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Health Correlates of Co-occurring Substance Use for Women with HIV in Cocaine Use Recovery

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Abstract

Background—The goal of this study was to examine clinical correlates of alcohol, opioid, cannabis, sedative, or other co-occurring substance use disorders in a sample of 124 HIV+women in recovery from cocaine use disorders.

Methods—Data was collected from a baseline assessment for a randomized trial comparing a family therapy intervention to a health promotion group intervention. Substance use disorders were assessed with a computer-administered structured diagnostic interview. Psychological distress was measured with the Brief Symptom Inventory. Sleep problems were measured with the Short Sleep Index from the Hamilton Anxiety and Depression Ratings Scales. Pain was assessed with items from the Medical Outcomes Study-HIV scale. HIV health was assessed with blood tests for T-cell count and HIV viral load suppression, as well as a nurse-administered symptom assessment.

Results—Women with a co-occurring opioid use disorder were significantly more likely to have psychological distress and sleep problems, but less likely to have severe pain. Even though there was no difference in T-cell count or Viral load, women with opioid use disorder were significantly more likely to have high HIV symptoms.

Conclusions—Women in recovery with HIV who have co-occurring cocaine use and opioid use disorders were more likely to have several indicators of worse mental and physical health. Interventions may need to be tailored to meet the needs of this subgroup of women. Future research should examine whether these co-occurring conditions are associated with greater

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Drs. Feaster and Mitrani designed the study and wrote the protocol.

Dr. McCabe conducted literature searches, provided summaries of previous research studies, and conducted the statistical analysis.

Dr. McCabe wrote the first draft of the manuscript and all authors contributed to and have approved the final manuscript.

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likelihood of relapse or poor treatment response, and whether this higher-risk profile exists in other groups.

Keywords

comorbidity; HIV/AIDS; cocaine; opioids; women

1. Introduction

Substance use disorders have been linked to HIV progression and associated health problems (National Institute on Drug Abuse, 2012). The prevalence of co-occurring substance use and mental health disorders, e.g., depression, ranges from 10-28% for people with HIV (Burnam et al., 2001; Dausey & Desai, 2003). Sleep problems are linked to depression in HIV populations (Crum-Cianflone et al., 2012). Evidence for a relationship between sleep and substance use is less clear, which may be due to limitations in study design (Rubinstein & Selwyn, 1998; Reid & Dwyer, 2005). People with HIV and substance use disorders often receive less pain relief from medications, and may find pain more distressing than non-using counterparts (Breitbart, Rosenfeld, Passik, Kaim, Funesti-Esch, & Stein, 1997).

People who have substance use disorders are often grouped by primary substance. However, many people use more than one substance and these individuals may have distinct patterns of use (Gossop, Manning, and Ridge, 2006), e.g., co-use of cocaine and opioids (Leri, Bruneau, & Stewart, 2003). Users often combine multiple substances in the belief that the effects of one substance will be enhanced or tempered by the effects of the other, e.g., a speedball that combines cocaine and heroin. Although the evidence for an enhanced subjective experience is conflicting, combining substances often increases the probability of harmful events for users (Leri et al., 2003). There is evidence of links between chronic use of multiple substances and increased problems with physical and mental health (Risser & Schneider, 1994; Kendall, Sherman, & Bigelow, 1995; Martinotti, Carli, Tedeschi, DiGiannantonio, Roy, & Sarchiapone, 2000; Bachman & Peralta, 2002; Schensul, Convey, & Burkholder, 2005). Use of multiple drugs is particularly salient with regard to women with HIV because using multiple drugs has been linked with greater impulsivity and risky sexual behaviors (Patterson, Semple, Zians, & Strathdee, 2005), and risky heterosexual contact and substance use are the leading routes of HIV transmission for women (Centers for Disease Control, 2008).

To date there is little research that examines whether women with HIV and co-occurring substance use disorders have worse mental or physical health than those with one substance use disorder; to our knowledge no studies examined this question in women with HIV in recovery from cocaine use disorders. The goal of this study is to expand knowledge about the health of women with co-occurring substance use disorders and HIV in recovery. Specifically, we hypothesized that women with co-occurring substance use disorders, in comparison to only a cocaine use disorder, would be more likely to have psychological distress, sleep problems, severe pain, and worse HIV health than women.

2. Materials and Methods

2.1 Participants

Participants were 124 women with HIV/AIDS in recovery from a cocaine use disorder enrolled in a randomized trial comparing family therapy and a health education group (Author; Author). All had left a treatment program in the year before enrollment. Women had an average age of 43.07 ($SD = 7.46$) years, and substance abuse history of 21.84 ($SD =$

9.70) years. Women had an HIV diagnosis for an average of 9.81 ($SD = 5.70$) years. Most women (80%) were African American, 11% were Hispanic, 7% were white, and 2% were of other ethnicities. About half (49%) had not completed high school. Median annual family income was \$7,236 (25th percentile \$1201, 75th percentile \$11,910), 86% of the women were unemployed, and 77% were on public assistance. All women had to have at least one family member available for a companion study of therapy mechanisms. Most (83%) had at least one child.

2.2 Measures

Substance use disorder was assessed using a computerized Composite International Diagnostic Interview (CIDI 2.3; WHO, 1997), a comprehensive, standardized instrument for assessment of DSM-IV mental disorders. Only items for substance use disorders were administered; women were considered to have a use disorder if they met criteria for either abuse or dependence. All women had cocaine use disorder. Most of the women ($n = 113$, 91%) had more than one substance use disorder and on average women had 3.05 ($SD = 1.22$) substance use disorders: 102 (82%) alcohol use disorder, 33 (27%) opioid use disorder, 75 (61%) cannabis use disorder, 32 (26%) sedative use disorder, and 12 (10%) another substance use disorder.

Psychological distress was measured with the Global Severity Index from the Brief Symptom Inventory (BSI; Derogatis, 1993). On the BSI, 53 items are rated on a 5-point Likert scale (1 *not at all* to 5 *extremely*) during the past 7 days. The Global Severity Index was created by calculating the mean of all 53 items, and then transforming the score into a T-score. The resulting scale was positively skewed, so a binary variable was created for analysis using the total score cutoff ($T > 63$) for significant distress. In this study, the BSI had excellent internal consistency (Cronbach's $\alpha = .98$).

Sleep problems were measured with the Short Sleep Index (Perney, Leher, & Mason, 2012), which is four items from the Hamilton Anxiety and Depression Ratings Scale (Williams, 1988). This scale was developed in research with substance abusing populations. The four items were summed into a single score. In this study, the scale had good internal reliability (Cronbach's $\alpha = .80$). Sleep problems were positively skewed with overdispersion, so a dichotomous variable was created that represented no sleep problems (0) vs. any sleep problems (1) for analysis.

Pain was assessed with two items from the Medical Outcomes Study – HIV scale (Wu, Hays, Kelly, Malitz, & Bozzette, 1997). One item assessed the overall level of pain, and the other assessed how much pain interfered with activities. These two items were summed, and then scaled from 0 – 100. Higher scores indicate a greater experience of pain. The resulting scale was negatively skewed, so a dichotomous variable was created using a median split at 66.67. In this study, the scale had strong internal consistency (Cronbach's $\alpha = .82$).

HIV Health was assessed with three measures. *CD4 T-cell count* was assessed with a T-cell Subset (CD4/CD8) lymphocyte phenotypes obtained using BD Biosciences FACSibur 4-color flow cytometer and monoclonal antibodies for lymphocytes, T cells, T-helper and suppressor cells. CD4 T-cell count was approximately normally distributed. *HIV Viral Load Suppression* was assessed using blood HIV-1 RNA levels obtained using reverse transcriptase polymerase chain reaction (RT-PCR) by Roche with a detection range of 400–750,000 copies/ml. For analysis, a dichotomous HIV Viral Load Suppression variable was created using the cutoff of $VL < 1000$, recommended by the Public Health Service Panel on Treatment of HIV-Infected Pregnant Women and Prevention of Perinatal Transmission (2010). *HIV symptoms* were assessed with a nurse-administered evaluation of 31 complaints (e.g., fever, lymphadenopathy, paresthesia, arthralgia, oral lesions, and nausea) in the past 60

days. Women could add up to three additional complaints. In this study, the scale had good internal consistency (Cronbach's $\alpha = .84$). The sum of these complaints was positively skewed, so a median split at 3 was used to create a dichotomous variable.

2.3 Statistical Analysis

Dummy variables were created for each possible co-occurring substance use disorder, e.g., presence of an alcohol use disorder. The dummy variable strategy was chosen to account for the multiple patterns of co-occurring disorders that were present in the sample and to isolate relationships of each co-occurring disorder. Separate Generalized Linear Modeling (GZLM) analysis in SPSS 18 were used with each outcome. In each analysis all of the co-occurring use disorder dummy variables were entered as predictor variables simultaneously. GZLM, which is an extension of general linear models that incorporates ANOVA, linear and logistic regression, was used to have a single analysis method that would allow for a number of dichotomous predictor variables and either a dichotomous or continuous outcome.

3. Results

Table 1 shows the full results from the GZLM analyses with psychological distress, sleep problems, and pain. Having a co-occurring opioid use disorder was linked to almost 3 times the odds ($OR = 2.75$) of psychological distress, almost four times the odds ($OR = 3.50$) of sleep problems, but about a quarter the odds ($OR = 0.25$) of severe pain. Table 2 shows the full results from the GZLM analyses for HIV health variables. There were no significant relationships with CD4 T-cell count or with HIV Viral Load Suppression. Having a co-occurring opioid use disorder was associated with about three and a half times the odds ($OR = 3.65$) of high HIV symptoms.

4. Discussion

Most women with HIV in this sample had at least one co-occurring substance use disorder, and many had more than one. These numbers are high, but consistent with other reports of high polysubstance use among illicit drug users (Hammersley, Forsyth, & Lavelle, 1990; Kedia, Sell, & Relyea, 2007). As this was a non-random sample, we cannot know whether these percentages are representative of the larger population of cocaine users, people with HIV, or whether these patterns of use are particular to users in South Florida.

The presence of a co-occurring opioid use disorder was linked to greater depression, worse sleep, higher HIV symptoms, but lower pain. Other co-occurring substance use disorders had no significant relationships to outcomes in this study. These findings suggest that women with HIV with co-occurring cocaine and opioid use disorders may have distinct etiology and/or prognosis and require customized HIV clinical care. Poor health among opioid users is particularly concerning because women may be at higher risk for prescription drug abuse; women are 48% more likely to have a prescription for a medication that might be abused than men (Center for Substance Abuse Treatment, 2009).

From a substance abuse treatment perspective, women with HIV with co-occurring cocaine and opioid use disorders may be a group with special needs. Future research should examine how a co-occurring opioid use disorder alters the trajectory of relapse/recovery, or moderates intervention effects, for women with HIV and cocaine use disorders. Previous research (Leri et al, 2003) suggested that there are a number of patterns of co-occurring cocaine and opioid use. These patterns of co-use, and the reasons that people use cocaine and opioids, may be useful to guide intervention development efforts with respect to subgroups of users.

There was one indicator of better health associated with a co-occurring opioid use disorder. Participants with an opioid use disorder were less likely to report severe pain. It is important to note that all women in this sample had a co-occurring cocaine use disorder, so women with only opioid use disorders may differ in important ways. Management of patients with HIV and substance use disorders is complex, and special considerations must be made for opioid use. A more comprehensive pain instrument that assesses pain etiology, severity, and treatment response should be used in future studies with this population.

Several additional limitations should be noted. With cross-sectional data, we cannot rule out the possibility that women with more mental or physical health problems were more likely to abuse opioids. These findings are consistent with the results of other studies that showed relationships between chronic use of multiple substances and worse health (Risser & Schneider, 1994; Kendall et al., 1995; Martinotti, et al., 2000; Schensul, et al., 2005). Future longitudinal studies that examine the mechanisms that explain the temporal sequence of opioid use and mental/physical health problems are needed. There is loss of information and statistical power associated with dichotomizing variables. However, other distributions were examined in preliminary analyses and did not provide acceptable fit to the data. Several factors that might have been associated with both substance use disorder and mental/physical health were not assessed, including personality and genetic vulnerability, and these should be used in future investigations.

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Highlights

- We examined correlates of co-occurring substance use disorders in a sample of women with HIV and cocaine use disorder.
- Opioid use disorder was related to depression, sleep problems, and HIV symptoms.
- Opioid use disorder was inversely related to pain.

Table 1
Estimated Relationship of Co-occurring Substance Use Disorders with Psychological Distress, Sleep Problems, and Pain

<i>Substance</i>	Psychological Distress			Sleep Problems			Pain		
	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>
Intercept	-1.10	0.54	.040	-0.20	0.47	.675	0.22	0.47	.638
Alcohol	0.55	0.54	.312	0.23	0.50	.653	-0.43	0.50	.387
Opioids	1.01	0.48	.035	1.25	0.55	.022	-1.38	0.55	.012
Cannabis	-0.11	0.40	.791	0.48	0.40	.226	-0.08	0.40	.844
Sedatives	0.12	0.52	.822	-0.43	0.55	.438	0.81	0.56	.146
Other Substance	-0.06	0.71	.932	0.05	0.73	.950	-0.46	0.74	.532

Note. **Bold** shows statistically significant relationships.

Table 2
Estimated Relationship of Co-occurring Substance Use Disorders with CD4 T-cell Count, HIV Viral Load Suppression, and HIV Symptoms

<i>Substance</i>	CD4 T-cell Count			HIV Viral Load Suppression			HIV Symptoms		
	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>	<i>B</i>	<i>SE</i>	<i>p</i>
Intercept	348.15	65.45	<.001	0.46	0.48	.329	-0.16	0.47	.736
Alcohol	117.39	68.35	.086	0.05	0.50	.928	-0.49	0.50	.332
Opioids	-64.13	65.89	.330	0.77	0.50	.126	1.30	0.50	.010
Cannabis	104.63	53.96	.052	-0.74	0.40	.062	0.32	0.39	.423
Sedatives	106.96	70.72	.130	-0.75	0.53	.161	-0.20	0.54	.711
Other Substance	-185.93	95.65	.052	-0.29	0.73	.688	0.21	0.70	.764

Note. **Bold** shows statistically significant relationships.