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The Effects of PTSD on Treatment Adherence, Drug Relapse, and Criminal Recidivism in a Sample of Incarcerated Men and Women

Sheryl Pimlott Kubiak
Wayne State University

Objective/Method: Given the relationship between post-traumatic stress disorder (PTSD) and substance use disorders (SUD), and the prevalence of SUD among offenders, the inattention to trauma before, during, and after incarceration is troubling. This exploratory study compared those with and without co-occurring PTSD among men (n = 139) and women (n = 60) involved in prison-based substance abuse treatment. *Results:* More than one half the sample met criteria for lifetime PTSD with women experiencing a greater number of events and men experiencing more recent events. Women with PTSD were significantly more likely to relapse than women without. Men with PTSD were more likely to enter community aftercare treatment and recidivate than those without. *Conclusion:* The findings suggest that trauma-related disorders, among those with SUD, affect postincarceration outcomes. Therefore, from a practice and policy perspective, interventions addressing this co-occurring disorder should be available to men and women within the criminal justice system.

Keywords: substance abuse; trauma; gender; treatment; prison

Rarely is trauma discussed in relation to incarceration—either the effect of incarceration on those with trauma histories, prison as a site of new trauma, or the effect of trauma-related disorders on recidivism. This is particularly troublesome given the relationship between post-traumatic stress disorder (PTSD) and substance use disorders (SUD), and the high prevalence of SUD among those involved in the criminal justice system. Men and women entering prisons and jails have considerable histories of psychological trauma prior to incarceration (Gibson et al., 1999; Jordan, Schlenger, Fairbank, & Cadell, 1996; Kupers, 1996; Teplin, Abram, & McClelland, 1996), and certainly the incidence of violence within the institution has been well documented (Kupers, 1996; Toch, 1998; Websdale & Chesney-Lind, 1998). Although there is a dearth of information on the prevalence of offenders with both disorders, as many as 50% of those entering community-based substance abuse treatment are thought to have a co-occurring PTSD and generally demonstrate poorer long-term outcomes compared to those without (Ouimette, Finney, &

Moos, 1999). Although prison-based treatment has generally been successful in reducing recidivism and relapse (Inciardi, Martin, Butzin, Hooper, & Harrison, 1997; Pelissier, Wallace, & O'Neil, 2001; Wexler, De Leon, Thomas, Kressel, & Peters, 1999), only 10% of those who need substance abuse treatment actually receive it (Lo & Stephens, 2000).

The purpose of the current study was to examine the prevalence of both disorders among men and women involved in prison-based substance abuse treatment and to compare treatment adherence, drug relapse, and criminal recidivism among those with and without symptoms of PTSD.

BACKGROUND

The incidence of co-occurring mental health and substance abuse disorders has been estimated to affect almost one half of those with serious and chronic mental health disorders (Kessler et al., 1997; Rogier et al., 1990). Those individuals with these dual disorders absorb a large proportion of the human and fiscal resources in the mental health and substance abuse service systems because they are among the most challenging to treat, often requiring repeated hospitalizations or intensive residential treatment (Drake, Yovetich, Bebout, Harris, & McHugo, 1997; Dumaine, 2003). A recent report to

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Congress by the Substance Abuse and Mental Health Services Administration (SAMHSA, 2002) outlined a multitude of factors (i.e., lack of cross-screening, dearth of programming, funding regulations, etc.) that result in comorbid substance abuse/mental health clients entering one system or the other, or volleying between systems, with inadequate services and support systems. However, there has been little attention to the issue of co-occurring disorders among incarcerated men and women.

The U.S. Department of Justice estimated that in 1999 approximately 16% of inmates in state prisons and local jails were mentally ill (Ditton, 1999). Furthermore, approximately 13% received mental health therapy or counseling from a "trained professional" while incarcerated and 10% receive psychotropic medications (Beck & Maruschak, 2001). In addition, estimates of drug or alcohol dependence among incarcerated men and women are considerably higher than epidemiological estimates (Kessler et al., 1997; Warner, Kessler, Hughes, Anthony, & Nelson, 1995), ranging from 51% (Lo & Stephens, 2000) to 70% (Pimlott Kubiak, Boyd, Slayden, & Young, in press). In fact, 80% of federal and state inmates were either convicted of a drug-related crime, were using at the time of the offense, or committed their crime to support their drug use (Center for Substance Abuse Treatment, 1998).

Of late, there has been an increased awareness of PTSD co-occurring with SUD. PTSD can occur after exposure to a life-threatening event where the individual experiences a sense of horror and believed his or her life was in danger. Symptoms of the disorder involve psychologically re-experiencing the event and wanting to avoid people and places that might trigger memories of the trauma (American Psychiatric Association, 2000). Although research studies have been mixed on support of the "self-medication" hypothesis of drug use, research indicates that trauma exposure usually precedes the development of an SUD (Chilcoat & Breslau, 1998; Stewart, Pihl, Conrod, & Dongier, 1998). In other words, drugs and alcohol are initially used to alleviate the painful symptoms associated with PTSD but then become problems in their own right that can exacerbate PTSD symptoms and increase the risk of subsequent trauma.

Exposure to a traumatic event is common, however, most people recover psychologically in a relatively brief period of time. For example, the National Comorbidity Study found that 61% of men and 51% of women in the United States experience a trauma over the course of their lifetime; however, of those who experience an event, only 8% of men and 20% women manifest symptoms of PTSD (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995).

However, among those with PTSD, nearly 52% of men and 28% of women experienced an alcohol dependency while 35% of men and 28% of women reported a co-occurring drug dependency (Kessler, Crum, et al., 1997). These results suggest that 2.9% of women, and 2.5% of men, experience co-occurring PTSD and an alcohol abuse disorder. Similarly, 2.9% of women and 1.7% of men would be expected to experience PTSD and a co-occurring drug abuse disorder.

While examining the prevalence of PTSD among those with a serious SUD we find a similar pattern. National epidemiological studies estimate that 9% of men and 6% of women experience a drug dependency over the life course (Warner et al., 1995). Among those with an SUD, 8.3% meet criteria for PTSD (Cottler, Compton, Mager, Spitznagel, & Janca, 1992). Of individuals seeking treatment for substance use, lifetime prevalence rates of PTSD have been estimated as high as 50%, with approximately one fourth to one third meeting criteria for current PTSD (Brown, Recupero, & Stout, 1995; Jacobsen, Southwick, & Kosten, 2001; Najavits, Gastfriend, & Barber, 1998).

Although there is little data on the intersection of SUD and PTSD among offenders, we can only assume that the high prevalence of SUDs translates into an enhanced prevalence of this particular co-occurring disorder. Certainly exposure to psychological trauma is higher among the incarcerated than those in the general population (Ehlers, Maercker, & Boos, 2000; Gibson et al., 1999; Jordan et al., 1996; O'Keefe, 1998). One study documented a lifetime prevalence rate for PTSD among incarcerated men at 33% (Ehlers et al., 2000), more than 4 times higher than the rate for men in the general population. Similarly, Jordan and colleagues (1996) compared the rates of several mental health disorders among women in prison and women from the surrounding geographic area, finding that incarcerated women had twice the rate of depression and had been exposed to a far greater number of traumatic incidents.

Estimates of PTSD may be higher among those incarcerated for several reasons. First, involvement in illegal behavior such as drug seeking (Forney, Inciardi, & Lockwood, 1992) and residing in areas of extreme poverty (Pimlott Kubiak, 2002) may increase exposure. Second, in addition to stress, prison may be a production site of new traumatic experiences, as well as triggering traumatic memories. Toch (1998) illustrated the threat of violence within male prisons for physical and sexual assault, as well as the codes of silence maintained by inmates and guards. Similarly, women's prisons have come under greater scrutiny because of the incidence of sexual assault by male corrections staff (General

Accounting Office, 1999; Websdale & Chesney-Lind, 1998).

Substance abuse treatment outcomes for those with PTSD have generally been less favorable when compared to those without. In a study comparing outcomes for women with and without PTSD at 3 months posttreatment, those with PTSD were more likely to relapse sooner than those without (Brown, Stout, & Mueller, 1996). In a sample of 1,630 male veterans attending substance abuse treatment, 1-year outcomes for those with co-occurring PTSD, were less favorable; those with the dual disorder were more likely to be readmitted for treatment and less likely to be employed than those in the SUD-only group (Ouimette, Ahrens, & Moos, 1997). At 2 years posttreatment, clients with co-occurring SUD and PTSD were more likely to report problems related to substance use and more likely to consume alcohol than either the SUD-only group or the group with SUD and other psychiatric disorders (Ouimette et al., 1999).

Initial assessments of an integrated approach to the treatment of trauma and substance-related disorders have been positive (Najavits, Weiss, & Shaw, 1998). In addition to community-based intervention studies, this same cognitive behavioral treatment approach was conducted in a correctional setting with a sample of 17 women. At the end of the 3-month treatment period, 53% no longer met criteria for PTSD, and at 6 weeks postrelease 70% did not meet criteria for an SUD (Najavits, 2002). Certainly treatment for women seems especially salient because women have higher epidemiological rates of PTSD, usually enter prison with more severe SUD, and represent a small proportion of the criminal justice population. However, in general, prison programs have not explicitly attended to this co-occurrence and have only recently been involved in the systematic screening and assessment of substance abuse disorders (see Pimlott Kubiak et al., in press).

CURRENT STUDY

Although the use of substance abuse treatment within criminal justice settings is gaining federal and state support (Farabee, Prendergast, Cartier, & Wexler, 1999), attention to the need for integrated approaches to treatment of co-occurring SUD and psychiatric disorders has been lagging. The focus of the current study was to examine treatment adherence, relapse, and recidivism among those who voluntarily entered a prison-based substance abuse treatment program, comparing those with co-

occurring PTSD and those without. Based on prior research we expected to find that treatment outcomes for those in the co-occurring group would be poorer than those without PTSD. Specifically we expected that treatment failure, recidivism, and relapse would be higher in those with co-occurring disorders.

METHOD

Participants

One hundred ninety-nine state prisoners (60 women and 139 men) voluntarily entered a residential substance abuse treatment (RSAT) program on the grounds of their respective institutions between November 1999 and May 2000 and completed treatment between May 2000 and February 2001. Participants resided in specially designated living units within the prison where they engaged in more than 40 hours of therapeutic activities each week including group and individual therapy as well as didactic lectures and community meetings. The units were staffed by a combination of treatment staff, contracted from community-based substance abuse treatment agencies, and corrections officers (see Pimlott Kubiak, 2003). Eligibility for the treatment program was based on assessment of substance dependency, as determined by the Substance Abuse Subtle Screening Inventory (Miller, Roberts, Brooks, & Lazowski, 1997), free from psychotropic medications, minimum-security status, and within 12 to 18 months from prison release. All program participants signed consent to treatment forms and agreed to participate in the evaluation process.

The program was widely advertised throughout minimum-security facilities across the state. Treatment participants were selected from the population of inmates who applied and were determined to be eligible. When accepted prisoners were transferred to the institution where the treatment program was housed, assessment instruments were self-administered prior to a clinical interview.

Although the cognitive behavioral models of treatment for men and women were similar, there were some differences between programs. First, the male program was 9 months in duration and the women's was 6 months. Men could meet criteria for Level II security status (a higher form of minimum security) while women had to be Level I. In addition, the women's program staff received some specialized training in treating trauma exposure.

Measures

Independent Variable

PTSD. Traumatic events were assessed using the Life Events subscale contained in the National Comorbidity Survey (NCS; Kessler, McGonagle & Zhao, 1994). In the NCS a modified version of the Composite International Diagnostic Interview (CIDI) was utilized which was developed collaboratively by the World Health Organization (WHO, 1990) and the U.S. Alcohol, Drug and Mental Health Administration. The CIDI is a comprehensive diagnostic interview designed for assessing mental health disorders. Within the NCS, a small validation study of the CIDI Trauma scale was conducted with 29 respondents of the larger sample who reported the occurrence of lifetime trauma. Approximately one half of the validation sample had a diagnosis of PTSD using the CIDI. These individuals were reassessed by trained interviewers using other validated instruments. Agreement between the CIDI and these two instruments was .75. Furthermore, the CIDI was found to somewhat underdiagnose PTSD (Kessler, Sonnega, et al., 1995).

The CIDI measure contained 11 closed-ended questions pertaining to specific traumatic events asking respondents to indicate if they have ever experienced the event. In addition, there was one open-ended question that queries the possibility of other traumatic experiences not included in the closed-ended questions. The CIDI evaluates life-threatening accident; natural disaster; witness of severe injury or death; death of loved one as a result of homicide, suicide, or accident; rape; molestation; serious attack; threatened with weapon or held captive; direct combat; and experience of a terrible event most people never do. In an effort to reduce the possibility of triggering psychological discomfort related to the trauma during incarceration, we gave participants the option of marking the individual event or simply tallying the number of event categories that had occurred over their lifetime and how many occurred within the past 12 months.

Measurement of the disorder was based on the definitions and criteria specified in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (2000). Diagnosis of PTSD requires that two criteria are met. The first is experiencing or witnessing an event that involved actual or threatened death, or serious injury in which the individual response involved fear, helplessness, or horror. The second is that the person is experiencing a specific constellation of symptoms. The first criterion was met if the offender marked any of the

previously noted events. Those who did not mark any events or did not write in a total number of events were eliminated from further scoring. The second criterion was determined by asking if symptoms were currently present using a 5-point scale from 0 (*absent*), 1 (*don't know*), 2 (*few times*), 3 (*a lot*), and 4 (*all the time*). An individual symptom was counted as present if the participant assessed it as 2 or higher (*a few times to all the time*).

Symptom segues are situated with three categories: triggers (re-experiencing), avoidance, and arousal. Those with at least one re-experiencing symptom proceed to avoidance symptoms where at least three are required for diagnosis. Finally, those with two or more arousal symptoms have met symptom criteria for PTSD. Each respondent ends with a categorical variable on PTSD diagnosis as well as total number of symptoms in each segue and mean level of intensity.

Dependent Variables

There are three major treatment outcomes measured in this study—treatment adherence, drug relapse, and criminal recidivism. Each outcome and their sources are explained below.

Treatment adherence. Adherence to treatment was measured using two indicators, the first measured completing the initial treatment program and the second entrance into aftercare, which measured adherence to the continuum of care.

- **Program Completion:** Successful completion of the program is defined using three criteria: (a) completion of all four program phases, (b) active participation and no major rule violations, and (c) no positive drug screens during treatment. Because treatment admission is considered a privilege, with usually a waiting list for admission, those noncompliant with program or institutional rules are terminated and sent back into general prison population.
- **Aftercare:** One of the treatment objectives is to create a continuum of care so that the offenders are supported in their transition to the community. In the first 7 months after prison release the offender is required to enter an outpatient treatment program. Participation in aftercare was documented in one of three ways: by the program staff that monitored aftercare, parole reports, and through Corrections Management Information System (CMIS) records because the community treatment was financially supported by the state. We were interested in whether the individual followed through with community treatment and the length of time it took to enter treatment after their release from prison.

Relapse. Relapse was considered if there was a positive drug screen documented in the CMIS. Drug screening is conducted in the prison, as well as in the community, allowing us to track treatment participants from

institution to community parole. However, the database does not account for all testing, and testing is not systematically conducted. The unavailable screens primarily pertain to the “instant” testing devices utilized by parole agents. This is a strip that can be dipped into a urine sample to determine the offenders’ recent drug use. If this preliminary test is positive, the sample is sent to the lab for confirmation. The positive urine screen would then be documented on CMIS; however, the instant test may not. In addition, urine samples are collected randomly and for “cause” so that the rate of sampling may change from offender to offender.

Recidivism. Recidivism is defined in two ways, new arrest and parole revocation. Because the same person can have a new arrest and a parole revocation, a third variable—legal problems—is used to represent unique cases of recidivism.

- **New Arrest:** Arrest data is obtained by accessing the Law Enforcement Information Network (LEIN) database maintained by the state police. LEIN data provide information on three types of violations: ordinance, misdemeanor, and felony. If a felony arrest occurred, postprison release, then the arrest is recorded and considered as recidivism.
- **Parole Revocation:** A parole revocation is when offenders have received a sustained violation of parole, lose their current community status, and are returned to the prison on the same sentence. Although some offenders may be in violation of their parole for not maintaining specific conditions (e.g., employment, treatment, etc.), rarely is parole revoked for such behavior. Some may be sent to a Technical Rule Violation Center; however, this is not considered a revocation. Parole revocation is obtained from the CMIS data.

Analysis

Descriptive statistics were used to describe the population and document differences between program participants as well as PTSD status. Inferential statistics, such as *t* tests and chi-squares, were used to ascertain differences between those with SUD only and those with co-occurring PTSD. The sample is also assessed for possible program/gender differences. Finally, we used linear and logistic regression to obtain the percentage of variance in outcomes associated with PTSD status (i.e. adjusted R^2 or Nagelkerke pseudo- R^2).

RESULTS

There were few demographic differences between program participants (see Table 1) except that Program 1 was all women and Program 2 all men. Women were slightly

older, and men were incarcerated more frequently. Overall, men and women did not differ on type of offense, although there was some variation. Although most were sentenced for property offenses (41%), women were more likely to have been convicted of a drug offense (24% vs. 19%), $\chi^2(1) = .56, p = .46$, and 7% of men, compared to no women, were convicted of criminal sexual misconduct $\chi^2(1) = 4.07, p = .04$. Men were more likely than women to have been incarcerated previously; however, for one half the women and nearly one third of the men this was their first prison experience. The majority, 80% of men and 70% of women, had previous substance abuse treatment. In addition, women were significantly more likely to have received previous mental health counseling and psychiatric hospitalization than men.

Table 2 demonstrates that the primary drug of choice was cocaine or crack (34% of the men and 40% of the women), $\chi^2(1) = .88, p = .35$. Nearly one third of the men, as compared to 18% of women, claimed alcohol as their primary drug of choice, $\chi^2(1) = 2.40, p = .12$; however, women were more likely than men to use heroin (28% vs. 17%), $\chi^2(1) = 3.63, p = .06$. Although the majority of men claim use of multiple drugs, women appeared to be the heavier users prior to incarceration. In the 30 days before being locked up, women averaged using 23 of those days. In fact, 75% of the women claimed daily use (30 of 30 days) in the month before incarceration. In addition, an examination of the combined sample by PTSD status yielded no statistically significant differences for any of the characteristics included in either Tables 1 or 2.

Determining who met event and symptom criteria for PTSD began by assessing the number of traumatic events over the life course and within the past 12 months. Overall, there was an average of 2.9 (*SD* 2.6) traumatic events experienced over the life course, with women experiencing significantly more events than men (3.70 vs. 2.57), $t(191) = 2.83, p = .005$. In contrast, men were more likely to report having experienced trauma within the past 12 months. In fact, only one woman claimed exposure in the past 12 months as compared to 75% of the men. Men averaged 2.7 events during the past 12 months compared to .02 for women (one woman reported), resulting in a highly significant difference, $t(184) = 12.05, p < .001$.

Men were more likely to report exposure of traumatic events during incarceration than women, who primarily reported exposure prior to incarceration. Although this assumption cannot be definitively tested, further analysis comparing treatment start dates (when the trauma assessment was administered) and prison entrance revealed that more than one half the men (52%), as compared to 33% of

TABLE 1: Demographics of Participants Overall and by Program

Variable	Overall	Program 1	Program 2	t Test or χ^2
	(N = 196) M (SD) / %	(Male) (n = 139) M (SD) / %	(Female) (n = 60) M (SD) / %	
Gender				
Male	69.8	100%		
Female	30.2		100%	
Age	36.1 (8.1)	35.2 (8.2)	38.1 (7.5)	2.34*
Race				2.81
Minority	59.3	63%	50%	
White	40.7	37%	50%	
Partner	21.4	20%	25%	.60
Children	70.9	69%	75%	.64
Criminal history				
Offense				5.42
Property	41.3	42%	41%	
Drug	20.4	19%	24%	
Assaultive	33.7	31%	36%	
Sex offense	5.6	7%	0%	
Prior incarcerations		2.5 (1.5)	2.0 (1.4)	2.38*
Prior treatment experiences				
Substance abuse	77.6	81%	70%	2.83
Mental health counseling	23.0	17.6	35.0	7.09**
Psychiatric hospitalization	10.7	7%	18%	5.25*

NOTE: Partner defined as being married, engaged, or living with a committed partner.

* $p < .05$

** $p < .01$.

women, had been in prison longer than 1 year before they entered the program, $\chi^2(1) = 5.75, p = .02$. Of the 72 men incarcerated longer than 1 year before treatment began, 79% ($n = 57$) experienced at least one trauma during that time, in other words, during the course of confinement. Although there were no statistical differences between men and women in the length of time incarcerated prior to treatment, men averaged nearly 6 months longer (719 days vs. 533 days), $t(197) = 1.24, p = .22$.

Overall one half the population (55%) of those entering treatment met criteria for lifetime PTSD. The rates did not differ between male and female populations; 53% of men and 60% of women report event and symptom criteria for PTSD diagnosis, $\chi^2(1) = .78, p = .38$. Comparing the number of symptoms and symptom intensity levels (across all symptoms clusters as well as overall) of those who met PTSD criteria with those who did not, we found significant differences ($p < .001$) on all measures across both programs. These consistently significant differences suggest that symptoms are associated with trauma

TABLE 2: Comparison of Substance Abuse Variables Overall and by Program (Sex)

Variable	Overall	Program 1	Program 2	t Test or χ^2
	(N = 196) % or M (SD)	(Male) (n = 139) % or M (SD)	(Female) (n = 60) % or M (SD)	
Drug of choice				7.34
Alcohol	26.0	29.4	18.3	
Heroin	20.4	16.9	28.3	
Marijuana	15.8	17.6	11.7	
Crack/Cocaine	35.7	33.8	40.0	
Other	1.0	2.0	2.0	
Poly drug user	74.0	89%	40%	51.87***
No. of family/friend use	2.6 (5.3)	3.15	1.27	3.20**
No. of days using / 30	16.0 (14.1)	13.1	22.7	4.60***
Daily use before prison	44.7	31.7	75.0	31.85***

NOTE: Number of days using / 30 = number of days using in the 30 days before incarceration.

** $p < .01$. *** $p < .001$.

exposure and not the prison or institutional environment per se. Comparisons between men and women meeting criteria for PTSD found that women experience more events (4.57 compared with 3.27), $t(107) = 2.55, p = .01$, and average more re-experiencing symptoms (3.71 compared to 3.19), $t(107) = 1.82, p = .07$. Furthermore, the intensity level of re-experiencing symptoms is greater for women than men (1.10 vs. 0.88), $t = 1.99, p = .05$.

A comparison of the dependent variables between programs by PTSD status (Table 3) found that men with PTSD were more likely to complete the program and have a positive drug screen, although neither were statistically significant. Similarly, recidivism did not significantly differ by PTSD diagnosis, however 17% ($n = 7$) of the PTSD group, compared to 6% ($n = 2$) on the non-PTSD group, experienced some legal problem postprison release. For men, the only significant outcome was aftercare—one half of those with PTSD (51.2%) compared to one fourth of those with SUD only were admitted to community-based aftercare.

For women (Table 3), completion rates and entrance into aftercare were nearly identical between groups, however relapse was significantly higher among women with PTSD. In fact, although there was no evidence of relapse among the 24 women in the non-PTSD group, 16.7% ($n = 6$) of the women with PTSD recorded at least one positive drug screen. In fact, a probable diagnosis of PTSD accounted for 22% of the variation in whether a woman has a positive drug screen. Although equal numbers of women from both groups ($n = 4$) have encountered legal

TABLE 3: Comparison of Outcomes by Program and PTSD Status

Variable	Program 1: Male				Program 2: Female			
	Non-PTSD (n = 65)		PTSD (n = 74)		Non-PTSD (n = 24)		PTSD (n = 36)	
	M (SD) or %	M (SD) or %	t Test or χ^2 p Value	R ²	M (SD) or %	M (SD) or %	t Test or χ^2 p Value	R ²
Successful completion	73.8	81.1	.307	.01	100	97.2	.410	.11
Drug relapse	13.8	17.6	.549	.00	0	16.7	.035	.22
If paroled	(n = 35)	(n = 41)			(n = 18)	(n = 29)		
Aftercare admission	25.7	51.2	.023	.09	50.0	48.3	.908	.00
Recidivism	5.7	17.1	.127	.06	22.2	13.8	.455	.02

NOTE: Positive drug screens either during incarceration or on parole.

problems, it is a higher percentage of women in the non-PTSD group (22% vs. 14%).

DISCUSSION AND APPLICATIONS TO SOCIAL WORK PRACTICE

This exploratory study examined differences in treatment adherence, drug relapse and criminal recidivism between those with a co-occurring PTSD and SUD and those with only SUD in two prison-based substance abuse treatment programs. Both programs used similar models, and we expected that those with a dual disorder would experience treatment failure, relapse, and recidivism more frequently than those with an SUD only. Our results, although somewhat mixed, support the original hypothesis and provide useful information to social work practitioners, researchers, teachers, and policy makers.

The strongest evidence to support our hypothesis is that women with SUD and PTSD are significantly more likely to relapse than women with only an SUD. In fact, PTSD diagnosis accounts for 22% of the variance in whether a woman tests positive for drug use posttreatment. Although there are no other statistical differences among women based on PTSD status, those with SUD only were more likely to recidivate. Men with PTSD were significantly more likely to enter community-based aftercare than those with SUD only. Although a greater proportion of men with both disorders were more likely to relapse (18% vs. 14%) and recidivate (17% vs. 6%), neither outcome reached statistical significance.

Certainly women's heavy drug use and prior victimization history may explain relapse posttreatment. However, there were no significant differences between those with and without PTSD in the proportion of women who used daily prior to incarceration (77% of those with PTSD compared to 71% for those without), $\chi^2(1) = .30$,

$p = .60$. Similarly, trauma history may be related to women's higher utilization of mental health treatment and psychiatric hospitalization; however, we found no statistical differences even though women with PTSD symptoms were more likely to have received prior mental health counseling (39% vs. 29%), $\chi^2(1) = .60$, $p = .44$, and psychiatric hospitalization (22% vs. 13%), $\chi^2(1) = .17$, $p = .68$. Therefore, the higher relapse rate of those with symptoms of PTSD supports previous findings (Brown et al., 1996) and theory that inattention to PTSD may negate the success of substance abuse treatment (Najavits et al., 1998; Najavits, Weiss, & Shaw, 1997; Ouimette, Brown & Najavits, 1998). Attention to trauma-related disorders among incarcerated women may be pivotal in preventing relapse and as a consequence, recidivism.

More interesting, there were no statistical differences between treatment-seeking incarcerated men and women in meeting diagnostic criteria for PTSD. Certainly this differs from epidemiological data in which women are twice as likely to be diagnosed with PTSD as men (Kessler et al., 1995) and from other studies of treatment studies seeking men and women. In the National Institute of Drug Abuse Cocaine Study, Najavits, Gastfriend, and Barber (1998) found that twice the number of women (30%) had a co-occurring PTSD when compared to men (15%). Certainly some of this variation may be attributed to how PTSD was assessed. Stewart and colleagues (1998) found a higher incidence of PTSD when conducting clinical assessments versus chart reviews. Therefore, higher rates of PTSD among this treatment-seeking population may be the self-report of symptoms and events at treatment onset. However, the measure used here (CIDI) has also been found to underdiagnose (Kessler et al., 1995).

Of importance to social workers involved in assisting prisoners with re-entry are differences between men and women in their experiences during incarceration and in

the community. Women, in contrast to men, may experience returning to their community as re-entering a traumatic environment. Women not only experienced more episodes of trauma but experienced them in the community. This may result in women feeling vulnerable and perhaps "re-experiencing" their trauma when returning to that environment. Thus substance use may be attributed to their desire to minimize symptoms that trigger memories of the original event. Although we are not suggesting that women feel safe in prison, especially in light of recent investigations and settlements on behalf of women victimized during incarceration (see Geer, 2000), the women in the current study entered prison with significantly more trauma than did men. In addition, the current study suggests that men may experience the majority of their trauma as a result of the incarceration. Therefore, men leaving the facility may take some comfort in departing from their source of trauma, whereas women may be more hypervigilant in the community. Alternately, and perhaps as a result of the aforementioned investigations in women's prisons, women may be victimized during incarceration and reluctant and/or ashamed to discuss or name these events.

Prison exit could also explain why men experiencing PTSD symptoms, and perhaps abuse during incarceration, may seek aftercare treatment more than men without PTSD. This difference between groups may be a desire to confront the trauma and alleviate symptoms by acknowledging their need for ongoing services that address their experiences of trauma during incarceration. However, it is questionable if men receive such services addressing the trauma-related sequelae during reintegration or at any other time. Although male victimization, particularly sexual assault, may be glibly referred to as part of the sentence (see Human Rights Watch, 2001), it is rarely attended to by clinical professionals during incarceration, or in planning reintegration services. Part of this inattention may be the reluctance of male offenders, as well as service providers, to acknowledge such victimization. Certainly masculine social norms may obstruct such candor. However, social worker practitioners and educators must understand the rules of masculine help seeking (Addis & Mahalik, 2003), as well as prison norms (Toch, 1998), creatively seeking solutions that confront such obstruction to meeting men's treatment needs.

These findings emphasize our earlier call for attention to trauma exposure among men and women in the criminal justice system. Certainly social workers recognize that victimization during incarceration requires a safe therapeutic space, for those who have experienced trauma (Herman, 1992). Although this study suggests that prison

may be "unsafe," there is some evidence that prison-based treatment programs can, in fact, provide a safe therapeutic space (Pimlott Kubiak, 2003). Therefore, it seems plausible that social workers could strive for the creation of an organizational climate in prison in which the inmate/client feels safe.

However, the presence of social workers employed by corrections, or working inside prisons, is extremely low, generating some speculation that social work has abandoned the field of corrections (Gibelman, 1995). Because funding for such opportunities may be increasing, it is crucial that social work professionals have greater visibility within the criminal justice system, as well as advocates for reform. Thus, social work educators need to include curricula that inform social workers about the system and the challenges for those entering and exiting the system.

Certainly the current study has many limitations, and we encourage other investigators to replicate this study. Although some of these limitations may be more easily remedied (e.g., the use of self-report measures, more systematic collection of drug screens), others are site dependent and more difficult to remedy. For example, there was little control over adherence to the treatment model. Although release into the community was planned subsequent to treatment discharge, frequently this did not occur. In fact, at the time data were collected nearly 40% of the men and women who participated in treatment remained in prison. Similarly, our comparison of outcomes by program for those with co-occurring PTSD found one significant difference; women were more likely to complete treatment than their male counterparts (97% compared with 81%), $\chi^2 = 5.36, p = .02$. However, this difference could be attributed to programmatic or facility differences and not gender per se.

The final limitation is in our analyses. In Table 3 we found two significant differences between PTSD and non-PTSD groups, whereas by chance alone we would have expected less than one (0.4). However, using the conservative Bonferroni correction to reduce the likelihood of chance findings (Type I errors), the new cut point for significance would be 0.0125, and neither of our findings would remain significant. This is another reason why our findings should be replicated in more rigorous studies.

CONCLUSION

The U.S. Surgeon General estimates that between 41% and 65% of individuals with an SUD also have a history

of another mental health disorder. Similarly, about one half of those with a lifetime history of a mental health disorder also have a lifetime history of an SUD (U.S. Department of Health and Human Services, 1999). Despite the high prevalence of co-occurring mental health and SUD, there are many barriers to the effective assessment and treatment of individuals experiencing these dual disorders (SAMHSA, 2002). Perhaps nowhere are these barriers more acutely felt than in the nation's prisons and jails.

Although the lack of appropriate treatment within the criminal justice system may mirror the lack of treatment in the community, in many respects the justice system has become the default provider for many with co-occurring mental health disorder and SUD. The myriad of issues surrounding victimization, trauma, and substance abuse are of particular salience to men and women who are, or have been, incarcerated—and may be exacerbated as a result of incarceration. Therefore appropriate treatment of these particular co-occurring conditions may be important psychologically for the offender, fiscally in reducing recidivism and institutional confinement costs and socially in reducing family disintegration and financial dependency.

Finally, as the United States continues to lead the world in incarceration rates, greater numbers of men and women—especially minority men and women—are experiencing incarceration. Social workers and other mental health professionals should assess incarceration as a possible site trauma. We must not only assess the trauma they enter the prison with but also that which they leave with.

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