

# Relationship Between Drug Abuse and Intimate Partner Violence: A Longitudinal Study Among Women Receiving Methadone

Nabila El-Bassel, DSW, Louisa Gilbert, MS, Elwin Wu, PhD, Hyun Go, MA, Jennifer Hill, PhD

Over the past decade, intimate partner violence (IPV) has emerged as a significant public health problem among women in drug treatment. Past-year prevalence rates of experiencing IPV have been found to range between 25% and 57% among women in drug treatment,<sup>1-3</sup> compared with rates of 1.5%–16% found in epidemiological surveys of community-based samples of women.<sup>4-6</sup> Research on the relationship between substance abuse and IPV has focused primarily on how a perpetrator's substance abuse increases the risk of IPV.<sup>7-9</sup> Accumulating research has also found significant associations between women's drug use and their victimization from IPV.<sup>1,2,10,11</sup> Recent, frequent use of illicit tranquilizers, marijuana, cocaine, crack, and heroin has been found to be associated with experienced IPV in cross-sectional studies of women in methadone maintenance treatment programs (MMTPs).<sup>1,2,11</sup> Research has yet to elucidate fully the causal relationships between women's drug use and experiencing IPV: Does women's drug use contribute to IPV? Does experiencing IPV lead to an increase in drug use? Or is there a reciprocal relationship between IPV and drug use?

The first possibility considered, that drug use leads to IPV, can be explained by several overlapping psychopharmacological, economic, and gender-related power factors. Psychopharmacological explanations focus on how drug use induces cognitive disruption and impairs the ability to process social interactions for the perpetrator and victim of IPV.<sup>12</sup> These cognitive disruptions may lead to paranoia, impair judgment, and distort cues, increasing the likelihood of a violent interaction.<sup>13</sup>

IPV occurs as an extension of the unequal distribution of power, social status, labor, and drugs between intimate partners.<sup>14-17</sup> Qualitative research suggests that conflicts over spending money on and sharing drugs often

**Objectives.** We examined whether frequent drug use increases the likelihood of subsequent sexual or physical intimate partner violence (IPV) and whether IPV increases the likelihood of subsequent frequent drug use.

**Methods.** A random sample of 416 women on methadone was assessed at baseline (wave 1) and at 6 months (wave 2), and 12 months (wave 3) following the initial assessment. Propensity score matching and multiple logistic regression were employed.

**Results.** Women who reported frequent crack use at wave 2 were more likely than non-drug using women to report IPV at wave 3 (odds ratio [OR]=4.4; 95% confidence interval [CI]=2.1, 9.1;  $P<.01$ ), and frequent marijuana users at wave 2 were more likely than non-drug users to report IPV at wave 3 (OR=4.5; 95% CI=2.4, 8.4;  $P<.01$ ). In addition, women who reported IPV at wave 2 were more likely than women who did not report IPV to indicate frequent heroin use at wave 3 (OR=2.7; 95% CI= 1.1, 6.5;  $P=.04$ ).

**Conclusions.** Our findings suggest that the relationship between frequent drug use and IPV is bidirectional and varies by type of drug. (*Am J Public Health.* 2005; 95:465-470. doi:10.2105/AJPH.2003.023200)

lead to arguments that escalate to IPV.<sup>18-20</sup> Because drug-dependent women are often deemed "sexually promiscuous" and are perceived as violating traditional gender norms, their partners may feel more justified in perpetrating violence against them.<sup>16,21,22</sup>

The second possibility considered, that IPV leads to the use of illicit drugs, is supported by qualitative studies documenting that women initiate or increase their illicit drug use to cope with the pain of experiencing IPV.<sup>23,24</sup> The use of tranquilizers or marijuana was cited as a frequent self-medication response to the physical and emotional pain experienced immediately after an episode of IPV in a study of abused women in MMTPs.<sup>25</sup>

The third alternative causal explanation posits a reciprocal relationship between IPV and drug abuse: drug abuse increases IPV, and IPV also increases the likelihood of drug abuse.<sup>24,26</sup> A longitudinal investigation by Kilpatrick et al.<sup>24</sup> using a national probability sample of 3003 women found that a woman's drug use at a single point in time increased her odds of experiencing a violent assault in

the subsequent 2 years by a factor of 1.84 after control for background factors. This study also estimated that new assaults increased the odds of drug use by a factor of 2.3 in the subsequent 2 years, after control for background variables. Kilpatrick et al.'s study was limited by its focus on physical assaults in general, as opposed to IPV, and its failure to control for potentially confounding psychosocial variables.

A fourth plausible explanation is that instead of a direct association, several psychosocial variables are independently associated with both IPV and drug abuse. A wide range of psychosocial mediators have been found to be associated with both IPV and drug use,<sup>27-30</sup> including posttraumatic stress disorder (PTSD),<sup>31,32</sup> lack of social support,<sup>11</sup> childhood sexual abuse,<sup>33-37</sup> and HIV risk behavior.<sup>25</sup> These potential confounders need to be considered when examining the relationship between drug use and IPV.

In our study, data were collected in 3 waves (i.e., at baseline and 6 and 12 months later) to examine the temporal relationship

between frequent drug use and IPV among a random sample of 416 women in MMTPs. We tested 3 hypotheses.

Hypothesis 1 was that frequent drug use increases the likelihood of subsequent IPV. We tested whether women in MMTPs who reported frequent use of cocaine, crack, heroin, marijuana, or frequent binge drinking at wave 2 were at higher risk of physical or sexual IPV at wave 3 than were women in MMTPs who did not use these drugs at wave 2, after control for background and relationship factors at wave 1.

Hypothesis 2 was that IPV increases the likelihood of subsequent frequent drug use. We tested whether women who reported IPV at wave 2 had greater odds than women who did not report IPV at wave 2 of reporting frequent use of crack/cocaine, heroin, marijuana, or frequent binge drinking at wave 3, after control for background and relationship factors at wave 1.

Hypothesis 3 was that the relationship between frequent drug use and IPV is reciprocal. This hypothesis was tested indirectly: if hypothesis 1 and hypothesis 2 were supported for a particular drug, then we can conclude that hypothesis 3 is supported for that drug.

## METHODS

### Random Sampling and Recruitment Procedures

We randomly selected 753 women from the total population of 1708 women enrolled in 14 MMTP clinics in New York City. Of the 753 women, 559 (74%) agreed to participate and completed informed consent and a screening interview; 194 (26%) refused to participate in the study or missed 2 or more appointments to be screened. Of the 559 women who completed the screening interview, 427 met eligibility criteria. Of those eligible, 416 (97%) women agreed to participate and completed a baseline survey. Eligibility criteria for this study were: being a female between the ages of 18 and 55 years, being enrolled at a MMTP for at least 3 months, and during the past year, having had a sexual or dating relationship with someone described as a boyfriend, girlfriend, spouse, regular sexual partner, or the father of her children.

MMTP counselors notified potential participants of their selection for the study and invited them to contact the recruiters in the clinic. Once a potential participant made contact with a recruiter, the participant would receive a flyer describing the study. If the potential participant expressed interest in the study, the recruiter would complete informed consent and conduct a screening interview to determine eligibility.

Eligible participants were interviewed at baseline (wave 1) and received follow-up interviews at 6 months (wave 2) and 12 months (wave 3). Data were collected between 1997 and 2000. Research assistants (RAs) conducted face-to-face baseline and follow-up interviews, which averaged between 1.5 and 2 hours in length. The RAs were all women who had at least a bachelor's degree. RAs received 24 hours of training in interviewing and recruitment skills. The institutional review boards of the participating MMTPs and Columbia University approved the protocol for this study. Participants received \$5 for participating in the screening, \$25 for the baseline interview, \$30 for the 6-month interview, and \$35 for the 12-month interview.

### Measurement

The baseline and follow-up interviews covered psychological distress, childhood sexual abuse, PTSD, relationship factors, drug use, HIV risk behaviors, IPV, and perceived social support. Sociodemographic characteristics were collected at baseline only. Information on a maximum of 3 current intimate partners was elicited from participants.

Sociodemographic and relationship characteristics included age, race/ethnicity, level of education, incarceration, homelessness, employment status, average monthly income, length and type of intimate relationships, and number of intimate partners in the past 6 months.

Childhood sexual abuse was measured using the Childhood Sexual Abuse Interview, which includes 2 subscales: touching/exposure, measured by 6 items, and penetration, assessed with 3 items.<sup>38,39</sup> A positive indicator also required that a respondent reported the perpetrator used force, was a relative, or was 5 years older than the woman at the time the abuse occurred.

The Brief Symptom Inventory (BSI)<sup>40,41</sup> was used to assess psychological distress. The BSI includes a global severity index that provides an overall assessment of psychological status. It has good internal consistency ranging between .71 and .74 and has been tested with a wide range of populations.<sup>42</sup> PTSD was assessed using the Posttraumatic Stress Diagnostic Scale (PDS), a self-report instrument with a high internal consistency (Cronbach  $\alpha$  of .91).<sup>43</sup>

The Drug Use and Risk Behavior Questionnaire was developed by the investigators to provide frequency counts of using alcohol, heroin, crack, cocaine, marijuana, and other drugs during the previous 6 months. Internal consistency was assessed with 800 subjects and yielded  $\alpha$  reliability of .80.<sup>44</sup> For each drug, respondents were asked "In the past 6 months, how often have you used \_\_\_\_\_?" Participants responded on an 8-point Likert scale ranging from "never" to "2 or more times a day." Respondents who indicated "once a week" or more often were categorized as "frequent" users of a drug. This definition of frequent drug use has been used in previous research.<sup>45</sup> Binge drinking was defined as drinking 4 or more alcoholic drinks within a 6-hour period.<sup>46</sup> Respondents who indicated binge drinking once a week or more in the past 6 months were defined as "frequent" binge drinkers.

Relationship dependencies were also examined. Housing dependency was measured by whether the woman or her partner held the lease to their residence; contribution to household expenses was measured by whether the woman and her partner contributed the same amount or whether one partner contributed more. Drug dependency was measured by whether the partner paid for the woman's drugs.

HIV risks included whether women reported having monogamous, serially monogamous, or multiple, concurrent partners in the past 6 months and the frequency of condom use with intimate partners (never, sometimes, always).

IPV was assessed using the Revised Conflict Tactics Scales (CTS2).<sup>47</sup> The CTS2 provides 3 subscales measuring sexual, physical, and injury-related IPV in the past 6 months.<sup>47</sup> These 3 subscales have minor and severe components that, when combined, provide an overall prevalence of IPV that we defined as

“physical and/or sexual IPV.” We examined IPV across regular sexual partners at each wave. Internal consistency of the CTS2 subscales ranges between .79 and .95.<sup>47</sup>

Perceived social support was assessed using the Multidimensional Scale of Perceived Social Support (MSPSS), a 12-item instrument that measures perceived social support from family, friends, and a significant other.<sup>48</sup> The MSPSS has been used with diverse populations and has excellent internal consistency, with an  $\alpha$  of .91 for the total scale.<sup>48</sup>

### Data Analysis

To reduce the potential for bias resulting from missing data and differential attrition, we used multiple imputation.<sup>49,50</sup> Of the 416 participants who completed the baseline interview (wave 1), 346 (83%) and 317 (76%) women provided data at waves 2 and 3, respectively. Univariate analyses indicated that women who were not retained at wave 2 and wave 3 did not differ significantly from retained women on any background or outcome variables assessed at wave 1.

We used propensity score matching to reduce the selection bias that can occur in an observational (i.e., nonexperimental) study. This heuristic, nonparametric technique in effect “reconstructs” a sample that mimics the results of the random assignment component in a randomized clinical trial by selecting groups that have similar values to observed confounders and that differ only with respect to a “treatment variable” of interest.<sup>51–53</sup> Propensity score matching can eliminate this bias if we are able to balance (across the treatment and control groups) all the covariates that are associated with both the treatment and the outcome.

Propensity scores were calculated using attributes for observed confounders measured at wave 1, treatment variables at wave 2, and outcome variables at wave 3. This analysis plan ensures that observed confounders temporally precede treatment “assignment,” which, in turn, precedes determination of outcome variables. The confounders included sociodemographics, history of trauma (childhood sexual abuse, PTSD), psychological distress, social support, and HIV risks. For hypothesis 1, the treatment variable is frequent drug use measured at wave 2, and the

outcome variable is IPV assessed at wave 3. For hypothesis 2, the treatment variable is IPV at wave 2, and the outcome variable is frequent drug use assessed at wave 3. Various diagnostics, including robust tests such as Kolmogorov–Smirnov and Shapiro–Wilk, were performed to confirm that the matching procedures resulted in groups that were similar with respect to confounders and that differed only with respect to the treatment variable.

After using propensity score matching procedures to select a final sample of participants for which valid causal effect size estimates could be obtained, we used multiple logistic regression to test each hypothesis. For each type of drug, adjusted odds ratios (ORs) and their associated 95% confidence intervals (CIs) were examined to test hypothesis 1 and hypothesis 2, adjusting for the same set of background and relationship confounders used in the propensity score matching procedures. For all evaluations in testing hypothesis 1 and hypothesis 2, we compared frequent users of each drug to nondrug users. Women who reported occasional but not frequent use of a drug for hypothesis 1 and hypothesis 2 were excluded from the analysis.

## RESULTS

### Sociodemographic and Relationship Characteristics

Sociodemographic characteristics of the sample are presented in Table 1. The women’s mean age was almost 40 years ( $SD=6.7$  years), and the majority self-identified as Latina or African American. More than half of the sample did not have a high school diploma. Almost one-tenth of the women reported being homeless in the past 6 months. About half were single, never married. Less than 10% identified that their main partners were female. The average length of current relationships was 8.8 years ( $SD=7.8$ ). In the majority of relationships, the woman’s partner held the lease, and half of the women reported that they contributed more than their partners to household expenses. Less than one-third said they relied on their partners to pay for or supply drugs. About one-fifth of the women reported having more than 1 intimate partner in the past year. One-third

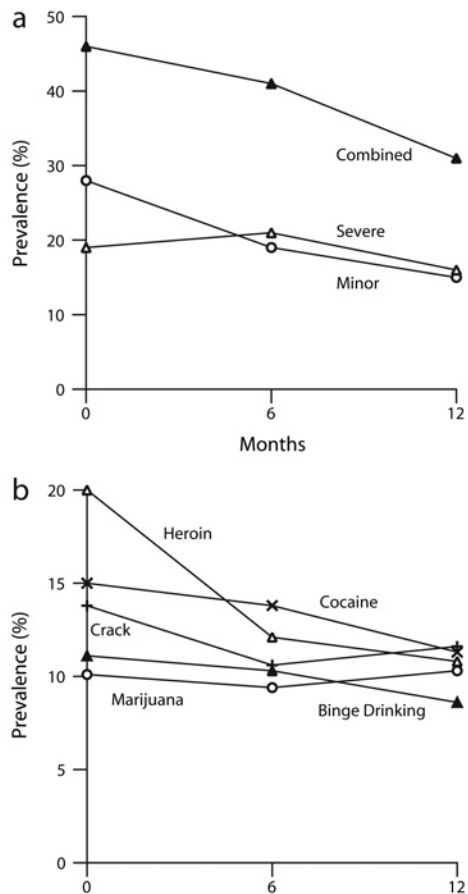
**TABLE 1—Characteristics of the Study Sample (N = 416)**

	No.(%)
Age, y, average (SD)	39.9 (6.7)
Ethnicity	
African American	128 (31)
White	89 (21)
Latina	199 (48)
Educational level	
< High school	242 (58)
High school or GED	84 (20)
> High school	90 (22)
Homelessness	40 (9)
Marital status	
Single, never married	194 (46)
Separated, divorced, or widowed	140 (34)
Married	82 (20)
Types of relationship	
Monogamous	346 (83)
Serially monogamous	12 (3)
Concurrent multiple partners	57 (14)
Condom Use	
Never	172 (41)
Sometimes	118 (28)
Always	126 (30)
Monthly income, \$, average (SD)	626 (2)
Housing dependency	
Woman does not hold lease	284 (68)
Contribution to household expenses	
Partner contributes more than woman	96 (23)
Same	110 (26)
Woman contributes more than partner	210 (50)
Main partner paid for woman’s drugs	109 (26)
Childhood sexual abuse	
Touching	228 (55)
Penetration	96 (23)
Posttraumatic stress disorder diagnosed	127 (31)

said that they always used condoms with their intimate partner or partners in the past 6 months.

### Childhood Sexual Abuse and Mental Health Status

Of the total sample, 54.8% experienced touching or exposure and 23.1% experienced penetration. The mean score of the global severity index of the BSI was .89. This mean is comparable to the mean found among other drug-involved female populations,<sup>54</sup> but it is substantially higher than the estimate of



**FIGURE 1—Prevalence of (a) intimate partner violence and (b) frequent drug use in a random sample of women attending methadone maintenance treatment programs.**

the mean global severity index of .37 for the general female population.<sup>40</sup>

### Prevalence of IPV

Prevalence rates of experiencing of different types of IPV in the past 6 months reported at each wave are presented in Figure 1a. The figure illustrates that prevalence of IPV for each wave decreased slightly over time.

### Prevalence of Drug Use

The prevalence of frequent drug use is reported in Figure 1b for each type of drug at each wave. In general, frequent drug use decreased over time, with the largest decrease observed for heroin use.

### Hypotheses Testing

*Hypothesis 1: frequent drug use increases the likelihood of subsequent IPV.* The findings

presented in Table 2 are the adjusted ORs for experiencing IPV at wave 3 contingent on frequent drug use reported at wave 2, after control for confounders measured at wave 1. Women who used crack at least once a week at wave 2 were more than 4 times as likely to report physical or sexual IPV at wave 3 compared with women who did not report using any drugs or binge drinking at wave 2 (OR=4.4; 95% CI=2.1, 9.1;  $P<.01$ ); similar results were found for frequent use of marijuana (OR=4.5; 95% CI=2.4, 8.4;  $P<.01$ ). Findings support hypothesis 1 for frequent crack or marijuana use. Although not significant, the results indicate that frequent cocaine users experienced higher rates of subsequent IPV compared with women who did not report using drugs or binge drinking (OR=1.6; 95% CI=.84, 3.0;  $P=.11$ ).

*Hypothesis 2: IPV increases the likelihood of subsequent frequent drug use.* The lower panel of Table 2 contains the adjusted ORs for engaging in frequent drug use at wave 3 contingent on experiences of physical or sexual IPV measured at wave 2 after control for confounders measured at wave 1. Women who reported physical or sexual IPV at wave 2 were more likely than women who did not report IPV to indicate frequent use of heroin at wave 3 (OR=2.7; 95% CI=1.1, 6.5;  $P=.04$ ). Marginal support was found for an increased likelihood of frequent crack use (OR=8.7; 95% CI=.98, 78;  $P=.06$ ) and marijuana use (OR=2.4; 95% CI=.92, 6.2;  $P=.07$ ) at wave 3 among women who reported IPV at wave 2 compared with women who did not report IPV. The results are indicative that IPV increases the likelihood of weekly or more frequent cocaine use (OR=2.1; 95% CI=.82, 5.5;  $P=.11$ ). The findings support the hypothesis that IPV at wave 2 increases the likelihood of frequent use of heroin and were suggestive for crack, cocaine, and marijuana use, but not frequent binge drinking, at wave 3.

*Hypothesis 3: the relationship between frequent drug use and IPV is reciprocal.* Hypothesis 3 was not supported at a 95% level of confidence; however, the results presented above indicate that both hypothesis 1 and hypothesis 2 were suggestive for crack and marijuana use.

## DISCUSSION

To our knowledge, this is the first longitudinal investigation of the causal relationship between frequent drug use and IPV among a random sample of women attending MMTPs. This study examined the temporal and reciprocal relationships between frequent use of different drugs and IPV at 2 points (wave 2 and wave 3) over a 1-year period, using state-of-the-art analytical procedures to control for observed confounders collected at baseline (wave 1). This study's findings significantly improve on earlier studies, which relied primarily on cross-sectional, retrospective designs.

The first hypothesis, that frequent drug use increases the likelihood of subsequent IPV, was supported for crack and marijuana and suggestive for cocaine but could not be



**TABLE 2—Frequent Drug Use and Any Intimate Partner Violence (IPV)**

	Any Intimate Partner Violence		N
	Odds Ratio (95% Confidence Interval)	P	
<b>Hypothesis 1: frequent drug use increases the likelihood of subsequent IPV (wave 3)</b>			
Frequent drug use at wave 2			
Cocaine	1.6 (0.84, 3.0)	.11	301
Crack	4.4 (2.1, 9.1)	<.01	291
Heroin	1.5 (0.70, 3.2)	.21	300
Marijuana	4.5 (2.4, 8.4)	<.01	288
Binge drinking	1.0 (0.49, 2.0)	.46	294
<b>Hypothesis 2: IPV (wave 2) increases the likelihood of subsequent frequent drug use</b>			
Frequent drug use at wave 3			
Cocaine	2.1 (0.82, 5.5)	.11	252
Crack	8.7 (0.98, 78)	.06	166
Heroin	2.7 (1.1, 6.5)	.04	252
Marijuana	2.4 (0.92, 6.2)	.07	248
Binge drinking	0.8 (0.04, 17)	.91	242

confirmed for heroin or frequent binge drinking. Several factors may explain these temporal relationships between frequent crack use and IPV: women who frequently use crack may have impaired judgment, making it more difficult for them to detect when their partners' words or actions are escalating to a threatening level<sup>55,56</sup>; the low social status of women who use crack may give partners a greater sense of entitlement to abuse these women<sup>18,20,25</sup>; and IPV often occurs as an extension of a violent subculture associated with crack in economically disadvantaged urban communities.<sup>57–59</sup>

The finding supporting a causal relationship between frequent marijuana use and subsequent IPV is consistent with previous cross-sectional studies.<sup>2,11,44,60,61</sup> Less is known about the contexts in which frequent marijuana use may lead to IPV among women. However, the significant relationship between frequent marijuana use and subsequent IPV may be confounded, in part, by the use of marijuana laced with other drugs, such as PCP.

The second hypothesis, that the experience of IPV increases the likelihood of subsequent frequent drug use, was supported by the data for heroin and suggestive for marijuana, cocaine, and crack use, but not for binge drinking. These findings underscore how women may react to the negative sequelae of IPV by self-medicating with drugs.

The findings suggest a reciprocal relationship between IPV and frequent crack or marijuana use. These findings highlight the need to understand the multiple contexts and chronological sequence in which IPV and drug use cooccur.

The study has several limitations that need to be addressed in future research. One-quarter of the women who were selected in the random sample refused to participate in the study. We do not have the background information necessary to determine whether these women differ from participants in terms of sociodemographics and IPV characteristics. Therefore, we may have missed some women who have experienced IPV in the prevalence rates reported in this study. The generalizability of study findings to other low-income, urban populations of women in MMTPs is greater than previous studies, which have used nonrandom samples. However, these findings may not be generalizable to other populations of women in drug treatment. Another major limitation of the study is the inability to isolate the unique effect of each drug on IPV, and vice versa. The sample sizes of crack-only, marijuana-only, and heroin-only users were too small to permit this type of analysis.

Despite these limitations, the findings have important implications. For women in MMTPs, not using illicit drugs frequently may be a pro-

tective factor for IPV. Intervention strategies to reduce or stop drug use and interrupt the cycle of IPV for women in drug treatment programs need to be developed and tested. The use of drugs as self-medication to deal with IPV suggests the potential utility of combined psychopharmacological and behavioral treatments that will help women build alternative coping skills in conjunction with monitored medication to address the psychological or physical pain stemming from IPV. Standard protocols for assessment, safety planning, treatment, and referrals to address the problem of IPV among women enrolled in drug treatment programs need to be designed, tested, and implemented. Ignoring the problem of IPV may not only jeopardize the safety of women in drug treatment but also increase the likelihood of relapse and premature attrition from treatment. ■

#### About the Authors

*Nabila El-Bassel, Louisa Gilbert, Elwin Wu, Hyun Go, and Jennifer Hill are with the Social Intervention Group, Columbia University School of Social Work, New York, NY.*

*Requests for reprints should be addressed to Nabila El-Bassel, DSW, Social Intervention Group, Columbia University School of Social Work, 1255 Amsterdam Avenue, New York, NY 10025 (e-mail: ne5@columbia.edu).*

*This article was accepted March 21, 2004.*

#### Contributors

N. El-Bassel and L. Gilbert conceptualized and implemented the study. N. El-Bassel conceptualized the data analysis plan, wrote the article, and supervised the process of data analysis. L. Gilbert participated in the conceptualization of the data analysis and article revision. E. Wu participated in the data analysis and article revision. H. Go conducted the data analysis, and J. Hill provided ongoing expertise on the data analysis and article review.

#### Human Participant Protection

The protocol was reviewed and approved by the institutional review boards of Columbia University and the Methadone Maintenance Treatment Program at the Beth Israel Medical Center, New York.

#### Acknowledgments

This study was supported by the National Institute on Drug Abuse (grant R01DA11027 to Nabila El-Bassel).

We acknowledge the contributions of the staff of the Methadone Maintenance Treatment Program at the Beth Israel Medical Center, New York, for their help in conducting this study.

#### References

1. El-Bassel N, Gilbert L, Wada T, et al. Drug abuse and partner violence among women in methadone treatment. *J Fam Violence*. 2000;15(3):209–225.

2. Brewer DD, Fleming CB, Haggerty KP, et al. Drug use predictors of partner violence in opiate dependent women. *Violence Vict*. 1998;13(2):107–115.
3. Chermack S, Fuller B, Blow F. Predictors of expressed partner and non-partner violence among patients in substance abuse treatment. *Drug Alcohol Depend*. 2000;58(1–2):43–54.
4. Straus M, Gelles R. How violent are American families? Estimates from the national family violence survey and other studies. In: Straus M, Gelles R, eds. *Physical Violence in American Families*. New Brunswick, NJ: Transaction Publishing; 1990:95–112.
5. Tjaden P, Thoennes N. *Prevalence, Incidence, and Consequences of Violence against Women: Findings from the National Violence Against Women Survey*. Washington, DC: Department of Justice, National Institutes of Health; 1998.
6. Caetano R, Nelson S, Cunradi C. Intimate partner violence, dependence symptoms and social consequences from drinking among White, Black and Hispanic couples in the United States. *Am J Addict*. 2001; 10(suppl.):60–69.
7. Abbot J, Johnson R, Koziol-McLain J, et al. Domestic violence against women: incidence and prevalence in emergency department populations. *JAMA*. 1995; 273:1763–1767.
8. Byles JA. Violence, alcohol problems and other problems in disintegrating families. *J Studies Alcohol*. 1978;39:551–553.
9. Fagan JA, Wexler S. Crime at home and in the streets. *Violence Vict*. 1987;2(1):5–23.
10. Cottler LB, Compton WM, Mager D, et al. Post-traumatic stress disorder among substance users from the general population. *Am J Psychiatry*. 1992;149(5): 664–670.
11. El-Bassel N, Gilbert L, Rajah V, et al. Social support among women in methadone treatment who experience partner violence. *Violence Against Women*. 2001; 7(3):246–274.
12. Goldstein PJ. Drugs and violent crime. In: Weiner NA, Wolfgang ME, eds. *Pathways to Criminal Violence*. Beverly Hills: Sage Publications; 1989:16–48.
13. Brown TG, Werk A, Caplan T, et al. Violent substance abusers in domestic violence treatment. *Violence Vict*. 1999;14:179–190.
14. Miller J. Gender and power on the streets. *J Contemp Ethnogr*. 1995;23:427–452.
15. Booth RE, Koester SK, Pinto F. Gender differences in sex-risk behaviors, economic livelihood and self-concept among drug injectors and crack smokers. *Am J Addict*. 1995;4:313–322.
16. Rosenbaum A, O'Leary KD. Marital violence: characteristics of abusive couples. *J Consulting Clin Psychol*. 1981;49:63–71.
17. Amaro H, Hardy-Fanta C. Gender relations in addiction and recovery. *J Psychoactive Drugs*. 1995;27(4): 325–337.
18. Gilbert L, El-Bassel N, Rajah V, et al. Linking drug related activities with experiences of partner violence: A focus group study of women in methadone treatment. *Violence Vict*. 2001;16(5):517–536.
19. Rosenbaum M. *Women on Heroin*. New Brunswick, NJ: Rutgers University Press; 1981.
20. Sterk CE. *Fast lives: Women Who Use Crack Cocaine*. Philadelphia, PA: Temple University Press; 1999.
21. Kaufman Kantor GK, Asdigian N. When women are under the influence: does drinking or drug use by women provoke beatings by men? *Recent Dev Alcoholism*. 1997;13:315–336.
22. Miller BA. The interrelationships between alcohol and drugs and family violence. *Natl Inst Drug Abuse Res Monogr*. 1990;103:177–207.
23. Gilbert L, El-Bassel N, Rajah V, et al. The converging epidemics of mood-altering-drug use, HIV, HCV, and partner violence: a conundrum for methadone maintenance treatment. *Mount Sinai J Med*. 2000;67(5–6):452–464.
24. Kilpatrick DG, Acierno R, Resnick HS, et al. A 2-year longitudinal analysis of the relationship between violent assault and substance use in women. *J Consult Clin Psychol*. 1997;65(5):834–837.
25. Gilbert L, El-Bassel N, Schilling R, et al. Partner violence and sexual HIV risk behaviors among women in methadone treatment. *AIDS Behav*. 2000;4(3): 261–269.
26. Ireland T, Widom C. Childhood victimization and risk for alcohol and drug arrests. *Int J Addict*. 1994; 29(2):235–274.
27. Burnam MA, Stein JA, Golding JM, et al. Sexual assault and mental disorders in a community population. *J Consult Clin Psychol*. 1988;56(6):843–850.
28. Eby KK, Campbell J, Sullivan C, et al. Health effects of experiences of sexual violence for women with abusive partners. *Health Care Women Int*. 1995;16(6): 563–576.
29. Campbell J, Alford P. The dark consequences of marital rape. *Am J Nurs*. 1989;89(7):946–949.
30. Germain CP. Sheltering abused women: A nursing perspective. *J Psychosocial Nurs Mental Health Services*. 1984;22(9):24–31.
31. Hanson RF, Kilpatrick DG, Freedy JR, et al. Los Angeles County after the 1992 civil disturbances: degree of exposure and impact on mental health. *J Consult Clin Psychol*. 1995;63(3):987–996.
32. Kilpatrick DG, Edmunds CN, Seymour AK. *Rape in America: A Report to the Nation*. Arlington, VA: National Victim Center and Medical University of South Carolina; 1992.
33. Back S, Dansky BS, Coffey SF, et al. Cocaine dependence with and without posttraumatic stress disorder: a comparison of substance use, trauma history and psychiatric comorbidity. *Am J Addict*. 2000;9(1):51–62.
34. Brady KT, Dustan LR, Grice DE, et al. Personality disorder and assault history in substance-dependent individuals. *Am J Addict*. 1995;4(4):306–312.
35. Wyatt GE, Myers HF, Williams JK, et al. Does a history of trauma contribute to HIV risk for women of color? *Am J Public Health*. 2002;92(4):660–665.
36. Zierler SL, Fiengold DL, Laufer D, et al. Adult survivors of childhood sexual abuse and subsequent risk of HIV infection. *Am J Public Health*. 1991;81: 572–575.
37. Bensley LS, Van Eenwyk J, Simmons KW. Self-reported childhood sexual and physical abuse and adult HIV-risk behaviors and heavy drinking. *Am J Prevent Med*. 2000;18:151–158.
38. Finkelhor D. *Sexually Victimized Children*. New York: The Free Press; 1979.
39. Sgroi SM. *Handbook of Clinical Intervention in Child Sexual Abuse*. Lexington, MA: D.C. Heath and Company; 1982.
40. Derogatis L. *Brief Symptom Inventory: Administration, Scoring, and Procedures Manual*. Minneapolis, MN: National Computer Systems; 1993.
41. Derogatis LR, Spitzer RL. The SCL-90-R, Brief Symptom Inventory, and matching clinical rating scales. In: Maruish ME, ed. *The Use of Psychological Testing for Treatment Planning Outcomes Assessment*. 2nd ed. Mahwah, NJ: Lawrence Erlbaum Associates; 1999.
42. Derogatis L, Melisaratos N. The Brief Symptom Inventory: an introductory report. *Psychol Med*. 1983; 13:595–605.
43. Foa EB, Molnar C, Cashman L. Change in rape narratives during exposure therapy for PTSD. *J Traumatic Stress*. 1995;8:675–690.
44. El-Bassel N, Ivanoff A, Schilling RF, et al. Correlates of problem drinking among drug using incarcerated women. *Addict Behav*. 1995;20:359–369.
45. Thiede H, Valleroy LA, MacKellar DA, et al. Regional patterns and correlates of substance use among young men who have sex with men in 7 US urban areas. *Am J Public Health*. 2003;93(11):1915–1921.
46. Matano RA, Koopman C, Wanat SF, et al. Assessment of binge drinking of alcohol in highly educated employees. *Addict Behav*. 2003;28(7):1299–1310.
47. Straus MA, Hamby SL, Boney-McCoy S, et al. The revised Conflict Tactics Scales (CTS2): Development & preliminary psychometric data. *J Fam Issues*. 1996;17.
48. Zimet GD, Dahlem NW, Zimet SG, et al. The Multidimensional Scale of Perceived Social Support. *J Personality Assess*. 1988;52:30–41.
49. Rubin DB. *Multiple Imputation for Nonresponse in Surveys*. New York: Wiley Publications; 1987.
50. Schafer JL. *Analysis of Incomplete Multivariate Data*. London: Chapman & Hall; 1997.
51. Dehejia R, Sadek W. Causal effects in non-experimental studies: re-evaluating the evaluation of training programs. *J Am Stat Assoc*. 1999;94:1053–1062.
52. Rosenbaum PR, Rubin DB. The central role of the propensity score in observational studies for causal effects. *Biometrika*. 1983;70:41–55.
53. Rosenbaum PR, Rubin DB. Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *Am Stat*. 1985; 39:33–38.
54. El-Bassel N, Schilling RF, Gilbert L, et al. Sex trading and psychological distress in a street-based sample of low-income urban men. *J Psychoactive Drugs*. 2000; 32(3):259–267.
55. Miller NS, Gold MS, Mahler JC. Violent behaviors associated with cocaine use: possible pharmacological mechanisms. *Int J Addict*. 1991;26(10):1077–1088.
56. Spunt BJ, Goldstein PJ, Bellucci PA, et al. Race/ethnicity and gender differences in the drugs-violence relationship. *J Psychoactive Drugs*. 1990;22(3):293–303.
57. Johnson BD, Williams T, Sanabria H, et al. Social impact of crack dealing in the inner city. *Natl Inst Drug Abuse Res Monogr*. 1989;95:326–327.
58. Inciardi JA, Lockwood D, Pottiger AE. *Women and Crack-Cocaine*. New York, NY: Macmillan; 1993.
59. Inciardi J, Pottiger A. Kids, crack and crime. *J Drug Issues*. 1991;21:257–270.
60. McClennen JC, Summers AB, Daley JG. The lesbian partner abuse scale. *Res Social Work Pract*. 2002; 12(2):277–292.
61. Renzetti CM. *Violent Betrayal: Partner Abuse in Lesbian Relationships*. Newbury Park, CA: Sage Publications; 1992.