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Risk Factors for Recent Intimate Partner Violence among Methamphetamine-Using Men and Women

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Abstract

The Substance Abuse, Violence, and HIV/AIDS (SAVA) syndemic model describes how the confluence of the three epidemics of substance abuse, violence, and HIV risk work synergistically to create excess burden among populations. We sought to identify risk factors associated with recent intimate partner violence (IPV) victimization among heterosexual methamphetamine (meth)-using men ($n = 108$) and women ($n = 122$) enrolled in FASTLANE-II, an HIV behavioral intervention in San Diego, CA. Women and men reported high rates of physical-only (women: 20%; men: 18%) and sexual (women: 25%; men: 23%) IPV. Multinomial regression analysis revealed that individuals who reported lower social support and individuals who reported a greater likelihood of engaging in risky sexual behaviors while high on meth were more likely to report IPV versus no IPV. Women who reported a greater likelihood of engaging in risky sexual behaviors while high on meth were 1.58 times more likely to report physical-only IPV versus no IPV, while men who reported similar behaviors were 1.15 times more likely to report physical-only IPV versus no IPV. Our findings highlight the influence of interpersonal factors on IPV. This research supports further study on gender-specific risk/protective factors and the development of gender-specific interventions targeting the SAVA syndemic among meth users.

Keywords

Drug use; gender differences; intimate partner violence; methamphetamine; SAVA syndemic

Introduction

Intimate partner violence (IPV), defined as physical and/or sexual abuse by a current or former intimate partner, poses a significant public health problem (Black et al. 2011). More than one in three women (35.6%) and more than one in four men (28.5%) have ever

experienced IPV; 1 in 17 and 1 in 20 women and men, respectively, experienced IPV in the past year (Black et al. 2011). IPV has been associated with mental, physical, and sexual health consequences (Stuart et al. 2008), as well as non-injury-related health burdens (Kar and O’Leary 2010). While it is important to avoid laying blame on victims, it is also important to understand factors that place individuals at higher risk for IPV victimization. Research supports a number of risk factors related primarily to IPV victimization among nationally representative samples of men and women who use drugs, including younger age, lower income, depression, poor sexual relationship power, poor social support, and sexual risk-taking behaviors (Campbell et al. 2009, 2012; Dunkle et al. 2004; Gage and Hutchinson 2006; Gilbert et al. 2012; Jewkes et al. 2010; Pulerwitz, Gortmaker, and DeJong 2000; Teitelman et al. 2008). Despite the high prevalence of IPV victimization among men (Black et al. 2011), there is limited literature on risk factors for such experiences (Carney, Buttell, and Dutton 2007; Dutton and Goodman 2005; Dutton and Nicholls 2005; Enander 2011; Hines and Douglas 2010; Stemple and Meyer 2014). Specifically, the IPV literature has been largely guided by male-perpetrator/female-victim models (Stith et al. 2004). The overwhelming focus on female victimization by male partners and neglect of male victimization by female partners not only neglects the experience of male victims, but also reinforces regressive and dated notions of female vulnerability and gender norms (Stemple and Meyer 2014).

The Substance Abuse, Violence, and HIV/AIDS (SAVA) syndemic describes how the confluence of the three epidemics of substance abuse, violence, and HIV risk interact and work synergistically to exacerbate and create excess burden among vulnerable populations (Campbell et al. 2008; El-Bassel et al. 2011; Gielen et al. 2007; Gilbert et al. 2015; Maman et al. 2000; Meyer, Springer, and Altice 2011; Singer 2013). These pathways include direct, indirect, and bidirectional relationships between these epidemics (Siemieniuk, Krentz, and Gill 2013). For example, substance abuse plays a key role in perpetuating IPV. Nationally, 61% of domestic violence offenders abuse substances, while from 50 to 90% of women in substance abuse treatment programs have been or are currently victims of IPV (National Coalition Against Domestic Violence 2013; Office of Alcoholism and Substance Abuse Services 2013). Drug-using women have been found to be as much as three times more likely to experience IPV in their lifetime as compared to women who do not use drugs (El-Bassel et al. 2010). Drug use is highly and independently associated with IPV among women, men, and couple drug users (Chermack et al. 2001; Cohen et al. 2003; El-Bassel et al. 2001, 2004; Gilbert et al. 2012). The relationship between drug use and IPV is bidirectional among both men and women, where drug use may facilitate IPV through the impairment of judgment, and where IPV may facilitate the use of drugs through its use in coping with the consequences of victimization (El-Bassel et al. 2005; Jewkes et al. 2010; Testa 2004). Further, substance abuse has been found to be related to the maintenance of power imbalances within sexual relationships, which may, in turn, influence one’s power over sexual decision making within the relationship (e.g., condom use, frequency of sexual intercourse) and thus risk for HIV (Siemieniuk, Krentz, and Gill 2013). HIV risk among women who use drugs may be caused directly by injection drug use or indirectly via high-risk sexual practices with injection drug users (Cheng et al. 2009, 2010; Lorvick et al. 2006; McKenna 2013; Meade et al. 2012; Semple, Patterson, and Grant 2004a, 2004b; Semple et

al. 2011; Stahlman et al. 2013). IPV may also lead to HIV through the direct and indirect pathway of risky sexual practices (e.g., concurrent sex partners, unprotected vaginal and/or anal sex, forced sex with HIV-infected partners) (Amaro et al. 1990; Amaro 1995; Amaro and Raj 2000; Axelrod et al. 1999; Coker 2007; Dunkle et al. 2004; Rothenberg and Paskey 1995; Van der Straten et al. 1998; Wingood, DiClemente, and Raj 2000; Wyatt et al. 2000). Similar relationships between HIV risk, IPV victimization, and substance abuse have been supported in studies of men who have sex with men (MSM) (Gilbert et al. 2015; Mustanski et al. 2007; Stall, Friedman, and Catania 2008; Stall et al. 2003).

Embedded in these relationships is the concept of sexual relationship power (SRP). SRP is a multidimensional concept that is expressed through decision-making dominance, defined as the ability to engage in behaviors against their partner's wishes, and relationship control, defined as the ability to control their partner's actions. SRP influences and is influenced by all three epidemics described by the SAVA syndemic (i.e., substance abuse, HIV risk, and IPV) (Blanc 2001; Jewkes and Morrell 2010). For example, the relationship between SRP and IPV has been shown to be bidirectional, where greater SRP has been found to be associated with reduced IPV experiences and more experiences of IPV has been found to be associated with lower SRP (Blanc 2001; Jewkes and Morrell 2010; Teitelman et al. 2008). Power is commonly associated with a person's capacity to reduce sexual risk behaviors (Campbell et al. 2009). Power within sexual relationships is linked to sexual health (e.g., HIV risk) through: (1) one's power to negotiate safer sex practices such as in condom use negotiation; (2) its relationship with IPV; and (3) its impact on a person's use of health services (Blanc 2001). These three pathways contribute to poor sexual health among victimized individuals. Lastly, power inequality has not only been found to be influenced by, but is also a risk factor for alcohol and drug abuse (Campbell et al. 2012).

Meth is one of the most widely abused illicit drugs in the United States and worldwide (Dobkin and Nicosia 2009). Meth users outnumber cocaine users 2.3 to 1, and heroin users 3.5 to 1 (Dobkin and Nicosia 2009). Chronic use of meth has been reported to cause psychotic behavior, including hallucinations, cognitive impairment, violent rages, mood disturbances, and suicidal thoughts (Dobkin and Nicosia 2009; National Institute of Drug Abuse 2010; NIDA-CEWG 2012). Meth abuse has been associated with increased sexual risk-taking behavior and increased risk of HIV (Brecht et al. 2004). A study on 1,016 meth-using participants in the Methamphetamine Treatment Program in California, Hawaii, and Montana found high rates of lifetime physical and sexual abuse among both men and women (Cohen et al. 2003).

San Diego, California, the setting for the current study, was once known as the meth capital of the country and continues to exhibit high rates of meth use. In 2013, a total of 4,820 San Diego residents were receiving treatment for meth use, and from 2009 to 2013, deaths related to meth overdose showed a marked increase (Meth Strike Force 2014). A 2012 study on the prevalence and correlates of IPV among HIV-negative, heterosexual, meth-using women in San Diego indicated associations between meth use, risky sexual behavior, and sexual and physical abuse by partners (Stockman 2012). Despite this evidence, there remains limited research on HIV risk factors for IPV among methamphetamine users.

The current research seeks to identify risk factors associated with IPV victimization among heterosexual meth-using men and women. The objectives are to: (1) examine risk factors for recent IPV; and (2) assess gender differences in risk factors related to recent IPV. Based on previous literature, we hypothesize that inconsistent condom use, poor relationship power, and frequent meth use will be associated with recent IPV among women, and inconsistent condom use, younger age, and a lack of social support will be associated with recent IPV among men. The proposed research contributes to the existing literature by exploring gender differences in sexual- and drug-related risk factors for IPV, including meth use and sexual risk-taking as described by the SAVA syndemic framework.

Methods

Overview

We conducted a cross-sectional analysis using baseline data from FASTLANE-II, an HIV behavioral intervention conducted between 2006 and 2010 in San Diego, CA (Semple, Patterson & Grant 2004a, 2004b; Semple et al. 2009, 2011). FASTLANE-II was a tri-focal HIV behavioral intervention designed to reduce sexual risk behaviors, meth use, and depressive symptoms among 432 meth-using men (n = 223) and women (n = 209). The FASTLANE-II research protocol was approved by the University of California, San Diego Human Research Protections Program. Data were gathered using audio computer-assisted self-interviewing technology. Participants were recruited through poster and media campaigns, referrals by outreach workers, and referrals from local agencies and enrolled participants. All participants provided written consent.

Sample

Participant inclusion criteria for FASTLANE-II were: (1) age ≥ 18 years; (2) HIV-negative at intake; (3) women or men self-identifying as heterosexual; (4) sexually active with at least one opposite sex partner in the past two months; and (5) had snorted, smoked, or injected meth at least once during the past two months, and at least once during the past 30 days. For the current study, only participants who reported at least one current steady sexual relationship (i.e., live-in spouse, boyfriend/girlfriend) were included. Exclusion criteria included: (1) unwillingness to participate in the intervention and follow-up assessments; (2) current major psychiatric diagnosis accompanied by floridly psychotic symptoms or suicidal ideation within the past two weeks; (3) not sexually active in the past two months or always used condoms; (4) unprotected sex with a spouse or steady partner only in the past two months; (5) trying to get pregnant or trying to get a partner pregnant; (6) current enrollment in a drug treatment program; and (7) a Beck Depression Inventory-Fast Screen (BDI-FS) score of 3 or less, which indicated mild depressive symptoms.

Measures

Dependent variable—Recent IPV was measured by asking participants a total of four questions regarding experiences of physical (i.e., actual/threats of physical harm, being slapped, punched, kicked, hit with an object) and/or sexual (i.e., forced or coerced to have sex) abuse by an intimate partner (i.e., steady, boyfriend/girlfriend, spouse/live-in partners) in the past two months. Responses ranged from 1: “Never”; 2: “Once in a while”; 3: “Fairly

Often”; and 4:”Very Often.” Categories 2, 3, and 4 were collapsed due to low cell counts. Recent IPV was coded on a nominal scale: no abuse, physical abuse only, and sexual violence (with or without physical abuse). Due to few incidents of sexual abuse alone, there was no category for sexual abuse only.

Independent variables—Age, gender (female/male), race/ethnicity, and income were included as sociodemographic variables. Meth use was measured by the number of days participants used meth in the past 30 days.

Depression was measured by the 21-item Beck Depression Inventory (BDI-II). Each item had four graded statements ordered (0–3) to show increasing depressive symptoms. The final variable was constructed by summing scores across all items (Cronbach’s alpha for this sample = 0.91) (Semple, Patterson, and Grant 2002). Scores ranged from 0 to 63.

Social Support: Social support was measured by using the Pearlin Social Support Scale (Pearlin et al. 1990). This scale asks participants their level of agreement with seven statements on support from family/friends/peers on a four-point Likert scale (1 = strongly disagree to 4 = strongly agree). Sample items included: “The people close to you let you know they care about you” and “You have a friend or relative in whose opinions you have confidence.” The final score was constructed by summing and averaging scores, which is consistent with the previous use of the scale (Pearlin et al. 1990). Higher scores indicated higher levels of social support. The alpha coefficient for this scale in the present sample was 0.92 (Semple et al. 2009).

Sexual Relationship Power (SRP) was assessed using a modified version of the Sexual Relationship Power Scale (SRPS) (Pulerwitz, Gortmaker, and DeJong 2000), comprised of two subscales: Relationship Control and Decision-Making Dominance. For this study, 11 of the original 23 SRPS items were used to construct an overall SRP score (Relationship Control: nine items; Decision-Making Dominance: two items) using methods described by Pulerwitz et al. (Cronbach’s alpha for this sample = 0.75) (Pulerwitz, Gortmaker, and DeJong 2000). For the Relationship Control subscale, participants were asked their level of agreement on control over sexual activities within their relationships on a four-point Likert scale (1 = strongly agree to 4 = strongly disagree). For the Decision-Making Dominance subscale, participants were asked to reflect on decision-making within their sexual relationships and respond by stating who had more power over these decisions (1 = your partner; 2 = both of you equally; and 3 = you). Scores from each subscale were calculated separately and then combined by methods previously described (Pulerwitz, Gortmaker, and DeJong 2000). Scores ranged from 1–4 where higher scores indicate higher SRP.

Sexual risk-taking was measured by three separate variables: (1) number of unprotected vaginal and/or anal sex acts in the past two months; (2) number of sex partners in the past two months; and (3) sexual risk-taking behaviors while high on meth (i.e., condom use and sexual partner selection). Unprotected sex was defined as the number of times they did not use a condom while having sexual intercourse (i.e., vaginal, anal, oral) with any type of sex partner (i.e., spouse, live-in, other steady, anonymous, casual, and transactional) in the past two months. Number of sex partners was defined as the number of sex partners reported in

the past two months, inclusive of all types of sex partners (i.e., spouse, live-in, other steady, anonymous, casual, and transactional). The likelihood of engaging in sexual risk-taking behaviors while high on meth (i.e., condom use and partner selection) was measured by asking participants their level of agreement with the statement, “While on meth, I am more likely to do something sexually risky.” Responses were: 1: “Strongly Disagree”; 2: “Somewhat Disagree”; 3: “Somewhat Agree”; and 4: “Strongly Agree.” Categories 1 and 2 (“Disagree”) and categories 3 and 4 (“Agree”) were collapsed due to low cell counts. These measures have been used in previous research centered on sexual risk-taking within heterosexual and same-sex relationships among meth users (Mausbach et al. 2007; Semple, Patterson, and Grant 2004b).

Statistical analysis

Two separate, multinomial logistic regressions were conducted to assess associations between the independent variables and dependent variable, recent IPV, and moderation/interaction with gender. The reference group for the outcome variable, recent IPV, was reporting no recent physical and/or sexual IPV in the past two months. The first model assessed main effects of independent variables on the dependent variable, and the second model assessed interaction effects between significant variables from the main effects models with gender. Univariate associations were assessed for each of the independent variables with the dependent variable. The assumption of non-perfect separation was tested by assessing multicollinearity among independent variables. Influential points and outliers were identified by assessing Cook’s distance. Likelihood ratio chi-square tests of the selected model were used to assess model adequacy over the empty model. Both Wald and likelihood ratio (LR) tests were used to test significant effects of independent variables on the outcome categories. To assess model fit to the data, two logistic regression models that are equivalent to the multinomial regression above were fitted (i.e., modeling log odds of physical violence only versus no violence, and sexual violence versus no violence) (Hosmer and Lemeshow 2004). Similar coefficient values between these logistic models and the multinomial model, and reasonable model fit of the logistic regression models (based on the Hosmer–Lemeshow (HL) goodness-of-fit test) indicate good fit for the multinomial regression model. Odds ratios and 95% confidence intervals were reported. Stata 12 software was used for this analysis (StataCorp 2011).

Results

Characteristics of participants

Among both men and women, the majority reported high unemployment rates, low income, high rates of drug use (i.e., current meth use and lifetime cocaine and heroin use), as well as a high prevalence of both lifetime and recent IPV victimization (see Table 1). Both women and men reported high rates of physical-only (women: 20%; men: 18%) and sexual (women: 25%; men: 23%) IPV.

Multinomial analysis

All standard errors (SE) for effect size measures in the final models were below 2.0, indicating no sign of multi-collinearity among independent variables and therefore no

violation to the assumption of non-perfect separation. Cook's Distance also indicated no significantly influential or outlier data points for continuous variables. Similar coefficient values when comparing logistic models and the related multinomial models, as well as good fit for both logistic regression models, based on non-significant HL goodness-of-fit test results, indicated good model fit of the multinomial models.

Main effects model

Accounting for gender, age, race/ethnicity, income, depression, SRP, unprotected sex, meth use, and number of sex partners, individuals who reported lower average social support (Adjusted Odds Ratio [AOR] = 0.47, $p < 0.05$) were more likely to report experiencing recent physical violence as opposed to reporting no violence. Individuals who reported a greater likelihood of engaging in risky sexual behaviors while high on meth (AOR = 1.54; $p < 0.05$) were also more likely to report experiencing recent physical violence as opposed to reporting no violence (Table 2).

Individuals who reported lower average social support (AOR = 0.49, $p < 0.05$) were more likely to report experiencing sexual violence with or without physical violence as opposed to no violence. Individuals who reported a greater likelihood of engaging in risky sexual behaviors while high on meth (AOR = 1.80; $p < 0.05$) were also more likely to report experiencing sexual violence with or without physical violence as opposed to no violence (Table 2).

Interaction model

Based on significant AORs in the main effect models, interaction terms for social support and gender, and reporting risky sexual behaviors while high on meth and gender, were created and added to the model. Accounting for gender, age, race/ethnicity, income, depression, SRP, unprotected sex, meth use, and number of sex partners, individuals who reported lower average social support (AOR = 0.69, $p < 0.05$) were more likely to report experiencing physical as opposed to no violence. Individuals who reported a greater likelihood of engaging in risky sexual behaviors while high on meth (AOR = 1.58, $p < 0.05$) were also more likely to report experiencing physical violence as opposed to reporting no violence. The relationship between reporting risky sexual behaviors while high on meth and physical IPV was significantly dependent on the gender of the participant (AOR for interaction term = 0.77, $p < 0.05$). The impact of risky sexual behaviors while high on meth was higher for women compared to men. Women who reported a greater likelihood of engaging in risky sexual behaviors while high on meth were 1.58 times (95% CI: 1.06–2.35) more likely to report recent physical-only IPV versus no IPV, while men who reported a greater likelihood of engaging in risky sexual behaviors were 1.15 times (95% CI: 1.03–2.07) more likely to report recent physical-only IPV versus no IPV. Based on this model, gender moderated the relationship between reporting risky sexual behaviors and physical IPV within this sample (Table 3). These data did not show evidence of the moderating effect of gender on social support on the experience of physical IPV.

Individuals who reported lower average social support (AOR = 0.34, $p < 0.05$) were more likely to report experiencing sexual violence with or without physical violence as opposed to

no violence. Individuals who reported a greater likelihood of engaging in risky sexual behaviors while high on meth (AOR = 1.68, $p < 0.05$) were also more likely to report experiencing sexual violence with or without physical violence as opposed to no violence. No interaction terms for this outcome (i.e., sexual violence with or without physical violence) were significant, indicating no evidence within these data to support the moderating effect of gender on social support and risky sexual behaviors while high on meth on the experience of sexual IPV (Table 3).

Discussion

This research supported high rates of both lifetime and recent physical and sexual IPV among both male and female meth users. These findings support positive and significant relationships between meth use, IPV (physical-only and sexual IPV), and HIV risk (sexual risk-taking), as described in the SAVA syndemic. This study also supports a negative and significant relationship between social support and IPV victimization among meth-using men and women. The relationship between social support and IPV victimization has been supported in previous research conducted on female meth users (Stockman 2012). The previously described analysis also revealed gender differences in risk factors for recent physical IPV. Specifically, the impact of risky sexual behaviors while high on meth on IPV was higher for females as compared to males.

While national data support high rates of IPV victimization among men (Black et al. 2011), this population remains vastly understudied (El-Bassel et al. 2001; Stemple and Meyer 2014). Consistent with national data, this study reported high rates of lifetime and recent IPV among men. Further research on risk factors for IPV among drug-using men is imperative for the treatment and prevention of this highly affected yet neglected population. This research, as well as other research, may provide a road map to guide the exploration of IPV risk factors among meth-using men. For example, significant findings from the multivariate analysis support associations between social support and IPV and risky sexual behaviors while high on meth and IPV within this population. Additionally, previous research that supports specific risk factors among female populations (e.g., mental health, power) may provide further guidance on possible risk factors for IPV among male populations (Campbell et al. 2009, 2012; Dunkle et al. 2004; El-Bassel et al. 2001; Gage and Hutchinson 2006; Gilbert et al. 2012; Jewkes et al. 2010; Pulerwitz, Gortmaker, and DeJong 2000; Teitelman et al. 2008).

While meth use was not associated with IPV for both men and women, the previously noted findings support an association between sexual risk-taking and meth use, and suggest the need for further exploration of the role of drug use in sexual decision-making and IPV. Prevention efforts among drug users should target both meth use as well as sexual risk-taking. Future research on IPV among drug-using populations should also explore the interaction between individual/interpersonal level factors (e.g., income, depression, personal and couple drug use) as well as environmental factors (e.g., access to resources, alcohol outlet density, neighborhood conditions/disadvantages). Related to the previously detailed points on interpersonal factors and the environment, the relationship between social support and IPV, supported in this and other research, may be further unpacked to shed light on how

social support, whether it be informational, emotional and/or tangible support, impacts and influences an individual's risk for IPV victimization, and how this interacts with meth use and sexual risk-taking. Non-significant findings for the relationship between SRP and IPV are inconsistent with previous research (Campbell et al. 2009; Gage and Hutchinson 2006; Jewkes et al. 2010; Jewkes and Morrell 2010; Jewkes, Wood, and Duvvury 2010; Pulerwitz, Gortmaker, and DeJong 2000). The SRPS was validated among women, some of whom were ethnic minority, and therefore may be limited in its ability to capture SRP among other populations. Therefore, this non-significant finding may be due to limited validity of the instrument within drug-using populations and also among men in general.

This research contributes to the literature by exploring IPV victimization and gender differences in IPV risk based on a number of demographic, social, drug use, and HIV risk factors (Baskin-Sommers and Sommers 2006; Boles and Miotto 2003; Tjaden and Thoennes 2000). These findings agree with those from previous studies on the positive relationship between patterns of meth use, partner violence, and sexual risk-taking (Jewkes and Morrell 2010; Teitelman et al. 2008), and the negative relationship between social support and IPV victimization (Stockman 2012). Consistent with the SAVA syndemic theoretical framework, this research supports the importance of assessing how meth use interacts with HIV risk (i.e., sexual risk taking) to impact IPV (Campbell et al. 2008; Gielen et al. 2007; Maman et al. 2000; Meyer, Springer, and Altice 2011; Singer 2013). Additionally, findings from the current study on the relationship between social support, meth use, sexual risk-taking, and IPV among men and women highlight the importance of developing gender-specific integrated interventions to target the SAVA syndemic among meth users.

Limitations

This study utilized the SRPS, and while this measure has been tested and validated in a number of populations, it has not been tested among drug users. Within a drug-using population, the culture of drug use may contribute to risk of IPV and therefore should be included in such measures/interpretations of power (Hampton, Oliver, and Magarian 2003; Pulerwitz, Gortmaker, and DeJong 2000; Wyatt et al. 2000). Also related to the SRP measure, participants were asked to reflect on all types of sex partners (i.e., spouse, live-in, boyfriend/girlfriend, anonymous, casual, and transactional), as opposed to just steady intimate partners, therefore leading to a possible disconnect between measures of power and recent IPV and, subsequently, our understanding of how power within relationships impact IPV victimization within that same relationship. Another limitation of this study is the ambiguity of responses with respect to whom these victims of IPV were referring to when asked about their perpetrators. In measuring the outcome variables, recent IPV, participants were not asked whether their abuser was a man or woman. While the FASTLANE-II study did require that participants have an opposite sex partner, this did not exclude those with concurrent or recent same-sex partners. Distinct risk factors faced by individuals within same-sex partnerships, as compared to heterosexual partnerships, may present threats to the validity of study findings (Burke and Follingstad 1999). Further, this study focused on steady intimate partners, as opposed to all intimate partner types, inclusive of casual, anonymous, and transactional sex partners. Future research should explore risk factors for

IPV within these other intimate partner relationships. Lastly, the cross-sectional nature of this study limits the ability to establish causality.

Conclusion

Findings from this study support a positive relationship between meth use, IPV, and HIV risk as described in the SAVA syndemic, as well as a negative relationship between social support and IPV victimization. Men and women who reported low social support and a greater likelihood of engaging in sexual risk-taking behaviors while high on meth were more likely to experience both physical and sexual IPV. These findings support: (1) the complex interactions described by the SAVA syndemic; and (2) the influence of interpersonal factors (i.e., social support) on IPV victimization, bringing attention to the need for multi-level interventions targeting these three epidemics concurrently. Additionally, our findings support gender differences in risk factors related to IPV, calling attention to the importance of gender-specific approaches to decreasing risk. Lastly, this research highlights the importance of understanding HIV risk and IPV within the context of meth use and social support. Overall, this study provides support for the need for further research on gender differences on factors related to IPV victimization, and increased attention towards understanding victimization among men, as well as the need for interventions tailored to the specific risk factors for IPV victimization among meth-using men and women.

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Table 1

Sample characteristics, drug use, and experience of IPV among HIV-negative, heterosexual methamphetamine users by gender.

	Women (n = 108)	Men (n = 122)
Median age, yrs (IQR)	37 (28–43)	38 (27–46)
Race/ethnicity, n (%)		
White	45 (42)	40 (34)
African American	34 (31)	48 (39)
Hispanic	24 (22)	26 (21)
Other	5 (5)	8 (6)
Unemployed, n (%)	82 (76)	96 (79)
Annual income <\$10,000, n (%)	78 (72)	82 (67)
Median depression score (IQR)	25 (16–35)	20 (13–28)
Mean average social support (SD)	3.5 (0.61)	3.4 (0.62)
Median consecutive days using meth in past 30 days (IQR)	7 (3–21)	5 (3–18)
Ever used cocaine, n (%)	78 (72)	91 (75)
Ever used heroin, n (%)	32 (30)	36 (30)
Lifetime IPV, n (%)		
No abuse	14 (17)	7 (17)
Physical	64 (79)	24 (57)
Sexual	17 (21)	11 (26)
Recent IPV, n (%)		
No abuse	59 (55)	72 (59)
Physical ONLY	22 (20)	22 (18)
Sexual w/or w/out physical	27 (25)	28 (23)

IPV: intimate partner violence; IQR: interquartile range.

Table 2

Main effects model: multinomial regression of risk factors for recent IPV among heterosexual methamphetamine-using women and men in San Diego, CA, 2009–2011.

Independent variable ^a	Physical-only IPV ^b AOR (SE; 95% CI)	Sexual IPV ^b AOR (SE; 95% CI)
Gender ref (0): Female; 1: Male	0.99 (0.41; 0.43, 2.33)	1.07 (0.43; 0.46, 2.48)
Age	1.01 (0.02; 0.97, 1.05)	1.00 (0.02; 0.97, 1.05)
Race/ethnicity ref (0): White; 1: African American; 2: Hispanic; 3: Other	0.52 (0.45; 0.22, 1.28)	0.52 (0.46; 0.21, 1.25)
Annual income ref (0): <\$10,000; 1: \$10,000	0.88 (0.45; 0.36, 2.13)	0.54 (0.48; 0.21, 1.36)
Depression score	1.01 (0.02; 0.98, 1.05)	1.02 (0.02; 0.98, 1.05)
Average social support	0.47 (0.38; 0.22, 0.98)*	0.49 (0.37; 0.23, 0.97)*
Sexual relationship power	0.84 (0.36; 0.42, 1.69)	1.61 (0.37; 0.78, 3.30)
Unprotected sex in past two months	0.99 (0.01; 0.97, 1.01)	1.00 (0.01; 0.99, 1.02)
Meth use in the last 30 days	1.00 (0.02; 0.96, 1.05)	1.00 (0.02; 0.96, 1.05)
Number of sex partners	1.01 (0.04; 0.95, 1.09)	1.04 (0.03; 0.98, 1.11)
Risky sexual behaviors while high on meth ref (0): Unlikely to engage in risky sexual behaviors while high on meth; 1: Likely to engage in risky sexual behaviors while high on meth	1.54 (0.20; 1.03, 2.29)*	1.80 (0.20; 1.21, 2.70)*

IPV intimate partner violence.

^aVariables without a description are continuous. Scoring is further described in the Methods section.

^bReference group (0): no recent IPV; 1: recent physical IPV only; 2: recent sexual IPV (with/without recent physical IPV).

* p < 0.05.

Table 3

Interaction model: Multinomial regression of risk factors for recent IPV among heterosexual methamphetamine-using women and men in San Diego, CA, 2009–2011.

Independent variable ^a	Physical-only IPV ^b AOR (SE; 95% CI)	Sexual IPV ^b AOR (SE; 95% CI)
Gender ref (0): Female; 1: Male	0.89 (0.98; 0.05, 2.33)	0.34 (0.73; 0.08, 1.40)
Age	1.01 (0.02; 0.96, 1.05)	1.01 (0.02; 0.96, 1.04)
Race/ethnicity ref (0): White, 1: African American, 2: Hispanic, 3: Other	0.52 (0.46; 0.21, 1.26)	0.52 (0.46; 0.21, 1.26)
Annual income ref (0): <\$10,000; 1: \$10,000	0.89 (0.45; 0.37, 2.18)	0.56 (0.48; 0.22, 1.43)
Depression score	1.01 (0.02; 0.98, 1.05)	1.02 (0.02; 0.98, 1.05)
Average social support	0.69 (0.17; 0.47, 0.90)*	0.34 (0.47; 0.10, 0.64)*
Interaction term: Average social support * Gender	1.31 (0.75; 0.30, 5.69)	2.26 (0.73; 0.54, 9.51)
Sexual relationship power	0.84 (0.36; 0.42, 1.70)	1.60 (0.37; 0.77, 3.30)
Unprotected sex in past two months	1.00 (0.01; 0.97, 1.01)	1.00 (0.01; 0.99, 1.02)
Meth use in the last 30 days	1.00 (0.02; 0.96, 1.05)	1.01 (0.02; 0.96, 1.05)
Number of sex partners	1.01 (0.04; 0.94, 1.09)	1.04 (0.03; 0.98, 1.11)
Risky sexual behaviors while high on meth ref (0): Unlikely to engage in risky sexual behaviors while high on meth; 1: Likely to engage in risky sexual behaviors while high on meth	1.58 (0.20; 1.06, 2.35)*	1.68 (0.20; 1.13, 2.51)*
Interaction term: Risky sexual behaviors while high on meth * Gender	0.77 (0.19; 0.45, 0.96)*	1.19 (0.36; 0.59, 2.40)

IPV intimate partner violence.

^aVariables without a description are continuous. Scoring is further described in the Methods section.

^bReference group (0): no recent IPV; 1: recent physical IPV only; 2: recent sexual IPV (with/without recent physical IPV).

* p < 0.05.