The Syndemic Effects of Intimate Partner Violence, HIV/AIDS, and Substance Abuse on Depression among Low-Income Urban Women

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ABSTRACT *Intimate partner violence (IPV), HIV/AIDS, and substance use are epidemics among low-income urban women that have been described together as the “SAVA syndemic” because of their co-occurring nature. This study examines the synergistic or “syndemic” effect of these three health issues on depression among urban women and evaluates social support as a protective factor that might reduce depressive symptoms associated with the Substance Abuse, Violence, and AIDS (SAVA) syndemic. Data from 445 urban women were collected through in-person interviews. All women were over the age of 18, not pregnant, English speaking, and reported having a main partner in the past year. Twenty-five percent had experienced all three factors of the SAVA syndemic (were HIV-positive, had experienced IPV in the past year, and had used cocaine or heroin in their lifetime). HIV-positive status, hard drug use, IPV, and low levels of social support were all individually associated with greater depressive symptoms. When controlling for demographics and other SAVA factors, IPV and hard drug use in the past 30 days remained associated with depressive symptoms, as did low social support. However, social support did not modify the effect of the SAVA factors on depression. Compared to women who experienced no SAVA factors, women who had experienced all three factors were 6.77 times more likely to have depressive symptoms. These findings confirm that IPV is significantly associated with depressive symptoms and that the syndemic impact of IPV, substance use, and HIV could have even more extreme effects on depression outcomes.*

KEYWORDS *Intimate partner violence, HIV/AIDS, Substance use, Mental health, Syndemics*

INTRODUCTION

Among the most significant health problems for women living in the US are HIV/AIDS, intimate partner violence (IPV) and substance abuse, and racial/ethnic minority and low-income women are disproportionately affected by all three.^{1–4} Given that these health issues disproportionately impact women in similar socio-demographic groups, it is not surprising that associations among them are

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extensively documented. Recent reviews of the literature revealed several mechanisms that link these women's health problems and empirical data have supported these associations.⁵⁻⁸ Women who are forced to have sex with an HIV-positive partner could be exposed to infection, and living with violence or the fear of abuse by an intimate partner can limit women's ability to negotiate safe sex behaviors.⁹⁻¹⁶ Conversely, women who are HIV-positive might experience abuse upon disclosure of their HIV status.^{17,18} HIV/AIDS and IPV are of particular concern among women abusing drugs and alcohol because this additional risk factor increases vulnerability and exposure to both health issues.¹⁹⁻²¹ While HIV and IPV risk certainly co-occur among female substance users, the nature of this relationship is unclear and further investigation into the intersection is needed to inform prevention and intervention efforts.

This concept of co-occurring and intersecting epidemics was defined as a syndemic, or "a set of synergistic, intertwined and mutually enhancing health and social problems facing the urban poor,"²² p.933 The SAVA (Substance Abuse, Violence and AIDS) syndemic is defined as a set of co-occurring, inextricably connected epidemics influenced by a "broader set of political-economic and social factors,"²² p.933 Syndemics theory suggests a framework for studying the interaction between co-occurring epidemics, and directs attention towards the need to address such health issues in their broader context.²³

While numerous health outcomes and risk factors for IPV, HIV, and substance use have been studied, particularly striking are the associations between each of these health problems and serious mental health outcomes among low-income and minority women who overall experience higher lifetime rates of major depressive disorder compared to women in the general population.²⁴⁻²⁶ Women who experience violence in their intimate relationships are at much higher risk of experiencing depressive symptoms.²⁷⁻³³ Living with HIV has also been associated with increased depression; studies show that HIV-positive women experience higher rates of depressive symptoms compared to their sociodemographically comparable HIV-negative counterparts.^{9,32} Finally, associations between depressive symptoms and substance use have been documented; the rate of depression among women abusing illegal substances was found to be significantly higher than that of non-substance abusing women and the general population.^{34,35} While individual associations are well-documented in the literature, and some studies show that being HIV-positive and experiencing IPV simultaneously increases the odds of depression,^{36,37} no study has evaluated the combined effect of IPV, HIV, and substance use on depressive symptoms among urban women.

Furthermore, little research has examined the potential protective factors that could reduce the risk of poor mental health outcomes for women experiencing IPV, HIV or substance use, and no research has been conducted to investigate factors that could protect against poor mental health outcomes for women experiencing all three conditions simultaneously.³⁸ Social support has been identified as an important influence on depression, PTSD, and experience of abuse.³⁹⁻⁴² Some suggest that social support could be especially relevant for low-income African American women who are more likely to rely on informal support systems and less likely to access traditional mental health services as compared to white women.^{43,44} The influence of social support on the relationship between the SAVA syndemic and depression is particularly important because of its theoretical and empirical impact as a buffer and its ability to be intervened upon and thereby improve outcomes.

Untangling the influences of each of these SAVA syndemic factors and their collective effect on depression is essential to developing interventions for women

who are burdened by these health concerns simultaneously. The aims of this study are to (1) document the co-occurrence of IPV, HIV and substance abuse among a sample of low-income urban women, (2) evaluate the syndemic impact of IPV, HIV and substance abuse on depressive outcomes, and (3) test if social support mediates or moderates the effect of the syndemic and depressive outcomes among low-income urban women.

METHODS

Data Source

Data for this analysis are from Project WAVE (Women, AIDS, and the Violence Epidemic), which was a cross-sectional study of women's health, HIV and IPV conducted from 1997 through 1999. Women were recruited from five clinic sites and resource centers. In order to be eligible for the study, women had to be over 18 years of age, not pregnant and English-speaking. A total of 310 HIV-positive women and 301 HIV-negative women were included in the full sample. Data were collected through face-to-face interviews that included questions about women's HIV status, substance abuse, experience of physical, sexual, and psychological IPV, depressive symptoms, and various demographic characteristics. Because this study focuses on issues specific to violence in intimate relationships, only women in the sample who indicated at the time of the interview that they had a main partner in the past year are included ($n=445$).

Measures

Intimate Partner Violence. Physical, sexual, and psychological violence were measured using the revised Conflict Tactics Scale (CTS2).⁴⁵ Women who reported having experienced any physical, sexual or psychological acts of violence by her partner in the past year were recorded as having experienced any type of abuse in the past year.

HIV Status. HIV-positive women in this sample were all recruited from a hospital-based HIV primary care clinic. Women who were HIV-negative were asked to show recent proof of their HIV status, or were tested for HIV as part of the study.

Substance Abuse. Drug use was measured using items based on Latkin and colleagues' work.⁴⁶ Women were asked if they had (1) smoked marijuana, (2) sniffed, snorted or smoked cocaine, crack-ready rock or freebase cocaine, (3) shot up cocaine by itself, (4) sniffed, snorted or smoked heroin, (5) shot up heroin by itself, (6) shot up heroin with something else such as cocaine or amphetamines (speedballing), or (7) used pills, such as tranquilizers or sedatives, ever in their lifetime or in the past 30 days. Women who reported sniffing, snorting, smoking, or shooting up cocaine or heroin were identified as having used hard drugs. Only the use of hard illicit drugs (cocaine and heroin) was examined because these were most commonly investigated in previous literature on the associations between drug use, IPV and HIV risk.

SAVA Syndemic. A variable to describe the SAVA syndemic was created categorizing women into eight mutually exclusive groups based on their experience of abuse in the past year, their HIV status, and their lifetime drug use: (1) No SAVA (HIV-negative, no

abuse in the past year, never used hard drugs); (2) Experienced abuse only; (3) Used hard drugs only; (4) HIV-positive only; (5) Used hard drugs and experienced abuse; (6) HIV-positive and experienced abuse; (7) HIV-positive and used hard drugs; and (8) HIV-positive used hard drugs and experienced abuse. Lifetime cocaine or heroin use was used to define the SAVA syndemic in this analysis because of the potential association of drug use at any point in a woman's life with her HIV or IPV risk.

Depressive Symptoms. Depressive symptoms were assessed using the Center for Epidemiologic Studies—Depression (CES-D) Scale,⁴⁷ which has 20 items addressing women's feelings and behaviors within the past week. The total scale score ranges from 0 to 60, with a cutoff score of 16 or above indicating high depressive symptoms and likely clinical depression.

Social Support. Items from the Social Support Appraisal Scale (SS-A) were used to measure available social support.⁴⁸ Women were asked to agree or disagree with 5 statements such as "I can rely on my friends," and "If I need a place to stay, there is no one I can count on to take me in." Scores were summed and a dichotomous variable to indicate low and high levels of social support was created based on the median scale score of 15.

Sociodemographic Characteristics. Women were asked their age, highest year in school or college completed, total household income, employment status, and housing status. Individual income was calculated by dividing the total household income by the number of people living in the household. Women were characterized as living in unstable housing if they reported living in a group home, drug treatment center, or shelter and characterized as living in stable housing if they reported living in their own or shared house or apartment. Alcohol abuse was assessed using the CAGE screening test^{49,50} and was examined in these analyses as an important behavioral risk factor but not included as a main explanatory variable of interest because data on recent alcohol abuse (within the past 30 days) was not available.

Data Analysis

Frequencies of all variables of interest and bivariate associations between depressive symptoms and sociodemographic variables, experience of IPV, HIV status, drug use, and social support were determined using frequency and distribution statistics and Pearson's χ^2 tests. Simple logistic regression analyses were conducted to examine unadjusted associations between depressive symptoms and explanatory variable. Multiple logistic regression models were used to examine the adjusted associations between depressive symptoms and explanatory variables and to test for effect modification. A separate multiple logistic regression analysis included the single SAVA syndemic variable and controlled for significant sociodemographic variables.

RESULTS

IPV, HIV, and Substance Abuse

Experiencing any type of IPV (psychological, physical or sexual) in the past year was reported by 62 % of women in the sample, and 19.3 % of women reported experiencing all three types in the past year. About 1 in 5 women (19.6 %) reported

experiencing psychological abuse only and the experience of psychological and physical abuse (without sexual abuse) was reported by 17.5 % of the sample. The majority of the sample (78.7 %) had used cocaine or heroin at some point in their lifetime, and 22.9 % had used these hard drugs in the past 30 days. Alcohol abuse was reported by 30.6 % of women, and only 14 women (3.2 %) screened positive for alcohol abuse that did not report using hard drugs in their lifetime. Almost half (42.3 %) of the sample was HIV-positive (Table 1).

TABLE 1 Sociodemographic characteristics of sample ($n=445$)

Characteristics	<i>N</i> (%)
Age, mean years (SD)	34.6 (7.6)
Race	
Black or African American	429 (96.4)
White or Caucasian	13 (2.9)
Other	3 (0.7)
Education	
Less than high school	181 (40.8)
High school or equivalent	189 (42.5)
More than high school	74 (16.7)
Individual monthly income, mean dollars (SD)	191.79 (376.99)
Relationship status	
Married	44 (9.9)
Separated	48 (10.8)
Divorced	52 (11.7)
Widowed	19 (4.3)
Never married	282 (63.3)
Employment status	
Not currently working	337 (75.7)
Currently working	108 (24.3)
Housing status	
Not living in stable housing	65 (14.6)
Living in stable housing	380 (85.4)
HIV status	
HIV-negative	257 (57.8)
HIV-positive	188 (42.2)
IPV in the past year	
No IPV	169 (38.0)
Any IPV	276 (62.0)
Hard drug use in lifetime (cocaine or heroin)	
Did not use any hard drugs in lifetime	95 (21.4)
Used any hard drugs in lifetime	350 (78.6)
Hard drug use in the past 30 days (cocaine or heroin)	
Did not use any hard drugs in past 30 days	343 (77.1)
Used any hard drugs in past 30 days	102 (22.9)
Depressive symptoms	
Low (CESD <16)	277 (62.2)
High (CESD ≥16)	168 (37.8)
Social support level	
High	304 (68.3)
Low	141 (31.7)

The co-occurrence of IPV, HIV infection, and use of hard drugs is illustrated in Figure 1. About one fourth (24.9 %) of the women in the sample experienced the complete SAVA syndemic and 6.7 % experienced none of the SAVA factors. Only 8 women (1.8 %) were HIV-positive and experienced IPV (without any hard drug use in their lifetime) and only 13 women (2.9 %) were HIV-positive and had not used hard drugs in their lifetime or experienced any IPV in the past year.

Depressive Symptoms and Social Support

The average score on the CES-D scale was 14.2 (SD=12.4) and 37.8 % of women reported depressive symptoms in the past week (cut off score ≥16). In bivariate analyses, lower educational attainment and unemployment were both associated with higher depressive symptoms. The mean income of women with high depressive symptoms was statistically significantly higher than the mean income of women with low depressive symptoms (\$238.3/month and \$163.5/month, respectively; *t* test *p* value<0.05). There were no significant associations between age, housing status, or relationship status with depressive symptoms (Table 2).

Experience of IPV, HIV-positive status and substance abuse were all individually associated with depressive symptoms in bivariate analyses. Higher percentages of women who experienced IPV, were HIV-positive, and had used hard drugs in the past 30 days had depressive symptoms, as compared to their counterparts.

Social support was not significantly associated with any of the SAVA syndemic factors, but was significantly associated with depressive symptoms. Because social support was not significantly associated with the SAVA syndemic factors, it was not tested as a mediator in the relationship between the SAVA factors and depressive symptoms.

FIGURE 1. SAVA syndemic (HIV, IPV, and lifetime hard drug use) among 445 low-income urban women.

TABLE 2 Bivariate associations between demographic characteristics, SAVA variables and depressive symptoms among low-income women, Baltimore, MD (*n*=445)

Characteristics	Low depressive symptoms (<i>n</i> =277)	High depressive symptoms (<i>n</i> =168)	χ^2 or <i>t</i> test <i>p</i> value
Age in categories			0.347
18–29 years	90 (66.7 %)	45 (33.3 %)	
30–39 years	116 (58.0 %)	84 (42.0 %)	
40–49 years	65 (63.7 %)	37 (36.3 %)	
50+ years	6 (75 %)	2 (25 %)	
Education			0.006
Less than high school	97 (53.6 %)	84 (46.4 %)	
High school or equivalent	126 (66.7 %)	63 (33.3 %)	
More than high school	54 (72 %)	21 (28 %)	
Individual Monthly Income (\$)	163.59	238.30	0.021
Relationship Status			0.990
Married	27 (61.4 %)	17 (38.6 %)	
Separated	31 (64.6 %)	17 (35.4 %)	
Divorced	31 (59.6 %)	21 (40.4 %)	
Widowed	12 (63.2 %)	7 (36.8 %)	
Never married	176 (62.4 %)	106 (37.6 %)	
Employment status			0.007
Not currently working	198 (58.8 %)	139 (41.2 %)	
Currently working	79 (73.2 %)	29 (26.8 %)	
Housing status			0.217
Not living in stable housing	36 (55.4 %)	29 (44.6 %)	
Living in stable housing	241 (63.4 %)	139 (36.6 %)	
IPV in past year			0.000
No IPV	124 (73.4 %)	45 (26.6 %)	
Any IPV	153 (55.4 %)	123 (44.6 %)	
HIV Status			0.005
HIV-negative	174 (67.6 %)	83 (32.4 %)	
HIV-positive	103 (54.8 %)	85 (45.2 %)	
Hard drug use			0.000
None	69 (72.6 %)	26 (27.4 %)	
Yes, but not in past 30 days	166 (66.9 %)	82 (33.1 %)	
Yes, in past 30 days	42 (41.2 %)	60 (58.8 %)	
Social support level			<0.001
High	212 (76.5 %)	92 (54.8 %)	
Low	65 (23.5 %)	76 (45.2 %)	

The SAVA Syndemic, Depressive Symptoms and Social Support

Model 1: SAVA syndemic factors and social support

Results from multivariable analyses including the SAVA syndemic factors and social support are presented in Table 3. When controlling for monthly income, education level, employment status, alcohol abuse, the other SAVA factors, and social support, the experience of IPV in the past year was significantly associated with depressive symptoms ($OR=2.01$, $p \leq 0.01$). Drug use in the past 30 days was

TABLE 3 Multivariable Logistic Regression of SAVA syndemic factors and social support on depressive symptoms (CESD ≥ 16) among low-income women, Baltimore, MD ($n=445$)

	Model 1: SAVA factors and social support		Model 2: SAVA syndemic variable and social support	
Variable	Adjusted OR ^a	95 % CI	Adjusted OR ^a	95 % CI
HIV status			—	—
HIV-negative	1.00	—		
HIV-positive	1.37	(0.88, 2.13)		
IPV in past year			—	—
No IPV	1.00	—		
Any IPV	2.01**	(1.29, 3.17)		
Hard drug use			—	—
None	1.00	—		
Yes, before 30 days	0.81	(0.45, 1.46)		
Yes, in past 30 days	2.20*	(1.13, 4.29)		
Social support level			—	—
High	1.00	—		
Low	2.47***	(1.58, 3.84)		
SAVA syndemic categories	—	—		
No SAVA factors			1.00	—
IPV only			1.59	(0.82, 3.09)
Drug use past 30 days only			2.99 †	(0.91, 9.77)
HIV-positive only			0.63	(0.24, 1.62)
Drug use and IPV			2.89*	(1.15, 7.24)
HIV-positive and IPV			2.55**	(1.25, 5.18)
HIV-positive and drug use			3.14*	(1.11, 8.92)
All SAVA factors			6.77***	(2.56, 17.9)
Social support level	—	—		
High social support			1.00	—
Low social support			2.40***	(1.54, 3.74)

— Not included in model

^aAdjusted for monthly income, education, employment status, and alcohol abuse

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$; † $p \leq 0.10$

also significantly associated with depressive symptoms in the adjusted model (OR=2.20, $p \leq 0.05$), but drug use prior to the past 30 days did not remain significantly associated. Low social support was significantly associated with high depressive symptoms; women who reported low social support were 2.47 times more likely to have high depressive symptoms ($p \leq 0.001$). Interactions between each of the SAVA syndemic factors were tested and that between HIV and IPV approached significance ($p \leq 0.10$). No other interactions were significant. The interactions between the SAVA syndemic factors and social support were also tested, and none were significant.

Model 2: SAVA syndemic variable and social support

Model 2 in Table 3 shows the multivariable analysis examining adjusted associations between the single SAVA syndemic variable and depressive symptoms.

Odds ratios describe the likelihood of high depressive symptoms for women in each of the SAVA categories compared to women who were HIV-negative, did not experience IPV, and had not used drugs in the past 30 days (no SAVA factors). Women who experienced two of the SAVA factors were between 2.89 and 3.14 times more likely to have high depressive symptoms ($p \leq 0.05$). Women who experienced all three SAVA factors (were HIV-positive, experienced IPV and used drugs in the past 30 days) were 6.77 times more likely to have high depressive symptoms compared with women who did not experience any of the SAVA factors.

DISCUSSION

Findings from this study suggest that the SAVA syndemic factors of HIV, IPV and substance use have a significant interactive effect on urban women's depressive symptoms, but that this relationship is not modified by the presence of social support in women's lives. This study contributes to a developing body of literature investigating HIV, IPV and substance abuse among low-income women, and the syndemic nature of these three health problems. While other studies have documented associations between the SAVA syndemic factors and mental health outcomes, this is the first study to quantify the co-occurrence and document overlapping prevalences of the SAVA syndemic factors among a sample of urban women, as well as the first to investigate the syndemic association of the SAVA factors with depressive symptoms.

Women in this urban sample were of low-income and primarily African American, and the majority of them had experienced some type of IPV in the past year (psychological, physical, or sexual) and had used cocaine or heroin at some point in their lifetime. Because the larger sample of 611 women was collected to include an approximately equal number of HIV-positive and HIV-negative, 42 % of the women included in these analyses were HIV-positive. Therefore, this study is unable to present a picture of the co-occurrence of SAVA factors in a community sample because HIV-positive women were oversampled making the prevalence of HIV in this sample much higher than in the general population of urban women. However, this sampling method's strength is that oversampling of HIV-positive women allowed for a greater sample size to detect associations between SAVA and depression. The co-occurrence of all three SAVA factors among 25 % of this sample reveals the extent to which the prevalences of HIV infection, experience of IPV, and use of illicit drugs overlap and provides strong evidence for the presence of the SAVA syndemic among a population of urban women.

Consistent with previous literature, depressive symptoms were found to be associated with all the SAVA factors in bivariate analyses.^{28–32,34–36,51–61} Significantly higher percentages of women who were HIV-positive, had experienced IPV in the past year, and had used hard drugs in the past 30 days exhibited higher depressive symptoms, without adjusting for sociodemographic factors. However, when adjusting for the other SAVA factors, sociodemographic factors, social support and alcohol abuse, only the experience of IPV in the past year and drug use in the past 30 days remained significant, as did reporting low social support. The lack of an adjusted association between HIV and depression could be due to the timing of HIV diagnosis in comparison to the current measurement of depression. Given that recent drug use was associated with depression, but drug use prior to 30 days was not, a similar relationship might be expected for women who were recently diagnosed with HIV. However, the time of HIV diagnosis was not considered in

this analysis. These results suggest that the recent experience of violence and recent or current drug use are more strongly linked to depressive symptoms than HIV status.

Results from this study support the hypothesis that the SAVA syndemic factors together have an interactive effect on depressive symptoms. When adjusting for other covariates, women who experience only one SAVA factor are not at greater relative odds for depression, while women who experience two SAVA factors are between 2.89 and 3.14 more likely to be depressed. Strikingly, women who experienced all three SAVA factors (HIV-positive, IPV in the past year and drug use in the past 30 days) were almost seven times as likely to be depressed compared to their counterparts with no SAVA factors.

The significant association between social support and depressive symptoms found in this study is supported by past research indicating that social support can impact depression among women.^{62–64} However, social support was not found to mediate or moderate the effect of the SAVA syndemic factors on depressive symptoms; that is, there was no relationship between social support and the SAVA factors, and the odds for depression among women who experienced IPV or drug use in the past 30 days did not improve even if they had high social support. A conclusion from this finding could be that general social support does not provide enough of a “buffer” against the detrimental impact of experiencing violence or using illicit drugs on women’s mental health.

Several limitations of this research must be recognized. First, the true prevalence in a community sample of urban women could not be determined because of the oversampling of HIV-positive women. Also, the small number of women in some of the “SAVA category” cells (i.e., women who are HIV-positive and experienced IPV only) could have contributed to a lack of power to detect true associations with depressive symptoms. In addition, the cross-sectional nature of the data collection did not allow for the determination of causality. For the purposes of studying HIV, IPV, substance use from a SAVA syndemics framework, these factors were considered “predictors” and depression was considered an “outcome.” Lastly, all measures were self-reported, and underreporting of stigmatized behaviors and experiences such as violence, drug use and depression might be expected, although the high rates observed suggest that this was not a substantial issue.

CONCLUSIONS

This research provides strong evidence that HIV risk, IPV, and drug use are interrelated and co-occurring factors that function as a syndemic, and is an important addition to the body of research documenting the separate associations between each of the SAVA syndemic factors. It contributes to the examination of these issues from a syndemics framework by documenting the prevalence of the SAVA syndemic among urban women and investigating its multiplicative impact on women’s depressive symptoms. These findings are important to consider when aiming to address the health of women in medical and public health contexts, whether it be by reducing their HIV risk, improving their HIV-related health outcomes, reducing or preventing IPV, improving health outcomes related substance abuse, or ameliorating mental illness. This study provides further evidence that the same women who become HIV-infected are also dealing with abuse in their relationships and using drugs and endorses the integration of often-disconnected programs, interventions and services related to HIV, IPV, and substance in order to effectively address the intersecting health issues.

Furthermore, women at the highest risk for depressive symptoms are those who experience all three of these factors, suggesting that in order to improve the mental health of low-income urban women, issues related to violence in her relationships, her HIV status and her use of or addiction to drugs must also be addressed. Living with various combinations of the SAVA factors have differential effects on risks of depression, and these intricacies of the syndemic impact of SAVA factors should be studied further to gain insight into the specific ways that they work interactively to impact depression. Additionally, general social support alone does not appear to buffer the impact of these syndemic factors on depressive symptoms. Therefore, more research into protective factors for depressive outcomes among women experiencing the SAVA syndemic is necessary to identify points of intervention. Comprehensive strategies to address depression and other health outcomes that acknowledge the intersection of violence, HIV and drug use are crucial to address the impact of this syndemic in urban women's lives.

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