-sum tests for continuous variables. Variables significant at <0.20 were entered into a multivariable logistic regression model to identify sexual- and drug-related risk behaviors independently associated with experiencing lifetime IPV at a significance level of <0.05 . The Akaike Information Criterion was used to determine model fit. All analyses were performed using SAS version 9.4.

Qualitative Analyses—All digitally recorded interviews were transcribed verbatim. We employed deductive and inductive analytic approaches to analyzing the qualitative interview data. First, the principal investigator, qualitative project coordinator, and research assistant read through the same selected interview excerpts independently and generated an initial list of codes based on the content of the interview guide as well as relevant themes that emerged in the transcripts. Second, the team met to construct an initial codebook. Finally, researchers independently applied codes to entire transcripts, including identical transcripts to check for consistency. Team members met regularly to discuss the transcripts, resolve differences in coding assignment, and refine codes as needed. The qualitative project coordinator merged the coded data into a single project file and checked the coding for quality control purposes. We used MAXQDA software to manage coding and analysis in an integrated system (MAXQDA, Berlin, Germany, 2010).

We draw upon the quantitative and qualitative results to examine the prevalence and lived experiences of physical and/or sexual violence among heterosexual, HIV-negative women who use methamphetamine. Our mixed methods approach employs an explanatory design, which looks to the richness of qualitative data to explain or build upon initial quantitative descriptive results. Using this design, we provide descriptive statistics of the prevalence of violence and build a final multivariable model to identify factors associated with lifetime IPV, as well as contextualize and expand upon our understanding of the specific factors associated with lifetime experiences of IPV that heighten vulnerable women's risk for HIV.

Results

Characteristics of Quantitative Sample

Of 209 total women in *FASTLANE-II*, the average age was 36 years ($SD=9.2$ years; range: 18-63). The sample was ethnically diverse with 36.8% White, 26.8% African American/Black, and 21.1% Latina women; the remaining 15.3% were multiracial or other. The majority were unemployed (79.9%). Approximately two-thirds had at least a high school diploma and 28.7% had neither a high school nor general equivalency diploma. The majority had children under the age of 18 years (74.2%). Only 10.5% of women were married, while the majority were either never married (47.9%), separated (15.8%), or widowed or divorced (25.8%). Approximately 20% of women were currently living with a spouse or steady sex partner, 48.8% were living alone or with another adult person who was not a sex partner, 14.4% were homeless, and 16.8% had other living arrangements.

Drug Use Patterns—The average age of initiation into methamphetamine use was 19.7 years ($SD=7.2$ years). Participants had been using methamphetamine on average for 16.7 years ($SD=9.0$ years). The median number of days in the past month in which women had used methamphetamine was 15 (interquartile range (IQR), 6-22) and approximately half of the women were binge users of methamphetamine, defined as using large quantities of methamphetamine for a period of time until one runs out of drugs or physically cannot continue. In the past two months, women injected methamphetamine or some combination of methamphetamine (e.g., methamphetamine and heroin) a median of 5 times (IQR, 2-20). Approximately 75% of women had ever used other illicit drugs, including heroin

(29.7%), cocaine (70.3%), heroin and cocaine mixed together (14.8%), and heroin and methamphetamine mixed together (12.9%). Of the 75.0% of women with a lifetime history of using other hard drug use, 39.0% used one or more of these drugs in the past month and 11.0% used one or more in the past week.

Physical and/or Sexual Partner Violence—Of the 209 women, the overall lifetime prevalence of physical and/or sexual violence perpetrated by intimate partners was 66.0%; in the past two months the prevalence was 19.6%. In the past two months, physical and/or sexual violence by a casual partner or stranger was reported among 8.6% of women. When examining physical and sexual partner violence individually, the overall prevalence of physical partner violence in the past two months was 22.1% and the overall prevalence of sexual partner violence in the past two months was 8.6%. The most commonly reported perpetrator of physical partner violence was a spouse or live-in partner (29.7%) and steady partner (14.8%). The most commonly reported perpetrator of sexual partner violence was a spouse or live-in (8.1%) and stranger (7.4%).

Characteristics of Qualitative Sub-Sample

Table 1 compares the characteristics of women in the quantitative sample with the characteristics of women in the qualitative sample. The 18 women who experienced lifetime IPV and participated in the qualitative interviews were slightly older than the overall quantitative sample, with an average age of nearly 40 years (range: 26-57). The women were ethnically diverse, comprised of seven white, six African American/Black, one Asian, and four Latina women. Eight women reported methamphetamine use in the past two months. The remaining ten women were no longer actively using methamphetamine at the time of their qualitative interviews. Thirteen women were involved in a relationship at the time of the interview. Half of the eight women who actively used methamphetamine were currently involved in an intimate relationship. Condom use, particularly in the context of steady relationships was inconsistent. With the exception of age and current methamphetamine use, there were no significant differences on demographic characteristics between the quantitative and qualitative samples of women.

Violence Victimization History

Physical Violence—Of the 209 total women from the quantitative sample, 27.3% reported ever experiencing physical violence only, 6.2% reported sexual violence only, 50.7% had experienced both physical and sexual violence, and 15.8% had never experienced physical or sexual violence. Among 165 women reporting ever experiencing physical violence, the median number of times these incidents occurred was 10 (IQR, 4-22) and the median number of people that perpetrated physical violence against these women was 3 (IQR, 2-5). Forty-two percent of these women were last physically abused in the past year, 35.2% between one and five years ago, and 22.4% more than five years ago. The median age at the first physically abusive incident was 14 years (IQR, 11-19 years). The most commonly reported perpetrator of any physical abuse incident was an intimate partner (spouse, boyfriend, or regular partner; 78.7%), followed by male relatives (21.9%).

With the exception of one woman, all participants in the qualitative sub-sample experienced lifetime physical violence. Three of these women were currently in a relationship with an abusive partner. Reflective of the quantitative data, women often endured revictimization, multiple experiences with abuse throughout their life and were more likely to report recent physical violence compared to sexual violence. Nellie was physically abused as a child by her parents, which shaped her experiences with intimate relationships as an adult, “almost all” of whom were physically abusive:

I was starting off as a kid, being abused, you don't want to be hit, you just want them to be happy so that they don't hit you so they don't get mad, ya know. So you get into a relationship, you want your partner to be happy, you don't want them to be mad or hit you. So it's like, okay, you just kinda go with it.

Women discussed a range of violent experiences, which were primarily perpetrated by sexual partners. Women described experiences of being beaten, choked, stabbed, and threatened with further physical violence and death. Several women had multiple abusive relationships, such as Briana who said her controlling ex-husband frequently beat her:

[He] was very abusive. He liked to choke me while he was having sex. He beat the shit out of me so bad that one day ... I had make up covering it and I had a hat and big glasses on, but that didn't hide the fact that I looked like a meat cleaver was taken in my face 'cause I was swollen everywhere. ... he says I'm still his wife 'til death. And he means it 'cause he's tried to put me six feet under.

Amy was the youngest qualitative participant and one of three women in a current physically abusive relationship. She relies on her partner for a place to stay stating:

If you're a woman and you're using and you don't have a place to stay and you're couch hopping, you have to deal with constantly being barraged by men wanting to fuck you...His apartment provides me a place where I can stay, get high. At any moment he could decide that he wants to kick me out. But then when he kicks me out, ta da, I'm on the street.

Amy also described the power and control that exists in her current relationship:

There's a power-control thing between me and him where I like it where he's running after me. And when he's not, I'm like, “What's going on?” So I manipulate the situation, not that I may even really want him but just so I get that attention or something.

Amy used methamphetamine daily, with and without her partner. She described their addiction as:

I'm in that point in my addiction that my self-esteem and my mind has been twisted up. He has a lot of his own head issues that he needs to deal with in his own addiction that he needs to deal with too.

She discussed how the violence in her relationship recently escalated:

He lost it and he locked the door, I had a black eye, I couldn't really eat, like it hurt for me to move my jaw. I was curled up in the fetal position as he was

kicking me in my side and smashing my face into the couch, telling me that I was going to die... I was pretty, pretty scared for my life at that point. So, why I would be even speaking to him again ...? I don't know because I'm in that point in my addiction...my self-esteem and over the past year and what not, my mind has been twisted up (sighs).

Of the other two women who reported current physical abuse, one said she was trying to "get clean" and leave her partner. She explained that she needed to "get clean to have a better mindset to leave the relationship". They had a long history of violence, and although he had not been physical with her recently, she called him a "narcissist" who blamed her for everything. The other woman called her relationship "an endless cycle of violence and psychological abuse," which she felt was related to both her and her partner's drug use. She explained that she planned to stay with him until he began serving time in prison because it was a safer way to leave the relationship rather than risk more violence if she told him she wanted to leave.

Sexual Violence—Of the 209 total women from the quantitative sample, 120 women reported sexual violence in their lifetime at a median of 3 times (IQR, 1-6) with a median of 3 different perpetrators (IQR, 1-5). Twenty-one percent of these women were last sexually abused in the past two years, 9.7% between two and five years ago, 49.2% more than five years ago, and the remaining 20.1% did not report the last time they experienced sexual abuse. The median age at the first sexually abusive incident was 19 years (IQR, 16-24 years). The most commonly reported perpetrators of sexual violence were strangers (40.1%), some other type of perpetrator (37.5%), and male relatives (30.0%). Twenty-four percent reported intimate partners as the perpetrator. Fewer women reported sexual clients and female relatives as perpetrators (4.2% and 3.3%, respectively).

Among the qualitative sub-sample of 18 women, 72.2% reported lifetime sexual violence, some of whom reported multiple assaults. Ten of the women had been raped or molested when they were minors. Early experiences were typically perpetrated by family contacts. Bernice was first molested by a family member and later repeatedly victimized by her mother's new husband when she went to work. Cases of rape that occurred mostly between the late teenage years to late 20's were often perpetrated by strangers, such as Monica who was brutally raped at age 28 by a stranger who broke into her home in the middle of the night.

Other women linked their drug use to environments where sexual violence occurred. Gloria has survived multiple rapes during her lifetime, including violent kidnapping and gang rape. When she was younger, she went through a period of heavy heroin injection use and traded sex for many years to support her habit. Gloria described being kidnapped and physically and sexually tortured, and how these events were related to drug use:

It was extremely violent. He broke my jaw. He broke my wrist um yeah it was not nice. He held me for 4 days, repeatedly raped and sodomized me. So, you know, you, you get into that kind of behavior and it's kind of uh a vicious cycle because, I mean, honestly, who wants to think about that, you know. I am a multiple rape survivor um for many years I think the heroin helped dull... some of the stuff I

got to deal with...Also, when I was prostituting I got gang raped by a group of men, gang bangers basically, and contracted syphilis and gonorrhea from that route. So, I'll always be paying for that. So ultimately you have to look at it and say if I hadn't been using [drugs]...I wouldn't have been engaging in that kind of behavior so. You have to own your part of it.

Amy described her most recent experience of rape perpetrated by an acquaintance in the context of unstable housing and drug use:

After being high and awake for five days, I went into this set up that this guy's house, you know, he had a room. And that's it. So there's a bed. I laid down. I remember sitting down on the bed and at some point like laying back. When I woke up, my pants were down and I was under the covers and things felt different down there. I asked him, you know, "Did we have sex?" He was like, "Yeah, you don't remember?"

Amy then described how she dealt with this event:

I didn't acknowledge it at the time...I see rape as something that signifies that I am a weak female. And so for me to acknowledge that maybe that it happened to me makes me feel things that I don't like. So I didn't acknowledge it.

Amy ended up living with this man for a couple of months. She finally left him and rekindled a relationship with a former partner (also a mutual friend of the previous abusive boyfriend), to whom she confessed what had happened to her. Amy described how her new partner reacted:

...constantly chastised me and, and called me a whore and a slut and a fucking, you know, piece of shit because I fucked his friend. And doesn't believe that it happened and he doesn't even know that I stayed with his friend as long as I did. And definitely would not understand that and said that it was my fault because I shouldn't have been there in the first place which enrages me because that's the whole, "Oh, I was asking for it?", you know. Like no, a woman doesn't ask for it, okay?

Other cases of sexual violence by intimate partners tended to involve manipulation and sexual coercion, which were typically tied to methamphetamine use. Monica's shared that her current partner coerced her into having sex when he was high, even if she cried and pleaded with him that she did not want to continue. Ella said she was in "a really sick relationship" with a previous partner that involved mental and physical abuse, who would also manipulate her with drugs and guilt her into having sex because he provided her with a place to live.

SAVA Syndemic Effects: Sexual- and Drug-Related HIV Risk and Lifetime

IPV—To assess the syndemic effects of sexual- and drug-related HIV risk behaviors and experiences of IPV among women, we examined the violence victimization histories of all women in the quantitative *FASTLANE-II* sample. Specifically, we compared sociodemographics, substance use behaviors, and sexual risk behaviors of women with lifetime experience of IPV to those without IPV (Table 1). Groups did not differ in regard

to their sociodemographic characteristics or substance use behaviors. In terms of sexual risk behaviors, compared to women without a history of IPV, women with a history of IPV were significantly more likely to report unprotected vaginal and/or anal sex with a steady sex partner in the past two months (90% vs. 79%, $p=0.04$), report being high on methamphetamine during unprotected sex with a steady sex partner in the past two months (64% vs. 42%, $p=0.01$), and to be older at the time of a first forced sex incident (median age 16 vs. 12 years, $p=0.01$). Marginal significance was achieved for women reporting an anonymous sex partner in the past two months and IPV status (30% vs. 18%, $p=0.07$). In the final multivariable regression model (Table 2), factors independently associated with lifetime IPV were having unprotected vaginal and/or anal sex with a steady partner within the past two months (odds ratio [OR]: 2.50, 95% Confidence Interval [CI]: 1.04, 6.00) and being high on methamphetamine during unprotected sex with a steady partner within the past two months (OR: 2.56, 95% CI: 1.30-5.09).

Among women with histories of violent victimization, the cumulative effects of violence over the life course and its relation to recent risk behaviors with steady partners was highlighted by our quantitative modeling and reflected in our findings from women in our qualitative interviews. Nellie, who had experienced a continuum of abuse over her life, described that these experiences influenced her current patterns of condom use with her partner:

I was starting off as a kid, being abused, you don't want to be hit, you just want them to be happy so that they don't hit you so they don't get mad. So you get into a relationship you want your partner to be happy, you don't want them to be mad or hit you. So it's like, okay you just kinda go with it. 'Oh, okay, I want you to wear a condom because...' And then you don't, or make a big deal about it, I don't want you to get mad, I don't want you to put your hands on me. So I feel like it [violence in previous relationships] has affected my decision-making.

Further, women in our qualitative sub-sample described the role of methamphetamine use in the context of gendered power dynamics, resulting in unprotected sex and threats of violence. In particular, women discussed that methamphetamine made sexual partners either aggressive or crave sex, which often was unprotected and occurred while either or both partners were high. Stacy explained how her partner wanted to have unprotected sex with her in the midst of verbal abuse:

He never wanted to wear protection... and then he would call me names and I would say, "Well why do you want to have sex with me, if I'm such a dirty slut?" He'd say, "Cause you're my dirty slut."...And sometimes we would be high.

Violet described her abusive partner's demeanor under the influence of methamphetamine, especially as it was related to her requests for him to use condoms:

Sometimes that [being asked to use condoms] is what would really piss him off, like I would want him to, to have protection and he would like [say], "No, fuck that." Then he would try, basically like start talking shit. "You're gonna get the fuck out if you don't give it to me. Ya know, I'm not wearing a fucking condom, and I'm not your trick," and ya know, stuff like that.

For Violet and others, current experiences with abusive relationships were rooted in drug use and gendered power differentials that often played a role in sexual decision-making. As Debra who attributed her partner's physical violence to his traumatic childhood and current drug use, acknowledged, "Violence and love and drugs, it all goes hand in hand."

Discussion

Consistent with the SAVA syndemic framework, our findings illustrated a high prevalence of physical and sexual violence across the lifespan among heterosexual women who use methamphetamine. Our mixed methods approach described and contextualized the synergistic overlap between drug use, violent experiences, sexual HIV risk, and relationship dynamics to highlight the complicated lived experience of women's heightened risk for HIV. We situate our discussion within the broader IPV literature to suggest the importance of addressing methamphetamine-related violence and conclude by offering suggestions for HIV prevention programming targeting the SAVA syndemic.

Over two-thirds of all women in our survey ever experienced physical abuse while over half ever experienced sexual abuse. These estimates are higher than other studies focused on women who use drugs in the US¹¹ and general female populations.^{38–40} Supported by both quantitative and qualitative data, women who use methamphetamine experienced multiple, violent experiences, many of which included overlapping types of abuse (physical, sexual, psychological) over the course of the lifespan that were perpetrated by multiple partner types (e.g. stranger, sex client, relative, intimate partner). This is not surprising given that childhood physical and/or sexual victimization has been found to increase the risk for adulthood victimization by any type of perpetrator.⁴¹ Moreover, sexual revictimization is associated with increased risk for posttraumatic stress disorder and substance use,⁴² emphasizing the significant overlap between violence and substance use, as was also evidenced by the women's experiences in our study.

Similar to previous cross-sectional and longitudinal studies,^{16,43–45} we also found evidence of heightened HIV risk for women with experiences of lifetime IPV through unprotected vaginal and/or anal sex and drug use while having sex. However, our use of quantitative and qualitative methods to focus on women who use methamphetamine not only adds prevalence estimates of IPV to the current literature, but through qualitative narratives draws out the syndemic connections between drug use and violence in turn, affecting gendered power differentials and subsequently, HIV risk. Some women described their use of methamphetamine as a primary cause of victimization and risky drug and sex practices (e.g., sex work, unprotected sex). Women frequently attributed their victimization by intimate partners to their own and their partners' use of methamphetamine. This highlights how these victimization experiences minimized women's agency to negotiate risk reduction strategies, which is consistent with research conducted among female sex workers who use drugs in Canada and Mexico.^{46,47}

Manipulation and sexual coercion by intimate partners were also typically tied to methamphetamine use. Prolonged methamphetamine use has been found to cause violent behavior, anxiety, confusion, insomnia, and paranoia.²⁵ Relative to other drugs such as

cocaine, methamphetamine offers a longer lasting high and has even been supported to engender higher levels of paranoia as compared to crack.¹⁸ Psychotic behaviors including auditory hallucinations, mood disturbances, delusions, and paranoia increase risk for violence in everyday situations.²⁵ Additionally, methamphetamine use enhances sexual drive and libido. Supported by prior research, the role of drugs was apparent through its use to cope with violent experiences, as a catalyst to abuse within relationships, and as a psychological impediment that places women in risky sexual situations or promotes sexual risk-taking.^{16,48} Taken together, our results suggest that methamphetamine is a critical component of the SAVA syndemic among vulnerable women.

Our mixed methods analysis linking sexual and drug-related HIV risk behaviors within steady sexual relationships (rather than casual or anonymous) with lifetime IPV has important implications for HIV prevention programming. As evidenced in our qualitative narratives, women may be continuously exposed to HIV/STIs throughout these steady relationships via several linked pathways. First, risk for HIV/STIs increases significantly when there are gendered-power differentials and women are unable to negotiate safe sex, as in the case of abusive intimate relationships.^{49,50} Just as reflected in our qualitative data, prior research has found that abused women are often unable to negotiate safe sex with their partners due to fear of continued violence or limited power in relationships,^{51,52} while drug use further contributes to lack of condom negotiation,^{53,54} a relationship further exacerbated in the presence of IPV.⁵⁵ Second, our findings parallel the literature focused on female populations with no history of abuse (e.g., adolescents, sex workers, drug users) that has shown rates of condom use with non-primary partners being much higher than rates of condom use with primary partners.^{56–59} Lower rates of condom use have been reported by women who use drugs with both their intimate partners and sex clients,^{60,61} and unprotected sex often occurs in the context of substance use by both the woman and/or her partner.^{55,60} Third, unstable housing emerged qualitatively as a key factor in the interplay between methamphetamine use and IPV. Prior research has quantitatively found that physical, sexual, and psychological violence is significantly associated with unstable housing.⁶² IPV experiences can further increase women's risk for HIV, owing to the intertwined nature of substance use, IPV, and sexual risk behaviors through gendered power differentials to form the SAVA syndemic.¹

Overall, our study helps us understand the role of methamphetamine use in the SAVA syndemic among women in San Diego, CA. Locally, violence and methamphetamine use continue to be intertwined.³⁶ While the severity of methamphetamine use may be a unique attribute of this setting for our study, it may also be that parallel syndemics related to methamphetamine or other stimulants remain underreported elsewhere. To our knowledge, this is the first investigation to focus on the SAVA syndemic in a population of women who use methamphetamine in a geographic setting where HIV, violence, and methamphetamine use are significant intersecting public health problems.

Limitations

The current study was limited by the cross-sectional analysis of the quantitative data; the sexual- and drug-related risk correlates observed cannot be construed as causal factors.

However, a key strength is its mixed methods design that enabled us to draw on qualitative data to provide rich context and highlight the interrelationships between substance use, violence, and HIV risk. Because the baseline data were collected from a behavioral intervention study designed to reduce sexual risk behaviors, methamphetamine use, and depressive symptoms among HIV-negative women, our study population consists of women who engaged in recent risky sexual- and drug-related risk behaviors. This therefore presents a threat to the external validity or generalizability of these study findings to the general population. However, given neglect of this population within the IPV literature, in addition to evidence that supports high rates of IPV among women in drug treatment facilities,¹¹ these findings provide insight into IPV among an understudied vulnerable population – women who use methamphetamine. Additionally, rather than solely exploring sexual- and drug-related associations with IPV, we were able to characterize the frequency, recency, and perpetrator for reported physical and sexual abuse incidents. Lastly, because we only had data from women, we were unable to assess the SAVA syndemic from both partners' perspectives, which would have supported the importance of couple-based approaches in curbing this syndemic as highlighted by previous research.^{55,63}

Implications

This research provides valuable insight into the SAVA syndemic, and how specifically methamphetamine use, IPV, and sexual risk-taking behaviors are intertwined. This research supports a strong relationship between lifetime and recent IPV, individual and partner drug use, gendered power differentials, and sexual risk-taking behaviors (e.g., poor condom use) in intimate relationships. Additionally, violent incidents at an early age often led to revictimization, which often escalated and permeated in subsequent relationship, and structural factors such as unstable housing were tied to drug use and IPV victimization. Future research should focus on further contextualizing the cyclical nature of this relationship to better understand how the methamphetamine use environment affects IPV, gendered power differentials, and HIV risk behavior among women who are dependent on their partners for resources such as housing.

The high rates of abuse experienced among women who use methamphetamine enrolled in this intervention trial provide further evidence that HIV behavioral interventions should address physical and sexual violence in the context of drug use. Findings from this study support the development of interventions and programs that incorporate all three components of the SAVA syndemic by considering how IPV and drug use promotes unsafe sex practices and subsequently the risk of HIV. A prior review underscored the need to advance a continuum of multilevel integrated interventions and policies that target salient mechanisms of the SAVA syndemic in the US and low- and middle-income countries.¹ Relevant to at-risk HIV-negative populations, these approaches include stable housing for women who use methamphetamine, IPV and methamphetamine screening, brief intervention, and referral to methamphetamine treatment and services models that can be integrated with HIV counseling and testing; integrated behavioral IPV and HIV prevention interventions; extended trauma-informed integrated treatments to prevent HIV; and primary prevention community-level or structural models.¹ In San Diego County, and similar geographical settings with high rates of methamphetamine use and violence, primary

and secondary prevention interventions should be inclusive to men and women to provide maximal impact on reducing risks associated with the SAVA syndemic.

Acknowledgements

We gratefully acknowledge the contributions of study participants and study staff to this research.

Funding Sources

This study was supported by the National Institute of Mental Health (Grant #R01MH061146, Patterson TL; Grant #R25MH080665, Stockman JK; Grant #R25MH080664, Stockman JK), the National Institute on Drug Abuse (Grant #K01DA031593, Stockman JK; Grant #R25DA025571, Stockman JK; Grant #T32DA023356, Syvertsen JL and Tsuyuki K; Grant #R36DA039012, Hayashi HD), and the National Institute on Minority Health and Health Disparities (Grant #L60MD003701, Stockman JK). All authors acknowledge support from the San Diego Center for AIDS Research (Grant #P30AI036214). The views expressed are those of the authors and not necessarily those of the National Institutes of Health. The funding agency had no role in the design and conduct of the study, collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

References

1. Gilbert L, Raj A, Hien D, Stockman J, Terlikbayeva A, Wyatt G. Targeting the SAVA (Substance Abuse, Violence, and AIDS) syndemic among women and girls: A Global review of epidemiology and integrated interventions. *J Acquir Immune Defic Syndr*. 2015;69 Suppl 2:S118–27. [PubMed: 25978478]
2. Meyer JP, Springer SA, Altice FL. Substance abuse, violence, and HIV in women: a literature review of the syndemic. *J Womens Health (Larchmt)*. 2011;20(7):991–1006. [PubMed: 21668380]
3. Jones AA, Gerke T, Striley CW, Osborne V, Whitehead N, Cottler LB. A longitudinal analysis of the substance abuse, violence, and HIV/AIDS (SAVA) syndemic among women in the criminal justice system. *J Psychoactive Drugs*. 2019;51(1):58–67. [PubMed: 30626264]
4. Sullivan KA, Messer LC, Quinlivan EB. Substance abuse, violence, and HIV/AIDS (SAVA) syndemic effects on viral suppression among HIV positive women of color. *AIDS Patient Care STDS*. 2015;29 Suppl 1:S42–8. [PubMed: 25397666]
5. Illangasekare S, Burke J, Chander G, Gielen A. The syndemic effects of intimate partner violence, HIV/AIDS, and substance abuse on depression among low-income urban women. *J Urban Health*. 2013;90(5):934–47. [PubMed: 23529665]
6. Singer M. AIDS and the health crisis of the U.S. urban poor; the perspective of critical medical anthropology. *Soc Sci Med*. 1994;39(7):931–48. [PubMed: 7992126]
7. Singer M, Clair S. Syndemics and public health: reconceptualizing disease in bio-social context. *Med Anthropol Q*. 2003;17(4):423–41. [PubMed: 14716917]
8. Stockman JK, Strathdee SA. HIV among people who use drugs: a global perspective of populations at risk. *J Acquir Immune Defic Syndr*. 2010;55 Suppl 1:S17–22. [PubMed: 21045594]
9. Zhang C, McMahon J, Simmons J, Brown LL, Nash R, Liu Y. Suboptimal HIV pre-exposure prophylaxis awareness and willingness to use among women who use drugs in the United States: A systematic review and meta-analysis. *AIDS Behav*. 2019;23(10):2641–2653. [PubMed: 31297684]
10. El-Bassel N, Terlikbaeva A, Pinkham S. HIV and women who use drugs: Double neglect, double risk. *Lancet*. 2010;376(9738):312–4. [PubMed: 20650519]
11. El-Bassel N, Gilbert L, Witte S, Wu E, Chang M. Intimate partner violence and HIV among drug-involved women: contexts linking these two epidemics—challenges and implications for prevention and treatment. *Subst Use Misuse*. 2011;46(2–3):295–306. [PubMed: 21303249]
12. Stockman JK, Ludwig-Barron N, Hoffman MA, Ulibarri MD, Dyer TV. Prevention interventions for human immunodeficiency virus in drug-using women with a history of partner violence. *Subst Abuse Rehabil*. 2012;3(Suppl 1):45–57. [PubMed: 24500422]
13. Singer M. A dose of drugs, a touch of violence, a case of AIDS, part 2: Further conceptualizing the SAVA syndemic. *Free Inquiry in Creative Sociology*. 2006;34(1):39–54.

14. Singer MC, Erickson PI, Badiane L, Diaz R, Ortiz D, Abraham T, Nicolaysen AM. Syndemics, sex and the city: Understanding sexually transmitted diseases in social and cultural context. *Soc Sci Med*. 2006;63(8):2010–21. [PubMed: 16782250]
15. Siemieniuk RA, Krentz HB, Gill MJ. Intimate partner violence and HIV: A review. *Curr HIV/AIDS Rep*. 2013;10(4):380–9. [PubMed: 23943348]
16. El-Bassel N, Gilbert L, Wu E, Go H, Hill J. Relationship between drug abuse and intimate partner violence: a longitudinal study among women receiving methadone. *Am J Public Health*. 2005;95(3):465–70. [PubMed: 15727978]
17. Petering R, Rhoades H, Rice E, Yoshioka-Maxwell A. Bidirectional Intimate Partner Violence and Drug Use Among Homeless Youth. *J Interpers Violence*. 2017;32(14):2209–2217. [PubMed: 26163542]
18. Sommers I, Baskin D, Baskin-Sommers A. Methamphetamine use among young adults: health and social consequences. *Addict Behav*. 2006;31(8):1469–76. [PubMed: 16309848]
19. Gilchrist G, Dennis F, Radcliffe P, Henderson J, Howard LM, Gadd D. The interplay between substance use and intimate partner violence perpetration: A meta-ethnography. *Int J Drug Policy*. 2019;65:8–23. [PubMed: 30580114]
20. Campbell AN, Tross S, Hu MC, Pavlicova M, Nunes EV. Predictors of relationship power among drug-involved women. *AIDS Behav*. 2012;16(6):1532–41. [PubMed: 22614746]
21. Hayashi HD, Patterson TL, Semple SJ, Fujimoto K, Stockman JK. Risk Factors for Recent Intimate Partner Violence among Methamphetamine-Using Men and Women. *J Psychoactive Drugs*. 2016;48(2):135–45. [PubMed: 27163712]
22. Kittirattanapaiboon P, Srikosai S, Wittayanookulluk A. Methamphetamine use and dependence in vulnerable female populations. *Curr Opin Psychiatry*. 2017;30(4):247–252. [PubMed: 28426546]
23. Kramer TL, Borders TF, Tripathi S, Lynch C, Leukefeld C, Falck RS, et al. Physical victimization of rural methamphetamine and cocaine users. *Violence Vict*. 2012;27(1):109–24. [PubMed: 22455188]
24. Cohen JB, Dickow A, Horner K, Zweben JE, Balabis J, Vandersloot D, et al. Abuse and violence history of men and women in treatment for methamphetamine dependence. *Am J Addict*. 2003;12(5):377–85. [PubMed: 14660152]
25. Cohen JB, Greenberg R, Uri J, Halpin M, Zweben JE. Women with methamphetamine dependence: research on etiology and treatment. *J Psychoactive Drugs*. 2007;Suppl 4:347–51. [PubMed: 18284101]
26. Cheng WS, Garfein RS, Semple SJ, Strathdee SA, Zians JK, Patterson TL. Binge use and sex and drug use behaviors among HIV(-), heterosexual methamphetamine users in San Diego. *Subst Use Misuse*. 2010;45(1–2):116–33. [PubMed: 20025442]
27. Cheng WS, Garfein RS, Semple SJ, Strathdee SA, Zians JK, Patterson TL. Differences in sexual risk behaviors among male and female HIV-seronegative heterosexual methamphetamine users. *Am J Drug Alcohol Abuse*. 2009;35(5):295–300. [PubMed: 19591066]
28. Corsi KF, Booth RE. HIV sex risk behaviors among heterosexual methamphetamine users: Literature review from 2000 to present. *Curr Drug Abuse Rev*. 2008;1(3):292–6. [PubMed: 19630727]
29. Lorvick J, Martinez A, Gee L, Kral AH. Sexual and injection risk among women who inject methamphetamine in San Francisco. *J Urban Health*. 2006;83(3):497–505. [PubMed: 16739050]
30. McKenna SA. Navigating the risk environment: Structural vulnerability, sex, and reciprocity among women who use methamphetamine. *Int J Drug Policy*. 2014;25(1):112–5. [PubMed: 24140170]
31. Meade CS, Watt MH, Sikkema KJ, Deng LX, Ranby KW, Skinner D, et al. Methamphetamine use is associated with childhood sexual abuse and HIV sexual risk behaviors among patrons of alcohol-serving venues in Cape Town, South Africa. *Drug Alcohol Depend*. 2012;126(1–2):232–9. [PubMed: 22717338]
32. Semple SJ, Grant I, Patterson TL. Female methamphetamine users: Social characteristics and sexual risk behavior. *Women Health*. 2004;40(3):35–50.

33. Semple SJ, Strathdee SA, Zians J, Patterson TL. Correlates of trading sex for methamphetamine in a sample of HIV-negative heterosexual methamphetamine users. *J Psychoactive Drugs*. 2011;43(2):79–88. [PubMed: 21858954]
34. Stahlman S, Javanbakht M, Stirland A, Guerry S, Gorbach PM. Methamphetamine use among women attending sexually transmitted disease clinics in Los Angeles County. *Sex Transm Dis*. 2013;40(8):632–8. [PubMed: 23859909]
35. Methamphetamine Strike Force. Methamphetamine Strike Force Report Card. 2019. Website: <https://www.ccrconsulting.org/community/now-available-2019-prescription-drug-abuse-task-force-report-card>.
36. County of San Diego Health and Human Services Agency. Office of Violence Prevention. San Diego Domestic Violence Fatality Review. 2014.
37. County of San Diego Health and Human Services Agency. Public Health Services. HIV/AIDS Surveillance Report, 2016. Website: <https://www.sandiegocounty.gov/content/dam/sdc/hhsa/programs/phs/documents/EpiReport2017final.pdf>.
38. Breiding MJ, Smith SG, Basile KC, Walters ML, Chen J, Merrick MT. Prevalence and characteristics of sexual violence, stalking, and intimate partner violence victimization--national intimate partner and sexual violence survey, United States, 2011. *MMWR Surveill Summ*. 2014;63(8):1–18.
39. Breiding MJ, Black MC, Ryan GW. Prevalence and risk factors of intimate partner violence in eighteen U.S. states/territories, 2005. *Am J Prev Med*. 2008;34(2):112–8. [PubMed: 18201640]
40. Breiding MJ, Ziembroski JS, Black MC. Prevalence of rural intimate partner violence in 16 US states, 2005. *J Rural Health*. 2009;25(3):240–6. [PubMed: 19566608]
41. Desai S, Arias I, Thompson MP, Basile KC. Childhood victimization and subsequent adult revictimization assessed in a nationally representative sample of women and men. *Violence Vict*. 2002;17(6):639–53. [PubMed: 12680680]
42. Walsh K, Resnick HS, Danielson CK, McCauley JL, Saunders BE, Kilpatrick DG. Patterns of drug and alcohol use associated with lifetime sexual revictimization and current posttraumatic stress disorder among three national samples of adolescent, college, and household-residing women. *Addict Behav*. 2014;39(3):684–9. [PubMed: 24370205]
43. El-Bassel N, Gilbert L, Witte S, Wu E, Gaeta T, Schilling R, et al. Intimate partner violence and substance abuse among minority women receiving care from an inner-city emergency department. *Womens Health Issues*. 2003;13(1):16–22. [PubMed: 12598055]
44. Gilbert L, El-Bassel N, Chang M, Wu E, Roy L. Substance use and partner violence among urban women seeking emergency care. *Psychol Addict Behav*. 2012;26(2):226–35. [PubMed: 22023020]
45. Wu E, El-Bassel N, Witte SS, Gilbert L, Chang M. Intimate partner violence and HIV risk among urban minority women in primary health care settings. *AIDS Behav*. 2003;7(3):291–301. [PubMed: 14586191]
46. Shannon K, Kerr T, Allinott S, Chettiar J, Shoveller J, Tyndall MW. Social and structural violence and power relations in mitigating HIV risk of drug-using women in survival sex work. *Soc Sci Med*. 2008;66(4):911–21. [PubMed: 18155336]
47. Ulibarri MD, Roesch S, Rangel MG, Staines H, Amaro H, et al. “Amar te Duele” (“love hurts”): sexual relationship power, intimate partner violence, depression symptoms and HIV risk among female sex workers who use drugs and their non-commercial, steady partners in Mexico. *AIDS Behav*. 2015;19(1):9–18. [PubMed: 24743959]
48. El-Bassel N, Gilbert L, Wu E, Go H, Hill J. HIV and intimate partner violence among methadone-maintained women in New York City. *Soc Sci Med*. 2005;61(1):171–83. [PubMed: 15847970]
49. Morokoff PJ, Redding CA, Harlow LL, Cho S, Rossi JS, Meier KS, et al. Associations of sexual victimization, depression, and sexual assertiveness with unprotected sex: A test of the multifaceted model of HIV risk across gender. *J Appl Biobehav Res*. 2009;14(1):30–54. [PubMed: 25018617]
50. Stockman JK, Lucea MB, Campbell JC. Forced sexual initiation, sexual intimate partner violence and HIV risk in women: a global review of the literature. *AIDS Behav*. 2013;17(3):832–47. [PubMed: 23143750]

51. Phillips DY, Walsh B, Bullion JW, Reid PV, Bacon K, Okoro N. The intersection of intimate partner violence and HIV in U.S. women: A review. *J Assoc Nurses AIDS Care*. 2014;25(1 Suppl):S36–49. [PubMed: 24216338]
52. Swan H, O'Connell DJ. The impact of intimate partner violence on women's condom negotiation efficacy. *J Interpers Violence*. 2012;27(4):775–92. [PubMed: 21987514]
53. Ludwig-Barron N, Wagner KD, Syvertsen JL, Ewald IJ, Patterson TL, Semple SJ, et al. "When you get old like this ... you don't run those risks anymore": influence of age on sexual risk behaviors and condom use attitudes among methamphetamine-using heterosexual women with a history of partner violence. *Womens Health Issues*. 2014;24(6):620–8. [PubMed: 25128035]
54. Urada LA, Morisky DE, Pimentel-Simbulan N, Silverman JG, Strathdee SA. Condom negotiations among female sex workers in the Philippines: environmental influences. *PLoS One*. 2012;7(3):e33282. [PubMed: 22448241]
55. El-Bassel N, Shaw SA, Dasgupta A, Strathdee SA. People who inject drugs in intimate relationships: it takes two to combat HIV. *Curr HIV/AIDS Rep*. 2014;11(1):45–51. [PubMed: 24477931]
56. Cooper ML, Orcutt HK. Alcohol use, condom use and partner type among heterosexual adolescents and young adults. *J Stud Alcohol*. 2000;61(3):413–9. [PubMed: 10807212]
57. Crosby RA, DiClemente RJ, Wingood GM, Sionean C, Cobb BK, Harrington K. Correlates of unprotected vaginal sex among African American female adolescents: Importance of relationship dynamics. *Arch Pediatr Adolesc Med*. 2000;154(9):893–9. [PubMed: 10980792]
58. Foulkes HB, Pettigrew MM, Livingston KA, Niccolai LM. Comparison of sexual partnership characteristics and associations with inconsistent condom use among a sample of adolescents and adult women diagnosed with Chlamydia trachomatis. *J Womens Health (Larchmt)*. 2009;18(3):393–9. [PubMed: 19245304]
59. Macaluso M, Demand MJ, Artz LM, Hook EW 3rd. Partner type and condom use. *AIDS*. 2000;14(5):537–46. [PubMed: 10780716]
60. Azim T, Bontell I, Strathdee SA. Women, drugs and HIV. *Int J Drug Policy*. 2015;26 Suppl 1:S16–21. [PubMed: 25277726]
61. El-Bassel N, Shaw SA, Dasgupta A, Strathdee SA. Drug use as a driver of HIV risks: Re-emerging and emerging issues. *Curr Opin HIV AIDS*. 2014;9(2):150–5. [PubMed: 24406532]
62. Stoicescu C, Cluver LD, Spreckelsen TF, Mahanani MM, Ameilia R. Intimate partner violence and receptive syringe sharing among women who inject drugs in Indonesia: A respondent-driven sampling study. *Int J Drug Policy*. 2019;63:1–11. [PubMed: 30465966]
63. Jiwatram-Negron T, El-Bassel N. Overlapping intimate partner violence and sex trading among high-risk women: Implications for practice. *Womens Health*. 2019;59(6):672–686. [PubMed: 30543494]

Characteristics of HIV-negative, heterosexual women with a history of methamphetamine use in San Diego

Table 1.

Characteristics	Quantitative Sample (n=209) n (%)	Qualitative Sample (n=18) n (%)
Age	36 (18-63)	40 (26-57)
Race/ethnicity		
White	77 (36.8)	7 (38.9)
African American/Black	76 (36.4)	6 (33.3)
Hispanic/Latina	45 (21.5)	4 (22.2)
Asian or Pacific Islander/Other	11 (5.3)	1 (5.6)
In a current relationship	168 (80.4)	13 (72.2)
Methamphetamine use in the past 2 months	209 (100)	8 (44.4)
Lifetime intimate partner violence	138 (66.0)	18 (100)
Lifetime physical violence	165 (78.9)	17 (94.4)
Lifetime sexual violence	120 (57.4)	13 (72.2)

Characteristics of HIV-negative, heterosexual women who use methamphetamine by lifetime IPV experiences in San Diego, CA (N=209)

Table 2.

Baseline Characteristics	IPV (n=138) n (%)	No IPV (n=71) n (%)	Total (n=209) n (%)	OR (95% CI)	p-value
Sociodemographics					
Median age (IQR)	36.7 (30.43)	35.8 (27.44)	36 (29.43)	1.01 (0.98-1.04)	0.61
Race/ethnicity					
White	54 (39.1)	23 (32.4)	77 (36.8)	Ref	0.14
African American/Black	46 (33.3)	30 (42.3)	76 (36.4)	0.65 (0.33-1.28)	
Hispanic/Latina	30 (14.4)	15 (21.1)	45 (21.5)	0.85 (0.39-1.88)	
Asian or Pacific Islander/Other	8 (3.8)	3 (4.2)	11 (5.3)	1.14 (0.28-4.67)	
Children 18 years	79 (57.3)	33 (46.5)	112 (53.6)	1.54 (0.87-2.74)	
Marital status					
Never married	62 (44.9)	38 (53.5)	100 (47.9)	Ref	0.08
Married	11 (8.0)	11 (15.5)	22 (10.5)	0.61 (0.24-1.55)	
Separated/filing for divorce	23 (16.7)	10 (14.1)	33 (15.8)	1.41 (0.61-3.28)	
Divorced/widowed	42 (30.4)	12 (16.9)	54 (25.8)	2.15 (1.01-4.58)	
Current Living situation					
Living w/spouse or steady partner	28 (20.3)	14 (19.7)	42 (20.1)	Ref	0.73
Living w/another adult (non-sexual partner)	46 (33.3)	30 (42.3)	76 (36.4)	0.69 (0.36-1.35)	
Living alone	19 (13.8)	7 (9.9)	26 (12.4)	1.23 (0.46-3.31)	
Homeless	20 (14.5)	10 (14.1)	30 (14.4)	0.91 (0.37-2.23)	
Education					
<High school diploma/GED	39 (28.3)	21 (29.6)	60 (28.7)	Ref	0.41
High school diploma/GED	46 (33.3)	29 (40.9)	75 (35.9)	0.85 (0.42-1.73)	
Some college or more	53 (38.4)	21 (29.6)	74 (35.4)	1.36 (0.65-2.83)	
Currently unemployed	109 (79.0)	58 (81.7)	167 (79.9)	1.19 (0.57-2.46)	0.64
Annual Income					
<\$10,000-\$19,000	126 (91.3)	63 (88.7)	189 (90.4)	Ref	0.55
\$20,000	12 (8.7)	8 (11.3)	20 (9.6)	0.75 (0.29-1.93)	
Ever Convicted of a Felony	67 (48.6)	38 (53.5)	105 (50.2)	0.82 (0.46-1.45)	0.50
Substance Use					

Baseline Characteristics	IPV (n=138) n (%)	No IPV (n=71) n (%)	Total (n=209) n (%)	OR (95% CI)	p-value
Median age of methamphetamine use initiation (IQR)	18 (16.23)	18 (14.22)	18 (15.23)	1.02 (0.98-1.06)	0.27
Median years of methamphetamine use (IQR)	16 (10.24)	17 (9.24)	16 (10.24)	1.00 (0.97-1.03)	0.95
Median number of days of methamphetamine use in past month (IQR)	15 (6.23)	12 (5.20)	15 (6.22)	1.02 (0.99-1.05)	0.27
Median number of most days in a row when methamphetamine was used in past month (IQR)	6 (3.20)	5 (3.19)	5 (3.20)	1.01 (0.98-1.04)	0.43
Binge use of methamphetamine	66 (47.8)	37 (52.1)	103 (49.3)	0.84 (0.48-1.49)	0.56
Primary method of methamphetamine use					
Snort	8 (5.8)	3 (4.2)	11 (5.3)	Ref	0.08
Smoke	122 (88.4)	56 (78.9)	178 (85.2)	1.22 (0.31-4.79)	
Inject	8 (5.8)	10 (14.1)	18 (8.6)	0.37 (0.14-0.98)	
Eat/drink or other	0 (0)	2 (2.8)	2 (1.0)	---	
Injection drug use in past 2 months	29 (21.0)	18 (25.4)	47 (22.5)	0.78 (0.40-1.54)	0.48
Sexual Risk Behaviors					
Exchange sex partner in past 2 months	49 (35.5)	25 (35.2)	74 (35.4)	1.01 (0.56-1.84)	0.97
Casual sex partner in past 2 months	94 (68.1)	44 (62.0)	138 (66.0)	1.31 (0.72-2.38)	0.37
Anonymous sex partner in past 2 months	31 (29.7)	13 (18.3)	54 (25.8)	1.89 (0.93-3.81)	0.07
2+ sex partners in past 2 months	81 (58.7)	43 (60.6)	124 (59.3)	0.93 (0.52-1.66)	0.79
Sex w/HIV + partner in past 2 months	90 (65.2)	40 (56.3)	130 (62.2)	1.45 (0.81-2.61)	0.21
Unprotected vaginal/anal sex with steady partner in past 2 months	117 (90.0)	54 (79.4)	171 (86.4)	2.33 (1.03-5.30)	0.04
Unprotected vaginal/anal sex with casual or anonymous partner in past 2 months	107 (82.3)	60 (88.2)	167 (84.3)	0.62 (0.26-1.47)	0.28
High on methamphetamine during unprotected sex w/steady partner	74 (63.8)	25 (42.4)	99 (56.5)	2.40 (1.26-4.55)	0.01
High on methamphetamine during unprotected sex w/casual or anonymous partner	81 (79.4)	33 (73.3)	114 (77.6)	1.40 (0.62-3.17)	0.42
Exchange sex for methamphetamine	49 (35.5)	19 (26.8)	68 (32.5)	1.51 (0.80-2.83)	0.20
Lifetime STD	22 (15.9)	12 (16.9)	34 (16.3)	0.93 (0.43-2.01)	0.86
Median age at first forced sex (IQR)	16 (12.20)	12 (8.16)	14.5(11.19)	1.09 (1.02-1.17)	0.01

IPV, intimate partner violence; OR, odds ratio; CI, confidence interval; IQR, interquartile range; STD, sexually transmitted disease

Table 3.

Factors independently associated with lifetime experiences of IPV among HIV-negative, heterosexual women who use methamphetamine in San Diego, CA

Variable	Adjusted* OR	95% CI
Unprotected vaginal/anal sex with steady partner in past 2 months	2.50	(1.04-6.00)
High on methamphetamine during unprotected sex w/steady partner	2.56	(1.30-5.09)

IPV, intimate partner violence; OR, odds ratio; CI, confidence interval

* Adjusted for age, race/ethnicity, marital status, median age at first forced sex, and intervention group.