

## Comorbidity of Severe Psychiatric Disorders and Substance Use Disorders Among Women in Jail

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**Objective:** This article presents the prevalence, patterns, and sequences of severe psychiatric disorders and substance use disorders among female jail detainees.

**Method:** Subjects were a randomly selected, stratified sample of 1,272 female arrestees awaiting trial at the Cook County Department of Corrections in Chicago. Independent clinical re-

search interviewers administered the National Institute of Mental Health Diagnostic Interview Schedule Version III-R to assess comorbid psychiatric disorders and substance use disorders.

**Results:** Eight percent of the women had both a current severe mental disorder and a current substance use disorder. Nearly three-quarters of those with severe mental disorders also met criteria for one or more substance use disorders.

**Conclusions:** Because most detainees return to their communities in a few days, these findings have implications for treatment of high-risk women throughout the mental health system.

*(Am J Psychiatry 2003; 160:1007-1010)*

Each year, there are over 3 million arrests of women; minorities are disproportionately represented (1). Nearly one-fifth of the women in jail have severe psychiatric disorders (2), double the rate among women in the general population and higher than the rate among male detainees (3).

Epidemiologic studies of men in jail (4), persons with high arrest rates (5), and women in the general population with severe mental disorders (6) suggest that comorbidity of substance use disorders and other psychiatric disorders is common among women in jail. Yet there are few data. We need studies of such comorbidity among women in jail for the following reasons:

1. To understand comorbidity among high-risk women. Studies of the general population (7), substance users

(8), and psychiatric patients (9) indicate that patterns and sequences of comorbidity differ by gender.

2. To improve treatment for high-risk women. Persons with comorbidity have different and often worse outcomes than those with only one disorder and require different treatments (10).
3. To improve screening for high-risk women. Jail detainees with severe mental disorders have a right to treatment, although few receive it (11).

### Method

The subjects were 1,272 randomly selected female arrestees awaiting trial at the Cook County Department of Corrections in Chicago. The sample was stratified by charge (misdemeanor or fel-

**TABLE 1. Prevalence of Substance Use Disorders Among 1,269 Female Jail Detainees With and Without Severe Mental Disorders<sup>a</sup>**

Status of Mental and Substance Use Disorders in Past 2 Weeks	%	Odds Ratio (OR) <sup>b</sup>		Analysis <sup>c</sup>	
		OR	95% CI	F	df
No severe mental disorder (N=1,110)					
Either alcohol or drug use disorder	51.7				
Alcohol use disorder	17.4				
Drug use disorder	45.5				
Both alcohol and drug use disorder	11.1				
Any severe mental disorder (N=155)					
Either alcohol or drug use disorder	72.0	2.4	1.49–3.86	12.9 <sup>d</sup>	1, 1256
Alcohol use disorder	31.9	2.2	1.38–3.57	10.9 <sup>d</sup>	1, 1255
Drug use disorder	61.7	1.9	1.24–3.02	8.5 <sup>e</sup>	1, 1256
Both alcohol and drug use disorder	21.6	2.2	1.28–3.81	8.2 <sup>e</sup>	1, 1255
Schizophrenia or manic episode (N=38) <sup>f</sup>					
Either alcohol or drug use disorder	72.1	2.4	0.93–6.25	3.3	1, 1259
Alcohol use disorder	50.7	4.9	2.04–11.67	12.7 <sup>d</sup>	1, 1258
Drug use disorder	54.9	1.5	0.61–3.49	0.7	1, 1259
Both alcohol and drug use disorder	33.5	4.0	1.56–10.41	8.3 <sup>e</sup>	1, 1258
Major depressive episode (N=134) <sup>f</sup>					
Either alcohol or drug use disorder	74.2	2.7	1.60–4.50	13.9 <sup>g</sup>	1, 1258
Alcohol use disorder	29.8	2.0	1.21–3.34	7.3 <sup>e</sup>	1, 1257
Drug use disorder	63.1	2.0	1.27–3.30	8.7 <sup>e</sup>	1, 1258
Both alcohol and drug use disorder	18.6	1.8	1.01–3.32	4.0	1, 1257

<sup>a</sup> Three of the 1,272 subjects were excluded from the analyses because information on diagnoses of both substance use disorder and severe mental disorder was missing. Four other subjects were excluded from some rows because they were missing information on severe mental disorders.

<sup>b</sup> Odds ratios contrast the group with any severe mental disorder and its two subgroups (with schizophrenia/manic episode and major depressive episode) to the group with no severe mental disorder.

<sup>c</sup> To protect against type I error, Bonferroni corrections were applied to each family of four tests (14). Inferential statistics were corrected for sample design with Taylor series linearization. We report F statistics because Taylor series corrections are based on the F distribution (13).

<sup>d</sup> Bonferroni corrected  $p < 0.01$ .

<sup>e</sup> Bonferroni corrected  $p < 0.05$ .

<sup>f</sup> Subjects may have more than one subcategory of severe mental disorder. Thus, Ns sum to more than the number of subjects with any severe mental disorder.

<sup>g</sup> Bonferroni corrected  $p < 0.001$ .

ony) and race/ethnicity (African American, non-Hispanic white, Hispanic). The subjects were recruited and interviewed in the jail's intake area during routine intake processing, almost always within 24 hours. The Cook County Department of Corrections receives approximately 6,400 female admissions per year; its population is similar to that of jails nationwide, composed disproportionately of racial/ethnic minorities (2). Urinalysis indicated the presence of drugs in 83.8% of the subjects. Like other jails, the Cook County Department of Corrections is used for pretrial detention and for offenders sentenced to less than 1 year.

The statistical power in this study was adequate for most analyses. On the basis of our prior analyses of these data (2), we presumed a design effect of 1.2. If  $\alpha = 0.05$  (two-tailed) and severe mental disorder occurs in 12% of our sample, this sample size provides at least 80% power to detect a difference in the rates of substance use disorders corresponding to a relative risk (odds ratio) of 2.5 (2.7) or greater (if we assume substance use rates of 12.5% among those with severe mental disorder and 5% among those without).

All postarrestment detainees were eligible for the study. Interviewers obtained written informed consent after giving the subjects a complete description of the study. Each subject was paid \$25.00. The data were collected during 1991–1993.

Of the 1,418 detainees randomly selected, only 59 (4.2%) refused to participate. Another 87 subjects (6.1%) agreed to participate but were unable to complete the interview.

We used the National Institute of Mental Health Diagnostic Interview Schedule, version III-R (12). The interviewers were female, had master's-level clinical education, and received a week of training; three were fluent in Spanish. Interviewer consistency was maintained through monitored mock interviews with scripted subjects and was maintained at or above 90% agree-

ment. We present data on current disorders, i.e., within the preceding 2 weeks. Statistical methods suitable for the analysis of stratified sample survey data were used in this analysis (13). All point estimates are weighted for unequal sampling probabilities and missing data to reflect the population characteristics of the Cook County Department of Corrections. Additional information on methods is available elsewhere (2).

## Results

Of the 1,272 subjects, 8.0% had both a severe psychiatric disorder (schizophrenia or major affective disorder) and a substance use disorder (drug or alcohol abuse or dependence).

Table 1 compares the prevalences of substance use disorders among subjects with no severe disorder and those with any severe disorder. We also examined two subcategories of severe disorder: schizophrenia or manic episode (combined) and major depressive episode. All test statistics and confidence intervals were computed from the variance-covariance matrix corrected for sample design with the Taylor series linearization (13). Bonferroni corrections were applied to each family of four tests to reduce the risk of type I error (14). Multivariate log-linear modeling of comorbidity, controlling for age, education, charge severity, and race/ethnicity, resulted in odds ratios that were substantively similar to the uncorrected odds ratios (analyses available from the authors).

**TABLE 2. Prevalence of Substance Use Disorders Among 1,252 Female Jail Detainees With and Without Severe Mental Disorders, by Race/Ethnicity<sup>a</sup>**

Status of Mental and Substance Use Disorders in Past 2 Weeks	African American (N=513)				Non-Hispanic White (N=425)				Hispanic (N=314)			
	%	Odds Ratio (OR) <sup>b</sup>		F (df=1, 506–509) <sup>c</sup>	%	Odds Ratio (OR) <sup>b</sup>		F (df=1, 422) <sup>c</sup>	%	Odds Ratio (OR) <sup>b</sup>		F (df=1, 310–311) <sup>c</sup>
		OR	95% CI			OR	95% CI			OR	95% CI	
No severe mental disorder (N=1,110)												
Either alcohol or drug use disorder	51.3				59.5				39.1			
Alcohol use disorder	15.6				26.1				19.1			
Drug use disorder	46.6				46.8				26.6			
Both alcohol and drug use disorder	11.0				13.4				6.6			
Any severe mental disorder (N=155)												
Either alcohol or drug use disorder	72.4	2.5	1.33–4.65	8.2 <sup>d</sup>	72.4	1.8	0.98–3.24	3.6	66.0	3.0	1.45–6.33	8.8 <sup>d</sup>
Alcohol use disorder	29.6	2.3	1.20–4.31	6.4 <sup>d</sup>	37.6	1.7	0.96–3.01	3.4	41.7	3.0	1.46–6.34	8.9 <sup>d</sup>
Drug use disorder	63.1	2.0	1.09–3.51	5.1	59.3	1.7	0.96–2.87	3.3	52.2	3.0	1.48–6.12	9.3 <sup>d</sup>
Both alcohol and drug use disorder	20.4	2.1	1.00–4.30	3.9	24.5	2.1	1.09–4.07	4.9	27.9	5.5	2.27–13.16	14.5 <sup>e</sup>
Schizophrenia or manic episode (N=38) <sup>f</sup>												
Either alcohol or drug use disorder	73.0	2.6	0.67–9.83	1.9	66.7	1.4	0.45–4.09	0.3	80.3	6.3	1.35–29.88	5.5
Alcohol use disorder	54.9	6.6	1.95–22.26	9.3 <sup>g</sup>	40.3	1.9	0.66–5.55	1.4	45.1	3.5	1.42–11.95	4.0
Drug use disorder	54.5	1.4	0.41–4.58	0.3	53.5	1.3	0.46–3.70	0.3	62.7	4.6	1.30–16.38	5.7
Both alcohol and drug use disorder	36.5	4.7	1.31–16.58	5.7	27.1	2.4	0.73–7.91	2.1	27.5	5.3	1.29–22.13	5.4
Major depressive episode (N=134) <sup>f</sup>												
Either alcohol or drug use disorder	75.1	2.9	1.45–5.66	9.2 <sup>d</sup>	75.3	2.1	1.07–4.02	4.7	59.5	2.3	1.05–4.96	4.4
Alcohol use disorder	27.1	2.0	1.01–3.99	3.9	36.4	1.6	0.88–2.98	2.4	43.4	3.3	1.48–7.16	8.7 <sup>d</sup>
Drug use disorder	64.7	2.1	1.12–3.90	5.4	61.8	1.8	1.02–3.33	4.1	46.2	2.4	1.09–5.11	4.8
Both alcohol and drug use disorder	16.6	1.6	0.72–3.67	1.3	22.9	1.9	0.94–3.93	3.2	30.1	6.1	2.41–15.29	14.8 <sup>e</sup>

<sup>a</sup> Three of the 1,272 subjects were excluded from the analyses because information on diagnoses of both substance use disorder and severe mental disorder was missing. Seventeen subjects who identified themselves as having “other” race/ethnicity were excluded from these analyses. Four other subjects were excluded from some rows because they were missing information on severe mental disorders; degrees of freedom were adjusted.

<sup>b</sup> Odds ratios contrast the group with any severe mental disorder and its two subgroups (with schizophrenia/manic episode and major depressive episode) to the group with no severe mental disorder.

<sup>c</sup> To protect against type I error, Bonferroni corrections were applied to each family of four tests (14). Inferential statistics were corrected for sample design with Taylor series linearization. We report F statistics because Taylor series corrections are based on the F distribution (13).

<sup>d</sup> Bonferroni corrected  $p < 0.05$ .

<sup>e</sup> Bonferroni corrected  $p < 0.001$ .

<sup>f</sup> Subjects may have more than one subcategory of severe mental disorder. Thus, Ns sum to more than the number of subjects with any severe mental disorder.

<sup>g</sup> Bonferroni corrected  $p < 0.01$ .

Nearly three-fourths (72.0%) of the women with any severe mental disorder also had a substance use disorder; 21.6% had both alcohol and drug use disorders (Table 1). For the total sample, women with severe mental disorders were 1.5 to 4.9 times as likely as women with no severe mental disorder (the residual category) to have substance use disorders; most odds ratios were significant. Many odds ratios were significant for African Americans and Hispanics but not for non-Hispanic whites (Table 2). Race/ethnicity and type of disorder affected the size and significance of the odds ratios.

We also found that 14.9% of the subjects with a substance use disorder also had a severe psychiatric disorder (data not shown).

Only 10.6% of the subjects with both a severe mental disorder and a substance use disorder had developed their

disorders during the same year. As many subjects developed the mental disorder a year or more before the substance use disorder (43.4%) as after (46.0%) (analyses available from authors).

## Discussion

Comorbid substance use disorders were more prevalent among these jailed women with severe mental disorders (72.0%) than among psychiatric patients (30%–50%) (10). The female jail detainees with severe mental disorders had higher rates of comorbid drug use disorder but lower rates of comorbid alcohol use disorder than men in jail (4).

Our findings may reflect the failure of the community mental health system. Persons with comorbidity seek treatment more often than those with single disorders, but

they receive fewer outpatient and residential services (15); with fewer treatments available, persons with comorbidity may be more vulnerable to arrest (4).

Although jails were never intended to be mental hospitals, they must systematically screen and provide treatments for women with comorbidity, not just single mental disorders. Detainees needing treatment should be diverted (at intake) or linked (after release) to community services (16).

Our data are subject to the limitations of self-report data. Moreover, our findings, drawn from only one site, may pertain only to women in urban jails with similar demographic composition. If DSM-IV had been available, the findings might have been slightly different.

Many high-risk women—prostitutes, the homeless, drug users—cycle through jails. Comorbidity is common in these populations. Because most detainees return to their communities in a few days (17), the community and correctional systems must work together to provide integrated, gender-specific services for women with comorbidity.

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Supported by NIMH grants MH-45583 and MH-47994.

The authors thank Cook County Sheriff Michael F. Sheahan and the staff of the Cook County Department of Corrections for their support, Thomas Lalley for his support, Dr. Mary Blehar for comments on an earlier version of the manuscript, Dr. Jennifer Wells for library work, and Laura Coats for editing.

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