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RESEARCH ARTICLE

Psychiatric Disorders and HIV Drug Risk Behaviors Among Individuals Under Community Correctional Supervision

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Abstract

The prevalence of human immunodeficiency virus (HIV) is nearly three times higher in the incarcerated population than in the general population in the United States, and over half of the incarcerated population has a psychiatric diagnosis. Individuals under community corrections supervision continue to receive limited attention regarding HIV prevention and surveillance. Anxiety-related, depressive-related, and post-traumatic stress disorders are high in the community corrections population and may be potential correlates of HIV risk behaviors. Examining the link between psychiatric diagnosis and HIV risk behavior within the community correctional setting may shed light on who is at greatest risk for HIV. Individuals within community corrections who participated in a clinical trial completed questionnaires and semi-structured interviews to screen for psychiatric disorders and HIV risk behaviors. Multivariate analyses revealed that individuals of younger age, of White race, and with anxiety disorders engaged in greater HIV drug risk behaviors, providing preliminary implications for whom testing and prevention efforts should be emphasized.

Keywords: community correctional setting, mental illness, HIV, drug risk behavior

Introduction

Human immunodeficiency virus (HIV) prevalence in the incarcerated population in the United States is about three times higher than in the general population (Westergaard *et al.*, 2013), and approximately 14% of all Americans living with HIV interact with the correctional system every year (Rich *et al.*, 2013). Individuals under community corrections (i.e., probationers and parolees) have similar rates of HIV but are less likely to seek medical treatment (Rich *et al.*, 2013). Despite these issues, individuals under community corrections supervision continue to receive limited surveillance of HIV risk behaviors (Belenko *et al.*, 2004; Larney *et al.*, 2014), including drug risk behaviors (i.e., injection drug use, sharing injection drug use equipment; Centers for Disease Control and Prevention [CDC], 2020).

The few studies that have examined the prevalence of HIV risk behaviors among criminal justice-involved persons, including those under community corrections supervision, have found a high lifetime prevalence of injection drug risk (Belenko *et al.*, 2004; Gordon *et al.*, 2013; Loeliger *et al.*, 2017). The prevalence of HIV and risk behaviors paired with the dearth of studies on such risk highlight a critical need for additional studies of this health problem among individuals in community corrections. This study aims to address this gap by examining the association between psychiatric disorders (i.e., anxiety-related, depressive-related, and post-traumatic stress disorders) common to community corrections populations and HIV drug risk behaviors.

Research on HIV in various populations has identified psychiatric disorders as important risk factors for HIV as they may increase risk behavior (Fang *et al.*, 2019; Hutton

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et al., 2001; Nduna *et al.*, 2010; Remien *et al.*, 2019). Indeed, a study of individuals seeking outpatient psychiatric care revealed an HIV prevalence nearly four times that of the general adult population (Beyer *et al.*, 2007). Psychiatric disorders as risk factors for HIV may be particularly relevant to the corrections population, as 37% to 48% of the incarcerated population and 11% to 19% of the community corrections population in the United States have a psychiatric disorder (Al-Rousan *et al.*, 2017; Bronson & Berzofsky, 2017; Prins & Draper, 2009).

Identifying which psychiatric disorders are most strongly associated with increased HIV drug risk behaviors within corrections populations will aid risk assessment and prevention within this vulnerable population. Numerous studies using a variety of samples have demonstrated that individuals with severe mental illnesses (e.g., schizophrenia and bipolar disorder) are at high risk for engaging in HIV drug risk behaviors (see Meade & Sikkema, 2005, for a review). However, fewer studies have attended to anxiety-related, depressive-related, and post-traumatic stress disorders, which are highly prevalent in the criminal justice population compared with the general population (Gottfried & Christopher, 2017; Prins, 2014).

Studies of injection drug users have found that depressive symptoms are associated with increases in HIV drug risk behavior (Shehadeh *et al.*, 2018; Stein *et al.*, 2003). Among people who inject drugs, severe anxiety symptoms were related to HIV drug risk behavior (Reyes *et al.*, 2007). Furthermore, a systematic review showed post-traumatic stress disorder symptoms to be common among people who inject drugs (Colledge *et al.*, 2020), but not among incarcerated adult women (Hutton *et al.*, 2001).

Relatedly, trauma history was associated with increased HIV drug risk behaviors in a nationally representative sample (Quinn *et al.*, 2016). However, researchers have ascertained that the data are inconsistent, suggesting a need for additional inquiry into the associations between psychiatric disorders and HIV drug risk behaviors (Roy *et al.*, 2016). Further investigation of the relations of anxiety-related, depressive-related, and post-traumatic stress disorders with HIV risk behavior in a community corrections sample is especially needed as these disorders are among the most prevalent psychiatric disorders in this population (Gottfried & Christopher, 2017; Prins, 2014).

The correlation between psychiatric symptoms and HIV drug risk behaviors is consistent with the social action theory of health behavior (Ewart, 1991), which posits that contextual influences (sociodemographic background, psychiatric symptoms, and life stressors) influence self-change processes (e.g., motivation, coping skills), which, in turn, impact action states, or habits (e.g., HIV drug risk behavior). For example, psychiatric symptoms may increase HIV drug risk behaviors due to reduced coping skills, self-efficacy, and motivation toward health protection (Traube *et al.*, 2011). This is especially relevant to individuals under community corrections supervision, who may have additional life stressors competing for attention (e.g., stable housing and relationship stressors; Rich *et al.*, 2013).

Overall, despite their high risk for HIV and HIV risk behaviors, individuals in community corrections have had limited empirical attention (Belenko *et al.*, 2004). Research in other populations has suggested that anxiety-related, depressive-related, and post-traumatic stress disorders increase engagement in HIV risk behaviors (Colledge *et al.*, 2020; Shehadeh *et al.*, 2018); however, the extent to which these findings generalize to the community corrections population while controlling for demographic correlates of HIV risk behaviors is unknown.

Thus, this study aimed to examine the relations of depressive, anxiety, and trauma-related disorders with HIV drug risk behaviors among individuals under community corrections supervision. We further aimed to examine these associations while controlling for gender and race (White and Black or other non-White races), given the gender and racial differences in HIV drug risk behaviors reported in the general population (CDC, 2018) and criminal justice samples (Adams *et al.*, 2013; Belenko *et al.*, 2004; Binswanger *et al.*, 2014; Clark *et al.*, 2013; Zhu *et al.*, 2015). This study will help inform targeted HIV prevention efforts for this often-overlooked population.

Method

Participants

Data were sourced from a larger clinical trial conducted in Birmingham, AL, examining the effects of bupropion on smoking outcomes among individuals in the community correctional system. Study criteria included being age 19 years or older (the age of majority in Alabama) and currently under community correctional supervision (e.g., parole, drug court, and probation), smoking at least five cigarettes per day, living in an environment that allows smoking, and willing to take bupropion and receive four sessions of behavioral counseling to quit smoking.

Participants on parole, on probation, or in drug court were combined due to these individuals being under community corrections supervision. Participants were excluded from the study if they had a history of mania, a seizure disorder, history of an eating disorder, current suicidal ideation or a suicide attempt in the past 6 months, a cognitive impairment that precluded informed consent, or a severe untreated medical condition, or if they were pregnant or nursing a child or were non-English speaking.

Measures

The parent study included several measures in the baseline assessment, which primarily measured demographics, smoking-related variables (e.g., Fagerstrom Test for

Nicotine Dependence, Stages of Change—Short Form, Processes of Change—Short Form, Hughes-Hatsukami Withdrawal Scale). Pertinent to the current research aims, the baseline assessment also measured psychiatric symptoms (e.g., Mini International Neuropsychiatric Interview [MINI], Center for Epidemiological Studies Depression Scale) and HIV risk behaviors (Risk Assessment Battery [RAB]). We elected to use the demographics measure, the MINI, and the RAB for the research aims due to their strong psychometric properties, which are described in greater detail below.

Demographics. A self-report demographics questionnaire was developed for this study. It assessed height, weight, gender, age, ethnicity, race, education level, marital status, number of children, and psychiatric treatment variables.

The MINI. Trained research assistants conducted the MINI, English version 5.0 (Sheehan *et al.*, 1998), a semi-structured diagnostic interview that screens for lifetime history of psychiatric disorders using the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*—Fourth Edition (DSM-IV; American Psychiatric Association, 2013). Sections assessing anxiety-related, depressive-related, and post-traumatic stress disorders were used for the present research aims. Each participant was assigned a score of 0 (absence) or 1 (presence) for each disorder. Disorders in the anxiety disorders section (i.e., panic disorder, agoraphobia, and generalized anxiety disorder) were combined such that 1 = the presence of one or more anxiety disorders and 0 = no anxiety disorders.

Disorders in the depressive disorders section (i.e., major depressive episode and dysthymia) were combined such that 1 = the presence of one or more depressive disorder and 0 = no depressive disorders. The post-traumatic stress disorder section was scored such that 1 = the presence of the disorder and 0 = no disorder. Thus, the final variables used to be included in the analyses were anxiety disorders, depressive disorders, and post-traumatic stress disorders, with possible scores of 0 or 1 on each.

The RAB. The RAB is a self-report HIV risk battery that was administered to assess drug risk behaviors (Navaline *et al.*, 1994) over the past 6 months. The drug risk behaviors scale consists of eight items. Item 1 assesses the presence/absence of injection drug use on a 0 to 1 scale. The remaining items assess the frequency of drug risk behaviors including injection drug use; sharing needles, rinse water, cookers, and cotton; visiting a shooting gallery; and frequency of back loading on a 0 to 3 scale. The items are summed, with total possible scores ranging from 0 to 22. Higher scores indicate greater frequency of drug risk behaviors. This subscale exhibited excellent internal consistency ($\alpha = 0.91$) in the present sample.

Procedure

Participants were recruited through fliers posted at a community correctional setting. Participants were screened for inclusion and exclusion criteria and, if eligible, scheduled for a baseline assessment. During the baseline assessment, participants provided informed consent, completed study assessments, had blood drawn to assess for general health, and had their carbon monoxide measured through a monitoring device; women of childbearing potential provided urine for pregnancy screening.

Participants were then randomized to receive either bupropion and smoking cessation counseling or bupropion and brief physician advice to quit smoking. All assessments for this study were completed during the baseline assessment. This study was registered with ClinicalTrials.gov (NCT01257490) and received approval by the University of Alabama at Birmingham Institutional Review Board. A detailed description of study procedures is provided elsewhere (Cropsey *et al.*, 2015).

Data Analytic Approach

First, descriptive statistics of drug risk behaviors were computed. Second, we examined demographic correlates of drug risk behaviors to control for relevant covariates in the regression model. Race, gender, and education differences in drug risk behaviors were assessed using *t* tests. Marital status differences in drug risk were assessed using univariate analysis of variance. Correlations were computed to examine the bivariate associations of age, number of children, and psychiatric disorders with drug risk behaviors.

Third, we examined the bivariate correlations between the psychiatric disorders to identify which disorders to include in the regression model. Point-biserial correlations were used for the psychiatric disorder variables given their dichotomous scale. Finally, to determine multivariate correlates of drug risk behaviors, we conducted a hierarchical multiple linear regression with drug risk entered as the outcome variable. The demographic and psychiatric disorders that were correlated with HIV drug risk behaviors in the analyses were entered as predictors.

Results

See Table 1 for descriptive statistics of the participant characteristics and study variables. Participants ($N = 656$) were recruited from a community correctional setting (67.1% male; mean age = 37.1 years; 65.2% African American). The prevalence of drug risk behaviors ranged from 3.4% to 10.2%. Twelve percent of the sample reported any drug risk behaviors. Ten percent of the sample had never had a blood test for HIV/AIDs and

Table 1. Descriptive Statistics

Variable	M	*SD*	N	%
Drug risk behaviors	0.57	2.31		
Endorsed any drug risk behaviors			81	12.4
Injected drugs			67	10.2
Shared needles or works			25	3.8
Been to shooting gallery/house			22	3.4
Shared rinse water			30	4.6
Shared cooker			23	3.5
Shared a cotton			29	4.5
Loaded drugs into one syringe using another syringe			26	4.0
Never tested for HIV/AIDS			66	10.3
Ever told had HIV/AIDS			22	3.4
Criminal charges				
Crimes against people			226	34.8
Crimes against property			332	51.1
Court-related crimes			523	80.5
Drug-related crimes			414	63.7
Race (Black/non-White)			428	65.2
Gender (male)			440	67.1
Marital status				
Never been married			353	54
Married			71	10.9
Divorced/separated			208	31.8
Widow			22	3.4
Education				
Less than high school			44	6.7
Some high school or greater			611	93.3
No. of children	1.73	1.79		
Age	37.09	11.08		
Anxiety disorder			115	17.5
Depressive disorder			120	18.3
Post-traumatic stress disorder			24	3.7
History of trauma			230	35.1

$N = 656$.

approximately 3% reported having HIV. White individuals engaged in greater drug risk behaviors ($M = 1.35$, SD = 3.51) than Black individuals ($M = 0.16$, SD = 1.12; $p < .001$).

Women and men did not differ in drug risk behaviors ($p = .52$). No differences in drug risk behaviors were observed across marital status ($p = .20$) or education levels ($p = .50$). Correlations indicated that age and number of children were negatively associated with drug risk behaviors. Finally, anxiety disorders were associated with drug risk behaviors (see Table 2 for correlations).

Next, a multiple linear regression was conducted with the aforementioned demographic correlates (age, race, and number of children) and anxiety disorders to determine multivariate correlates of drug risk behavior. The regression included drug risk behavior as the criterion variable and race, age, number of children, and anxiety disorder as the predictor variables. The overall model fit was significant—$R^2 = 0.09$, F (4, 644) = 14.94, $p < .001$—but explained only 9% of the variance in HIV drug risk behavior.

Race and age were the sole multivariate correlates of drug risk behaviors, indicating that Whites were more likely to engage in drug risk behaviors than Black individuals and that as age increased, drug risk behaviors decreased. Each of these effect sizes was small. More specifically, the model indicated that HIV drug risk behaviors were 0.21 units greater for White individuals than Black individuals, and as age increased by 1 year, HIV drug risk behaviors decreased by 0.14 units. Although anxiety disorders were not statistically associated with drug risk behavior, a trend indicated marginal significance for anxiety disorders (see Table 3 for regression parameters) such that HIV drug risk behaviors were 0.07 units greater in people with anxiety disorders than in people without anxiety disorders.

Discussion

This study aimed to examine the association between psychiatric disorders (i.e., anxiety-related, depressive-related, and post-traumatic stress disorders) and HIV drug risk behaviors in individuals under community corrections supervision, a population with high risk for HIV infection but limited empirical attention (Belenko *et al.*, 2004). Although research with other populations has suggested that depressive-related, anxiety-related, and post-traumatic stress disorders increase engagement in HIV risk behaviors, we did not replicate these findings. Rather, only sociodemographic variables remained associated with these behaviors in multivariate analyses.

Table 2. Means, Standard Deviations, and Bivariate Correlations Among Study Variables

Variable	*1*	*2*	*3*	*4*	*5*	*6*
1. HIV drug risk behaviors	—					
2. Age	−0.17*	—				
3. No. of children	−0.11*	0.00	—			
4. Depressive disorder	0.04	−0.01	−0.02	—		
5. Anxiety disorder	0.10*	−0.02	−0.02	0.52*	—	
5. History of trauma	−0.03	−0.06	0.05	0.21*	0.23*	—
7. Post-traumatic stress disorder	−0.02	0.07	0.11*	0.20*	0.19*	0.25*

*$p < .01$.

Table 3. Results of Regression Predicting HIV Drug Risk Behaviors

Variable	β	t	p
Race (White = 0, Black = 1)	−0.21	−5.46	<0.001
No. of children	−0.03	−0.75	0.45
Age	−0.14	−3.49	0.001
Anxiety disorder (none = 0, 1 or more = 1)	0.07	1.84	0.07

White individuals were more likely to engage in drug risk behaviors than Black individuals, and drug risk behaviors decreased as age increased. Anxiety disorders were associated with HIV drug risk behaviors at the bivariate level, but only marginally associated with these behaviors in multivariate models where demographic variables were controlled. Although effect sizes were small, our findings in the context of the very small body of literature on HIV risk behaviors in this population indicate future directions for research.

First, our findings both diverged and confirmed prior research regarding HIV drug risk behaviors and testing in community corrections samples. Twelve percent of the sample engaged in any drug risk behaviors in the past 6 months. This prevalence of HIV drug risk behaviors in the present sample appears higher than estimates in other community corrections samples with similar assessment time frames (e.g., 1% to 4%; Belenko *et al.*, 2004; El-Bassel *et al.*, 2017, 2019). This could be due to a potentially larger portion of our sample having been charged with drug-related crimes (67%) compared with other samples.

For example, 53% of a community corrections sample had drug charges (El-Bassel *et al.*, 2017) and 22% of another sample were ordered to drug and alcohol treatment (El-Bassel *et al.*, 2019). The lifetime prevalence for HIV testing (90%) was similar to that of past community corrections samples (Belenko *et al.*, 2004). However, this was a lifetime prevalence estimate. Past research has shown that HIV testing within the community corrections setting is low, with only 18.2% of individuals in community corrections receiving needed testing (Cropsey *et al.*, 2012). Additional research is needed to understand the needs of HIV testing of individuals under community corrections supervision, particularly given their higher rates of HIV drug risk behaviors than in the general population.

Second, this study also added to small and inconclusive (Roy *et al.*, 2016) body of literature concerning the association between anxiety-related, depressive-related, and post-traumatic stress disorders and HIV drug risk behaviors. Indeed, most studies have examined these associations in samples of people who inject drugs. Similar to a prior sample of incarcerated women (Hutton *et al.*, 2001)—but unlike other samples—depressive disorders, trauma history, and post-traumatic stress disorder were not associated with HIV drug risk behavior in this study (Colledge *et al.*, 2020; Quinn *et al.*, 2016; Shehadeh *et al.*, 2018; Stein *et al.*, 2003).

Anxiety disorders, however, were associated with drug risk behaviors at the bivariate level. This could be explained by a subset of individuals with anxiety disorders who experience impulsivity and negative urgency, which may increase their likelihood of engaging in risky behaviors in response to distress (Tomasi *et al.*, 2019). Indeed, individuals who engage in HIV drug risk behaviors are likely to have high levels of impulsivity (Arends *et al.*, 2019).

This would be consistent with social action theory (Ewart, 1991), but additional research is needed to investigate underlying anxiety constructs and how they may contribute to HIV drug risk behavior. Furthermore, this conclusion is weakened by the small effect size and the correlation falling below statistical significance in the multivariate analysis. This suggests that the presence of an anxiety disorder may be an overall weak predictor of HIV drug risk behaviors.

Finally, the current findings added to our understanding of potential sociodemographic correlates of HIV drug risk behaviors among people under community corrections supervision. Individuals of older age engaged in fewer drug risk behaviors, which is inconsistent with past community corrections samples (Clark *et al.*, 2013). Unlike prior findings, men and women did not differ in drug risk behaviors (Adams *et al.*, 2013; Belenko *et al.*, 2004; Binswanger *et al.*, 2014; Zhu *et al.*, 2015; c.f., Clark *et al.*, 2013).

White individuals were more likely to engage in drug risk behaviors than Black individuals, replicating past study with individuals recently released from prison or under community corrections supervision (Clark *et al.*, 2013). This is an important pattern of findings, as national statistics show that Black individuals are more likely to become infected with HIV than non-Hispanic White individuals (CDC, 2018). If risk assessment and prevention efforts were to follow these national statistics within a community corrections population, individuals at risk would be missed.

Despite these important implications, this study has notable limitations. The most significant limitation of the study was the exclusion criteria that limited the generalizability of the findings. Individuals with current suicidal ideation or recent suicide attempts were excluded, likely limiting the study to investigating less severe forms of depression. Relying on self-report for potentially sensitive information may have resulted in underreporting of HIV risk behaviors. Given the racial demographics within Alabama, it was not possible to determine racial differences of other ethnic minority groups. Future research would benefit from expanding these results to Hispanic/Latino populations as they are also at an elevated risk for HIV infection (CDC, 2018).

Conclusions

Individuals under community corrections supervision are the understudied group vulnerable to HIV risk infection. This study examined psychiatric disorders and sociodemographic correlates of drug risk behaviors. The study demonstrated that sociodemographic factors, namely age and race, were associated with HIV drug risk behaviors. Anxiety disorders were marginally associated with HIV drug risk behaviors. Additional investigations of HIV drug risk behaviors in individuals under community corrections supervision are sorely needed.

Author Disclosure Statement

The authors disclosed no conflicts of interest with respect to the research, authorship, or publication of this article.

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