Trauma Exposure and Posttraumatic Stress Disorder among Incarcerated Men

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ABSTRACT *Trauma exposure and trauma-related symptoms are prevalent among incarcerated men, suggesting a need for behavioral health intervention. A random sample of adult males (N=592) residing in a single high-security prison were screened for trauma exposure and posttraumatic stress disorder (PTSD) symptoms. Trauma was a universal experience among incarcerated men. Rates of current PTSD symptoms and lifetime PTSD were significantly higher (30 to 60 %) than rates found in the general male populations (3 to 6 %). Lifetime rates of trauma and PTSD were associated with psychiatric disorders. This study suggests the need for a gender-sensitive response to trauma among incarcerated men with modification for comorbid mental disorders and type of trauma exposure. Developing gender-sensitive trauma interventions for incarcerated men and testing them is necessary to improve the behavioral health outcomes of incarcerated men who disproportionately return to urban communities.*

KEYWORDS *Trauma, PTSD, Incarcerated men, Integrated treatment*

Evidence on trauma exposure and prevalence of posttraumatic stress disorder (PTSD) among incarcerated men is limited, although men are vastly overrepresented in prisons and jails and drawn disproportionately from socially and economically distressed communities. This privation of evidence is especially surprising given their behavioral health profiles in which at least one fifth of men inside state prisons have mental health problems;^{1,2} over half have experienced physical, sexual, or emotional abuse during their formative years and often in adulthood,^{3–6} and the majority have past or current histories of alcohol or drug use problems.⁷ The implications for recidivism are stark given the high correlation among trauma, behavioral health problems, and criminality.⁶ Indeed, a minority of male inmates receive treatment for behavioral health disorders while incarcerated,⁸ even though these problems are risk factors for returning to prison after release.

Understanding trauma is critical because of its etiological link to PTSD. Trauma is extremely common among men. Rates of lifetime exposure to at least one traumatic event for males in community samples vary between 43 and 92 %, depending on the study sample.⁹ Rates have been found to vary by age, location, and type of trauma.⁹ For incarcerated adult males, trauma exposure rates range from 62.4 to 87 %.^{6,10,11} In a study of 124 jailed veterans, 87 % reported at least one traumatic event during

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their lifetime.¹¹ Wolff and colleagues,⁶ based on an incarcerated male sample of approximately 7,000, estimated rates of trauma exposure ranging from 3.4 to 64.7 % for physical trauma occurring in the community prior to incarceration, with prevalence depending on the type of physical trauma, age of exposure, and mental disorder. Self-reported sexual trauma was less common among incarcerated men, with estimated exposure rates between 0.4 and 19 %.⁵ Six-month prevalence estimates for physical or sexual trauma while incarcerated was estimated at 35.7 % for incarcerated men without mental disorder and 47.7 % for their counterparts with mental disorder.⁶

Compared to the general population, exposure rates for traumatic events are higher among people with serious mental illnesses. Teplin and colleagues¹² found that, during a 12-month period, over one quarter of persons with serious mental illnesses were victims of violent crime, a rate that was 11 times higher than that of the general population. Consistently, higher trauma exposure rates have been found for incarcerated men with mental disorders compared to their counterparts without mental disorders both prior to and during incarceration.⁶

Although rates of traumatic exposure are high among incarcerated male samples, whether and to what extent trauma is manifested in ways that meet criteria of PTSD is not clear. Based on community samples, roughly 3 to 6.3 % of males who experience a traumatic event meet criteria for lifetime PTSD.⁹ Rates estimated for incarcerated male samples, based on sample sizes of less than 220 and varying diagnostic methodologies, range from 21 % (general prison population) to 39 % (jailed veterans) for current PTSD, with an estimated lifetime PTSD rate of 33 % (general prison population).^{10,11} The 7- to 10-fold difference in rates of PTSD between community and incarcerated samples requires closer inspection. Given the large number of incarcerated males, combined with their high rates of trauma exposure and PTSD, suggest a significant need for trauma treatment in correctional settings. For this reason, expanding the evidence base on the nature and prevalence of trauma exposure among incarcerated men, and the prevalence of current and lifetime PTSD among them, is vital for identifying their behavioral health need and projecting service need within correctional settings.

This study describes the trauma exposure history and PTSD symptoms for a large random sample of incarcerated men. The goal is to profile the type and prevalence of trauma exposure by mental disorder, estimate prevalence rates for lifetime and current PTSD by the type of trauma and co-occurring mental disorder (beyond PTSD), and associate the type of trauma to the likelihood of screening positive (or negative) for PTSD.

METHODS

This study screened for trauma exposure and PTSD among male residents housed at a high-security prison operated by the Pennsylvania Department of Corrections from February to June 2012. The protocols for recruitment and interviewing were approved by the appropriate institutional review boards. All participants signed informed consent forms after the conditions of participation (including confidentiality, duty to inform, privacy, risks, benefits, and right to withdraw or refuse to answer questions) were reviewed with them by research staff.

The Consolidated Statement on Reporting Trials (CONSORT) diagram is presented in Fig. 1. Residents eligible for the screening were 18 years or older and had at least 10 months remaining on their mandatory minimum sentence to be

FIGURE 1. CONSORT diagram for recruitment phase.

completed at the host facility (to ensure sufficient time to complete the parent study prior to release). Excluded were residents with active psychosis or organic brain impairment (limiting the ability to give informed consent) or currently on or been on suicide watch in the past 3 months. According to prison administrative records, of the estimated 4,000 residents, 1887 were eligible for the study. Half of these men

($n=944$) were randomly invited to be screened, and 592 gave written consent and participated in the screening interviews, for a participation rate of 63 %. Of those screened, 346 (58 %) screened positive for current PTSD symptoms (PCL-C >34) and, of those, 269 (or 78 % of those who screened positive for PTSD symptoms) agreed to participate in the second clinical interview.

At the initial screening interview, participants completed background questions on criminal history (e.g., years incarcerated, type of offense), health status and treatment conditions (e.g., ever been treated for schizophrenia, bipolar, depression, PTSD, anxiety, hypertension, diabetes, drug or alcohol problems), demographics (e.g., education, race, ethnicity, age, citizenship, veteran status, marital status, employment history), the Trauma History Questionnaire, a modified version of the National Violence Against Women and Men Survey (NVAWM), and the PTSD Checklist-Civilian Version (PCL-C) for DSM-IV. The PCL-C, a 17-item self-report measure of PTSD symptoms based on DSM-IV criteria, uses a 5-point Likert scale format generating a score ranging from 17 to 85 with higher scores indicating greater symptom severity to assess presence of current PTSD symptoms.¹³ The PCL-C has robust psychometric properties for internal consistency, test-retest reliability, and convergent validity, especially for PTSD screening with trauma-exposed populations.¹⁴ The Trauma History Questionnaire (THQ), a 24-item self-report measure, queries any lifetime exposure to 24 life-threatening or traumatizing experiences (e.g., crime, general disaster, sexual or physical assault) using a yes/no format that qualify as traumas for a diagnosis of PTSD.^{15,16} The NVAWM survey asks behavior-specific questions about sexual and physical trauma and was used to elicit information about trauma that occurred in childhood.¹⁷ Questionnaire Development System (QDS) software and computer-assisted self-interviewing (CASI) technology were used to administer these surveys by laptop computers with mouse devices. The surveys were available in English. In less than 1 % of cases, literacy issues arose that resulted in research assistants helping subjects complete the CASI surveys. There was no problem with computer literacy even among subjects older than 50. Within several minutes of instruction, they were able to maneuver the mouse without difficulty.

At the second interview, the Clinician-Administered PTSD Scale (CAPS)¹⁸ and Structured Clinical Interview for DSM-IV-Non-Patient Version with Psychotic Screen (SCID-NP)¹⁹ were used to assess psychiatric and substance abuse or dependence disorder. The CAPS, the gold-standard measure for the diagnosis of PTSD, was used to diagnose lifetime and current full or subthreshold PTSD.^{19,20} The CAPS diagnosis of PTSD is based on the DSM-IV criteria. Diagnostically, full PTSD was defined as follows: a qualifying traumatic event, one reexperiencing symptom, three avoidance symptoms, and two arousal symptoms with the presence of co-occurring significant distress or impairment in functioning. Subthreshold PTSD classification required a qualifying traumatic event, one reexperiencing symptom, and either three avoidance or two arousal symptoms with the presence of co-occurring significant distress or impairment in functioning.^{20,21} The SCID was used to assess current (past month) or lifetime axis I disorders. Axis I disorders assessed included mood disorders (e.g., bipolar disorders, depression, dysthymic disorder, depressive disorder nos), substance use disorders (e.g., alcohol and drug abuse or dependence), and anxiety disorders (panic disorder, agoraphobia, social phobia, specific phobia, obsessive compulsive disorder, generalized anxiety disorder, anxiety disorder nos, adjustment disorder). The psychotic screen was used to assess the presence of psychotic symptoms. The clinical interviews were administered by seven

master's-level, clinically trained social workers or psychologists, and one bachelor's-level researcher with 3 years of experience administering psychological instruments. The assessors were trained and supervised by doctoral-level researchers with experience administering these instruments in clinical and research settings. Interviews were conducted in private rooms. All the clinical measures are commonly used to assess traumatized populations²² and were scored in standard fashion. The second interview battery took approximately 1.5 h to administer.

Participants were divided into groups according to mental disorder status (serious mental disorder, other axis I disorder, or no axis I disorder) and PTSD symptoms. Serious mental illnesses include primary psychotic symptoms, bipolar disorder, and major depressive disorder. Other axis I mental illnesses include anxiety, dysthymic, depressive, and other mood disorders. For the total screening sample, mental disorder was determined by self-reported response to the screening question: "have you ever been treated for any of the following problems: depression, schizophrenia, PTSD, bipolar disorder, anxiety disorder." For the treatment sample, diagnosis was determined by clinical assessment using the SCID. Grouping by PTSD was determined by PCL-C score and CAPS diagnosis. The optimal PCL cutoff scores for distinguishing between people with and without PTSD have been found to vary across samples. Using a veterans sample, Weathers et al.²³ recommend an optimal cutoff score of 50 based on specificity and sensitivity analyses. Other studies have recommended lower cutoff scores, ranging from 30 to 44 scores, to optimally identify people with PTSD.¹³ None of these studies was based on an incarcerated sample. Given the diversity within the literature, groups were constructed to characterize a high to moderate severity range of PTSD symptoms: high severity equaled scores of 50 or higher on the PCL-C, and moderate severity was defined by scores of 35 or higher. These score ranges were used to define screening positive for PTSD, while those with scores below 35 were classified as screening negative for PTSD.

Means and percentages were estimated on the basis of valid numbers. Given the small sample size and the exploratory nature of the study, Bonferroni-type alpha adjustments were not conducted, which raised the possibility of type I error but minimized type II error. Multivariate logistic regression was conducted to assess the trauma event determinants of a moderate to severe PTSD symptoms (PCL-C=35+) or a severe PTSD symptoms (PCL-C=50+), controlling for age (continuous) and education (coded categorically 1=grade school only, 2=some high school, 3=high school graduate or GED, 4=technical or trade school, 5=some college, 6=bachelors degree, 7=graduate studies). Model fit was determined by the *c*-statistic. Estimates of conditional probabilities of lifetime PTSD were based on trauma type (direct violence, physical; direct violence, sexual; other injury/shocking event) reported by each participant. For all analyses, the significance level used to test differences was $p < 0.05$ and $p < 0.01$. SAS 9.2 was used for all analyses, and Proc means, survey means, *t* test, logistic, and freq were used to construct all statistics.

RESULTS

The screening sample included 592 male participants with the following characteristics: a mean age of 42.7 (± 12.3 SD), racially and ethnically diverse (African-American (51.9 %), Caucasian (30.2 %), other (17.9 %), Hispanic (13.6 %)), at least high school/GED educated (78.5 %), nonveterans (17.7 % veterans and 15.3 % were active-duty veterans), committed a violent crime (54.7 %), and served,

on average, 14.9 (± 11.7 SD) years in prison since turning 18. The treatment sample participants ($N=269$) were 42.0 (± 12.3 SD) years old, racially and ethnically diverse (African-American (50.2 %), Caucasian (34.1 %), other (15.7 %), Hispanic (10.4 %)), at least high school/GED educated (81.4 %), nonveterans (24.8 % were veterans and 21.1 % were active-duty veterans), committed a violent crime (55.3 %), and incarcerated 14.8 (± 11.7 SD) years since age 18. There were no significant differences between the demographic and criminal history characteristics of the treatment and nontreatment samples with two exceptions: the nontreatment sample included more Hispanic participants (11.7 vs. 10.4 %, $p=0.04$) and fewer veterans (11.7 vs. 24.8 %, $p=0.0004$).

Virtually, all participants in the screening and treatment samples reported at least one lifetime traumatic event that was directly violent and involved injury or shock (see Table 1). In both samples, over half of the participants reported experiencing at least one of the following violent traumatic events in their lifetimes: feared being killed or seriously injured, robbed either with or without force or threat of force, attacked with a weapon, and sustained an injury from a beating or being pushed. Other traumas experienced by over half the screening and treatment samples included the following: serious injury, illness, or death of someone close to them; seen someone seriously injured or killed; had a serious or life-threatening illness or injury; seen dead bodies (other than at a funeral); and had a serious accident at work, in a car, or somewhere else. The mean score on the PCL-C was significantly higher for the treatment sample (52.0) than the no treatment screening sample (40.7) ($p<0.0001$), which reflects the eligibility criterion for the treatment sample: PCL-C greater than 34. Of those in the screening sample, 58.5 % reported moderate to higher PTSD symptoms (PCL-C scores greater than 35), with nearly half of these participants (49 %) reporting severe symptoms (PCL-C scores at 50 or higher).

Table 2 presents prevalence rates of childhood trauma. Trauma in childhood was prevalent, with higher rates reported by the treatment sample. The most common forms of trauma were physical in nature and most often involved being hit with objects that left welts or caused bleeding or being beat up. Nearly one third of the screening and treatment samples reported being threatened with a knife or gun prior to turning 18. Participants with mental illnesses were more likely to report all forms of trauma compared to participants without a mental illness. Sexual trauma was reported by one-in-five participants in the screening sample, with one in ten reporting that they were sexually assaulted as children.

Compared to the no axis I disorder group of the treatment sample, participants with serious mental illnesses were more likely to experience at least one lifetime traumatic event, a direct violent event, and other injury or shocking event. The group with serious mental illnesses, compared to the non-disordered group, was also more likely to report four of the nine types of violent traumas: robbed by force or threat of force, sustained injury from a beating or pushing, attacked and seriously injured, and nonconsensual sexual contact. Similar significant differences were found for the other axis I disorder group except with respect to nonconsensual sexual trauma where no significant differences were found. Reflecting this greater lifetime trauma exposure, mean PCL-C scores were significantly higher for participants in the treatment sample with serious axis I disorders (54.3) than their counterparts in the non-disordered group (47.1). Participants in the treatment sample with serious mental disorders were more likely to report severe symptoms of PTSD (PCL-C scores at 50 or higher) than their counterparts without an axis I disorder.

TABLE 1 Trauma history events by sample and axis I mental disorder category among incarcerated men

Traumatic events	Treatment sample N=269				
	Total screening sample ^a N=592	Total sample ^a N=269	Serious mental disorders ^{a,b} N=162	Other axis I disorders ^c N=56	No axis I disorder ^d N=51
Any trauma: violent, injury, shocking event	99.0	98.9	100*	100	94.0
Direct violence, any percentage	95.8	98.1	100**	100*	90.0
Feared being killed or seriously injured	82.8	88.8	90.1	87.5	86.0
Attempted to rob or actually robbed you	78.4	84.0	84.0	87.5	80.0
Robbed by force or threat of force	68.5	73.1	75.3*	80.4*	58.0
Attacked with weapon	64.2	70.8	73.9	69.6	62.0
Serious injury from beating or being pushed	50.5	63.7	69.6**	64.3*	44.0
Attacked without weapon and seriously injured	41.0	49.3	53.8**	53.6*	30.0
Had unwanted sexual contact	23.7 ^d	31.9 ^d	41.5**	16.1	18.8 ^e
Had sex against your will	15.3 ^d	18.6 ^d	22.6 ^d	12.5	12.5 ^e
Combat exposure while in military	8.7	12.1	12.5	10.9 ^d	12.0
Other injury or shocking event, any percentage	98.5	98.5	100*	98.2	94.0
Serious injury, illness, or death close to you	89.8	93.3	95.1	92.9	88.0
Seen someone seriously injured or killed	87.6	91.0	90.7	94.6	88.0
Had serious or life-threatening illness/injury	69.5	79.0	83.2*	75.0	70.0
Seen dead bodies (other than at funeral)	68.3	72.0	71.0	82.1*	64.0
Had serious accident	62.6	67.0	70.2	58.9	66.0
Had spouse/partner or child die	39.1	41.7	41.9	35.7	48.0
Close friend/family member murdered or killed by driver under the influence	36.4	37.7	32.7	44.6	46.0
Experienced man-made disaster	35.2	41.6	39.8	42.9	46.0
Exposed to dangerous chemicals	29.4	35.2	39.8	23.2	34.0
Experienced natural disaster	25.3	31.8	34.2	30.4	26.0
PCL-C score, mean	40.7	52.0	54.3**	50.0	47.1
(SD)	(15.0)	(10.4)	(11.0)	(8.6)	(8.1)
Percentage of PCL-C score, 35+	58.5	100	100	100	100
Percentage of PCL-C score, 50+	28.4	52.4	59.9**	50.0	31.4

* $p<0.05$; ** $p<0.01$ (statistically significant results comparing severe disorder sample and other axis I disorders sample to no axis I disorder sample, t test, chi-square test, or fisher's exact test)

^aSample means based on 1 % or less missing data unless otherwise noted

^bIncludes anyone with primary psychotic symptoms, bipolar disorder, or major depression according to SCID assessment

^cIncludes anyone with a mental disorder other than serious mental disorder according to SCID assessment

^dSample means based on 2 to 3 % missing data

^eSample means based on 6 % missing data due to skip patterns in responses

TABLE 2 Childhood trauma history events by sample and axis I mental disorder category among incarcerated men

Trauma experienced prior to age 18	Treatment sample N=269				
	Total screening sample ^a N=592	Total sample ^a N=269	Serious mental disorders ^{a,b} N=162	Other axis I disorders ^c N=56	No axis I disorder ^a N=51
Any childhood trauma, %	70.9	80.1	78.8	92.9**	70.0
Specific types of childhood trauma, %					
Hit with object that left welts or caused bleeding	55.1	62.8	65.6*	66.1	50.0
Beat up	43.8	51.5	53.1*	60.7*	36.0
Threatened or harmed with knife or gun	30.8	37.2	37.5	42.9	30.0
Abandoned	28.1	39.9	41.3	44.6	30.0
Sexual contact ^d	19.2	23.7	26.9	19.6	18.0
Choked or attempted to drown	16.1	19.6	20.0	25.0	12.0
Burned with hot object or liquid	12.3	16.2	15.0	21.4	14.0
Sexual act ^e	10.8	13.9	16.9	10.7	8.0

* $p < 0.05$; ** $p < 0.01$ (statistically significant results comparing severe disorder sample and other axis I disorders sample to no axis I disorder sample, t test, chi-square test, or fisher's exact test)

^aSample means based on 2 % or less missing data unless otherwise noted

^bIncludes anyone with primary psychotic symptoms, bipolar disorder, or major depression according to SCID assessment

^cIncludes anyone with a mental disorder other than serious mental disorder according to SCID assessment

^dSexual contact includes any touching that was sexually threatening or suggestive

^eSexual act includes oral, anal, or vaginal sex

Rates of trauma exposure and conditional probabilities for PTSD symptoms (i.e., screening positive for moderate to severe PTSD symptoms) for the screening sample are shown in Table 3. Nearly 6 in 10 participants in the total screening sample with exposure to direct physical violence or other serious injury or shocking event experienced moderate to severe levels of PTSD symptoms, with approximately half experiencing severe symptoms. While sexual trauma was a significantly less common type of traumatic event reported by incarcerated men, those who experienced a sexually traumatic event were significantly more likely to screen positive for PTSD symptoms. For physically violent and other injury/shocking traumatic events, conditional probabilities for moderate to severe and severe PTSD symptoms were significantly larger for participants reporting treatment for a mental disorder compared to those reporting no prior treatment. Conditional probabilities for sexually traumatic events between disorder groups were significantly different only for the group with severe PTSD symptoms (PCL-C of 50+).

Using an age-education adjusted model, the odds for positive severe PTSD symptoms significantly increased with the experience of the following: sexual assault or molestation and had a serious or life-threatening illness (see Table 4). The odds of screening positive for moderate to severe PTSD symptoms was significantly increased by fear of being killed or injured, combat exposure, sustained injury from beating or being pushed, sexual assault or molestation, experiencing a serious or life-threatening illness, and experiencing a natural disaster. The models predict positive

TABLE 3 Rates of trauma exposure and conditional probabilities for PTSD by screening score, event type, and mental disorder

Traumatic event type	Total screening sample N ^c =589		Ever treated for mental disorder ^a N ^c =299		No prior treatment for mental disorder N ^c =287	
	Trauma exposure, % ^b	Screen positive PTSD, % ^b	Trauma exposure, % ^b	Screen positive PTSD, % ^b	Trauma exposure, % ^b	Screen positive PTSD, % ^b
Moderate to severe PTSD symptoms (PCL-C=35+)						
Direct violence, physical	95.6 (93.9–97.2)	59.8 (58.8–60.8)	97.3 (95.5–99.2)	76.6 (75.2–78.1)	93.7 (90.9–96.5)	41.8 (40.6–43.1)
Direct violence, sexual	25.3 (21.8–28.9)	75.0 (65.8–87.2)	35.0 (29.6–40.5)	78.8 (68.2–93.4)	15.5 (11.3–19.7)	65.9 (51.8–90.7)
Other injury or shocking event	98.5 (97.5–99.5)	58.5 (57.9–59.0)	99.0 (97.9–100)	76.0 (75.2–76.9)	97.9 (96.2–99.6)	40.2 (39.5–40.9)
Severe PTSD symptoms (PCL-C=50+)						
Direct violence, physical	95.6 (93.9–97.2)	29.0 (28.5–29.5)	97.3 (95.5–99.2)	43.0 (42.2–43.8)	93.7 (90.9–96.5)	13.8 (13.4–14.2)
Direct violence, sexual	25.3 (21.8–28.9)	42.6 (37.4–49.5)	35.0 (29.6–40.5)	48.1 (41.6–57.0)	15.5 (11.3–19.7)	29.6 (23.2–40.7)
Other injury or shocking event	98.5 (97.5–99.5)	28.4 (28.2–28.7)	99.0 (97.9–100)	42.6 (42.1–43.1)	97.9 (96.2–99.6)	13.5 (13.3–13.8)

^aBased on self-reported response to ever receiving treatment for schizophrenia, bipolar, depression, PTSD, or anxiety

^b95 % Confidence interval

^cSample Ns reflect valid reported number

screening for PTSD moderately well as indicated by the *c*-statistic (*c*~0.7). For positively screening for severe PTSD symptoms among those reporting a mental disorder, the model revealed that combat exposure (odds ratio (OR), 2.69; 95 % confidence interval (CI), 1.11–6.54; *p*=0.0285) and attacked without a weapon and seriously injured (OR, 1.86; CI, 1.04–3.33; *p*=0.0367) significantly increased the odds. Similar factors significantly increased the odds for positively screening for moderate to severe PTSD symptoms (models not shown but are available from the first author upon request).

DISCUSSION

Results of this epidemiological study showed a high prevalence of trauma exposure and PTSD symptoms among a large random sample of incarcerated men. For incarcerated men, trauma was a universal experience. Correspondingly, rates of current PTSD symptoms and a lifetime PTSD diagnosis (30 to 60 %) are higher than rates found in the general male populations (3 to 6.3%). These findings reinforce and amplify earlier research of trauma exposure and PTSD among incarcerated men.^{4–6,10,11}

Considerable variation was found in the lifetime prevalence of exposure to trauma across traumatic events. Some events occurred in less than a third of the screening sample (e.g., nonconsensual sexual contact, combat exposure, exposure to dangerous chemicals or natural disaster) and others in more than two thirds (e.g., robbed by force or threat of force, feared being killed or injured, witnessing serious

TABLE 4 Comparative analysis of odds ratios: likelihood of incarcerated man exposed to lifetime traumatic event to suffer from moderate to severe or severe PTSD symptoms

Trauma event types	OR of incarcerated males with positive screen for PTSD <i>N</i> ^a =572	
	PCL-C=50+ OR, 95 % CI	PCL-C=35+ OR, 95 % CI
Direct violent trauma		
Feared being killed or injured	0.76 (0.4–1.44)	1.99* (1.13–3.51)
Combat exposure while in military	1.84 (0.96–3.56)	2.51* (1.14–5.55)
Robbed by force or threat of force	0.88 (0.51–1.54)	1.32 (0.8–2.18)
Sustained injury from beating/being pushed	1.55 (1–2.41)	2.5** (1.66–3.78)
Attacked with a weapon	0.92 (0.56–1.51)	0.83 (0.52–1.31)
Attacked without weapon and seriously injured	1.47 (0.94–2.3)	1.07 (0.69–1.66)
Sexual assault/molestation	1.88** (1.22–2.91)	2.01** (1.25–3.2)
Other injury or shocking event		
Had a serious accident	0.87 (0.56–1.35)	0.88 (0.58–1.32)
Had a serious or life-threatening illness	2.01** (1.19–3.37)	1.84** (1.19–2.86)
Experienced a natural disaster	1.13 (0.71–1.79)	1.69* (1.04–2.74)
Experienced a man-made disaster	1.51 (0.97–2.34)	1.07 (0.68–1.68)
Exposed to dangerous chemicals	1.31 (0.84–2.04)	1.25 (0.79–1.96)
Seen someone seriously injured or killed	1.05 (0.51–2.19)	0.86 (0.46–1.61)
Seen dead bodies (other than a funeral)	1.06 (0.66–1.69)	0.97 (0.63–1.49)
Close friend/family member murdered or killed by driver under the influence	0.99 (0.66–1.5)	0.93 (0.62–1.38)
Had a spouse/partner or child die	1.22 (0.8–1.85)	0.69 (0.46–1.04)
Serious injury, illness, or death of someone close to you	0.76 (0.37–1.54)	1.29 (0.69–2.43)
c-statistic	0.706	0.746

^a*N* reflects listwise deletion number for logistic regression model

injury or killing, had a serious or life-threatening injury). Incarcerated men were most likely to report exposure to traumas that were violent, interpersonal, sudden, and life-threatening. The distribution of lifetime traumatic events to which incarcerated men reported was dissimilar to that reported by community samples^{24,25} but similar to those based on smaller samples of incarcerated men.^{10,11} Particularly, incarcerated populations report lifetime exposure rates of assaultive

violence that are at least twice the rate reported for community-based male populations. For example, in this study, the lifetime rate of assaultive violence was estimated at 96 % compared to 43.3 % reported by Breslau et al.²⁴ The most significant difference was found in rates of sexual trauma between male community and incarcerated populations. The lifetime prevalence of rape reported by incarcerated men in this study was 15 %, similar to the rate of 16 % reported by Saxon.¹¹ By contrast, in community samples, rape was reported by 1 to 3 % of the adult male population.^{24,25}

Specific types of trauma exposure were also found to vary by mental disorder group. Incarcerated men with mental disorders were significantly more likely to report trauma exposure, particularly violent trauma in which they were the victim, compared to incarcerated men without an axis I disorder. This is consistent with the literature that reports higher trauma prevalence among people with mental illnesses in community samples.¹² It also reinforces the evidence on the comorbidity of PTSD and other mental disorders, especially serious mental illnesses, among incarcerated men^{4-6,10,11} and women.²⁶ Furthermore, these findings are consistent with others showing that interpersonal violence, especially involving family members or caregivers, is associated with greater complexity in psychopathology.²⁷

While this study is based on a large random sample and employs standard measures of trauma, PTSD, and mental disorder, there are limitations that merit discussion. First, the screening sample includes only those who volunteered to participate in the study. Although these participants were selected at random, exposure to violence may have influenced their willingness to participate in the study. Nonrandom participation is not unique to this study, but, to the extent that exposure to trauma is correlated with participation, rates reported herein may not be generalizable to the full population of incarcerated men. On the other hand, our participation rate of 64 % is comparable to other epidemiological studies with incarcerated populations. Second, while the screening sample includes all men who agreed to participate in the study, the treatment sample only includes those who met the eligibility criteria of a PCL-C score greater than 34. Only for this group was the identification of mental disorder determined by clinical diagnosis using the SCID. For the screening sample, mental disorder was determined by self-report response to a question regarding prior treatment for specific types of mental illnesses (e.g., schizophrenia, bipolar, depression, PTSD, anxiety). Responses to this question will reflect the individual's insight into symptoms that are psychiatric in nature, diagnostic practices of their providers, and access to services in the community and prison. For this reason, we tested the reliability of the self-report measure of any mental disorder by comparing the concordance of disorder classification (i.e., any mental disorder or no disorder) using the self-report response to the treatment question and the diagnostic assessment of mental disorder for participants in the treatment sample. Concordance was found for 72 % of the treatment sample. Of those reporting no prior treatment, 65 % were diagnosed as having an axis I disorder compared to 11 % who reported prior treatment who were not diagnosed with an axis I disorder. The imprecise diagnostic information for the screening sample limits the reach of this study to explore the relationship among trauma, PTSD, and mental disorder as well as the generalizability of the findings. Third, the potential for a variety of errors and respondent biases beyond mere faulty recall exist when relying on self-report histories regarding potentially threatening topics (e.g., trauma and psychopathology) by vulnerable people (inmates). Computer-administered screening for trauma and PTSD symptoms and trauma-sensitive

training of survey staff were used in an attempt to minimize these biases. Fourth, we are unable to disentangle the time sequence of the exposure to trauma other than indicating if certain traumas occurred in childhood. For this reason, we are unable to identify the correlation between PTSD symptoms and the recency of the trauma, particularly whether the trauma occurred in prison and/or the community.

CONCLUSIONS

Trauma exposure and trauma-related symptoms are prevalent among incarcerated men, suggesting a need for behavioral health intervention. Heretofore, attention has focused on the trauma needs of incarcerated women.²⁸ This study suggests the need for a gender-sensitive response to trauma among incarcerated men with modification for comorbid mental disorders and type of trauma exposure. The high levels of assaultive violence, both physical and sexual, in combination with lifetime and current PTSD warrant intervention that is trauma-informed and sensitive to male mindsets, particularly regarding what it means to be a man. Delivering these services in an environment that is known for being predatory, harsh, and violent will require sensitivity to privacy, confidentiality, and safety. It is essential for men to feel safe before they can begin to explore experiences where they were unsafe. Developing gender-sensitive trauma interventions for incarcerated men and then testing them using randomized controlled designs is a research imperative with significant potential to improve the behavioral health outcomes of incarcerated men.

ACKNOWLEDGMENTS

This study was supported by grant R01-MH095206 from the National Institute of Mental Health

REFERENCES

1. Fazel S, Danesh J. Serious mental disorder in 23,000 prisoners: a systematic review of 62 surveys. *Lancet*. 2002; 359: 545–550.
2. James DJ, Glaze LE. *Mental Health Problems of Prison and Jail Inmates*. Washington, District of Columbia, U.S. Dept of Justice; 2006. NCJ 213600
3. Harlow C. *Prior Abuses Reported by Inmates and Probationers*. Washington, District of Columbia, U.S. Dept of Justice; 1999. NCJ 172879
4. Wolff N, Shi J, Siegel J. Patterns of victimization among male and female inmates: evidence of an enduring legacy. *Violence Vict*. 2009; 24: 469–484.
5. Wolff N, Blitz CL, Shi J, Bachman R, Siegel J. Sexual violence inside prison: rates of victimization. *J Urban Health*. 2006; 83: 835–848.
6. Wolff N, Shi J. Trauma and incarcerated persons. In: Scott CL, ed. *The Handbook of Correctional Mental Health*. 2nd ed. Arlington, VA: American Psychiatric Publishing; 2009: 277–320.
7. Mumola CJ, Karberg JC. *Drug Use and Dependence, State and Federal Prisoners*, 2004. Washington, District of Columbia, U.S. Dept of Justice; 2006. NCJ 213530
8. Chandler RK, Fletcher BW, Volkow ND. Treating drug abuse and addiction in the criminal justice system: improving public health and safety. *JAMA*. 2009; 301: 183–190.
9. Breslau N. The epidemiology of trauma, PTSD, and other posttrauma disorders. *Trauma Violence Abuse*. 2009; 10: 198–210.

10. Gibson LE, Holt JC, Fondacaro KM, et al. An examination of antecedent traumas and psychiatric comorbidity among male inmates with PTSD. *J Trauma Stress*. 1999; 12: 473–484.
11. Saxon AJ, Davis TM, Sloan KL, et al. Trauma, symptoms of posttraumatic stress disorder, and associated problems among incarcerated veterans. *Psy Ser*. 2001; 52: 959–964.
12. Teplin L, McClelland GM, Abram KM, et al. Crime victimization in adults with severe mental illness: comparison with the National Crime Victimization Survey. *Arch Gen Psychiatry*. 2005; 62: 911–921.
13. Wilkins KD, Lang AJ, Norman SB. Synthesis of the psychometric properties of the PTSD checklist (PCL) military, civilian, and specific versions. *Depress Anxiety*. 2011; 28: 596–606.
14. Keen SM, Kutter CJ, Niles BL, et al. Psychometric properties of PTSD Checklist in sample of male veterans. *J Rehabil Res Dev*. 2008; 45: 465–474.
15. Green B. Trauma history questionnaire. In: Stamm BH, ed. *Measurement of Stress, Trauma, and Adaptation*. Lutherville, MD: Sidran Press; 1996: 366–369.
16. Hooper LM, Stockton P, Krupnick JL, et al. Development, use, and psychometric properties of the trauma history questionnaire. *J Loss Trauma*. 2011; 16: 258–283.
17. Tjaden P, Thoennes N. *Full Report of the Prevalence, Incidence, and Consequences of Violence Against Women: Findings from the National Violence Against Women Survey*. Washington, District of Columbia: National Institute of Justice and Centers for Disease Control and Prevention; 2000. NCJ 183781
18. Blake DD, Weathers FW, Nagy LN, et al. A clinician rating scale for assessing current and lifetime PTSD: the CAPS-1. *Behav Ther*. 1990; 13: 187–188.
19. First MB, Spitzer RL, Gibbon M, et al. *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition with Psychotic Screen*. New York, Biometrics Research, New York State Psychiatric Institute, Nov 2002
20. Weathers FW, Litz BT. Psychometric properties of the Clinician-Administered PTSD Scale, CAPS-1. *PTSD Res Q*. 1994; 5: 2–6.
21. Grubaugh AL, Magruder KM, Waldrop AE, et al. Subthreshold PTSD in primary care: prevalence, psychiatric disorders, healthcare use, and functional status. *J Nerv Ment Dis*. 2005; 193: 658–664.
22. Elhai JD, Gray MJ, Kashdan TB, et al. Which instruments are most commonly used to assess traumatic event exposure and posttraumatic effects? A survey of traumatic stress professionals. *J Trauma Stress*. 2005; 18: 541–545.
23. Weathers FW, Litz BT, Herman DS, et al. *The PTSD Checklist (PCL): reliability, validity, and diagnostic utility*; in Proceedings of the Annual Conference of the International Society for Traumatic Stress Studies. San Antonio, TX, Oct 1993
24. Breslau N, Chilcoat HD, Kessler RC, et al. Vulnerability to assaultive violence: further specification of the sex difference in post-traumatic stress disorder. *Psychol Med*. 1999; 29: 813–821.
25. Lukaschek K, Kruse J, Thwing Emeny R, et al. Lifetime traumatic experiences and their impact on PTSD: a general population study. *Soc Psychiatry Psychiat Epidemiol*. 2013; 48: 525–532.
26. Wolff N, Frueh BC, Shi J, et al. Trauma exposure and mental health characteristics of incarcerated females self-referred to specialty PTSD treatment. *Psy Ser*. 2011; 62: 954–958.
27. Price M, Higa-McMillan C, Kim S, et al. Trauma experience in children and adolescents: an assessment of the effects of trauma type and role of interpersonal proximity. *J Anxiety Disord*. 2013; 27: 652–660.
28. Federal Partners Committee on Women and Trauma: *Trauma-informed approaches: Federal activities and initiatives*. Washington: DC. September 2013. Available at <http://nicic.gov/Library/027657>