Experiencing Violence as a Predictor of Drug Use Relapse among Former Drug Users in Baltimore, Maryland

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ABSTRACT *The purpose of this study was to examine experiencing violence as a predictor of subsequent drug relapse among a sample of former crack, cocaine, and heroin users in Baltimore, MD, USA. The sample consists of 228 former drug users in Baltimore who were recruited through street outreach. Mixed-effects models were used to examine experiencing violence as a predictor of drug relapse at follow-up after adjusting for clustering of responses among participants living in the same census block. Using longitudinal data, we found that experiencing violence in the past year predicted drug relapse at 2-year follow-up among former drug users. Results indicate experiencing violence is a determinant of drug use relapse and highlight the importance of addressing the fundamental issues of violence experienced in inner-city communities. Addressing the extent of recent violence among drug treatment participants, providing coping skills, and reducing community violence are strategies that may address the link between violence and drug relapse.*

KEYWORDS *Violence, Drug relapse, Drug users, Inner city*

INTRODUCTION

Many urban areas within the USA have extraordinarily high rates of criminal violence and substance use, particularly in areas with concentrated poverty.¹ Urban residents with lower income levels report more violence victimization than similar persons in rural/suburban environments.² Drug users have particularly high rates of homicide victimization associated with drug use, sales, or trafficking.^{3–5} Injection drug users and cocaine/crack users experience higher levels of crime victimization compared to general urban populations.^{2,6–9} Research also found that women in substance abuse treatment programs were disproportionately affected by partner violence,¹⁰ and the relationship between frequent drug use and intimate partner violence was bidirectional.⁸

Exposure to and experiences of violence are generally considered to be stressful and often traumatic events. Many studies highlight the mental health consequences of such experiences, citing depression, post-traumatic stress disorder,¹¹ and even high blood pressure¹² as common results. Exposure to community violence has also been associated with depressive symptoms in a variety of populations, including

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adolescents,¹³ young mothers,¹⁴ and primary care patients.¹⁵ Given the detrimental effects of experiencing or witnessing violence on mental health, it is plausible that exposure to violence could lead to increased substance use. Indeed, research on psychiatric morbidity conducted in a range of settings has suggested that individuals victimized by violence may consume higher levels of various legal and illegal substances as a means of self-medication to alleviate symptoms of anxiety and distress associated with the traumatic experience.^{16–18}

In conceptualizing the relationship between violence and drug use, little is known about how violence may contribute to drug relapse among former users. Relapse has been shown to be associated with younger age, male gender, homelessness, HIV seropositivity, use of alcohol, non-injection cocaine, sexual abstinence, having a longer time to the first cessation, not participating in a drug treatment,^{19,20} and exposure to stressful events.²¹

Given the extent of often chronic violence exposure among drug users, there is a dearth of knowledge about the drug use consequences of such experiences in this population. Using longitudinal data, the goal of this study was to examine experiencing victimization as a predictor of subsequent drug relapse among a sample of 228 former crack, cocaine, and heroin users in Baltimore, MD, USA. We hypothesized that recent experience of violence would predict drug use relapse at follow-up.

METHOD

Data Collection

Data were collected as a part of the Self-Help in Eliminating Life-Threatening Disease (SHIELD) study, which was a social-network-oriented, experimental HIV prevention intervention. Participants were recruited through targeted outreach in areas of high drug activity in Baltimore city. The inclusion criteria included: (1) 18 years or older, (2) weekly contact with drug users, (3) professed willingness to conduct HIV/AIDS outreach education, (4) being able to bring in two network members to the program, and (5) not being enrolled in other HIV prevention programs or network studies. There were five waves of data collection with an average attrition rate of less than 15%.

Data for experiencing violence victimization and other control variables presented here were collected during the third wave between April 2000 and June 2002. The primary outcome of drug use was collected during the fifth survey wave between July 2002 and June 2004. Data analysis was limited to former drug users at wave 3. Former drug users were defined as participants who reported past-6-months heroin, cocaine, or crack use at baseline but not at the third wave of follow-up. Among 993 wave 3 participants, 375 were non-active drug users, 228 of whom reported heroin, cocaine, or crack use at baseline and completed the fifth wave survey.

Measures

Comprehensive in-person interviews that included questions about personal characteristics, physical health status, psychological well-being, and exposure to violence were conducted by trained study staff using computer-assisted personal interviewing technology. Audio computer-assisted self-interview was used for questions related to drug use.

The primary outcome was any heroin, cocaine, or crack use in the prior 6 months at the wave-5 follow-up. Wave 3 survey items assessing experience of violence were based on the Selner-O'Hagan et al. assessment.²² History of experiencing violence was

measured by these seven items: “Have you ever been: (1) chased when you thought that you could really get hurt; (2) hit, slapped, punched, or beaten up; (3) attacked with a weapon; (4) shot; (5) shot at but not actually wounded; (6) sexually assaulted, molested, or raped; and (7) threatened to seriously hurt.” Experiencing violence in the past year was based on an affirmative report of any of the seven types of violence. This study also assessed time of last event on a 4-point response: “within the last year,” “1–3 years ago,” “4–6 years ago,” and “more than 6 years ago.”

Control variables at wave 3 included age, race/ethnicity, gender, educational attainment, employment, relationship status, homelessness, incarceration history, alcohol use, and current drug treatment attendance. Participating in any drug economy activity was assessed by nine items of activity such as owning/operating shooting galleries, selling drugs, and exchanging sex for drugs or money. Level of depressive symptoms at wave 3 was identified by the Center of Epidemiologic Studies Depression (CES-D) 20-item scale.²³ We used a score 20 as cutoff point, and the scale had strong internal consistency, with Cronbach’s alpha of 0.89.

Statistical Analysis

Exploratory data analyses were conducted to examine the variable distribution and generate a profile of study participants at wave 3. Bivariate analyses between predictors at wave 3 and drug use at wave 5 were conducted with logistic regression models. Subsequently, a multivariate logistic regression model was used to test variables associated with using drugs at follow-up. Bivariate tests indicating statistical differences at $p < 0.20$ were included in multivariate models. Since people living in a neighborhood with high levels of violence are more likely to experience a violent event, mixed-effects models were used to examine the independent correlates of experiencing violence after adjusting for clustering of responses among participants living in the same census block. Data were analyzed using Stata version 10.0 (StataCorp, College Station, TX, USA).

RESULT

A total of 288 former drug users at wave 3 completed assessments at wave 5. The mean time between two waves was 2.3 years. Table 1 presents the characteristics of participants. Participants reported high levels of lifetime and past-year-experienced violence. During their lifetime, many respondents had been hit/punched or beaten up (64.0%), chased (50.9%), attacked with a weapon (39.5%), physically threatened (31.1%), sexually assaulted or raped (21.1%), shot at (21.1%), and shot (14.5%). Within the past year, a smaller number of respondents reported being hit/punched or beaten up (7.0%), physically threatened (5.7%), chased (4.4%), attacked with a weapon (2.6%), sexually assaulted or raped (1.3%), and shot at (0.4%). No respondents reported being shot in the past year. Eighty-three percent of participants had ever been a victim of violence and almost 14% experienced at least one physically violent event in the prior year.

Table 2 reports the unadjusted and adjusted odds ratios for drug relapse at 2-year follow-up. Victimization of violence in the past year at wave 3 was associated with drug relapse at follow-up in the bivariate analysis (odds ratio [OR]: 3.37, 95% confidence interval [CI]: 1.54, 7.36). In the adjusted mixed-effects model, former drug users who had experienced any violence in the past year were 2.73 times more likely to use drugs at 1-year follow-up (95% CI: 1.20, 6.18). Additionally, likelihood of relapse at follow-up

TABLE 1 Characteristics of former drug users at wave 3: SHIELD study

	Total (<i>n</i> = 228)
	<i>N</i> (%)
Age: mean (range)	42 (26–63)
Race	
African-American	216 (94.7)
Other	12 (5.3)
Gender	
Female	141 (61.8)
Male	87 (38.2)
Education	
At least 12th grade/high school graduate	119 (52.2)
Less than high school	109 (47.8)
Current employment	
Unemployed	135 (59.2)
Employed	93 (40.8)
Currently having main partner	
Yes	135 (59.2)
No	93 (40.8)
Alcohol use ^a	
At least once a week	62 (27.2)
Less than once a week or never	166 (72.8)
Homeless ^a	
Yes	7 (3.1)
No	221 (96.9)
Incarcerated ^a	
Yes	21 (9.2)
No	207 (90.8)
Currently in drug treatment	
Yes	73 (32.0)
No	155 (68.0)
Any drug economy activity ^a	
Yes	25 (11.0)
No	203 (89.0)
CES-D	
≥20	43 (18.9)
<20	185 (81.1)
Experiencing violence in lifetime	
Been chased	116 (50.9)
Been hit/punched/beaten up	146 (64.0)
Been attacked with a weapon, not including shot/shot at	90 (39.5)
Been shot	33 (14.5)
Been shot at	48 (21.1)
Been sexually assaulted, molested, or raped	48 (21.1)
Been threatened to serious hurt	71 (31.1)
Experienced any violence	190 (83.3)
Experiencing violence in the past year	
Been chased	10 (4.4)
Been hit/punched/beaten up	16 (7.0)
Been attacked with a weapon, not including shot/shot at	6 (2.6)
Been shot	0 (0)
Been shot at	1 (0.4)

TABLE 1 (continued)

	Total (<i>n</i> =228)
	<i>N</i> (%)
Been sexually assaulted, molested, or raped	3 (1.3)
Been threatened to serious hurt	13 (5.7)
Experienced any violence	31 (13.6)

SHIELD Self-Help in Eliminating Life-Threatening Disease study
^aIn the past 6 months

was marginally associated with current unemployment (OR: 1.73, 95%CI: 0.95, 3.14) and with incarceration in the past 6 months (AOR: 0.32, 95%CI: 0.10, 1.06).

DISCUSSION

Using longitudinal data, we found that experiencing violence in the past year predicted crack, cocaine, and heroin relapse at 2-year follow-up among former drug users. In a nationally representative sample from the Injury Control and Risk Survey, 5.4% of the US adult population and 6.9% of persons in the 25–34-year age range had experienced at least one violent victimization episode in the past 12 months.²⁴ In the current analysis, more than 83% of former drug user participants had experienced serious violent events in their lifetime and 14% had experienced violence in the past year. These rates could have been much higher since we only measured a few violent events. The elevated rate of victimization in this sample may contribute to the understandings of the impact violence within some inner-city communities.

That victimization may predict that drug relapse is consistent with theories and findings that the relationship between drug abuse and victimization may have a cyclical nature.^{8,25} Several factors may explain the temporal relationship between exposure to violence and relapse. Prior studies have suggested that that drug craving may be enhanced in the context of stress response,²⁶ thus victimization may create physiological triggers that enhance self-medication with drugs. In addition, there is a spatial relationship between drug activity and violence.²⁷ Exposure to violence may be a marker of neighborhood drug context and extent of continued drug involvement. Place of residence influences exposure to drugs and violence and potential vulnerability to long-term drug use.²⁸ Studies have shown that neighborhood drug access²⁹ and social network drug influences³⁰ can present substantial challenges to drug cessation. In this sample, involvement in the drug economy was not associated with relapse. However, it is possible that exposure to violence may be an indicator of interaction with the drug scene through neighborhood or network interactions. Those who relapsed were less able to distance themselves from drug use, either through their neighborhood environment or through social ties. This reinforces a need to recognize and mitigate the contextual aspects that may contribute both to relapse and to likelihood of violence exposure.

This study has several limitations. Generalizability of the findings is restricted due to the sampling strategy. The face-to-face assessment of violence experiences may have the potential for heightened social desirability response bias. Drug use was based on self-report and was not verified. Additional efforts are needed to understand the mechanisms that explain the association between recent exposure

TABLE 2 Adjusted analysis of former drug users experiencing violence in the past year predicts drug relapse at 1-year follow up: mixed-effects models to adjust for clustering observations in the same block

	Unadjusted analysis (n = 228)			Adjusted analysis (n = 228)		
	Odds ratio	95%CI	P	Odds ratio	95%CI	p
Age	0.97	0.93,1.01	0.17	0.97	0.93,1.02	0.23
Race: African-American	0.38	0.12,1.24	0.11	0.46	0.13,1.64	0.23
Gender: male	0.90	0.52,1.58	0.71	—	—	—
Education: at least high school graduate	1.10	0.64,1.88	0.74	—	—	—
Currently having main partner	0.96	0.55,1.66	0.88	—	—	—
Current unemployed	1.68	0.96,2.95	0.07	1.73	0.95,3.14	0.07
Weekly alcohol use ^a	1.89	1.03,3.45	0.04	1.60	0.853,0.1	0.15
Homeless ^a	1.35	0.29,6.18	0.70	—	—	—
Incarcerated ^a	0.39	0.13,1.20	0.10	0.32	0.10,1.06	0.06
Currently in drug treatment	1.17	0.65,2.11	0.61	—	—	—
Any drug economy activity	1.00	0.42,2.38	0.99	—	—	—
CES-D: ≥20	0.63	0.30,1.33	0.23	—	—	—
Ever experienced violence	0.73	0.361,49	0.39	—	—	—
Experienced violence in the past year	3.37	1.54,7.36	0.002	2.72	1.20,6.18	0.02

^aIn the past 6 months

to violence and relapse. Future research should also look at gender differences by victimization and the relationship of the victim to the violence perpetrator.

Results from the current study highlight the importance of addressing the fundamental issues of violence experienced in inner-city communities. Evidence-based national and local policies are needed to address the disproportionate violence experienced by inner-city minority populations with history of illicit drug use. Furthermore, it may be valuable for treatment programs to address the extent of recent violence among participants, explore the extent to which these experiences may challenge abstinence efforts, and establish programs that involve drug users to reduce violence in the community and offer alternatives to drug economy. In addition, future research should look at the association between the location of drug treatment centers, especially methadone clinics and the effectiveness of drug treatment programs. It may be important to locate drug treatment centers and halfway or recovery houses in neighborhoods with less violence. Moreover, there is a need for trauma support and mental health services that are accessible and appropriate for current and former drug users and others whose access may be limited by economic means or lack of insurance. Integrating trauma programs into treatment may be helpful to address prior experiences of violence. However, these data suggest that additionally providing supportive and mental health resources in the event of future victimization may be a realistic and invaluable component of comprehensive service provision.

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