

HIV Risk Behaviors and Their Relationship to Posttraumatic Stress Disorder Among Women Prisoners

Heidi E. Hutton, Ph.D.

Glenn J. Treisman, M.D., Ph.D.

Wayne R. Hunt, Ed.D.

Marc Fishman, M.D.

Newton Kendig, M.D.

Anthony Swetz, Ph.D.

Constantine G. Lyketsos, M.D., M.P.H.

Objective: This study assessed HIV risk behaviors and their association with psychiatric disorders among women prisoners. **Methods:** HIV risk behaviors practiced in the five years before incarceration were ascertained with the Risk Behavior Assessment interview for 177 inmates at the Maryland Correctional Institution for Women. The Structured Clinical Interview for the DSM-IV was used to determine the occurrence of posttraumatic stress disorder (PTSD), major depression, and dysthymic disorder among the women. Regression models were used to determine the association between HIV risk behavior and psychiatric disorders. **Results:** HIV risk behaviors in the five years before incarceration included never or rarely having used condoms (56 percent of the women), injection drug use (42 percent), sexual intercourse with a partner who used injection drugs (42 percent), prostitution (30 percent), needle sharing (30 percent), receptive anal sex (19 percent), and having more than 100 sex partners (7 percent). After the analysis adjusted for age, education, race, HIV status, and addictive disorders, a lifetime occurrence of PTSD was associated with the practice of anal sex (odds ratio=1.7; 95 percent confidence interval=1.26 to 2.16; $p<.02$) and prostitution (OR=1.56; 95% CI=1.17 to 1.95; $p<.03$). **Conclusions:** HIV risk behaviors before incarceration were highly prevalent among the women in this study. Rates of PTSD, depression, and dysthymic disorder were also high. PTSD was associated with prostitution and receptive anal sex, and the disorder may contribute to high rates of risky sexual behavior. Targeted HIV risk reduction efforts among women prisoners should include evaluation for PTSD; conversely, women prisoners with a diagnosis of PTSD should be evaluated for prior HIV sexual risk behaviors. (*Psychiatric Services* 52: 508–513, 2001)

Dr. Hutton, Dr. Treisman, Dr. Hunt, and Dr. Fishman are associated with the AIDS psychiatry service and Dr. Lyketsos is associated with the neuropsychiatry and memory group at the Johns Hopkins University School of Medicine in Baltimore. Dr. Kendig is with the Federal Bureau of Prisons in Washington, D.C., and Dr. Swetz is with the Department of Correction in Baltimore. Address correspondence to Dr. Hutton, Department of Psychiatry, Meyer 4-119, Johns Hopkins Hospital, 600 North Wolfe Street, Baltimore, Maryland 21287 (e-mail, hhutton@mail.jhmi.edu). This paper was presented in part at a symposium on psychiatric disorders and HIV infection among women prisoners at the annual meeting of the American Psychiatric Association held May 17–21, 1997, in San Diego.

With the rapid increase in the rate of incarceration among women, the psychiatric disorders and physical health problems in this population have become significant public health challenges (1). The number of women prisoners doubled between 1986 and 1997, whereas the number of male prisoners increased by two-thirds (2). By 1997, women prisoners accounted for more than 6 percent of the 1.8 million inmates held in U.S. prisons or jails (2). This explosion in the number of incarcerated women has been attributed primarily to illicit drug use and drug-related crimes (1,3).

Rates of human immunodeficiency virus (HIV) infection are also soaring among women prisoners. In national surveys of prison inmates, the prevalence of HIV infection among incarcerated women ranged from 2.5 percent to 20 percent (4,5), which greatly exceeds the rate of .15 percent among women in the general population (6). Furthermore, rates of HIV infection among women prisoners are often three times those of male prisoners (4), whereas in community samples, HIV-infected men have nearly three times the infection rate of women (6).

Despite the high HIV seroprevalence among women prisoners, only a few studies have examined the behaviors that place these women at high risk of HIV infection (7–9). Major

HIV risk factors for prisoners of both sexes are injection drug use and needle sharing (4,5,8,9). Although the rates of injection drug use are higher among men in the general population (10), female prisoners are more likely than male prisoners to have been drug injectors before incarceration (4,9). Female prisoners are also more likely than their male counterparts to have had sex partners who were injection drug users or to have engaged in prostitution (11).

In addition to addictive disorders, other psychiatric disorders may contribute to HIV risk behaviors. Post-traumatic stress disorder (PTSD) has received little research attention in this context, even though it has been associated with depression (12,13) and cocaine or opiate abuse (13,14), both of which have been reported to be risk factors for HIV infection (15). Symptoms of PTSD have been associated with prostitution and injection drug use in young adults (16). Among female drug users, violent trauma and other predisposing factors for PTSD are widespread (17). HIV-infected adults who have a history of childhood sexual or physical abuse have reported engaging in more HIV risk behaviors such as drug abuse and sexual compulsivity than persons with no history of trauma (18,19).

Previous studies have usually focused on the association between HIV risk behavior and either trauma or symptoms of posttraumatic stress rather than on the full disorder, which is a more devastating response to trauma. Because PTSD has been associated with an elevated risk of HIV infection (20), such an exploration appears especially warranted.

In previous studies, PTSD has been found to affect about one-third of incarcerated women, and it was found to be the second most prevalent psychiatric disorder—after substance abuse—in this population. Teplin and colleagues (21) found that among 1,272 women jail detainees, 22 percent met the criteria for current PTSD, and 34 percent met the criteria for lifetime PTSD. In a study by Jordan and colleagues (22), 30 percent of 805 convicted women prisoners reported exposure to trauma and having symptoms of

PTSD in the six months before incarceration. Zlotnick (23) has reported even higher rates of PTSD among women prisoners, although these results may be associated with differences in sample size and methodology. The association between PTSD and HIV risk behavior among women prisoners has not been explored. Establishing the prevalence of PTSD in women prisoners and its contribution to HIV risk behaviors would be important in mental health treatment planning and HIV risk reduction for this population.

Lyketsos and Federman (15) found an association between depression

*Despite
the high HIV
seroprevalence among
women prisoners, only a
few studies have examined
the behaviors that place
these women at high
risk of HIV
infection.*

and HIV risk behaviors. In nonprisoner samples, elevated rates of a lifetime history of major depression have been reported by HIV-infected and noninfected individuals who engaged in HIV risk behaviors (24–26). The contribution of depression to HIV risk behaviors is underscored among women prisoners, in whom the prevalence of depression exceeded rates reported by men both in prison and in community samples (22).

To our knowledge, no published study has examined the relationship between psychiatric disorders and HIV risk behaviors among women prisoners. For this study, we hypothesized that HIV risk behaviors in this

population would be high, considering the high rates of HIV infection reported for women prisoners. We also hypothesized that rates of psychiatric disorders would be high and that these disorders could have contributed to high rates of HIV risk behaviors. Specifically, we predicted that PTSD, major depression, and dysthymic disorder would be linked to sex and drug risk behaviors associated with HIV transmission.

Methods

Participants

The study sample consisted of 177 women prisoners at the Maryland Correctional Institution for Women (MCIW), an 800-bed minimum- to maximum-security prison that houses the majority of female prisoners in the Maryland state correctional system. Participants were recruited through a prisonwide advertisement for volunteers to take part in a study of “issues of women in prison.” To reduce selection bias, the advertisement did not mention the psychiatric or HIV nature of the study. No incentives were provided for participation. Participants were included in the study if they had been incarcerated for less than one year. An additional 15 HIV-infected women were recruited from the prison HIV clinic. Secondary analyses excluding these additional participants indicated that their absence did not have a statistically significant impact on the study findings. Participants were offered a separate feedback session on the results of their evaluation. At the conclusion of the study, participants were apprised of the purpose of the study and offered a summary of the results.

Table 1 presents the demographic characteristics of the study sample and of the entire MCIW population during the study period, from 1995 to 1997. The sample was representative of the MCIW population. The participants gave written, informed consent. The institutional review board of the Johns Hopkins University, which included a prisoner advocate, and the human subjects committee of the Maryland Department of Correction approved the study. The all-inmate advisory council at MCIW also approved the study.

Table 1

Characteristics of women prisoners in the Maryland Correctional Institution for Women (MCIW) who participated in an HIV risk behavior study and characteristics of the entire incarcerated population at the facility

Characteristic	Women prisoners ¹ (N=177)		MCIW population (N=791)	
	N	%	N	%
Ethnicity				
African American	121	68	569	72
White	49	28	220	28
Other	7	4	2	.2
HIV positive	36	20	119	15
Marital status				
Ever married	21	12		
Never married	97	55		
Intermittent or no employment history	106	60		
Instant offense				
Parole violation	52	29	198	25
Drug abuse	38	21	166	21
Larceny	30	17	158	20
Murder	21	12	79	10
Robbery	10	6	48	6
Other ²	26	15	142	18

¹ Mean±SD age, 33±7.7 years; mean±SD education, 11±2.5 years

² Includes prostitution, breaking and entering, disorderly conduct, and trespassing

Measures

We adapted scale items from the Risk Behavior Assessment (27), a structured interview developed by the National Institute on Drug Abuse that examines drug-related and sexual HIV risk behaviors, to assess the participants' risk behaviors in the five years before their incarceration. Retrospective reporting on drug use and sexual behavior has been shown to yield reliable information (28,29); however, socially undesirable behavior is generally underreported (30).

Eight dichotomous high-risk behaviors were examined: used or did not use intravenous drugs; had or did not have a sex partner who was an injection drug user; shared or did not share needles or drug paraphernalia; engaged or did not engage in anal intercourse; often or always, or never or rarely, had sexual intercourse when intoxicated or high on drugs; never or rarely, or often or always, used condoms; engaged or did not engage in prostitution; and had 100 or more, or fewer than 100, sex partners. The absolute number of sex partners participants had, a continuous variable, was also examined.

The Structured Clinical Interview

for DSM-IV, Non-patient Edition (SCID) (31), was used to assess participants for axis I psychiatric disorders, including substance use. Lifetime—that is, ever meeting diagnostic criteria—and current psychiatric diagnoses were determined for major depression, dysthymic disorder, heroin or cocaine dependence, and PTSD. After the PTSD module had been administered, participants who indicated that they had experienced a traumatic event were asked to identify the event. Traumatic events were subsequently categorized as sexual assault before age 16, excluding rape; adult sexual assault, excluding rape; rape before age 16; rape after age 16; physical assault before age 16; physical assault after age 16; witness to physical or sexual assault; fire; and other events—for example, motor vehicle accident. This approach is consistent with that used in published studies (32,33).

Two psychologists and a social worker reviewed the SCIDs. All three had received prescribed training (34), which included reviewing and scoring videotaped SCID interviews as well as observing or scoring interviews by SCID-trained psychia-

trists or other mental health professionals to verify adequate interrater reliability. The reviewers were blind to the participant's HIV status and HIV risk behaviors.

HIV testing

HIV serologic testing was performed for all participants, and, in accordance with prison policy, all participants received pre- and posttest counseling.

Statistical analysis

Data were analyzed with SPSS software (35). Chi square tests were used to compare distributions of categorical variables, such as risk behaviors, and t tests were used to compare distributions of continuous data. Logistic regression was used to investigate the association between psychiatric diagnosis—the independent variable—and each high-risk behavior category—the dependent variable. The resultant odds ratios were adjusted for age, race (white or not white), HIV status, and years of education. Given the association of addiction with HIV risk behaviors (8–11), odds ratios were also adjusted for a SCID-derived psychiatric disorder of heroin or cocaine dependence. Linear regression was used to investigate the association of psychiatric diagnoses with number of sex partners.

Results

Specific HIV risk behaviors are summarized in Table 2. Both HIV-positive and HIV-negative participants reported several types of sexual behavior that would have placed them at risk of HIV infection—for example, never or rarely using condoms, engaging in anal intercourse, or engaging in prostitution. Crack cocaine was the drug most frequently exchanged for sex. The women's drug use behavior, such as use of injection drugs or sharing of needles and syringes, also placed them at significant risk of HIV infection.

HIV-positive and HIV-negative participants differed significantly in having a history of having injected drugs ($\chi^2=24.03$, $df=1$, $p<.001$), having a sex partner who was an injection drug user ($\chi^2=5.07$, $df=1$, $p<.03$), exclusively having sex partners who

were injection drug users ($\chi^2=9.6$, $df=1$, $p<.002$), and sharing of drug paraphernalia ($\chi^2=4.40$, $df=1$, $p<.04$). These behaviors are those most likely to transmit the HIV virus. The total number of HIV risk behaviors was high among all participants, but it was significantly higher among HIV-infected participants than among non-infected participants (mean $\pm$ SD= 4.69 ± 1.43 and 3.48 ± 1.52 ; $F=17.99$, $df=1,175$, $p<.001$).

The participants' psychiatric diagnoses are summarized in Table 3. Their frequencies of current and lifetime diagnoses were well above general population estimates for women for PTSD (36–38), major depression, and dysthymic disorder (39).

The association between the diagnosis of a psychiatric disorder and specific high-risk behaviors was examined in logistic regression models. Compared with participants who did not have PTSD, participants who met criteria for a lifetime diagnosis of this disorder were 71 percent more likely than those who were not diagnosed with PTSD to have engaged in anal sex and 56 percent more likely to have engaged in prostitution (Wald statistic=5.75, $df=1$, $p<.02$; and Wald statistic=4.5, $df=1$, $p<.04$). The association between lifetime PTSD and other HIV risk behaviors was not significant.

After the analysis adjusted for age, race, HIV status, education, and heroin or cocaine dependence, the association between lifetime PTSD and the practice of anal sex or prostitution remained significant (for anal sex, odds ratio=1.7, 95 percent confidence interval=1.26 to 2.16; Wald statistic=5.5, $df=1$, $p<.02$; and for prostitution, OR=1.56; 95% CI=1.17 to 1.95; Wald statistic=4.8, $df=1$, $p<.03$). HIV risk behaviors were associated with a current diagnosis of PTSD, but the association was not significant.

In logistic regression models, no significant associations were found between traumatic life events and HIV risk behaviors, either when considered alone or when adjusted for the presence of PTSD. No significant associations were found between any of the reported high-risk behaviors and major depression or dysthymic disorder.

Table 2

Types of HIV risk behavior before incarceration among 177 women prisoners who participated in an HIV risk behavior study, by HIV status

Behavior	HIV positive (N=36)		HIV negative (N=141)		All participants (N=177)	
	N	%	N	%	N	%
Injection drug use ¹	28	78	46	33	74	42
Shared needles or syringes ²	24	67	29	21	53	30
Never or rarely used condoms	22	61	76	54	98	56
Primary sex partner was an injection drug user ³	21	58	53	38	74	42
Was often or always high during intercourse	15	42	62	44	77	44
Engaged in prostitution	10	29	42	31	52	30
Engaged in receptive anal intercourse	10	28	23	16	33	19
Has had 100 or more sex partners	3	8	10	7	13	7

¹ $\chi^2=24.03$, $df=1$, $p<.01$ between groups

² $\chi^2=4.4$, $df=1$, $p<.05$ between groups

³ $\chi^2=5.07$, $df=1$, $p<.05$ between groups

Discussion

The prevalence of HIV infection among women prisoners has been found to be as high as three times the rate among male prisoners (4). The participants in our study reported high rates of risky sex and drug use behaviors during the five years before incarceration. Rates of PTSD, depression, and dysthymic disorder among these women were also high. Furthermore, participants with a lifetime diagnosis of PTSD were more likely than others to have engaged in prostitution and receptive anal sex.

Nearly half of the women in our study used injection drugs during the

five years before incarceration, and most of them shared needles or syringes, primarily with their significant other. The majority of women never or rarely used condoms, and nearly half reported having sexual intercourse with partners who used injection drugs. Prostitution for money or drugs, primarily cocaine, was a frequently reported behavior. Not surprisingly, prior high-risk behaviors were more prevalent among the participants who tested positive for HIV infection. As other studies have shown (8,9), we found that injection drug use, needle sharing, and sexual intercourse with partners who used

Table 3

Frequency of psychiatric disorders among 177 women prisoners who participated in an HIV risk behavior study, compared with frequency among the general population

Disorder	Women prisoners		Percentage among general population
	N	%	
Posttraumatic stress disorder ¹			
Lifetime	59	33	1–14
Current	27	15	<1
Major depression ²			
Lifetime	64	36	10–25
Current	18	10	5–9
Dysthymic disorder	14	8	4

¹ Sources: Breslau et al. (36,37) and Robins et al. (39)

² Source: Kessler et al. (38)

injection drugs were associated with HIV infection. These similar findings support the validity of the methods we used to ascertain risk behavior.

The rate of PTSD among the women in our study was also high, significantly exceeding the rate in the general population. Fifty-eight participants (33 percent) met *DSM-IV* criteria for a lifetime PTSD diagnosis, and 27 (15 percent) met criteria for a current PTSD diagnosis. These rates correspond with those reported by two large-scale studies of incarcerated women that indicated that PTSD was the most prevalent psychiatric disorder among women prisoners, excluding substance abuse (21,22).

Our study also indicates that PTSD is associated with HIV sexual risk behavior. Participants who had a lifetime history of PTSD were more likely to have engaged in prostitution and receptive anal sex in the five years before incarceration than those who did not have PTSD. A causal relationship between PTSD and HIV risk behavior cannot be identified by the methods used in this study; however, prostitution may increase exposure to trauma and thus the likelihood of developing PTSD (17,40). Alternatively, PTSD that stems from early sexual abuse may predispose a woman to engage in sexual behaviors that can be destructive, such as prostitution or receptive anal sex (41). Clarification of the contribution of trauma and PTSD to HIV risk will facilitate prevention and treatment efforts.

Our results indicate that the trauma of being raped before age 16 was the most frequently reported antecedent to PTSD among the women prisoners. Rape has been cited as the event most likely to produce PTSD in the general population (39,42), particularly if it occurs before or during adolescence (42).

Interestingly, exposure to trauma alone was not found to be associated with HIV risk behavior in our study. Other studies have found an association between trauma or posttraumatic stress symptoms and HIV risk behavior (16–19); however, none examined PTSD and trauma, so it is not known whether PTSD would have been a better predictor of HIV risk behavior in those studies.

Identification of PTSD among women prisoners is crucial because of its high prevalence. Effective psychological and pharmacological interventions are available to treat the disorder (43). Treatment planning will be facilitated by more accurate estimates of PTSD, such as diagnostic evaluations of consecutive prison admissions, as opposed to the random sampling used in this study and elsewhere (23).

Women who engage in drug-related and sexual HIV risk behaviors should be routinely evaluated for PTSD. Instruments such as the Trauma History Questionnaire and the PTSD Checklist (44,45) have improved detection rates of the disorder. Undetected, PTSD may present a barrier to reducing HIV risk. Comorbid PTSD and substance abuse have been associated with poorer compliance with drug treatment (46) and quicker relapse (47) than substance abuse alone. Untreated PTSD may present a similar obstacle to reduction of sexual risk behaviors (16).

The failure to detect a relationship between major depression or dysthymic disorder and high-risk behaviors was unexpected. Possibly, the high rates of these disorders in this prison sample attenuated the ability to detect a small association with HIV risk behaviors. Alternatively, the relationship between mood disorders and HIV risk behaviors reported elsewhere (15) may be mediated in women by PTSD (37). There is also evidence that rates of depression among HIV-infected women may not be as high as rates reported for HIV-infected men (48).

The findings of this study have two potential limitations. First, participants were volunteers from the general prison population. Because the population was not systematically sampled, the reported frequencies of HIV risk behaviors and of associated psychiatric disorders may not reflect actual prevalence.

The second potential limitation is that our estimates of HIV risk behaviors relied on retrospective self-report, although participation in the study had no positive or negative effect on incarceration time, so the women had no motivation for re-

sponding untruthfully. The high prevalence of drug use, particularly during risk behaviors, may have resulted in inaccurate reporting (49). Bias in self-reports appears to be in the direction of underreporting past occurrences of behavior and psychopathology (30,50), suggesting that our findings may underestimate the actual frequency of HIV risk behaviors. The prison setting necessarily limits sources of information to retrospective self-report, although prisons can provide a unique opportunity to examine an otherwise elusive group.

Conclusions

This study demonstrated that HIV risk behaviors were highly prevalent among women prisoners before incarceration. Rates of current and lifetime PTSD, major depression, and dysthymic disorder were also high. A lifetime history of PTSD was associated with prostitution and receptive anal sex and may have contributed to the high rates of risky sexual behaviors. Targeted HIV risk reduction efforts among women should include evaluation for PTSD; furthermore, women diagnosed with PTSD should be evaluated for HIV sexual risk behaviors. ♦

Acknowledgments

This study was supported by grant MCRR-OPD-GCRC-5MO1RRO0722 to Dr. Lyketsos from the Johns Hopkins General Clinical Research Center, National Institutes of Health. The authors thank Joseph Coresh, M.D., Ph.D., for his statistical consultation and Gail Bendit, B.A., Robert B. Harrison, M.S., and Pamela Norbeck, L.C.S.W., for their technical assistance.

References

1. Report to the Honorable Eleanor Holmes Norton: Women in Prison: Issues and Challenges Confronting US Correctional Systems. Pub GAO/GGD-00-22. Washington, DC, US General Accounting Office, 1999
2. Correctional Populations in the United States, 1997. Bureau of Justice Statistics Special Report NCJ 177613. Washington DC, US Department of Justice, 1999
3. Greenfield LA, Snell TL: Women Offenders. Bureau of Justice Statistics Special Report NCJ 175688. Washington DC, US Department of Justice, 1999
4. Hammett TM, Harmon P, Maruschak LM: 1996–1997 Update: HIV/AIDS, STDs, and TB in Correctional Facilities. NCJ 176344.

- Washington DC, US Department of Justice, National Institute of Justice, 1999
5. Maruschak L: HIV in Prisons 1997. NCJ 178211784. Washington, DC, Bureau of Justice, 1999
6. US HIV and AIDS cases reported through December 1999. HIV/AIDS Surveillance Report 11. Atlanta, Centers for Disease Control and Prevention, 2000
7. Patel KK, Hutchinson C, Sienko DK: Sentinel surveillance of HIV infection among new inmates and implications for policies of correctional facilities. *Public Health Reports* 105:510–514, 1990
8. Stevens J, Zierler S, Cram M, et al: Risks for HIV infection in incarcerated women. *Journal of Women's Health* 4:569–577, 1995
9. Hankins CA, Gendron S, Handley MA, et al: HIV infection among women in prison: an assessment of risk factors using a non-nominal methodology. *American Journal of Public Health* 84:1637–1640, 1994
10. Nwanyanwu OC, Chu SY, Green TA, et al: Acquired immunodeficiency syndrome in the United States associated with injecting drug use, 1981–1991. *American Journal of Drug and Alcohol Abuse* 19:399–408, 1993
11. Schilling RF, el-Bassel N, Ivanoff A, et al: Sexual risk behavior of incarcerated, drug-using women, 1992. *Public Health Reports* 109:539–547, 1994
12. Duncan RD, Saunders BE, Kilpatrick DK, et al: Childhood physical assault as a risk factor for PTSD, depression, and substance abuse: findings from a national survey. *American Journal of Orthopsychiatry* 66:437–448, 1996
13. Najavits LM, Gastfriend DR, Barber JP, et al: Cocaine dependence with and without PTSD among subjects in the National Institute on Drug Abuse Collaborative Cocaine Treatment Study. *American Journal of Psychiatry* 155:214–219, 1998
14. Cottler LB, Compton WM, Mager D, et al: Posttraumatic stress disorder among substance users from the general population. *American Journal of Psychiatry* 149:664–670, 1992
15. Lyketsos CL, Federman EB: Psychiatric disorders and HIV infection: impact on one another. *Epidemiological Review* 17:152–164, 1995
16. Stiffman AR, Dore P, Earls F, et al: The influence of mental health problems on AIDS-related risk behaviors in young adults. *Journal of Nervous and Mental Disease* 180:314–320, 1992
17. Fullilove MT, Fullilove RE, Smith M, et al: Violence, trauma, and post-traumatic stress disorder among women drug users. *Journal of Traumatic Stress* 6:533–543, 1993
18. Johnson LW, Harlow LL: Childhood sexual abuse linked with adult sexual abuse, victimization, and AIDS risk. *AIDS Education and Prevention* 8:44–57, 1996
19. Allers CT, Benjak KJ: Barriers to HIV education and prevention: the role of unresolved childhood sexual abuse. *Journal of Child Sexual Abuse* 1:69–81, 1992
20. Hoff RA, Beam-Goulet J, Rosenheck RA: Mental disorder as a risk factor for human immunodeficiency virus infection in a sample of veterans. *Journal of Nervous and Mental Disease* 185:556–560, 1997
21. Teplin LA, Abram KM, McClelland GM: Prevalence of psychiatric disorders among incarcerated women: I. pretrial jail detainees. *Archives of General Psychiatry* 53:505–512, 1996
22. Jordan BK, Schlenger WE, Fairbank JA, et al: Prevalence of psychiatric disorders among incarcerated women. *Archives of General Psychiatry* 53:513–519, 1996
23. Zlotnick C: Posttraumatic stress disorder (PTSD), PTSD comorbidity, and childhood abuse among incarcerated women. *Journal of Nervous and Mental Disease* 185:761–763, 1997
24. Lyketsos CG, Hutton H, Fishman M, et al: Psychiatric morbidity on entry to an HIV primary care clinic. *AIDS* 10:1033–1039, 1996
25. Perry S, Jacobsberg LB, Fishman B, et al: Psychiatric diagnosis before serological testing for the human immunodeficiency virus. *American Journal of Psychiatry* 147:89–93, 1990
26. Williams JBW, Rabkin JG, Remien RH, et al: Multidisciplinary baseline assessment of homosexual men with and without human immunodeficiency virus infection: II. standardized clinical assessment of current and lifetime psychopathology. *Archives of General Psychiatry* 48:124–130, 1991
27. Risk Behavior Assessment. Rockville, Md, National Institute on Drug Abuse, 1991
28. Rotily M, Galinier-Pujol A, Obadia Y, et al: HIV testing, HIV infection, and associated risk factors among inmates in south-eastern French prisons. *AIDS* 8:1341–1344, 1994
29. Magura A, Kang S, Shapiro J, et al: HIV risk among women injecting drug users who are in jail. *Addiction* 88:1351–1360, 1993
30. Hser Y, Anglin MD, Chou C, et al: Reliability of retrospective self-report by narcotics addicts. *Psychological Assessment* 4:207–213, 1992
31. First MB, Spitzer RL, Gibbon M, et al: Structured Clinical Interview for Axis I DSM-IV Disorders, Non-patient Edition (SCID-I/NP, Version 2.0). New York, New York State Psychiatric Institute, Biometrics Research Department, 1994
32. Norris FH: Epidemiology of trauma: frequency and impact of different potentially traumatic events on different demographic groups. *Journal of Consulting and Clinical Psychology* 60:409–418
33. Davidson JRT, Hughes D, Blazer DG, et al: Post-traumatic stress disorder in the community: an epidemiological study. *Psychological Medicine* 21:713–721, 1991
34. Spitzer RL, Williams JBW, Gibbon M, et al: The Structured Clinical Interview for DSM-III-R (SCID): I. history, rationale, and description. *Archives of General Psychiatry* 49:624–629, 1992
35. Norusis MJ: SPSS Advanced Statistics 6.1. Chicago, SPSS, Inc, 1994
36. Breslau N, Davis GC, Peterson EL, et al: Psychiatric sequelae of posttraumatic stress disorder in women. *Archives of General Psychiatry* 45:81–87, 1997
37. Breslau N, Davis GC, Andreski P, et al: Traumatic events and posttraumatic stress disorder in an urban population of young adults. *Archives of General Psychiatry* 48:216–222, 1991
38. Kessler RC, Sonnega A, Bromer E, et al: Posttraumatic stress disorder in the national comorbidity survey. *Archives of General Psychiatry* 52:1048–1060, 1995
39. Robins LN, Regier DA (eds): *Psychiatric Disorders in America: The Epidemiological Catchment Area Study*. New York, Free Press, 1991
40. el-Bassel N, Schilling RF, Irwin KL, et al: Sex trading and psychological distress among women recruited from the streets of Harlem. *American Journal of Public Health* 87:66–70, 1997
41. Farley M, Barkan H: Prostitution, violence, and posttraumatic stress disorder. *Women and Health* 27:37–49, 1998
42. Deykin EY, Buka SL: Prevalence and risk factors for posttraumatic stress disorder among chemically dependent adolescents. *American Journal of Psychiatry* 154:752–757, 1997
43. Shalev AY, Bonne O, Eth S: Treatment of posttraumatic stress disorder: a review. *Psychosomatic Medicine* 58:165–182, 1996
44. Weathers FW, Litz BT, Herman DS, et al: The PTSD checklist: reliability, validity, and diagnostic utility. Presented at the annual meeting of the International Society for Traumatic Stress Studies, San Antonio, Tex, October 3–5, 1993
45. Najavits LM, Weiss RD, Reif S: The Addiction Severity Index as a screen for trauma and posttraumatic stress disorder. *Journal of Studies on Alcohol* 59:56–62, 1998
46. Brady KT, Killeen T, Saladin ME, et al: Comorbid substance abuse and posttraumatic stress disorder: characteristics of women in treatment. *American Journal of the Addictions* 3:160–164, 1994
47. Brown PJ, Stout RL, Mueller T: Posttraumatic stress disorder and substance abuse relapse among women: a pilot study. *Psychology of Addictive Behaviors* 10:124–128, 1996
48. Brown GR, Rundell JR: A prospective study of psychiatric aspects of early HIV disease in women. *General Hospital Psychiatry* 15:139–147, 1993
49. McElrath K, Chitwood DD, Griffin DK, et al: The consistency of self-reported HIV risk behavior among injection drug users. *American Journal of Public Health* 84:1965–1970, 1995
50. Lyketsos CG, Nestadt G, Cwi J, et al: The Life Chart Interview: a standardized method to describe the course of psychopathology. *International Journal of Methods in Psychiatric Research* 4:143–155, 1994