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## Intimate partner violence among individuals in methadone maintenance treatment

Marcel A. de Dios, Ph.D.<sup>1,2</sup>, Bradley J. Anderson, Ph.D.<sup>3</sup>, Celeste M. Caviness, M.A.<sup>3</sup>, and Michael Stein, M.D.<sup>3,4</sup>

<sup>1</sup>Department of Health Disparities Research, Division of Cancer Prevention and Population Sciences, University of Texas MD Anderson Cancer Center, Houston TX 77030

<sup>2</sup>Department of Psychiatry and Human Behavior, Alpert Medical School of Brown University, Providence, RI 02906

<sup>3</sup>General Medicine Research, Butler Hospital, Providence, RI 02906

<sup>4</sup>Departments of Medicine and Community Health, Warren Alpert Medical School of Brown University, Providence, RI 02912

### Abstract

**Background**—Intimate partner violence (IPV) is a highly prevalent and concerning problem among methadone maintenance populations, and previous studies have shown a relationship between a history of IPV and increased substance use and affective disturbances.

**Methods**—The current study examined 1) the association between recent IPV victimization and alcohol and cocaine use and 2) the relationship between recent IPV victimization and depression in a sample of smokers (n=203) in methadone maintenance treatment (MMT). Participants in this study completed a battery of assessments that included standard questionnaires of trauma, alcohol and substance use, and depression. Parallel logistic and linear regression models were used to estimate the adjusted association of IPV victimization and depressive symptoms and evaluate the adjusted association of victimization with recent substance use.

**Results**—Participants recently victimized by partners were shown to have significantly higher mean CES-D scores ( $b = 0.54$ , 95%CI 0.07; 1.02,  $p < .05$ ) and were found to have a 6 times greater likelihood of cocaine use ( $OR = 6.65$ , 95%CI 1.61; 27.46,  $p < .01$ ) after controlling for age, gender, education, opiate use and ethnicity.

**Conclusions**—These findings support the notion that IPV victimization can potentially increase depression and other substance use among MMT patients, which can have a deleterious impact on treatment.

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Corresponding Author: Marcel A. de Dios, Ph.D., Department of Health Disparities Research, MD Anderson Cancer Center, 1400 Pressler St, FCT9.5010, Houston TX 77030-3721, Telephone 713-563-8768; Fax: 713-792-1152; made@mdanderson.org.

**Contributors:** Dr. Stein is the PI of the study. He designed the protocol and contributed to the writing of this manuscript. Dr. de Dios was the primary author of the manuscript. Dr. Anderson conducted the statistical analyses and contributed to the manuscript. Mrs. Celeste Caviness implemented the study. All four authors have approved the final manuscript.

## Keywords

Intimate Partner Violence; Methadone Maintenance; Depression

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## INTRODUCTION

Intimate partner violence (IPV) is a highly prevalent and concerning problem among substance abusing populations. For example, in a recent study involving a national U.S. sample, individuals with a history of either IPV victimization or perpetration were found to be up to 6 times more likely to have a substance use disorder after adjusting for socioeconomic factors (1). Studies have repeatedly demonstrated a link between alcohol and illicit drug use and a greater likelihood of being both a perpetrator of IPV as well as a victim (1–5). Methadone maintenance treatment (MMT) populations have been the focus of several studies focusing on IPV (6–12). Findings from such studies have not only shown this group to have a greater lifetime history of IPV victimization and perpetration, but also that MMT patients with a history of IPV suffer from a variety of psychosocial, physical and legal problems that can impede their substance abuse treatment. For example, Frye and Colleagues [2006; (7)] found significant associations between unemployment, poverty, and a history of childhood sexual abuse and intimate partner violence among women in MMT. Intimate partner violence victimization has also been linked with other substance use (non-opioid) among MMT patients where ongoing substance use is thought to serve as a method for coping with IPV but at the same time may lead to an increased risk for IPV(8). However, findings from El-Bassel and colleagues (8) regarding the relationship between other substance use and IPV victimization among MMT populations varied according to the “other” substance involved suggesting a need to replicate and clarify these substance specific distinctions.

### Depression, IPV and Methadone Maintenance

Intimate partner violence victimization is also more generally associated with a wide range of mental health problems. In a meta-analysis, Beydoun and colleagues (13) noted a strong to moderate relationship between IPV victimization and major depressive disorder (MDD) in population-based studies as well as clinical populations. MDD is a highly prevalent mental health condition among MMT populations (14–18) with over half of MMT patients meeting criteria for MDD in the past 6 months (18). Despite the high prevalence of both IPV and depressive problems in the methadone maintenance treatment community there have been no studies that have directly explored the relationship between these two significant problems.

The purpose of the current study is to 1) explore the association between recent IPV victimization and cocaine, alcohol use in a sample of MMT patients; and 2) examine the relationship between recent IPV victimization and depressive symptomology. We hypothesize a significant relationship between cocaine and alcohol use, which are the most common other non-nicotine substances of abuse among MMT populations, and IPV victimization. We also hypothesize that IPV will be significantly related to depressive symptoms after controlling for key demographic variables in our models.

## METHODS

The current study uses data from a three-group smoking cessation study that compared varenicline (Chantix), varenicline placebo, and combination nicotine replacement patches plus ad libitum nicotine rescue gum (19). Baseline data of 315 methadone-maintained cigarette smokers from nine methadone treatment programs were used. Inclusion criteria were: 1) 18 years of age or greater, 2) smoking at least 10 cigarettes per day for the past 3 months, 3) speak English, 4) telephone availability, 5) methadone treatment for at least one month, and 6) willingness to set a smoking quit date. Participants were excluded if they currently: 1) suffered from an unstable medical condition, 2) were involved in another smoking cessation treatment (pharmacotherapy or behavioral), 3) used smokeless tobacco, 4) were pregnant or nursing, or 5) had a severe psychiatric condition or condition that would interfere with treatment (e.g., schizophrenia or other psychotic disorders, bipolar disorder, suicidal ideation).

### Procedures

Participants were recruited from nine methadone clinics throughout Rhode Island and Massachusetts. All the clinics were private, for-profit facilities that provide treatment to >90% of the methadone-maintained persons in the region. Participants were recruited directly by research staff in the clinics during dosing hours as well as through posted advertisements. Of a total of 767 individuals screened for the study, 284 were ineligible. Participants did not differ significantly from those ineligible and those not enrolled based on age, gender, race or ethnicity, or mean cigarettes per day. One hundred and fifty two eligible individuals did not attend the initial study visit; 331 individuals enrolled in the protocol. An additional 16 individuals were excluded, most often for not completing the baseline visit. The final sample consisted of 315 participants, and the study protocol was approved by the Butler Hospital Institutional Review Board. The current study utilized data from the baseline visit of the 203 participants who reported having a current sexual partner.

### Measures

Demographic characteristics (e.g., age, gender, ethnicity, & race) were assessed. Depression was measured using the short Center for Epidemiologic Studies Depression Scale (CES-D) (20) which assessed depressive symptomology in the past week using 10 items. CES-D scores range from 0–30, with higher scores indicating more severe depression. Scores of 11 or greater indicate “significant” depressive symptomology (20). The CES-D demonstrated strong internal consistency in our sample ( $\alpha=.82$ ). Cocaine and opioid use in the past 30 days were assessed using an adaptation of the Addiction Severity Index drug use measure (21). Alcohol use was assessed using the three-item version of the Alcohol Use Disorders Identification Test (22) (AUDIT-C) with sum scores ranging from 0 to 12 with higher scores indicating a greater levels of “hazardous” drinking (22).

Intimate partner violence was assessed using six items drawn from the Trauma History Questionnaire[THQ (23)] which asked participants to endorse the occurrence of the following intimate partner perpetrated events in the past 6 months including: 1) pushing/shoving, 2) slapping, 3) physical threats, 4) forced sexual intercourse, 5) use of a gun, 6)

punching or hitting. Based on these six items, a variable was created which represented the endorsement or non-endorsement of any of these events (0 = did not endorse any of the six items; 1 = endorsed one or more of the six items). In addition, history of being a victim of childhood (<16 years old) sexual attack/s (forced intercourse, oral/anal sex, or touching) and physical attacks (physical attacks with or without a weapon) was measured using two categorical items (yes/no) from the Conflict Tactics Scale-2 [CTS-2(24)]. These variables were used to simply characterize the sample and were not combined with the THQ items.

### Analytic Approach

Descriptive statistics are presented to summarize the background characteristics of this cohort. Linear regression was used to estimate the adjusted association of IPV victimization with symptoms of depression, as assessed by the CESD. Parallel logistic regression models were estimated to evaluate the adjusted association of victimization with recent cocaine use, recent opiate use, and screening positive on the AUDIT-C for hazardous alcohol use. Age, gender, education, recent opiate use and ethnicity were included as covariates in all models. All continuous variables were standardized to zero mean and unit variance prior to model estimation. Tests of significance and 95% confidence interval estimates were based on robust Huber-White variance estimators. Statistical analyses were conducting using StataCorp 10.1. (25).

## RESULTS

The demographic characteristics of the sample are summarized in Table 1. Participants averaged 39.4 ( $\pm$  9.6) years of age, 97 (47.8%) were male, 160 (78.8%) were non-Hispanic Caucasian, 5 (2.5%) were African-American, 25 (12.3%) were Hispanic, and 13 (6.4%) were of other ethnic or racial origins. Ethnicity was dichotomized to contrast non-Hispanic Caucasians to all racial or ethnic minorities in subsequent analyses. Mean CES-D scores were 11.0 ( $\pm$  6.2). Of the 200 participants who responded, 28 (14.0%) reported childhood physical victimization and 39 (19.5%) reported childhood sexual abuse. Sixteen (7.9%) participants reported recent cocaine use, 21 (10.3%) reported recent use of opiates, and 41 (20.2%) screened positive for hazardous use of alcohol on the AUDIT-C. Twenty-two (10.8%) participants reported being the victim of one or more forms of partner violence in the 6-months immediately preceding baseline; 18 (8.9%) said they had been pushed or shoved, 7 (3.5%) reported that they had been slapped, 9 (4.4%) reported that they had been physically threatened by their partner, 1 (0.5%) reported that their partner had forced them to have sex, and 4 (2.0%) reported that they had been punched or hit with an object. No one reported that their partner had used a gun. Overall rates of victimization did not differ significantly by gender ( $\chi^2 = 0.47$ ,  $df = 1$ ,  $p = .494$ ); 13 (12.3%) females and 9 (9.3%) males reported being the victim of recent partner violence.

After controlling for age, gender, ethnicity, educational attainment, and recent use of opiates, participants who had recently been the victim of partner violence had significantly higher mean CES-D scores ( $b = 0.54$ , 95%CI 0.07; 1.02,  $p < .05$ ) (Table 2). This difference corresponds to about 3.4 points on the unstandardized CES-D. The estimated odds of recent cocaine use was over 6-fold higher (OR = 6.65, 95%CI 1.61; 27.46,  $p < .01$ ) among those

who reported recent victimization by a sexual partner. Though not statistically significant, participants with a recent partner victimization experience were about 2.4 times more likely to screen positive for hazardous alcohol use on the AUDIT-C (OR = 2.35, 95%CI 0.95; 5.83,  $p = .065$ ).

## DISCUSSION

As we hypothesized, participants reporting a recent history of IPV had significantly higher mean levels of CESD scores. This association has been found in other substance abusing populations (1–5) and our study expands upon this literature to methadone maintained smokers and focuses on recent IPV victimization. Interestingly, we found equivalent rates of IPV among both genders which is atypical in the general IPV literature. Although we can speculate that this may be due to the unique characteristics of our sample (MMT, smokers, enrolled in a cessation trial) we are unable to empirically explain this finding. Our findings may suggest that the psychological distress associated with IPV may increase the risk for major depressive disorder. This finding has implications for methadone programs that seek to address the needs of individuals with a history of IPV. Our findings may provide a rationale for the use of screening and assessments of IPV in MMT programs. Furthermore, MMT programs can potentially be enhanced by implementing interventions that not only target IPV, but also, address the associated affective disturbances associated with IPV.

Participants with IPV were found to be over ten times more likely to have used cocaine. The conventional view of this relationship would purport that individuals with IPV seek to relieve IPV related psychological symptoms through increased substance use (5). Therefore, increased levels of use represent a “self-medicating” type of phenomenon (26). Yet cocaine use may also contribute to depressive symptoms (27) and an alternative possibility for this association is that individuals with partners who are violent have greater exposure and access to other substances such as cocaine or alcohol. The fact that partner violence is often perpetrated while under the influence of cocaine may lend support to this explanatory model (28). However, these relations could not be examined directly in the current study.

There were several limitations to the current study. First, our study relied on self-report. Secondly, our study was cross-sectional and we cannot make assertions regarding the direction of effects. Third, we enrolled only smokers participating in a cessation study. Because nearly 80% of methadone maintained persons are smokers (29), those included in this study are likely to be representative of MMT clients in our region. Also, due to the fact that the study was a medication trial, pregnant women were excluded from participation. This limits our ability to generalize our findings to substance abusing pregnant women who are known to be a highly vulnerable subpopulation at a greater risk for IPV. Lastly, our IPV measure utilized items from validated measures, but did not account for the duration or intimacy (exclusivity) of respondents’ relationship with current partners, and the frequency and duration of IPV which may have an important impact on psychological functioning.

Our study demonstrated a significant association between IPV, cocaine use, and MDD symptoms among methadone maintenance populations. Given the high prevalence of depressive problems and other substance use among methadone maintenance populations

and the known negative impact that both of these problems have on methadone treatment, our study offers an important direction for future research and treatment interventions.

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**Table 1**

Background Characteristics (n = 203).

	Mean ( $\pm$ SD) or n (%)
Years Age	39.4 ( $\pm$ 9.6)
Gender (Male)	97 (47.8%)
<i>Race/Ethnicity</i>	
Caucasian	160 (78.8%)
African-American	5 (2.5%)
Hispanic	25 (12.3%)
Other	13 (6.4%)
Years Education	11.9 ( $\pm$ 2.3)
Employed (Yes)	52 (25.6%)
Used Opiates Past 30 Days	21 (10.3%)
Used Cocaine Past 30 Days	16 (7.9%)
AUDIT-C +	41 (20.2%)
Mean CESD	11.0 ( $\pm$ 6.2)
IPV past 6 months (Yes)	22 (10.8%)
Pushed/Shoved	18 (8.9%)
Slapped/Punched	7 (3.5%)
Physically Threatened	9 (4.4%)
Forced Sex	1 (0.5%)
Gun Violence	0 (0.0%)
Punched or Hit with an Object	4 (2.0%)
Victim Childhood Sexual Abuse	39 (19.2%)
Victim Childhood Physical Abuse	28 (14.0%)



**Table 2**

The Adjusted Association of Partner Victimization with Depression, Recent Cocaine Use, and Screening Positive for Alcohol Use Disorder (n = 203).

	<i>CES-D</i>	<i>Recent Cocaine</i>	<i>AUDIT-C+</i>
	<b>b (95% CI)</b>	<b>OR (95% CI)</b>	<b>OR (95% CI)</b>
Age	0.19 ** (0.06; 0.32)	2.10 ** (1.21; 3.66)	1.16 (0.81; 1.66)
Male Gender	−0.02 (−0.28; 0.24)	0.36 (0.09; 1.46)	0.76 (0.37; 1.55)
Non-Hispanic Caucasian	−0.27 (−0.65; 0.11)	0.31 (0.08; 1.12)	0.61 (0.28; 1.35)
Education	−0.16 ** (−0.13; −0.02)	1.26 (0.67; 2.34)	1.05 (0.08; 1.37)
Recent Opiate Use	0.34 (−0.08; 0.77)	21.22 ** (5.96; 75.56)	1.74 (0.80; 1.37)
Victimized	0.54 * (0.07; 1.02)	6.65 ** (1.61; 27.46)	2.35 (0.95; 5.84)
Intercept	0.13		

\*  
p < .05,

\*\*  
p < .10