Depression among people who inject drugs and their intimate partners in Kazakhstan

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Abstract

This paper examines individual, social, and structural factors associated with depression among 728 people who inject drugs (PWID) and their intimate partners in Kazakhstan, with separate multivariate models by gender. Depression scores were higher on average among participants of both genders who recently experienced sexual intimate partner violence, food insecurity, and who had lower levels of self-rated health. Among females, higher depression scores were associated with experiencing childhood sexual abuse, lower levels of social support, and not having children. Findings highlight a need to incorporate gender differences and factors associated with depression in designing mental health services for PWID in Kazakhstan.

Keywords

depression; Central Asia; Kazakhstan; injection drug use

Introduction

Although extensive global research has identified links between substance use, HIV, and mental health issues such as depression (Jane-Llopis & Matytsina, 2006), studies examining links between these issues remains limited in Kazakhstan. Depression among different adult population was found to be associated with a number of individual, social, and structural risk factors (d'Hombres, Rocco, Suhrcke, & McKee, 2010; Mair, Roux, & Galea, 2008; Roberts, Abbott, & McKee, 2010; Steptoe, Tsuda, & Tanaka, 2007). However, risk on depression and risk factors has not been studied in Central Asia despite the severity of drug use in this region (Aceijas et al., 2006; RAC, 2013).

This study was conducted among a sample of 728 men and women who inject drugs and their intimate partners. Guided by previous research conducted mainly outside of Central

Asia, this exploratory study, without establishing a priori hypotheses, examines whether individual, social, and structural factors, including HIV status, are associated with depression among female and male participants. The individual factors examined include biologically confirmed HIV status, socio-demographic characteristics (age, ethnicity, and education), self-rated quality of health, and substance use. We examine social factors including marital status, having children, childhood sexual abuse, financial dependence, sexual intimate partner violence (IPV), and social support. Structural factors include employment status, experience of food insecurity, history of incarceration, and access to health care. We also examine whether or not participants need counseling, and if so, whether they have access to counseling services.

Individual, social, and structural level factors and depression

A number of individual level risk factors have been found to be associated with depression. Research conducted globally, but not in Central Asia, has found associations between depression and physical health (Salter, Lau, Go, Mehta, & Kirk, 2011), HIV seropositive status (Gilchrist, Blazquez, & Torrens, 2011), unsafe drug use (Gilchrist et al., 2011; Gu, Lau, Chen, Tsui, & Ling, 2011; Lundgren, Amodeo, & Chassler, 2005; Sarin, Singh, Samson, & Sweat, 2013), and high-risk sexual behaviors (Psaros, Israel, O'Cleirigh, Bedoya, & Safren, 2011). Predictors of depression identified in former Soviet Union (fSU) countries include older age (Roberts et al., 2010), alcohol consumption (Mentzakis, Suhrcke, Roberts, Murphy, & McKee, 2013), and lower levels of education (Goryakin, Suhrcke, Rocco, Roberts, & McKee, 2013; Roberts et al., 2010).

Depression has been found to be higher among women than men worldwide in general populations (Dobson & Dozois, 2011; Hyde, Mezulis, & Abramson, 2008), in the fSU (Goryakin et al., 2013; Mentzakis et al., 2013; Roberts, Abbott, & McKee, 2012), as well as in drug involved populations (Magnus et al., 2013). Variations in depression by gender (Sjöberg et al., 2006) point to the importance of examining risks associated with depression among both women and men separately (Risch et al., 2009).

Among female drug users, depressive symptoms have been associated with experiencing intimate partner violence (IPV), a history of childhood sexual abuse (Gilchrist, Blázquez, & Torrens, 2012), living with someone who uses drugs (Gilchrist et al., 2012), lower levels of social support, stigma and discrimination (Ahern, Stuber, & Galea, 2007), and lacking access to health care (Risser, Cates, Rehman, & Risser, 2010). Research on depression is limited among men who inject drugs, as well as couples where one or both partners inject.

In the fSU, stress related to political, social, and economic changes has contributed to psychological distress and poor health outcomes (Andreev, Pridemore, Shkolnikov, & Antonova, 2008; Footman, Roberts, Tumanov, & McKee, 2013; Pietilä & Rytkönen, 2008; UNDP, 2011), and depression has been associated with unemployment (Goryakin et al., 2013; Roberts et al., 2010). In the fSU and Kazakhstan, depression has also been found to be associated with mobility (Ismayilova et al., 2014) and social isolation (Goryakin et al., 2013; Roberts et al., 2010). Research has also identified associations between depression and food insecurity (Vogenthaler et al., 2011; Weiser et al., 2011) and poor access to health care (Bhatia, Hartman, Kallen, Graham, & Giordano, 2011)

Methods

Study participants

We use baseline data from NIDA-funded Project Renaissance, conducted between 2009 and 2012 in Almaty, Kazakhstan. The Columbia University Institutional Review Board and the Kazakhstan School of Public Health Institutional Review Board approved all study procedures. Study participants were recruited by trained research assistants through centers serving PWID, and word-of-mouth via other participants (anonymous). Participants were eligible to participate if they met the following criteria: (1) both were aged 18 or older (2) both identified each other as their main partner of the opposite sex and someone whom the participant considered a boy/girlfriend, spouse, lover and/or parent of his/her child (3) both reported the relationship had existed for at least three months (4) both reported intending to remain together for at least 12 months (5) at least one partner reported having had unprotected vaginal or anal intercourse with the other partner within the previous 90 days, and (6) at least one partner reported injecting drugs within the previous 90 days. Participants were excluded if they met any of the following criteria: (1) either partner showed evidence of psychiatric, physical, or neurological impairment that would limit effective participation in the study; (2) either partner reported severe physical or sexual violence perpetrated by the other partner in the past year, as determined on a Revised Conflict Tactics Scale (Straus, 1979); (3) either partner reported that the couple was planning a pregnancy within the next 18 months; or (4) either partner was not fluent in Russian as determined during the informed consent process. Inclusion and exclusion criteria were based on needs for Project Renaissance, a randomized clinical trial of HIV/hepatitis C/sexually transmitted infection prevention intervention, conducted with couples where one or both partners inject drugs (anonymous). A total of 971 individuals completed the screening interview. Of these, 728 met study eligibility criteria and completed the baseline interview. An additional 33 people were eligible but did not return to participate in the baseline.

Data collection

Data collection included both self-reported data and objective biological assays. During the baseline visit, participants completed a 1.5-hour Audio Computer Assisted Self-Interview (ACASI) conducted in Russian in a private room. The ACASI included all measures described below. After the interview, a Clinical Research Coordinator (CRC) conducted individual pre-test counseling related to HIV privately with each participant. Within two weeks of the baseline interview, the CRC notified each participant privately of his or her HIV test results, conducted post-test counseling, and provided referrals and navigation to treatment when applicable. Participants received the equivalent of $10 USD for completing the baseline ACASI interview and biological testing.

Measures

Depression—The Brief Symptom Inventory (BSI)-18 depression six-item subscale was utilized to measure current depression level (L R Derogatis & Savitz, 2000). This tool has demonstrated high reliability (.84) and validity (.93) (Leonard R Derogatis, 2000) as a measure of distress across multiple populations (L R Derogatis & Unger, 2010; Leonard R Derogatis, 2000). Participants reported how much discomfort the following caused them

during the previous week: thoughts of ending your life, feeling lonely even when you are with people, feeling sad, feeling no interest in things, feeling hopeless about the future, and feelings of worthlessness. On each item, participants chose between five responses, including not at all (0), a little bit (1), moderately (2), quite a bit (3), and extremely (4). The average score of these six items was calculated and used as the outcome variable in this analysis.

Individual level factors—Self-reported information was collected regarding socio-demographic characteristics including gender, age, ethnicity (Kazakh, Russian, or other), years of education, and health. To measure health, participants were asked to rate their quality of life in regards to health, nutrition, and exercise over the past 90 days. Each question included a range of five answers, including poor (0), fair (1), good (2), very good (3), and excellent (4). Self-rated health was measured by adding participant health, nutrition, and exercise responses. HIV status was measured through the use of biological assays. A dried blood spot (DBS) technique was applied where a whole blood spot was obtained by a finger prick, applied to five printed circles on DBS filter paper cards, and sent to the reference laboratory at the Republican AIDS Center (RAC). For the serologic surveillance, a standard enzyme-linked immunosorbent assay (ELISA test manufactured by Abbott Murex) was used (H. Young, Moyes, Seagar, & McMillan, 1998). Tests were conducted using a serial two-test strategy, as recommended by the World Health Organization and routinely used at the RAC. U.S. manufactured Abbott Murex Biotech tests were used for the second test. According to the RAC Guidelines for Serological Surveillance, the Murex anti HIV ABBOTT, has a reported sensitivity of >99.9% and specificity of 99%.

We also measured substance use as an individual level factor using the CAGE, which has demonstrated high reliability (.80 or higher) and moderate correlation with other screening instruments (.48–.70) (Dhalla & Kopec, 2007), to identify severity of alcohol consumption (Ewing, 1998), and the Risk Behavior Assessment (RBA) (Booth, Mikulich-Gilbertson, Brewster, Salomonsen-Sautel, & Semerik, 2004; Needle et al., 1995), with a reliability of .66–.83 (Needle et al., 1995) and validity over .85 (Weatherby et al., 1994) to assess drug use. Participants reported whether they had ever injected drugs and if they had injected in the past 90 days. Unsafe injection behaviors measured included using unclean syringes/needles; sharing cookers, cotton, rinse water, and other paraphernalia; splitting drug solutions with other injectors through front-loading, back-loading, or use of the same cooker/spoon; or adding their own or someone else's blood into an injected drug. If participants reported engaging in one or more of these behaviors in the past 90 days, they were designated as engaging in unsafe injection.

Social factors—Participants were asked to report their marital status (legally married and common-law marriage as "married," or divorced, separated, widowed, or never married as "unmarried"), and whether or not they had children under the age of 18. Financial dependency was examined by asking participants who lived together (*n*=562, 77.2%) how they and their partner paid for common expenses. Participants who said, "my partner pays for most of the expenses" or "my partner pays for almost all of the expenses" were considered to be financially dependent on their partner. Sexual intimate partner violence was

measured by asking if a partner had either used force (hitting, holding down, or using a weapon), or used a threat of force to make the participant have vaginal, anal, or oral sex in the past six months. Childhood sexual abuse was measured by asking a series questions (Felitti et al., 1998) which have an estimated reliability of .55–.69 (Dube, Williamson, Thompson, Felitti, & Anda, 2004). The eight items included questions such as, "When you were 16 years old or younger did an adult or someone at least 5 years older than you touch or fondle you in a sexual way?" If a participant answered "yes" to any of these items, they were considered as having experienced sexual abuse. Social support was measured through the Multidimensional scale of perceived social support (MSPSS), which has a reported reliability over .85 and high validity, with questions addressing social support from the participant's family, friends, and significant other or special person in their life (Kazarian & McCabe, 1991; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). Social support was calculated through averaging the responses from the three subscales.

Structural factors—Participants reported their employment status, which was coded as being employed (full or part time), or being unemployed. Food insecurity was measured by asking participants if they had been without sufficient money for food in the past 90 days. Additional measures included whether participants had ever been incarcerated and access to health care, which was measured by asking participants whether they had a regular physician. Participants who said "yes" were designated as having regular access to health care.

Mental health treatment—Access to mental health treatment was assessed through asking participants about their experience with psychological counseling and psychiatric treatment. Participants reported whether they had been hospitalized for psychiatric treatment in the past 90 days. They were also asked whether they had received counseling in the past six months. If not, participants reported whether they needed this service. Participants also reported whether counseling was available to them.

Data analysis

Chi-square, t-tests, and bivariate linear regression were used to test the bivariate relationships between average depression score and individual, social, and structural level factors. Bivariate relationships were examined separately by gender. We performed multivariate linear regression to examine associations between depression and risk factors, with one model examining individual, social, and structural factors for females, and a second model examining associations for males. All statistical analyses were performed in SPSS version 20.

Results

Risk factors by gender

To examine whether individual, social, and structural factors were associated with depression among female and male participants, we first describe differences across each factor by gender. The average age of female participants was 34.8, while males on average were slightly older 36.8 years (p<.01). Approximately two thirds of participants were

ethnically Russian and over one tenth were Kazakh, while 25.5% of females and 19.8% of males identified as another ethnic category, which included Uighur, Tatar, Uzbek, Dunghan, Korean, and others. Through biological assay, 80 women (22.0%) were identified as being HIV positive. A higher number of men (n=103, 28.3%, p<.05) were HIV positive. The average self-rated health score among females was 4.5 (SD: 2.4), similar to the average score for males, at 4.6 (SD: 2.5). Alcohol use severity was higher among males when compared to females (p<.001). Nearly all male participants reported ever injecting drugs (*n*=351, 96.4%) while close to two- thirds of female participants had a history of drug injection (*n*=229, 62.9%) (p<.001).

Most participants were married or in a common law marriage (88.2% of females and 84.6% of males). Nearly 60% of female participants reported having children under the age of 18 as did 45.9% of male participants (p<.001). Financial dependency was more likely to be reported by female (28.8%) than male participants (14.0%, p<.001). High numbers of participants reported a history of childhood sexual abuse, with males more likely to report childhood sexual abuse (51.6%) than females (33.2%, p<.001). Experience of sexual IPV in the previous six months was more likely to be reported by female participants (20.3%) when compared to males (2.5%, p<.001). Social support was similar across gender. Most participants were unemployed, with 26.1% of female and 28.6% of male participants reporting full or part time employment. Food insecurity was widespread, reported by 46.7% of females and 50.8% of males. More males reported a history of incarceration (79.4%) than females (40.1%, p<.001). Access to health care was low, with 36.0% of females and only 19.0% of males having a regular physician (p<.001).

Depression by individual, social, and structural factors

Bivariate analysis between current depression and individual, social, and structural risk factors were conducted separately by gender. Among male participants only, depression scores were associated with lower age (b=−.01, 95% CI=−.03, −.001, p<.05). For both females and males, those with higher self-rated health scores were more likely to report lower levels of depression (women: b=−.14, 95% CI=−.18, −.10, p<.001; men: b=−.10, 95% CI=−.13, −.06, p<.001). Significant differences were not observed in depression score by biologically assessed HIV status. Among females only, a history of drug injection and unsafe injection were significantly associated with higher levels of depression (p<.001). Among both male and female participants, higher levels of social support were associated with lower levels of depression (women: b=−.21, 95% CI=−.28, −.13, p<.001; men: b=−.12, 95% CI=−.20, −.05, p<.01). Additionally, experiencing sexual IPV was associated with higher levels of depression across genders. A history of childhood sexual abuse was also associated with higher depression level among females (1.53 vs. 1.09, p<.001) and males (1.12 vs. .89, p<.05). Food insecurity was associated with higher levels of depression for both men and women (p<.001). A history of incarceration was also associated with higher levels of depression among female participants (1.39 vs. 1.13, p<.05), while this difference was not observed among males.

Multivariate analysis

We conducted multivariate analysis to examine which individual, social, and structural factors are associated with depression among female and male participants when controlling for other factors. All individual, social, and structural level factors were included in the models, although among variables related to substance use, only "ever injected drugs" was included, as other drug use variables were correlated with ever injecting drugs.

Although age was not significantly related to depression among females, among males, higher age was associated with lower levels of depression (b=−.014, 95% CI= −.027, −.002, p<.05). HIV status was not significantly associated with depression. Among participants of both genders, higher levels of self-rated health remained significantly associated with lower levels of depression when controlling for other individual, social, and structural risk factors (women: b=−.09, 95% CI=−.13, −.05, p<.001; men: b=−.08, 95% CI=−.12, −.04, p<.001). Sexual intimate partner violence in the previous six months was also associated with higher depression levels among females and males in the multivariate analysis (women: b=.48, 95% CI=.25, .71, p<.001; men: b=.79, 95% CI=.22, 1.37, p<.01). Additionally, among females, higher social support was associated with lower depression scores (b=−.128, 95% CI= −.200, −.056, p<.01), and a history of childhood sexual abuse was associated with higher levels of depression (b=.207, 95% CI=.008, .406, p<.05). Similar patterns on both variables were observed among male participants, although associations were only marginally significant. Among females, having children was also associated with lower depression scores (b=−.204, 95% CI= −.386, −.022, p<.05), while this association was not significant for males. Food insecurity was associated with higher levels depression among participants of both genders (women: b=.25, 95% CI=.06, .44, p<.01; men: b=.31, 95% CI=.13, .49, p<.01).

Mental health services

We examined whether access to counseling services varied by gender through bivariate analysis. Two female and two male participants reported being hospitalized for psychiatric treatment in the past 90 days. Less than one fifth of participants reported accessing counseling in the past six months (19.8% of females and 17.3% of males), demonstrating no significant difference in access to counseling by gender. Among those who had not accessed services in the prior six months, females were more likely to report needing counseling (51.0%) than males (35.9%, p<.001). Of participants who reported needing and not receiving services in the prior six months, 12.4% of females and 8.5% of males reported that counseling was available to them.

Discussion

This paper adds to the knowledge base on depression and associated risk factors among injection drug users in Central Asia. A number of individual, social, and structural level factors were found to be associated with depression in the multivariate analysis. Prevalence of depression overall was higher among women when compared to men, consistent with previous studies conducted among the general population in the fSU (Goryakin et al., 2013; Mentzakis et al., 2013; Roberts et al., 2012) and among PWID (Magnus et al., 2013). We did

not find an association between depression and HIV prevalence, in contrast with that reported in other studies among PWID (Ciesla & Roberts, 2001; Gilchrist et al., 2011).

While age was not a significant predictor of depression among women, the association between older age and lower levels of depression among men is contrary to patterns observed in the fSU (Roberts et al., 2010). The finding that older age was associated with lower levels of depression among males may result from cultural differences related to disclosure of mental health problems among older males in Kazakhstan, who may be less likely to feel comfortable discussing or admitting to experience of depression when compared to younger males. Self-rated health was associated with lower depression levels across gender, highlighting the interconnectedness of mental and physical health conditions (Prince et al., 2007) and pointing to the importance of nutrition, exercise, and attention to physical health problems in indirectly supporting mental wellbeing. Depression was marginally associated with injecting drugs among females, while the bivariate analysis identified an association between depression and engaging in unsafe injection practices, consistent with other research (Gilchrist et al., 2011; Gu et al., 2011; Lundgren et al., 2005; Sarin et al., 2013). Rates of injection drug use were high among men, which may explain the insignificant differences between men who did and did not inject drugs in levels of depression.

Our finding that a history of childhood sexual abuse and recent experience of sexual intimate partner violence were associated with higher levels of depression was consistent with research conducted among females who inject drugs elsewhere (Gilchrist et al., 2012), but this study identifies similar patterns among male injection drug users, although the numbers of males reporting recent sexual intimate partner violence was low. The high numbers of men reporting experience of childhood sexual abuse may be misleading, as some participants may be describing consensual sexual activity experienced during adolescence. The association between social support and lower levels of depression has also been identified in the fSU (Goryakin et al., 2013; Roberts et al., 2010) and among female injectors (Risser et al., 2010), highlighting the importance of relationships and social networks in promoting mental wellbeing.

Although unemployment has been found to influence depression in other research in the fSU (Roberts et al., 2010), this study did not find an association between employment status and depression, perhaps due to the low employment rate (near 25%) among participants. Access to health care also did not demonstrate significance in this analysis, in contrast with results found in other research (Risser et al., 2010). This finding may also be related to fairly low levels of health care access among the group of participants. Food insecurity, which was associated with higher levels of depression among females and males, coincides with economic vulnerability and points to basic survival needs faced by many PWID. A lack of access to basic supports needed for survival may lead to higher levels of depression, or alternatively, depression may limit people's ability to address basic survival needs.

Nearly one fifth of participants had received counseling services in the past six months, demonstrating that some mental health treatment is available to PWID in Kazakhstan. However, many participants, particularly women, felt they needed counseling assistance and

few felt that they could access needed services. This finding highlights the need for additional health and mental health services for PWID in Kazakhstan. Unmet treatment needs for depression and mental illness are a challenge worldwide (Consortium, 2004), and Kazakhstan is no exception (Saxena, Thornicroft, Knapp, & Whiteford, 2007). Necessary policies and infrastructure available for mental health services in Kazakhstan, including community and human resources as well as funding are very limited. Mental health services in Kazakhstan are mostly institutionally based and include mental hospitals (31 in the country), mental health outpatient facilities (32), and day treatment facilities (15), in addition to psychiatric beds in general hospitals (WHO, 2011). Diagnoses and treatment of mental disorders are not provided within primary care settings (WHO, 2011). Expansion in the number of service providers has been observed in the related field of alcohol treatment since the end of the Soviet era, although fundamental treatment approaches remain unchanged (Waters & Thom, 2008). In addition to these limitations in general service availability, PWID may experience additional difficulties in accessing mental health resources due to stigma and a lack of resources (Luoma et al., 2007; Neale, Tompkins, & Sheard, 2008; M. Young, Stuber, Ahern, & Galea, 2005). To be accessible, mental health services must be low-cost or free and welcoming to participants regardless of drug use background. Comprehensive services that can address mental health needs as well as the co-occurring issues of intimate partner violence, drug use and drug risk, legal challenges, employment, HIV prevention and treatment, and basic food and shelter are critical. The significance of social support in relation to lower rates of depression highlights possibilities for peer support strategies, as well as network, group, family, and couple involvement in addressing mental health and co-occurring vulnerabilities.

Limitations

As this study was not a random sample, study results are not generalizable to the larger population of PWID in Kazakhstan. As potential participants with evidence of psychiatric impairment that could have limited effective study participation were excluded from the study, findings may not be applicable to PWID with severe forms of depression or mental illness. Furthermore, the study did not include a clinical evaluation of depressive symptomology or determine whether or not someone met diagnostic criteria for major depressive disorder or other mental health conditions, and we were not able to clinically assess whether someone met diagnostic criteria for drug or alcohol addiction. For a number of constructs examined, we did not utilize standardized scales. We were unable to examine biological factors such as genetic vulnerabilities that may play a critical role in depression (Hyde et al., 2008). Among people who inject drugs who have been incarcerated and experienced abuse and poverty, attention to anxiety and trauma would likely point to additional service needs for both men and women. We did not examine important political and cultural factors, i.e., dominance, power, and social capital, which are known to affect individual and community choices and perceptions regarding mental health and substance use (McKenzie, Whitley, & Weich, 2002). We chose to look at individual level data, although participants comprised couples. Despite these limitations, this study seeks to contribute to the limited research available on mental health needs of PWID. Study findings highlight the interconnectedness of physical health, social supports, structural risk factors,

and depression among PWID, and point to the need for enhanced treatment access and co-occurring supports for men and women who inject drugs and their intimate partners.

Conclusion

Findings from this research underscore the need for attention to mental health services for PWID in Kazakhstan. The higher rates of depression observed among women suggest there is a need for tailored outreach and gender specific prevention and treatment services (Magnus et al., 2013) which respond to potential access barriers such as discrimination, stigma, child care needs, and financial needs. Although a link between HIV and depression was not found in this study, high rates of HIV among PWID in Kazakhstan (Deryabina, Krukova, Gwynn, Zhussupov, & McFarland, 2012; El-Bassel et al., 2013; UNAIDS, 2012) highlight the need for additional research on links between mental health and HIV. Further research is also needed to examine how cultural and political factors including social capital, stigma, service provider attitudes, and drug policies influence depression and access to services among injection drug users in this region. The inter-related occurrence of drug use, mental health, and socio-economic needs suggest attention to depression can be incorporated into existing strategies including HIV and drug treatment and primary health care (Gu et al., 2011; Jane-Llopis & Matytsina, 2006; Psaros et al., 2011).

Acknowledgements

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Table 1

Individual, social, and structural factors by gender

	Female (364)	Male (364)
Individual Factors		
Age: mean (SD)	34.76 (7.67)[**]	36.76 (7.82)[**]
Russian ethnicity	231 (63.5%)	247 (67.9%)
Kazakh ethnicity	40 (11.0%)	45 (12.4%)
Other ethnicity	93 (25.5%)[~]	72 (19.8%)[~]
High school education	296 (81.3%)[~]	275 (75.5%)[~]
Self rated health: mean (SD)	4.45 (2.39)	4.64 (2.51)
HIV positive	80 (22.0%)[*]	103 (28.3%)[*]
CAGE: mean (SD)	2.90 (1.97)[***]	3.58 (1.72)[***]
Ever injected drugs	229 (62.9%)[***]	351 (96.4%)[***]
Among ever injected:		
Injected drugs in the past 90 days	189 (85.9%)[**]	321 (94.4%)[**]
Unsafe injection in the past 90 days	177 (48.6%)[***]	296 (81.3%)[***]
Social Factors		
Marital status (married)	321 (88.2%)	308 (84.6%)
Have children under 18	218 (59.9%)[***]	167 (45.9%)[***]
Financially dependent on partner	105 (28.8%)[***]	51 (14.0%)[***]
Sexual IPV in the past 6 months	74 (20.3%)[***]	9 (2.5%)[***]
Experienced childhood sexual abuse	121 (33.2%)[***]	188 (51.6%)[***]
Social support: mean (SD)	5.01 (1.3)	5.14 (1.19)
Structural Factors		
Employed	95 (26.1%)	104 (28.6%)
Food insecurity past 90 days	170 (46.7%)	185 (50.8%)
Ever incarcerated	146 (40.1%)[***]	289 (79.4%)[***]
Regular access to health care	131 (36.0%)[***]	69 (19.0%)[***]

[~] $p<.1$,

[*] $p<.05$,

[**] $p<.01$,

[***] $p<.001$, t-test and chi-square

Table 2

Depression by individual, social, and structural risk factors

	Female (364)	Male (364)
Individual Factors:		
Age: B (95% CI)	.01 (−.01, .02)	−.013 (−.03, −.001) [*]
Russian: mean (SD)	1.23 (.92)	.99 (.88)
Kazakh: mean (SD)	1.47 (1.04)	1.04 (.96)
High school education or above: mean (SD)	1.27 (.98)	.99 (.86)
Less than high school	1.09 (.91)	1.06 (1.00)
Self rated health: B (95% CI)	−.14 (−.18, −.10) [***]	−.10 (−.13, −.06) [***]
HIV positive: mean (SD)	1.39 (1.02)	.97 (.90)
HIV negative	1.19 (.96)	1.02 (.89)
CAGE: B (SE)	.41 (−.01, .09)	.12 (−.04, .07)
Ever injected drugs: mean (SD)	1.39 (.97) [***]	1.00 (.89)
Never injected	.96 (.92) [***]	1.22 (1.02)
Among ever injected: mean (SD)		
Injected drugs, past 90 days	1.45 (.96)	1.01 (.88)
Never injected, past 90 days	1.19 (1.05)	.95 (1.01)
Unsafe injection, past 90 days	1.47 (.95) [***]	1.03 (.90)
No unsafe injection, past 90 days	1.01 (.94) [***]	.88 (.87)
Social Factors: mean (SD)		
Married	1.21 (.95)	1.00 (.91)
Unmarried	1.40 (1.14)	1.04 (.82)
Have children under 18	1.17 (.94)	1.02 (.90)
No children	1.33 (1.02)	1.00 (.89)
Financial dependency on partner	1.18 (.95)	1.08 (.92)
No financial dependency	1.26 (.98)	.99 (.89)
Sexual IPV in the past 6 month	1.79 (.95) [***]	1.19 (.40) [***]
No sexual IPV	1.09 (.93) [***]	.98 (.87) [***]
Experienced childhood sexual abuse	1.53 (.90) [***]	1.12 (.86) [*]
No experience of childhood sexual abuse	1.09 (.97) [***]	.89 (.92) [*]
Social Support: B (95% CI)	−.21 (−.28, −.13) [***]	−.12 (−.20, −.05)**
Structural Factors: mean (SD)		
Employed	1.15 (1.01)	.93 (.85)
Unemployed	1.27 (.96)	1.03 (.91)
Food insecurity past 90 days	1.50 (.97) [***]	1.21 (.91) [***]
No food insecurity	1.00 (.92) [***]	.79 (.83) [***]
Ever incarcerated	1.39 (.96) [*]	1.00 (.89)

	Female (364)	Male (364)
Never incarcerated	1.13 (.96) [*]	1.01 (.89)
Access to health care	1.21 (1.01)	.94 (.97)
No access to health care	1.25 (.95)	1.02 (.88)

[*]
p<.05,

[***]
p<.001, t-test and univariate regression

Table 3

Multivariate linear regression of individual, social, and structural risk factors on depression

	Women	Men
Individual Factors	B [95% CI]	B [95% CI]
Age	.003 [−.010, .015]	−.014 [−.027, −.002] *
Russian	.042 [−.165, .250]	−.038 [−.262, .187]
Kazakh	.040 [−.286, .367]	.020 [−.297, .338]
High school education or more	.202 [−.029, .434]~	.048 [−.166, .262]
Self rated health	−.090 [−.130, −.050] ***	−.081 [−.118, −.043] ***
HIV positive	.168 [−.057, .392]	−.024 [−.227, .179]
Ever injected drugs	.222 [−.014, .457]~	−.324 [−.812, .165]
Social Factors		
Married	−.108 [−.387, .171]	−.102 [−.344, .141]
Children under 18	−.204 [−.386, −.022] *	.009 [−.169, .187]
Experienced childhood sexual abuse	.207 [.008, .406] *	.155 [−.022, .332]~
Financial dependency on partner	−.047 [−.248, .153]	.136 [−.120, .392]
Sexual IPV in the past 6 months	.478 [.247, .709] ***	.793 [.215, 1.371] **
Social support	−.128 [−.200, −.056] **	−.074 (−.148, .000)~
Structural Factors		
Employed	.011 [−.197, .218]	−.068 [−.264, .128]
Food insecurity	.249 [.062, .437] **	.310 [.129, .492] **
Ever incarcerated	−.058 [−.289, .173]	.001 [−.228, .230]
Access to health care	.031 [−.158, .219]	.052 [−.184, .288

~
p<.1,

*
p<.05,

**
p<.01,

***
p<.001