Published in final edited form as:

Glob Soc Welf. 2018 June ; 5(2): 71–81. doi:10.1007/s40609-018-0112-1.

The syndemic effect of injection drug use, intimate partner violence, and HIV on mental health among drug-involved women in Kazakhstan

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Abstract

We examined the synergistic effect of substance use (injection drug use), intimate partner violence, and HIV (dubbed the “SAVA syndemic”) on depression and suicidal thoughts among a sample of high-risk women in Kazakhstan, a country with a notably high prevalence of suicide and violence against women, and concentrated epidemics of HIV and injection drug use. Using baseline data from an intervention study conducted in Almaty, Kazakhstan among 364 drug-involved couples, multivariate logistic regression analyses were used to examine the relationship between the SAVA syndemic continuum and mental health. Compared to women reporting none of the SAVA conditions, women who experienced the full range of the SAVA syndemic continuum had a 15.5-fold odds ($p < .05$) of reporting depression and a 6-fold odds ($p < .05$) in reporting suicidal thought disturbances. Findings suggest the need for integrated screening assessments among practitioners and interventions designed to address multiple, commonly co-occurring conditions in Central Asia.

Keywords

SAVA syndemic; depression; suicide; Kazakhstan; Central Asia

Introduction

Accumulating evidence over the past decade has demonstrated that the effect of co-occurring substance use, intimate partner violence (IPV), and HIV, dubbed the “SAVA syndemic,” on

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Conflict of Interest: The authors declare that they have no conflicts of interest.

Compliance with Ethical Standards

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

Conflict of Interest: The authors declare that they have no conflicts of interest.

health outcomes, such as depression, are more deleterious than any one of these individual conditions alone (Gielen, McDonnell, O'Campo, & Burke, 2005; Gilbert et al., 2015; Illangasekare et al., 2012; Illangasekare, Burke, Chander, & Gielen, 2013, 2014; Illangasekare, Burke, McDonnell, & Gielen, 2013; Singer, 1996, 2006; Sullivan, Messer, & Quinlivan, 2015). Although there has been increased attention in recent years on the syndemic and calls to develop interventions accounting for this phenomenon (Gilbert et al., 2015), no studies have examined the effect of the SAVA syndemic in Central Asia (CA). This is critical as the Central Asian population has recently been burdened by concentrated epidemics of HIV (UNAIDS, 2016) and injection drug use (Aceijas et al., 2004, 2006; El-Bassel, Strathdee, & El Sadr, 2013; UNODC Central Asia, 2008), in addition to high rates of violence against women (Advocates for Human Rights), depression and suicide (WHO, 2011, 2014). Co-occurring injection drug use, IPV, and HIV may play a key factor on the prevalence of poor mental health in Central Asia. Research on the relationship between the SAVA syndemic and mental health in the region may help to uncover existing service gaps and offer direction for urgently needed intervention strategies (Gilbert et al., 2015).

Despite a relatively low HIV prevalence of 0.2% in Kazakhstan (UNAIDS, 2015b), the largest of the Central Asian countries, the HIV incidence rate in Kazakhstan has increased by 50% over the past decade from 11 to 15 per 100,000 (European Centre for Disease Prevention and Control & World Health Organization, 2014). Although recent estimates suggest that a growing proportion of new infections may be attributed to heterosexual transmission, a recent UNAIDS report (UNAIDS, 2016) estimates that roughly 50% all new HIV infections may be attributed to injection drug use (IDU). An estimated 0.98% of the Kazakh population injects drugs (Mathers et al., 2008), and studies suggest an HIV prevalence of approximately 2–5% among them (Jolley et al., 2012). Additional evidence suggests excess mortality among people who use drugs in Kazakhstan, with an estimated standardized mortality ratio of 2.4, compared to the general population. Among female drug users, however, this rate is substantially higher at 6.8 compared to the general population, indicating greater harms among women compared to men (European Monitoring Centre for Drugs and Drug Addiction, 2015).

Although limited IPV surveillance data exists from within the Central Asian region, IPV among women is also a widely recognized social and public health problem (Advocates for Human Rights). In Kazakhstan, a recent Ministry Report revealed that 52% of women have experienced IPV (Advocates for Human Rights), far exceeding the global estimate of 35% (García-Moreno, 2013). Additional research has demonstrated that acceptability of violence against women is widespread within the Central Asian countries and serves as a barrier to IPV reporting and access to services, exacerbating poor outcomes among women (Haarr, 2005, 2007, 2010; Moldosheva, 2008).

In addition to a burgeoning HIV epidemic, high rates of injection drug use, and violence against women, poor mental health is yet another key public health issue (Baxter, Patton, Scott, Degenhardt, & Whiteford, 2013). The World Health Organization (2011) estimates that neuropsychiatric disorders in Kazakhstan contributes to 12.4% of the global burden of disease. Additional data from Kazakhstan indicates that living with a major depressive disorder is one of the five leading causes of “years of life lived with a disability” (Institute

for Health Metrics & Evaluation, 2010). Most troubling though, is recent evidence that Kazakhstan has one of the world's highest rates of suicide, the most severe manifestation of depression. While the global age-standardized suicide rate stands at 11.4 per 100,000 people, the rate among adults in Kazakhstan is more than double at 23.8 per 100,000 (World Health Organization, 2011, 2014).

Drawing on previous literature and guided by ecological systems theory, integrated with risk and resiliency theory, we identified several key individual, interpersonal, and socio-structural risk and protective factors that confound the relationship between each of the SAVA conditions and mental health. The ecological systems perspective (Bronfenbrenner, 1979; 1989) organizes our understanding of, and calls attention to, the multitude of inter-related determinants that affect individuals and their wellbeing. Specifically, this theory draws our attention to the importance of *multiple systems*, which include both *proximal and distal* factors, in shaping individual behavior, risk, and outcomes (Bronfenbrenner, 1979; 1989). From this perspective, co-occurring IPV, HIV, and substance and its relationship to poor mental health may be understood in context of individual characteristics (e.g. age, race), interpersonal or micro-level characteristics (e.g. partner drug use, social support etc.), and socio-structural or exo-macro-level characteristics (e.g. access to resources, poverty, unemployment, homelessness). While the ecological model invites us to consider varying levels of influence, risk and resiliency theories ask us to conceptualize how different experiences either diminish our health and capacity or protect and aid us in overcoming adversity. Risk factors are those that create stress, which “threaten positive adaptational outcomes” (Waller, 2001). Protective factors (sometimes referred to as resiliency), on the other hand, offer buffer effects to negative experiences, and can occur on many levels (Waller, 2001). On an individual level, research has shown that sex trading is associated with increased risk of violence (Crago, Rakhmetova, Karadafov, Islamova, & Maslova, 2008), substance use (Li, Li, & Stanton, 2010), HIV (Kerrigan et al., 2013), and psychological distress (El-Bassel et al., 1997; Golder & Logan, 2007; Wilson & Widom, 2010), and is an outcome associated with high-risk behavior (Cobbina & Oselin, 2011; Wilson & Widom, 2010). Research has also demonstrated several interpersonal level factors associated with the SAVA syndemic and poor mental health, including partner risk behaviors, child sexual abuse, and social support; specifically, research suggests that women who experience IPV may be more likely to have partners who engage in HIV-risk behaviors such as sexual concurrency and substance use, than women who do not report violence, driving their HIV risk (Abramsky et al., 2011; Decker et al., 2009; Foran & O’Leary, 2008; Raj, Silverman, & Amaro, 2004). Data also indicates that women who have experienced child sexual abuse are more likely than women who have not experienced sexual abuse to use substances (Maniglio, 2009), experience re-victimization as adults (Noll, 2005), and engage in HIV-risk behaviors (Arriola, Loudon, Doldren, & Fortenberry, 2005; Cobbina & Oselin, 2011; Wilson & Widom, 2010), as well as suffer from depressive symptoms, among other mental health conditions (Maniglio, 2009). Finally, evidence suggests that social support may serve as a protective factor against the incidence of violence (Capaldi, Noble, Shortt & Kim, 2012) and the effects of violence such as poor mental health (Coker, Watkins, Smith, & Brandt, 2003; Constantino, Kim, & Crane, 2005; Douge, Lehman, & McCall-Hosenfeld, 2014), though a recent systematic review of risk factors of IPV found that a small number of studies

yielded inconsistent findings (Capaldi et al., 2012). Similarly, social support has been linked to improved adherence to ARTs among HIV-positive samples (DiMatteo, 2004). On a socio-structural level, data suggests low socio-economic status (SES), low levels of education, and access to services are important correlates of a number of the SAVA conditions and poor mental health. For example, a recent report by the CDC (Pratt & Brody, 2014) indicates that depression and poverty are closely linked, finding that those living below the poverty line were roughly two and a half times more likely to report depression than those above the poverty line. Similarly, a paper by Roberts et al. (Roberts, Abbott, & McKee, 2010) examining psychological distress in eight former Soviet Union countries found associations with unemployment, poor economic conditions, and lack of education. Research from within the Central Asian region also suggests that women, in particular, have difficulty accessing education and participating in the labor force (Advocates for Human Rights; Moldosheva, 2008). Studies have also consistently found an inverse relationship between SES and IPV (Black et al., 2011; Capaldi et al., 2012; CDC, 2014; Ezeanochie, Olagbuji, Ande, Kubeyinje, & Okonofua, 2011). Finally, extant literature has demonstrated that access to services is critical to problem identification and outcomes, and that, marginalized communities often report limited or delayed access to resources, often exacerbated by stigma, which is been linked to poor health and outcomes (CDC OMHD, 2015; Earnshaw, et al., 2013; Kendrick & Pilling, 2012; SAMHSA, 2015a; UNAIDS, 2014). For example, in Kazakhstan, data indicates that limited legal and social options are available for abuse even though spousal abuse is illegal (Advocates for Human Rights). Additional data from the Central Asian region also demonstrates limited access to mental health services and supportive mental health policies (WHO, 2011).

Based on these findings and addressing a critical gap in the literature, this paper seeks to 1) examine the prevalence of depression and suicidal thought disturbance by the SAVA syndemic continuum, comparing women who experience the full-range or some of the syndemic conditions compared to those who report none of the conditions; and 2) examine the odds of depression and suicidal thoughts by the SAVA syndemic continuum, adjusting for basic socio-demographics (age, ethnicity, marital status) and key confounders described earlier. We hypothesized that women who report the full range of the SAVA syndemic conditions would have a higher reported prevalence and odds of depression and suicidal thoughts, compared with women who report some or none of the SAVA syndemic conditions, after controlling for relevant confounders and socio-demographic characteristics.

Methods

Study design

Data for this paper are from Project Renaissance, a randomized control trial to evaluate a couple-based HIV prevention program for drug-involved heterosexual couples, conducted between 2009–2012 in Almaty, Kazakhstan (see BLINDED for review, 2014, for details on the methods). Data reported here are from the baseline survey, administered to 364 couples, using data from the female participants only.

Recruitment and eligibility criteria

Participants were recruited through organizations providing services to people who inject drugs, such as needle exchange programs and HIV programs, and through word-of-mouth via participants already enrolled. Couples were eligible to participate if: 1) both partners were 18 years of age or older; 2) both partners identified their study partner as their main intimate partner; 3) both partners reported they had been together for at least 3 months; 4) both partners reported intending to remain together for at least 12 months; 5) if at least one partner reported having unprotected vaginal or anal intercourse with the other partner within the previous 90 days; and 6) if at least one partner reported having injected drugs within the previous 90 days.

Data collection

Data were collected using both self-report and objective biological assays. Self-reported data were collected using Audio Computer Assisted Self-Interview (ACASI), conducted in Russian, in a private room. Informed consent was obtained from all individual participants included in the study. All study procedures were reviewed and approved by the Columbia University and the Kazakhstan School of Public Health Institutional Review Boards.

Measures

HIV—HIV status was determined using biological assays. For the serologic surveillance, a standard enzyme-linked immunosorbent assay (ELISA test manufactured by Abbott Murex) was used (Young, Moyes, Seagar, & McMillan, 1998). Tests were conducted using a serial two-test strategy, which has been recommended by the World Health Organization and routinely used at the Republican AIDS Center. U.S. manufactured Abbott Murex Biotech tests were used for the second test, which has a reported sensitivity of 99.9% and specificity of 99%, according to the Republican AIDS Center Guidelines for Serological Surveillance.

Substance use—Injection drug use was assessed by asking participants whether they had ever injected drugs (yes/no), and then if they had injected drugs in the past 90 days (yes/no). Following SAMSHA's guidelines (Substance Abuse and Mental Health Services, 2015b), recent binge drinking was assessed by asking participants how many days in the past 90 days they consumed 5 or more drinks in a six-hour period. Participants who reported at least one occasion where they consumed 5 or more drinks were coded as binge drinking.

Intimate partner violence (IPV)—IPV was measured using an abbreviated version of the Revised Conflict Tactics Scale (CTS-2) (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Participants were asked to indicate whether they had experienced particular incidents of physical (severe), injurious, and sexual violence since the age of 18 and in the past 6 months. Exclusion criteria for this study included screening out participants with severe IPV, however, we found that some participants still reported severe IPV in the baseline assessment, after acceptance into the study. For the purpose of this paper, participants responding affirmatively to at least one incident of severe physical, injurious, or sexual IPV in the past 6 months were coded as having experienced recent IPV. The CTS-2 has been shown to have convergent, discriminant, and factorial validity (alpha ranges 0.75–0.95) (Straus et al., 1996). In our study, alpha was 0.93.

SAVA syndemic—To calculate the presence of the SAVA syndemic, a categorical variable was created, scored 0–3. Participant scores were calculated based on the presence or absence of the three SAVA conditions. Specifically, recent IPV, HIV-positive status, and injection drug use during the past 90 days were used to indicate the presence of the full spectrum of the syndemic. Injection drug use was specifically chosen as part of the syndemic variable given the current epidemic of injection drug use in the region. Alcohol use, which was prevalent in the sample, was retained as a covariate.

Depression & suicidality—Depression was measured using the Brief Symptom Inventory (BSI) – depression subscale (Derogatis & Melisaratos, 1983). The BSI depression subscale is a 6-item measure of self-reported depressive symptoms experienced during the prior seven days, including suicidal thoughts, feeling lonely, worthless, sad, hopeless, and lacking interest in activities. Participants were asked how much each symptom bothered them, using a Likert scale of zero (“not at all”) to four (“extremely”). Scores from all six items were summed and converted into a t-score, with a mean of 50 and standard deviation of 10. A dichotomized variable was then created using a t-score of 63 or above (Derogatis, 1993). The BSI has demonstrated good internal consistency (0.85) (Derogatis & Melisaratos, 1983), and in our study, Chronbach’s alpha was 0.89.

To assess suicidality or suicidal ideation disturbance, we used the first question of the BSI-depression subscale on suicidal thoughts. Since participants were asked to report their agreement with level of symptomology, a dichotomized variable was created using scores 0–1 to indicate the absence to low levels of suicidal ideation disturbance and 2–4 to indicate moderate to severe suicidal ideation disturbance.

Socio-demographic characteristics—Socio-demographic variables included age (continuous), ethnicity (Kazakh, Russian, or other), and marital status (legally married and common-law marriage as “married,” and divorced, separated, widowed, or never married as “unmarried”).

Individual level factors—To assess for recent sex trading, participants were asked, “have you exchanged sex for money or drugs with other men in the past 90 days?” Participants who responded yes to this question were coded as “having a history of recent sex trading.”

Interpersonal level factors—Social support was measured using the Multi-dimensional Scale of Perceived Social Support (MSPSS) (score range of 12–84; reported alpha .85) (Zimet, et al., 1988). The MSPSS consists of twelve items that ask participants to rate their agreement about perceived support received from family, friends, and significant others. Higher scores indicate greater levels of social support.

Child sexual abuse was assessed by asking participants whether, when they were 16 or younger, an adult or someone at least 5 years older than them had oral, anal, or vaginal intercourse with them. Similarly, participants were asked whether a relative had oral, anal, or vaginal intercourse with them. Participants responding affirmatively to either question were coded as having experienced childhood sexual abuse.

Partner risk-behaviors were assessed in multiple ways; partner substance use was assessed using data collected from the male study partner. Specifically, the same question asked of the female participant regarding injection drug use was selected for inclusion for this paper. To assess for sexual concurrency, both perceived and actual concurrency were assessed. Since the majority of the participants reported their study partner was a spouse, boyfriend, or regular partner, we assessed sexual concurrency using questions regarding behavior during the past 90 days. For perceived concurrency, a question posed to female partners about whether they suspected a partner engaged in vaginal sex with another person during the past 90 days was used. To assess actual concurrency, reported vaginal sex with another person (not main study partner), asked of men, was used.

Socio-structural level factors—Three items that reflect socio-economic status included: highest level of education completed, housing status (where they slept the previous night and where they slept more than half the time over the past 90 days), and food (in)security (if they had enough money to buy food every day, in the past 90 days).

Access to services was determined using a proxy question whereby were asked participants whether they had a regular physician. Participants who responded in the affirmative were designated as having regular access to health care.

Analytic strategy

Descriptive statistics were used to characterize the sample and the prevalence of women experiencing none, some, and all of the SAVA conditions. To address the primary research question, we performed tests of association to describe the relationship between the SAVA variable and depression and suicidal thought disturbance (Parsons, Grov, & Golub, 2012). We then performed bivariate and multivariate regression analyses to examine the association between the syndemic variable and depression/suicidal thought disturbance, adjusting for basic socio-demographics and multi-level risk and protective factors. Logistic regression was used to estimate odds ratio (OR) of depression and suicidal thought disturbance. All variables were checked for multicollinearity, and where collinear, one marker variable was selected. All analyses were performed in STATA SE 13.1.

Results

Participant characteristics and main variables of interest

Table 1 presents participant socio-demographic characteristics and multi-level risk and protective factor descriptive statistics for the total female sample (N = 364). The average age of the participants was 34.75 years old (SD = 7.67), and almost two thirds of sample identified as ethnic Russian (63.46%). The majority of the participants reported being married (88.19%), either legally or through a common law marriage.

Descriptive statistics for each of the syndemic level variables and mental health outcomes of interest are also reported in Table 1. Data indicated that 21.98% of the women in the sample were HIV-positive, 51.92% recently injected drugs, and 17.58% experienced recent IPV. Combining the syndemic variables together, a third of the participants reported none of the syndemic conditions, 45.33% reported at least one, 18.95% reported two of the conditions,

and 2.75% reported all three of the SAVA conditions. Twelve percent of the participants met the cutoff for depression, while 23.08% reported having had moderate-to-severe suicidal thought disturbance. Additionally, thirty-three women (9.1%) met both the cut-off for depression and reported moderate-to-severe suicidal thought disturbance.

Prevalence of mental health variables by the SAVA syndemic

Table 2 presents the intercorrelations between the SAVA syndemic conditions and mental health outcomes of interest; of the ten relationships tested, six were significant. Figure 1 presents the prevalence and chi-square analyses findings for depression and suicidal thought disturbance and the cumulative number of SAVA conditions. As the number of SAVA conditions increased from zero to three, the prevalence of depression and suicidal ideation disturbance increased, with the exception of the prevalence of depression from one to two SAVA conditions (see Figure 1 for prevalence figures). Chi-square analyses indicated a significant relationship between the SAVA variable and depression ($p < .01$) and suicidal ideation disturbance ($p < .01$).

Similarly, findings from the bivariate analyses (see Table 3), indicated that, compared to women who experienced none of the SAVA conditions, women who experienced one ($uOR = 4.11, p = .005$), two ($uOR = 3.90, p = .017$), or all three of the SAVA conditions ($uOR = 15.33, p = .001$) were more likely to report depression. Bivariate analyses similarly showed that the odds of suicidal ideation disturbance were higher for women who experienced one of the SAVA conditions, compared to women who reported none of the SAVA conditions, but that this was only marginally significant ($uOR = 1.59, p = .136$). However, comparing women who reported none of the SAVA conditions to women experiencing two or three of the SAVA conditions indicated they were significantly more likely to report suicidal ideation disturbance ($uOR = 2.33, p = .02$; $uOR = 7.97, p = .003$, respectively).

Multivariate analyses

To test the main hypothesis that the odds of reporting depression and suicidal ideation among women reporting the full-range of the SAVA syndemic would be disproportionately higher compared to women who reported none of the SAVA conditions, reduced and full models were tested to assess changes in coefficients/ORs of the main variables of interest, controlling for relevant covariates and confounds. Bivariate analyses indicated marginally significant associations between perceived sexual concurrency and mental health over actual concurrency, thus, only the perceived concurrency variable was selected for use in the final model.

Consistent with our hypothesis, multivariate findings indicated that women who reported one, two, or all three of the SAVA conditions were more likely to report depression ($aOR = 1.19, p < .05$; $aOR = 1.52, p < .05$; and $aOR = 2.74, p < .01$, respectively) than women who reported none of the SAVA conditions. Also consistent with our hypothesis, regression analyses of suicidal ideation disturbance as the dependent variable indicated that compared to women reporting none of the SAVA conditions, women reporting all three conditions had a greater odds of reporting suicidal ideation disturbances ($aOR = 6.16, p < .05$). When examining women reporting only one of the SAVA conditions, compared to women

reporting none of the SAVA conditions, analyses revealed no elevated odds ($aOR = 1.39$, $p > .05$), and only marginally significantly elevated odds among women experiencing two of the SAVA conditions ($aOR = 2.13$, $p = .054$).

Multivariate analyses also indicated that participants reporting higher levels of social support were less likely to report depression ($aOR = .95$, $p < .000$) and suicidal thought disturbance ($aOR = .98$, $p < .01$). Unexpectedly, higher levels of education were associated with greater odds of depression ($aOR = 5.27$, $p < .05$). Not surprisingly, food insecurity was associated with being more likely to report depression ($aOR = 2.64$, $p < .05$) and suicidal ideation disturbance ($aOR = 1.99$, $p < .05$). Among women whose main partner's reported substance use, they were also more likely to report depression ($aOR = 5.05$, $p < .05$). Compared to ethnic Russians, women reporting other ethnic status (non-Kazakh) were less likely to report suicidal ideation disturbance ($aOR = .49$, $p < .05$).

Discussion

This paper sought to examine the relationship between the SAVA syndemic and mental health among a sample of 364 drug-involved women in Kazakhstan, Central Asia, a region that has recently experienced not only concentrated epidemics of HIV and injection drug use, but pervasive violence against women and high rates of depression and suicide. Examining the SAVA conditions themselves, we found that nearly 18% of the women in the sample experienced physical, sexual, or injurious IPV in the past six months, approaching global estimates of *past year* violence (Garcia-Moreno, et al., 2006). This finding is particularly striking given the study exclusion criterion for severe IPV – given that some women were screened out while others still reported severe IPV during the baseline assessment suggests that IPV prevalence estimates from this study are likely lower than what may be otherwise found among similar samples. As such, additional attention on IPV among substance involved women in intimate relationships is desperately needed. Additionally, HIV prevalence among the sample was high at 22%, exceeding the national HIV prevalence of Kazakhstan, but consistent with some samples of drug-involved populations (Dutta et al., 2012; El-Bassel, Shaw, Dasgupta, & Strathdee, 2014). The rate of reported injection drug use was also high at 52%, but this may be explained by the study inclusion criteria of recruiting drug-involved couples. Together, we found that 33% of the sample experienced none of the SAVA conditions, 45% reported one, 19% reported two, and nearly three percent met the criteria for all three conditions, as defined in this study. Due to the context of this study, which is uniquely different from prior studies on the syndemic, as well as the operationalization of the syndemic variable (i.e. requiring recent violence and injection drug use), it is difficult to draw conclusions with respect to “averages” of the syndemic compared to other studies, and may suggest a need for standardization or more uniformity in defining the syndemic for research purposes (Meyer, Springer, & Altice, 2011). Despite this limitation, our results support the presence of the syndemic, calls for further research to understand this phenomenon, and development of relevant screening tools and interventions in response to this growing problem (Gilbert et al., 2015).

Further, our study lends support for the main hypothesis that the syndemic effects of IPV, substance use, and HIV would have disproportionate effects on mental health outcomes.

Specifically, we found a staggering 15.5 fold in the odds of reporting depression among women experiencing the full range of the syndemic, compared to none of them, after adjusting for other variables. Results also indicated a 3 fold odds and 4.5 fold odds for depression among those reporting one or two conditions, compared to none, respectively. Similarly, we found a 6 fold odds in reporting ideation disturbance among women reporting all three conditions, compared to none. Though we observed increased odds of reporting suicidal ideation among women reporting one or two of the SAVA conditions, compared to none, they were not statistically significant. These findings suggest there may be a “tipping point” specific to suicidality - a point at which the likelihood for suicidal ideation rises dramatically in response to a coalescence of debilitating experiences, which likely exhausts available coping resources and resilience.

Our findings, with respect to depression, are consistent with prior studies examining the syndemic and depressive outcomes (Gielen et al., 2005; Illangasekare et al., 2012, 2013a, 2013b, 2014), though we found higher odds ratios. Our finding of elevated odds compared to other studies may reflect a number of different scenarios including operationalization of the SAVA variable and use of alternative measures of depression. Our findings may also represent differences in the incidence and onset of depression within this context and/or a reflection of the lack of readily available resources to support those struggling with mental health and the syndemic conditions in Central Asia, which in turn exacerbates poor outcomes. Given research that mental health care within the Central Asian context is limited (World Health Organization, 2011), depressive symptomology among women experiencing the syndemic may be more prevalent due to lack of early identification and treatment of mental health as well as other syndemic conditions.

Taken together, a careful examination of the odds ratios across outcomes reveals an initial shorter rise or increase in odds towards poor mental health, clearly distinguishing between those who experience none of the SAVA conditions to some, but also that the move from one to two SAVA conditions does not affect the likelihood of poor outcomes in the same manner as experiencing all of the SAVA conditions. This suggests that though depression and suicidal ideation are certainly impacted by the presence of one or two conditions, the exacerbation to multiple conditions are far more debilitating. Clinically, these findings have utility in that screening for number of conditions during initial assessments may quickly aid health and social workers in also assessing depression and suicidal ideation so that they may target their prevention and intervention efforts to more carefully address not only the source, but also the outcome of these conditions.

Of particular interest is the finding of higher prevalence of suicidal ideation compared to depression among the sample. This may be explained by the use of a crude measure for suicidality and a standardized measure for depression, resulting in biased findings. However, even though a crude measure for suicidal ideation was used, the finding that 23% of women reported moderate-to-severe discomfort with suicidal thoughts during the past week is striking and may reflect salient differences by context and availability of choices for women in how to participate in society/power to make choices about their lives, relationships, employment, etc. As research has demonstrated, suicidal ideation results from feeling hopeless about being able to change one’s circumstances (WHO, 2014). This incongruity

between depression and suicide is also somewhat consistent with previous research in the region (Institute for Health Metrics and Evaluation, 2010) and adds to research which suggests that specific items assessing suicidal ideation in non-western contexts are unable to adequately discriminate between people with different levels of the latent trait of depression (Haroz, Bolton, et al., 2016). Together, these data suggest a need for further investigations into this seeming paradox, which may subsequently offer useful information about underlying mechanisms at play and possible intervention strategies. These findings also suggest the value of screening for suicide and integration of suicide prevention planning into non-mental health specific interventions (e.g. HIV interventions), just as safety planning for clients with active violence has become routinized in many settings.

Limitations

This paper has a number of limitations. First, this study relies on cross-sectional data, which limits any conclusion on causality or directionality. Relatedly, given the different assessment time points of each of the SAVA conditions and mental health, it was not possible to examine the temporal sequencing of each of these conditions as they relate to one another and mental health. Second, participants were not recruited using probability sampling methods and selection bias may have occurred, and thus, findings are not generalizable to the larger population. Third, the recruitment of drug-involved couples where the prevalence of alcohol use was high, limiting the ability to include any drug use/alcohol in the construction of the SAVA variable. Fourth, the study mainly relies on self-reported data, and even though all participants were informed of the procedures to protect their confidentiality, some participants may have not felt comfortable in disclosing information pertaining to high-risk behaviors or other sensitive information such as past trauma. Fifth, and as previously noted, exclusion criteria extended to severe IPV, yet IPV was a main variable of interest in this paper. Though we still found couples with IPV, this paper likely underestimated the prevalence of IPV among drug-involved couples and the effect of the syndemic on mental health outcomes. Sixth, mental health measures developed in western contexts were used in this study. It is possible that measures that account for cultural differences in the expression of depression and suicidality may have yielded different findings (Haroz, Ritchey, et al., 2016). Finally, we were not able to use interaction analyses to fully test the concept of the syndemic variable and its relationship to the mental health outcomes, as suggested by a recent paper by Tsai and Burns (Tsai & Burns, 2015).

Implications

Globally, few interventions have been developed or deployed globally that address the SAVA syndemic (Gilbert et al., 2015), and given the Central Asian context of concurrent epidemics, as well as stigma against IDUs, people living with HIV, and cultural norms of violence against women, efforts are urgently needed to advance public health strategies and infrastructure to deliver direct services to the community. Suicide may be, in part, linked to the lack of available supportive services and resources. Although mental health and other types of programs (e.g. HIV treatment programs, drug treatment programs, etc.), exist, they are limited. Expansion of policies and public budgets to meet rising rates of HIV, injection drug use, suicide, and violence against women may reduce costs and improve overall

population health over the long-term. Similarly, findings from this paper also suggest that existing social service organizations and medical service centers may benefit from adopting screening tools that assess for multiple conditions – specifically for the co-occurring conditions explored here. Likewise, social service organizations may consider expanding safety planning to include suicide prevention as well as staying safe during violent episodes or during injection drug use. In addition, as this paper clearly demonstrated, food insecurity, even when controlling for the SAVA conditions, had an effect on mental health outcomes. The findings suggest the need for attention to assessment of food security in community programs, medical centers, HIV treatment centers, etc. and ability to link clients to appropriate resources to address this need. Programs may also consider assessing the availability and strength of clients' social support networks, which also demonstrated associations to poor mental health, and using the information to improve or link people to informal and formal social networks. Given the current resource terrain in Kazakhstan, this may also be achieved by providing group services, areas for clients to safely convene, among other social activities. However, safety concerns of such gatherings should be carefully considered given high rates of stigma against HIV-positive people, drug users, etc. Finally, additional research on the SAVA syndemic among both the high-risk-, and, the general population within Kazakhstan and surrounding Central Asian countries is needed to test wider definitions of the SAVA syndemic (inclusive of violence by other partners) and the use of moderation/interaction effects, which were not possible in this study. Examining each of the syndemic conditions temporally, and their relationship to mental health would also strengthen our understanding of syndemics, and provide rich data that can be used to provide better services. Additional research with respect to the paradoxical rates of depression and suicidal ideation may also be useful in unpacking underlying mechanisms and potential strategies to reduce rates of ideation and suicide.

Acknowledgments

Funding: This study was funded by the National Institute on Drug Abuse (NIDA R01-DA022914-01A2), awarded to Dr. Nabila El-Bassel. Dr. Jiwatram-Negrón acknowledges the support received as a postdoctoral fellow at the Vivian A. and James L. Curtis School of Social Work Research and Training Center at the University of Michigan.

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Figure 1.
Prevalence of Depression and Suicidal Ideation Disturbance, by Number of SAVA Conditions

Table 1**Participant Characteristics (N=364)**

	n	%
<i>Socio-demographic characteristics</i>		
Age (m, sd)	34.75	7.67
Ethnicity		
Kazakh	40	10.99
Russian	231	63.46
Other	93	25.55
Married	321	88.19
<i>Individual level variables</i>		
Sex trading	19	5.22
Binge drinking, past 90 days	238	65.38
<i>Interpersonal level variables</i>		
Social support (m, sd)	60	15.59
Child Sexual Abuse	59	16.86
Partner substance use	321	88.19
Partner sexual concurrency, actual	91	25.14
Partner sexual concurrency, perceived	31	8.52
<i>Socio-structural level variables</i>		
Socio-economic status		
Education, high school or greater	296	81.32
Homelessness, past 90 days	38	10.44
Food insecurity, past 90 days	170	46.70
Access to services (regular physician)	131	35.99
<i>Syndemic and Mental Health Variables</i>		
HIV positive	80	21.98
Experienced IPV, past 6 months	64	17.58
Injected drugs, past 90 days	189	51.92
SAVA variable		
None	120	32.97
One condition	165	45.33
Two conditions	69	18.96
Three conditions	10	2.75
Depressed	44	12.09
Suicidal ideation disturbance	84	23.08
Depressed & suicidal ideation disturbance	33	9.1

Table 2

SAVA Syndemic Variable and Mental Health Inter-correlations

	Experienced IPV	Injected drugs	Depressed	Suicidal Ideation disturbance
HIV-positive status	−0.001	0.179 **	0.068	0.020
Experienced IPV		−0.047	.117 *	.0142 **
Injected drugs			0.138 **	0.123 *
Depressed				0.420 **

⁺
 $p < .1$ *
 $p < .05$;**
 $p < .01$

Table 3

Regression Analyses of the Relationship Between Depression and Suicidal Ideation Disturbance by the SAVA (injection drug use, intimate partner violence, and HIV-positive status) Syndemic Continuum

	Depression		Suicidal ideation disturbance	
	uOR [95% CI]	aOR [95% CI]	uOR [95% CI]	aOR [95% CI]
SAVA variable (ref: None)				
One	4.11 [1.52–11.07] **	3.29 [1.11–9.71] *	1.59 [0.86–2.93]	1.39 [0.71–2.70]
Two	3.90 [1.27–11.93] *	4.56 [1.35–15.39] *	2.34 [1.14–4.73] *	2.14 [0.99–4.64] +
Three	15.33 [3.25–72.24] **	15.53 [2.17–111.30] *	7.97 [2.05–30.97] **	6.16 [1.24–30.57] *
Age	1.04 [1.00–1.08] +	1.04 [0.98–1.10]	1.01 [0.98–1.04]	1.01 [0.97–1.05]
Ethnicity (ref: Russian)				
Other ethnic	1.28 [0.61–2.68]	1.33 [0.54–3.24]	0.63 [0.34–1.17]	0.49 [0.24–0.99] *
Kazakh	2.16 [0.89–5.21] +	0.99 [0.33–3.01]	1.16 [0.54–2.47]	0.65 [0.27–1.58]
Married	0.67 [0.28–1.61]	0.61 [0.20–1.86]	0.99 [0.47–2.10]	0.93 [0.39–2.22]
<i>Individual level</i>				
Sex trading, past 90 days	2.80 [0.96–8.20] +	1.27 [0.27–5.94]	1.20 [0.42–3.44]	0.69 [0.18–2.67]
Binge drinking, past 90 days	1.48 [0.73–2.98]	1.95 [0.82–4.68]	1.54 [0.90–2.64]	1.56 [0.84–2.90]
<i>Interpersonal level</i>				
Social support	0.96 [0.94–0.98] **	0.95 [0.93–0.97] ***	0.98 [0.96–0.99] **	0.98 [0.96–0.99] **
Child sexual abuse	1.27 [0.55–2.91]	0.89 [0.32–2.48]	1.50 [0.80–2.81]	1.41 [0.69–2.87]
Partner substance use	3.09 [0.72–13.23]	5.05 [0.94–27.25] +	1.15 [0.53–2.51]	1.41 [0.57–3.46]
Partner concurrency, perceived	2.33 [0.94–5.79] +	1.92 [0.54–6.86]	0.78 [0.31–1.98]	0.45 [0.14–1.40]
Partner concurrency, actual	1.18 [0.58–2.40]	--	1.03 [0.59–1.82]	--
<i>Socio-structural level</i>				
Education	2.5 [0.68–7.24] +	5.27 [1.24–22.38] *	0.80 [0.44–1.46]	0.87 [0.43–1.76]
Homeless, past 90 days	2.58 [1.13–5.89] *	1.16 [0.37–3.63]	2.76 [1.37–5.54] **	2.34 [0.99–5.54]
Food insecurity, past 90 days	2.76 [1.41–5.39] **	2.64 [1.14–6.15] *	2.54 [1.53–4.22] **	1.99 [1.11–3.58] *
Access to services	0.81 [0.41–1.59]	0.88 [0.37–2.06]	0.80 [0.48–1.35]	1.10 [0.60–2.00]

+ $p < .1$;

* $p < .05$;

** $p < .01$;

*** $p < .001$, logistic regression analyses (uOR=unadjusted odds ratio; aOR=adjusted odds ratio)