RESEARCH ARTICLE

Antisocial personality disorder in incarcerated offenders: Psychiatric comorbidity and quality of life

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BACKGROUND: We determined the frequency of antisocial personality disorder (ASPD) in offenders. We examined demographic characteristics, psychiatric comorbidity, and quality of life in those with and without ASPD. We also looked at the subset with attention-deficit/hyperactivity disorder (ADHD).

METHODS: A random sample of 320 newly incarcerated offenders was assessed using the Mini International Neuropsychiatric Interview (MINI), the 36-item Short Form Health Survey (SF-36), and the Level of Service Inventory–Revised (LSI-R).

RESULTS: ASPD was present in 113 subjects (35.3%). There was no gender-based prevalence difference. Offenders with ASPD were younger, had a higher suicide risk, and had higher rates of mood, anxiety, substance use, psychotic, somatoform disorders, borderline personality disorder, and ADHD. Quality of life was worse, and their LSI-R scores were higher, indicating a greater risk for recidivism. A subanalysis showed that offenders with ASPD who also had ADHD had a higher suicide risk, higher rates of comorbid disorders, and worse mental health functioning.

CONCLUSION: ASPD is relatively common among both male and female inmates and is associated with comorbid disorders, high suicide risk, and impaired quality of life. Those with comorbid ADHD were more impaired than those without ADHD. ASPD occurs frequently in prison populations and is nearly as common in women as in men. These study findings should contribute to discussions of appropriate and innovative treatment of ASPD in correctional settings.

KEYWORDS: antisocial personality disorder, offenders, prison, incarceration

INTRODUCTION

Antisocial personality disorder (ASPD) is characterized by a pervasive pattern of socially irresponsible, exploitative, and guiltless behavior. ASPD has a prevalence of between 3.9% and 5.8% in men and 0.5% and 1.9% in women in the US general population.[1-3] The disorder is associated with significant psychosocial impairment, depression, substance misuse, and domestic violence; suicide is an all too common outcome.[4-6] Family and marital relationships are frequently disrupted in persons with ASPD, and health care utilization is excessive.[7,8] The prevalence of ASPD is higher in correctional than in psychiatric settings.[9-15] In prison, offenders with ASPD can present a considerable management problem because of their irritability, aggression, disregard for the rights of others, and lack of remorse.[16,17]

We recently assessed the prevalence of ASPD and other psychiatric disorders in a group of offenders newly committed to the Iowa Department of Corrections (IDOC). This was part of a larger prevalence survey already reported.[18] Subjects were assessed with DSM-IV criteria using standardized instruments of known reliability. We expected to see ASPD at higher frequencies in men than in women, and that offenders with ASPD would have poorer quality of life, and higher rates of psychiatric comorbidity than offenders without ASPD. We further expected that antisocial offenders with comorbid attention-deficit/hyperactivity disorder (ADHD) would fare even worse. We have already reported on offenders with borderline personality disorder (BPD)[19] and those with ADHD.[20]

METHODS

Subjects

Subjects were randomly selected for participation from the daily census roster of incoming offenders newly committed to the IDOC and undergoing intake assessment at the Iowa Medical and Classification Center (IMCC) in Oakdale, Iowa. IMCC serves as a reception facility for the IDOC. All newly committed offenders are admitted for essential intake and reception activities, including a health screen, basic orientation to Iowa's correctional system, institutional assignment, and initiation of the IDOC's central offender record. The process lasts 4 to 6 weeks, after which offenders

are assigned to 1 of 9 correctional facilities throughout Iowa to serve their sentence. The sample does not include persons who had violated probation, those requiring special programming (eg, close supervision, segregation, seclusion), or those requiring maximum security placement. Violent offenders and those requiring segregation or maximum security placement were excluded because they could not be easily moved into the testing area. Stays in special programming units were generally brief so that most inmates were generally unavailable for the testing. Women were purposely oversampled so that their percentage in the study was approximately twice that in the Iowa prison population.

Interviewing was conducted at IMCC by trained raters. All subjects gave written, informed consent according to procedures approved by the University of Iowa Institutional Review Board and were compensated. The study was conducted under a Certificate of Confidentiality and in compliance with Office of Human Research Protections regulations regarding research with prisoners.[21] These regulations help to ensure that the rights of offenders are protected and that research procedures are not coercive.

Demographic data, including age, sex, race/ethnicity, education, income, and marital status, were obtained along with legal/criminal variables of interest. Offenders were administered the MINI-Plus,[22] a fully structured instrument that assesses the presence of DSM-IV[23] mood disorders, anxiety disorders, somatoform disorders, substance use disorders, psychotic disorders, eating disorders, conduct disorder, ASPD, ADHD, and adjustment disorder. A summary score is calculated to indicate suicide risk. The ASPD section involves 2 areas of inquiry. In the first, subjects are asked about 6 specific problematic childhood misbehaviors; if ≥2 are endorsed, then subjects are asked about 6 antisocial behaviors since age 15; ≥3 are required for the diagnosis. The BPD module of the Structured Interview for DSM-IV Personality (SIDP-IV)[24] was used to assess the presence of BPD and its traits. (This screen was added after the study was under way and was administered to a subset of 220 offenders.) The Medical Outcomes Study 36-item Short Form Health Survey (SF-36)[25,26] was used to assess functional status. Finally, subjects were administered the Level of Service Inventory–Revised (LSI-R),[27] used in correctional settings to gather data on social/demographic

variables and criminal history. The instrument also provides a measure of the primary risk factors that contribute to the development of lifetime adjustment problems and is used to predict recidivism.

The Pearson chi-square test (or the Fisher's exact test when the expected cell counts were too small) was used for comparison of categorical variables. *P* values <.05 were considered statistically significant.

RESULTS

A total of 322 subjects were recruited, and 320 (264 men, 56 women) completed the assessment protocol. A total of 113 offenders (35.3%) met criteria for ASPD. The percentage of men with ASPD was greater than that for women (37.1% and 26.8%, respectively), but the difference was not significant. Associated demographic characteristics of the sample are shown in **TABLE 1**. Offenders with ASPD were mean age 29.3 years, and most were Caucasian. ASPD status was not related to race/ethnicity, education, marital status, or current criminal offense. The ASPD group was much more likely to be considered at risk for suicide based on a scale embedded in the MINI-Plus.

TABLE 2 compares antisocial and nonantisocial offenders with respect to selected LSI-R items. Because offenders with ASPD were more likely to be men, we calculated adjusted odds ratios (with confidence intervals and *P* values) by fitting a logistic regression model for each LSI-R item (treated as a dichotomous outcome) with ASPD status, gender, age, and race/ethnicity as covariates. Subjects with ASPD were more likely to report prior mental health treatment (80.5% in ASPD group, 66.2% in non-ASPD group); the odds of having prior mental health treatment were 2.4 times higher for the ASDP group (95% confidence interval, 1.4 to 4.3). From **TABLE 2**, we also see that antisocial subjects were more likely to report ≥3 prior convictions, to have been punished for misconduct (in prison), and to have been fired before incarceration.

TABLE 3 compares current and lifetime psychiatric diagnoses between the 2 groups and shows statistically significant differences in the percentage of subjects with mood, anxiety, substance use, psychotic, conduct, any MINI, and somatoform disorders; ADHD; and BPD. Of note, there was considerable overlap between ASPD and BPD; 44% of 84 offenders with ASPD who received the

TABLE 1

Demographic characteristics in offenders with and without ASPD

	ASPD status		
Variable	**Present (n = 113)**	**Absent (n = 207)**	***P* value[a]**
Mean age (SD)	29.3 (8.3)	32.1 (10.0)	.012[b]
Gender			
Female	13.3%	19.8%	.142
Male	86.7%	80.2%	
Race/ethnicity			
African American	10.6%	20.8%	
Caucasian	76.1%	69.1%	.063
Other	13.3%	10.1%	
Education			
Less than high school	23.0%	20.3%	
High school or GED	62.0%	57.0%	.259
More than high school	15.0%	22.7%	
Marital status			
Divorced	18.2%	20.3%	
Married	20.9%	21.7%	.953
Single	56.4%	53.1%	
Other	4.5%	4.7%	
Current suicide risk	39.8%	24.2%	.003
Type of current offense			
Drug manufacturing/delivery	33.6%	31.9%	
Assault/abuse	27.4%	21.7%	
DUI/driving while barred	8.9%	14.5%	
Burglary	8.0%	13.0%	.262[c]
Parole violation	15.0%	8.7%	
Fraud/forgery	6.2%	6.8%	
Possession of firearm	0.9%	2.4%	
Unknown	0.0%	1.0%	

ASPD: antisocial personality disorder; DUI: driving under the influence (of alcohol or other substances); GED: general educational development.
[a]*P* value from Pearson chi-square test.
[b]*P* value from Fisher's exact test used.
[c]*P* value from Student *t* test used.

BPD screen also met criteria for BPD. Psychoses were frequent in both groups, although most were related to substances (n = 47) or to a medical condition (n = 1).

TABLE 4 presents comparisons of the 2 groups on semicontinuous measures of interest, including the LSI-R total score and SF-36 scales. We report the adjusted difference (*D*) in the groups' means for each measure. The adjusted differences were derived by fitting multiple lin-

TABLE 2
Selected LSI-R items in offenders with and without ASPD

| | ASPD status | | | |
LSI-R item	Present (n = 113)	Absent (n = 207)	OR[a] (95% CI)	P value[b]
Prior MH treatment	80.5%	66.2%	2.4 (1.4 to 4.3)	.003
Severe interference from MH problem	4.4%	7.7%	0.6 (0.2 to 1.7)	.317
≥3 current offenses	26.6%	22.2%	1.2 (0.7 to 2.1)	.486
≥1 prior convictions	81.4%	76.8%	1.5 (0.9 to 2.8)	.158
≥3 prior convictions	74.3%	61.8%	2.4 (1.4 to 4.1)	.002
Prior incarceration	78.8%	71.5%	1.6 (0.9 to 2.7)	.123
Ever punished for misconduct (in prison)	65.5%	44.9%	2.3 (1.4 to 3.7)	.001
Record of assault	70.8%	63.3%	1.5 (0.9 to 2.5)	.127
Employed (when charged)	55.8%	56.0%	1.0 (0.6 to 1.6)	.947
Ever fired	74.3%	61.4%	2.0 (1.2 to 3.3)	.012

ASPD: antisocial personality disorder; CI: confidence interval; MH: mental health; OR: odds ratio (adjusted).

[a] OR adjusted for age, gender, race/ethnicity.
[b] P value from multiple logistic regression model.

ear regression models with each measure (LSI-R total or SF-36) as the outcome, and gender, age, and race/ethnicity as covariates. The LSI-R total scores were higher for the ASPD subjects, suggesting a greater likelihood of recidivism. The SF-36 scale scores were consistently lower for the ASPD group with the exception of physical functioning. Variables indicating emotional well-being were particularly affected, including role limitations due to emotional health, mental health, and the summary scale for mental health; social functioning was also worse in the group with ASPD.

ADHD subanalysis

We conducted a subanalysis comparing 37 antisocial offenders with ADHD and 75 without; thus, 33% of antisocial offenders had comorbid ADHD. (One subject was omitted from the analysis because the data for an ADHD diagnosis were incomplete and group assignment was not possible.) There were no differences in demographics, education, type of current offense, selected items from the LSI-R, or the LSI-R score itself. Offenders with ADHD were more likely to have high suicide risk scores (62% vs 28%, respectively; $P < .001$). A comparison of MINI data shows that the subset with ADHD were significantly more likely to meet criteria for major depression (62% to 19%; $P < .001$), bipolar disorder (78% to 59%; $P < .04$), other mood disorder (24% to 7%; $P = .008$), any

mood disorder (97% to 65%; $P < .001$), panic disorder (24% to 5%; $P = .009$), body dysmorphic disorder (14% to 1%; $P = .015$), and any somatoform disorder (18% to 5%; $P = .039$). They also had significantly worse SF-36 mental health subscores ($P < .001$) and worse mental health summary scores ($P = .011$). (Tables are not shown.)

DISCUSSION

More than 35% of offenders assessed for this study met criteria for ASPD. The rate of ASPD is higher than in our pilot study (19%),[28] despite using the same diagnostic instrument at the same facility, but the finding could be due to the larger sample and more consistent administration of the MINI-Plus. Importantly, there was no significant difference in its prevalence between men (37%) and women (27%). Although ASPD mainly occurs in men in the general population, it appears that its frequency among incarcerated women approaches that of men. The fact that so many women met criteria for ASPD is a strong indicator that the disorder needs to be included in the differential diagnosis in prison settings, particularly when the presenting complaints involve irresponsibility, aggression, or deceitfulness.

Although the overall rate appears high, this rate falls in the midrange of what others have reported. It should not be interpreted as a prevalence estimate among all offenders but, rather, those newly committed to the IDOC who were physically and psychiatrically stable at the time of the interview and on a regular security level. Repeat offenders, those on special programming, persons violating probation, maximum security new offenders, and offenders not sentenced to prison (ie, probationers) were not included. Thus, the true rate of ASPD could be much higher.

Rates of ASPD among incarcerated offenders have varied from 11% to 78% among men and 12% to 65% among women, depending on the sample size, particular prison population sampled, and assessment method used.[9-15] Blackburn and Coid[15] reported in a study from England that 62% of 164 violent male offenders met cri-

teria for ASPD. Jordan et al[12] assessed 805 women entering prison in North Carolina and reported that 12% were antisocial, whereas Zlotnick[14] reported that 40% of 85 women offenders incarcerated in Rhode Island met criteria for ASPD. Lastly, in a large survey of incarcerated persons in the United Kingdom, Singleton et al[13] determined that 56% of 2371 men and 31% of 771 women were antisocial. Although not directly comparable to our study, these studies point to the frequency with which ASPD is seen in prison settings in both the United States and the United Kingdom, particularly among violent offenders. These figures are substantially higher than what has been reported in the general population, as mentioned earlier.

Offenders with ASPD are much more likely to have other types of mental illness. Like their antisocial counterparts in the community, offenders had high rates of mood, anxiety, substance use, and somatoform disorders, and BPD.[1-5] The pattern mirrors what is seen in clinical samples, except perhaps for even higher rates of substance use disorders.[29-32] This latter finding could reflect the influence of having a predominantly male sample, or the fact that the most common criminal offenses in this sample were substance related. With few exceptions, the rates of psychiatric comorbidity were markedly higher for the offenders with ASPD. This finding is similar to what our group reported in formerly hospitalized antisocial men.[30]

Fifty-six percent of the offenders with ASPD and 24% of the remainder screened positive for a lifetime psychotic disorder, albeit most were substance-related. These figures may seem excessive, yet should be placed into perspective. First, prevalence for schizophrenia/psychotic disorder

TABLE 3

Psychiatric comorbidity in offenders with and without ASPD

Disorder	ASPD status			
	Present (n = 113)	Absent (n = 207)	OR[a] (95% CI)	P value[b]
Mood disorders				
Major depression	33.6%	17.9%	2.4 (1.4 to 4.2)	.002
Dysthymia	3.5%	2.9%	1.3 (0.4 to 5.0)	.746[c]
Bipolar	65.5%	34.3%	3.8 (2.3 to 6.3)	<.001
Other mood disorder	12.4%	6.3%	2.5 (1.1 to 5.9)	.030
Any mood disorder	76.1%	42.5%	4.7 (2.8 to 8.0)	<.001
Anxiety disorders				
Panic	12.4%	5.8%	2.4 (1.0 to 5.4)	.044
Agoraphobia	34.5%	16.9%	2.8 (1.6 to 4.8)	<.001
Generalized anxiety disorder	31.0%	12.6%	3.7 (2.0 to 6.8)	<.001
Social anxiety disorder	20.4%	4.8%	5.3 (2.3 to 11.8)	<.001
Specific phobia	6.2%	3.9%	1.9 (0.6 to 5.6)	.258
Obsessive-compulsive disorder	21.2%	3.4%	7.9 (3.2 to 19.7)	<.001
Posttraumatic stress disorder	20.4%	8.2%	3.9 (1.8 to 8.3)	<.001
Any anxiety disorder	61.1%	32.9%	3.7 (2.3 to 6.2)	<.001
Substance use disorders				
Alcohol disorder	85.0%	67.6%	2.6 (1.4 to 4.8)	.005
Drug disorder	92.9%	67.6%	6.5 (2.9 to 14.3)	<.001
Any substance use disorder	98.2%	85.0%	11.2 (2.5 to 50.0)	.002
Psychotic disorders				
Schizophrenia/NOS	14.2%	5.3%	2.7 (1.2 to 6.2)	.018
Substance/GMC related	42.5%	18.4%	3.6 (2.1 to 6.2)	<.001
Any psychotic disorder	55.8%	23.7%	4.1 (2.5 to 6.9)	<.001
Eating disorders				
Anorexia	0.0%	0.0%	NA[d]	NA[d]
Bulimia	4.4%	1.9%	2.3 (0.6 to 9.4)	.288[c]
Any eating disorder	4.4%	1.9%	2.3 (0.6 to 9.4)	.288[c]
Somatoform disorders				
Somatization disorder	0.9%	0.0%	NA[d]	.353[c]
Hypochondriasis	2.7%	0.5%	5.8 (0.6 to 61.0)	.128[c]
Body dysmorphic disorder	5.3%	2.4%	2.8 (0.8 to 10.0)	.205[c]
Pain disorder	3.5%	1.0%	4.8 (0.8 to 29.2)	.190[c]
Any somatoform disorder	9.7%	3.4%	3.6 (1.3 to 10.1)	.017
Borderline personality disorder[e]	44.1%	21.0%	3.0 (1.6 to 5.5)	<.001
Conduct disorder	96.5%	11.6%	NA[d]	<.001
ADHD	33.6%	15.0%	2.6 (1.5 to 4.6)	<.001
Adjustment disorder	5.3%	3.9%	1.6 (0.5 to 5.0)	.575[c]
Any MINI disorder	100.0%	91.8%	NA[d]	<.001[c]

ADHD: attention-deficit/hyperactivity disorder; ASPD: antisocial personality disorder; CI: confidence interval; GMC: general medical condition; MINI; Mini international Neuropsychiatric Interview; NA: not applicable; NOS: not otherwise specified; OR: odds ratio (adjusted).

[a]OR adjusted for age, gender, race/ethnicity.
[b]P value from multiple logistic regression model.
[c]P value from Fisher's exact test.
[d]Logistic regression model not fit due to lack of response variability.
[e]Results for borderline personality disorder used n = 220.

TABLE 4

Mean (SD) LSI-R and SF-36 scores in offenders with and without ASPD

Scale	ASPD status			
	Present (n = 113)	Absent (n = 207)	*D (SE)*[a]	*P* value[b]
LSI-R total score	34.9 (6.8)	31.8 (7.4)	3.1 (0.9)	<.001
SF-36 scales				
Physical Summary	80.0 (18.5)	80.4 (19.5)	–2.2 (2.3)	.337
Mental Summary	60.1 (23.5)	68.0 (21.4)	–8.5 (2.8)	.002
Physical Functioning	89.4 (18.9)	84.9 (24.3)	2.6 (2.7)	.336
Role Limitations (Physical)	80.5 (31.1)	81.9 (32.8)	–3.2 (3.8)	.409
Role Limitations (Emotional)	64.0 (42.5)	76.3 (37.2)	–13.5 (4.7)	.004
Vitality	54.1 (22.5)	58.7 (21.0)	–4.5 (2.6)	.087
Mental Health	56.3 (22.0)	63.2 (21.8)	–6.9 (2.7)	.010
Social Functioning	65.8 (27.7)	74.1 (26.0)	–9.4 (3.2)	.004
Bodily Pain	79.0 (23.4)	82.2 (24.0)	–5.1 (2.8)	.068
General Health	70.6 (22.2)	72.9 (20.3)	–3.6 (2.5)	.150

ASPD: antisocial personality disorder; *D*: difference (adjusted); LSI-R: Level of Service Inventory–Revised; SF-36: 36-item Short Form Health Survey.
[a]*D* in group means adjusted for age, gender, race/ethnicity.
[b]*P* value from multiple logistic regression model.

not otherwise specified (NOS) cases is not out of line with what has been previously reported in correctional samples.[33,34] In fact, nearly all offenders met criteria for a lifetime substance use disorder (and for many, the substance misuse/manufacture contributed to their incarceration). Psychotic features are commonly observed in substance abusers, particularly when stimulants (eg, methamphetamine) are involved.[34,35] Further, it may be that the MINI-Plus overdiagnoses psychotic disorders. The studies of both Sheehan et al[22] and Otsubo et al[37] report a relatively high rate of false-positive diagnoses of psychotic disorders with the MINI. Lastly, the MINI-Plus has not been standardized in the setting of criminal prosecution and incarceration—unusual experiences that may contribute to elevations in instruments designed to measure strange experiences.

The overlap with BPD merits comment. In this study, 44% of antisocial offenders also met criteria for BPD, not unlike what Zlotnick[14] and others[15] have reported. We have already written about offenders with BPD, who were more likely to be female, have high suicide risk scores, have substantial psychiatric comorbidity, and have impaired quality of life.[38]

Not surprising was the fact that antisocial offenders were more likely to report a history of prior mental health treatment and impaired quality of life than were

nonantisocial subjects, as indicated by scores on the SF-36 subscales. These findings have been reported in clinical samples,[29] and were confirmed in our follow-up of antisocial men.[29,39] Thus, these findings are compatible with clinical studies that indicate that ASPD subjects experience substantial psychological distress, which impairs their ability to function in important life domains.

Our subanalysis on antisocial offenders with and without ADHD was also informative. As expected, those with ADHD were more severe. They had higher suicide risk scores and a higher frequency of mood disorders, panic disorder, and somatoform disorders (especially body dysmorphic disorder). The association of ADHD with body dysmorphic disorder is intriguing, and although not previously reported, may possibly relate to negative self-image common to many persons with ADHD.[40,41] The prevalence of ADHD in antisocial offenders (33%) is lower than that reported in a study of 105 antisocial inmates (65%) in Turkey.[42] In that study, although psychiatric comorbidity was not assessed, those with ASPD and comorbid ADHD had higher rates of childhood neglect, self-injurious behavior, and suicide attempts. The latter finding is particular intriguing, and partially replicates our finding that antisocial offenders with ADHD are at special risk for suicidal behavior. Although the association of ADHD in adults with ASPD has rarely been examined, follow-up studies of ADHD show that the co-occurrence of ADHD and ASPD predicts earlier onset of addictive behaviors and criminality.[43,44]

There are several limitations to acknowledge in this study. First, because this sample consisted of offenders newly committed to the general population of a reception unit at a state prison, the results may not generalize to incarcerated offenders as a whole, or to probationers or parolees. Because there were relatively few women in the study, caution should be used in attempting to generalize the findings to this population. Second, while recall bias could have altered reports of symptoms, the potential for bias is likely reduced by the use of multiple validated self-report measures. Although the MINI-Plus

itself is widely used and has acceptable reliability and validity with most diagnostic categories, there is some evidence that the instrument may overdiagnose some disorders, including psychoses. Third, the ASPD diagnosis was based on a single instrument, and there was no effort to interview family members or other informants, who could have provided additional information. Lastly, although it appeared that subjects were forthright in their reporting symptoms of mental illness, substance misuse, and ASPD, some degree of underreporting of antisocial behaviors and overreporting of symptoms of mental illness is possible.

CONCLUSION

The current study was not developed as an epidemiologic study and involved only newly committed offenders without special security or medical designation. Nonetheless, the findings suggest that ASPD occurs frequently in prison and is nearly as common in women as in men. A critical implication is that correctional systems should not overlook the diagnosis of ASPD in women. Offenders with ASPD are more likely to report poorer mental health and social functioning, to have substantial psychiatric comorbidity, and to report higher suicide risk, and for these reasons are likely to require more intensive mental health services than others. These findings should contribute to discussions regarding the appropriate management of persons with ASPD in correctional settings. ∎

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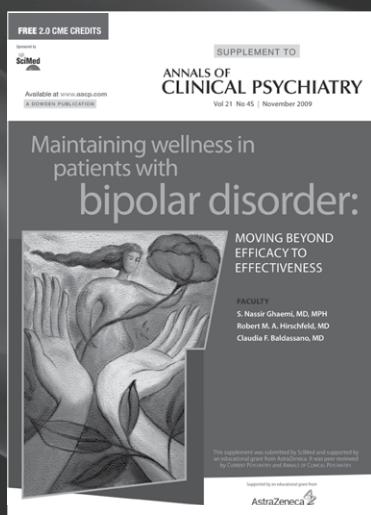
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