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PAPER

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Retrospective Evaluation of Attention Deficit Hyperactivity Disorder with the Wender Utah Rating Scale in a Sample of Spanish Prison Inmates

ABSTRACT: The aim of this study is to determine the prevalence of childhood history of attention deficit hyperactivity disorder (ADHD) in a sample of prison inmates. This is a descriptive, cross-sectional study, which consisted of a sample of 100 inmates from penitentiary centers in Madrid. The instruments used were the Wender Utah Rating Scale (WURS), the International Personality Disorder Examination, and a questionnaire of demographic, penitentiary, and toxicological data. For statistical analysis, the SPSS program was used with confidence interval estimation of 95%. The mean score of the WURS was 65.7 points. Fifty percent of the sample surpassed the cut-off point of 32 for the 25 best discriminative items in the Spanish validated version. A significant association was found between a childhood history of ADHD and antisocial and borderline personality disorders. The disorder was also found to be associated with autoaggressive behavior, more probability to be sanctioned in prison, and have a history of substance dependence.

KEYWORDS: forensic sciences, forensic psychiatry, attention deficit hyperactivity disorder, personality disorders, substance-related disorders, prison

Attention deficit hyperactivity disorder (ADHD) is mainly characterized by the difficulty to maintain attention with impulsive and hyperactive behavior. It is currently known that this disorder is not exclusive of childhood, and its symptoms, especially those concerning attention, may persist through adult age, producing a lack of adaptation at work as well as failure in academic settings.

Several studies have shown an association between the ADHD in adults and antisocial behavior (1). According to Barkley (2), it was outlined that 22% of patients with ADHD had been arrested, as opposed to 3% of subjects without ADHD. Mannuzza et al. (3) concluded that 39% of people with ADHD had been arrested, as opposed to 20% in the control group. On the other hand, among incarcerated adolescents, prevalence of ADHD has been found to be between 20 and 72% (4,5).

While other epidemiological studies concluded that ADHD is a frequent disorder in the prison environment (6), there are no data about the history of childhood-onset ADHD in the Spanish jail population, and it has been pointed out that ADHD may be the most common but undiagnosed psychiatric disorder in prisoners (7).

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The purpose of this study was to determine the prevalence of childhood history of ADHD in a sample of a Spanish adult penitentiary population and to analyze the demographic and penitentiary characteristics of the prison inmates who were positive for history of childhood-onset ADHD. This was to evaluate whether there was a possible association with other comorbid conditions such as personality disorders or addictions and also to determine whether there was a relationship with early behavior disorders, especially auto- and heteroaggressive behaviors that inmates frequently present.

Therefore, it is necessary to identify the inmates with a childhood history of ADHD to provide adequate therapy that would allow their stay in prison to be more meaningful and to reduce the probability of substance abuse and aggressive behavior. Thus, the control of ADHD will lead to a better prognosis for the comorbid disorders (8,9) by applying rehabilitation measures that may contribute to their better reinsertion in society and to a less probability of offense recidivism. Studies made in penitentiary centers show that inmates with ADHD present an increased risk of repeat offense compared with control groups without ADHD (10). In some cases, the information and education that follow their diagnosis will help them to learn about the causes of many of their symptoms and to improve their self-esteem and aptitudes for work and social relations.

Materials and Methods

This is a descriptive study of cross-sectional design in which we studied the distribution of frequencies of childhood-onset ADHD in a sample of adult prison population. To determine its prevalence and trends, the variables of person, place, and time were measured

at the same time to explain certain characteristics and outcome of prison inmates who present this disorder. The sample consisted of individuals who were randomly selected while conducting an initial medical interview in a 1-year period. These individuals were incarcerated in the penitentiary centers of Madrid IV of Navalcarnero Prison and the Victoria Kent Centre for Social Insertion.

Three criteria were applied for their inclusion in the study: (i) age of inmates between 18 and 65 years, (ii) prison inmates of any penitentiary center, and (iii) absence of data that could be indicative of substance use for at least 30 days before the date of the interview.

The criteria used for exclusion of the individuals from the study were the following: (i) inmates' unwillingness to participate, (ii) difficulty to communicate or to evaluate them correctly because of their failure to complete the questionnaires, and (iii) presence of psychiatric disorders, such as schizophrenia, major depression, or bipolar disorder, which could affect the validity of the questionnaires.

After conducting a pilot study with six prisoners, 115 inmates were interviewed. Nine of them did not accept to participate in the study, and none of these presented relevant psychiatric disorders that could affect the accuracy of the instruments used. Six other subjects were excluded, two of them because of difficulty in understanding the questions and the other four because of not filling out the questionnaires completely. The study sample size thus consisted of 100 subjects, of which 83 were men whose median age was 37 years and 17 were women whose median age was 35 years.

In this study, three instruments were used for evaluation: a questionnaire of demographic, penitentiary, and toxicological data designed for this study, the Wender Utah Rating Scale (WURS) used for patients, and the International Personality Disorder Examination (IPDE) DSM-IV version.

Diagnosis of adult ADHD requires the existence of a history of childhood-onset ADHD, and the majority of patients were not psychiatrically evaluated in their childhood. This issue was solved using the WURS, an instrument that evaluates in a retrospective manner the existence of a history of childhood-onset ADHD using a scale for patients and another for parents (11). The scale for patients consists of 61 questions with the heading "As a child, I was (or I had)…". Each item is scored from 0 to 4 points.

For the original validation of WURS, Ward et al. (11) selected the 25 questions that they observed to be more discriminatory among the subjects who had ADHD and the control subjects who did not have it. They found out that for those 25 items and using 36 points as the cut-off value, the instrument's sensitivity and specificity were high enough to provide the diagnosis of childhood ADHD.

The WURS was validated in Spanish population by Rodríguez-Jiménez et al. (12), having also selected the 25 questions that were best discriminative in a Spanish sample, and using the cut-off value of 32 points, the instrument's sensitivity and specificity for a retrospective evaluation of ADHD were 91.5% and 90.8%, respectively.

The IPDE is a semistructured interview approved by the World Health Organization for categorical and dimensional diagnosis of personality disorders. It is translated into Spanish and includes a screening questionnaire and the DSM-IV and ICD-10 versions. In addition, it allows the facilitated data to be scored. The DSM-IV module consists of 99 questions that are scored as zero, one, or two points. This interview is frequently used in the clinical setting and also in research because it is one of the tests that display the best psychometric assessment properties (13).

These instruments were administered during individual interviews by a trained physician. First of all, demographic, penitentiary, and toxicological data were recorded, then the IPDE DSM-IV was filled out, and finally, the WURS was applied.

A document of informed consent was signed by all participants in the study after receiving sufficient information about the objectives and procedures used. The study provides a guarantee to guard the privacy of the results, protects the anonymity of the participants, and details the voluntary nature of participation, and the subjects are informed of their right to withdraw from the study at any time.

The collected information was processed using the program of Microsoft Excel 2003 and version 13.0 of the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL) for Windows. Data were analyzed using chi-square test to compare the distribution of frequencies among qualitative variables to measure the risk of ADHD in different subgroups. The parametric Student's *t*-test and the nonparametric Mann–Whitney *U*-test were used for the comparison of means. Findings concerning the descriptive data were considered significant if $p < 0.05$.

Results

In the study sample of the 100 inmates evaluated, the mean score of the 61 WURS questions was 65.7 points.

Table 1 includes the demographic and penitentiary characteristics of the subjects who present or not a childhood history of ADHD showing the probability that corresponds to each variable.

Table 2 illustrates the score of each of the 25 most discriminative items of the validated version of WURS in Spanish. The mean score for these questions is 31.4 points, and for those 25 items, 50% of the sample present a score of equal or higher than 32 points, which is the reference cut-off value used in the Spanish version of this instrument.

Table 3 shows the substances of dependence in the inmates studied according to DSM-IV-TR criteria, taking into account that subjects were categorized as having or not a history of childhood ADHD according to the result of the WURS.

Among the subjects who present criteria of childhood ADHD, the personality disorders that are diagnosed with the IPDE DSM-IV module are the antisocial personality disorder (40%), the borderline (28%), the nonspecified (20%), the paranoid (16%), and each of the avoidance, obsessive-compulsive, and histrionic personality disorders corresponding to 4%.

A significant association was found between the childhood history of ADHD using WURS evaluation, a conduct disorder using DSM-IV criteria, and also the presence of one or more personality disorders in adult age diagnosed according to the IPDE DSM-IV module. Considering the different personality disorders, there was a significant association with the antisocial disorder and the personality borderline disorder as shown in Table 4.

Discussion

In this study, 50% of the cases evaluated would fulfill the criteria of childhood history of ADHD in comparison with the lifetime prevalence of 8.1% of ADHD, which was found in the National Comorbidity Survey Replication for the general population (14). The higher prevalence in the penitentiary population may be attributed to the particular factors of this population.

Other studies that also used the WURS have shown a similar prevalence of childhood ADHD. Rasmussen et al. (15) found in prison inmates of Norway a childhood ADHD of 46%. Einarsson et al. (16) observed that 50% of the penal population of Iceland fulfilled the criteria of childhood ADHD.

This prevalence difference between the general and the penitentiary populations was not influenced by gender. This is in contrast

TABLE 1—*Demographic and penitentiary characteristics of inmates according to results of WURS.*

	WURS Positive	WURS Negative	*t*, *p*	*U*, *p*
Age in years $\bar{X}$	34.8	38.5	0.0605	0.1181
Time in Prison in months $\bar{X}$	66.8	62.5	0.7116	0.8876
Time worked in months $\bar{X}$	76.7	151.6	0.0001*	0.0001*
	n (%)	*n* (%)	χ^2, *p*	
Sex				
Male	44 (47)	39 (53)	0.1832	
Female	6 (35)	11 (65)		
Nationality				
Spanish	45 (56)	35 (44)	0.0124*	
Foreigner	5 (25)	15 (75)		
Marital status				
Married + unmarried couples	9 (32)	19 (68)	0.0259*	
Other situations	41 (57)	31 (43)		
Type of crime				
Violent	28 (58)	20 (42)	0.1093	
Others	22 (42)	30 (58)		
Penitentiary history				
First imprisonment	27 (44)	35 (56)	0.0993	
Reimprisonment	23 (61)	15 (39)		
Penitentiary degree				
Second degree	16 (59)	11 (41)	0.2601	
Third-degree-conditional liberty	34 (47)	39 (53)		
Aggressive behavior, self and others				
Yes	36 (55)	30 (45)	0.2053	
No	14 (41)	20 (59)		
Aggressive behavior against others				
Yes	34 (58)	25 (42)	0.0673	
No	16 (39)	25 (61)		
Self-aggressive behavior				
Yes	24 (69)	11 (31)	0.0064*	
No	26 (40)	39 (60)		
Sanctions				
Yes	23 (68)	11 (32)	0.0113*	
No	27 (41)	39 (59)		

WURS, Wender Utah Rating Scale.

WURS positive = selected 25 items of the study of Rodríguez-Jiménez et al. (12), score ≥ 32; WURS negative = selected 25 items of the study of Rodríguez-Jiménez et al. (12), score < 32; $\bar{X}$ = arithmetical media; *t* = Student's *t*-test; *U* = Mann–Whitney *U*-test; χ^2 = chi-square test; *p* = probability value; *$p < 0.05$.

to other studies where the prevalence of adult ADHD tends to be similar for men and women (17), while in childhood, this disorder is more frequent among boys. Upon considering the mean score corresponding to items referring to gender, men are observed to refer more symptoms of hyperactivity and women to have more symptoms of attention deficit.

Subjects with childhood-onset ADHD criteria have worked less time during their lives, with no significant differences according to age or time spent in prison. This is in close coincidence with the findings of Retz et al. (18) in a study of young adult male inmates. It was also observed in studies with adult ADHD that these patients adapt worse at work than subjects without this disorder, which could be due to a lack of control of impulses or because of their attention disorder (19).

With respect to social adjustment, subjects with a childhood history of ADHD manifested marked difficulty with intimacy, which they had even before their stay in prison. These individuals frequently live alone or with their parents and usually have difficulties for interpersonal relations, which explains to some extent the reason why they are more frequently sanctioned while they are in prison (20).

When considering the foreign inmates population, it is of interest that only 25% present childhood-onset ADHD in comparison with the 56% of the native inmates. Also, a lower rate of criminality, crime recidivism, and conflicts in prison was found among the foreign inmates. Moreover, they displayed a lower tendency to aggressive behavior, drug dependency, and personality disorders. All this could be attributed to the reality that in Spain, the foreigners' criminality is more related to adverse psychosocial circumstances than to the presence of ADHD or other mental disorders (21).

Moreover, coinciding with other reports studying jail populations (22,23), a significant association was found between the cases of childhood-onset ADHD and a history of aggressive behavior, especially against oneself. This is in contrast to the results of Matsumoto et al. (24) in 2006, who found an association between a history of childhood ADHD and aggressive behavior against others but did not find a relevant association with nonsuicidal self-aggressive behavior.

Among subjects who present criteria of childhood-onset ADHD, it is frequent to find substance abuse comorbidity, which is consistent with the results of Matsumoto et al. (25). These patients could have worse prognosis if the ADHD persists to adulthood as there is greater risk of relapses. There is no predisposition to a certain substance abuse, and agreeing with Biederman et al. (26), no significant association was found between childhood-onset ADHD and drug dependence on psychoactive substances used by prisoners, whether they have stimulant or depressive effects.

On the other hand, psychiatric comorbidity among prisoners evaluated and who presented a history of childhood-onset ADHD is common. There was a significant association with the conduct and personality disorders, especially the antisocial and the borderline personality disorders, coinciding with other studies (27–29).

TABLE 2—*Descriptive statistics of WURS in the total sample and according to gender.*

	Total (n = 100)		Male (n = 83)		Female (n = 17)	
25 Items that Best Discriminate in the Spanish Validated Version	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1. Active, restless, always on the go	2.22	1.22	2.30	1.23	1.82	1.13
3. Concentration problems, easily distracted	1.76	1.26	1.70	1.28	2.06	1.20
4. Anxious, worrying	1.13	1.26	1.19	1.29	0.82	1.07
5. Nervous, fidgety	1.58	1.33	1.65	1.37	1.24	1.15
6. Inattentive, daydreaming	1.29	1.17	1.25	1.11	1.47	1.46
7. Hot or short-tempered, low boiling point	1.62	1.41	1.57	1.42	1.88	1.36
9. Temper outbursts, tantrums	1.39	1.25	1.39	1.27	1.41	1.23
10. Trouble with stick-to-it-tiveness, not following through, failing to finish things started	1.21	1.37	1.20	1.36	1.24	1.44
11. Stubborn, strong-willed	2.03	1.40	2.05	1.42	1.94	1.35
13. Uncautious, dare-devilish, involved in pranks	2.01	1.40	2.20	1.35	1.06	1.25
15. Disobedient with parents, rebellious, sassy	1.23	1.31	1.28	1.34	1.00	1.17
17. Irritable	0.75	1.10	0.80	1.11	0.53	1.07
19. Sloppy, disorganized	1.14	1.08	1.18	1.09	0.94	1.03
20. Moody, have ups and downs	1.02	1.25	0.98	1.23	1.24	1.35
21. Feel angry	0.71	1.10	0.73	1.09	0.65	1.22
24. Acting without thinking, impulsive	1.52	1.40	1.60	1.40	1.12	1.36
25. Tend to be immature	1.01	1.26	1.05	1.28	0.82	1.19
26. Feel guilty, regretful	1.15	1.40	1.07	1.38	1.53	1.46
27. Lose control of myself	0.74	1.12	0.77	1.15	0.59	1.00
28. Tend to be or act irrational	0.84	1.14	0.80	1.15	1.06	1.14
35. Get in fights	0.90	1.11	0.99	1.16	0.47	0.72
36. Teased other children	0.70	0.92	0.71	0.90	0.65	0.90
39. Follower, lead around too much	1.11	1.22	1.17	1.23	0.82	1.19
40. Trouble seeing things from someone else's point of view	1.02	1.21	1.13	1.26	0.47	0.72
41. Trouble with authorities, trouble with school, visits to principal's office	1.31	1.43	1.46	1.45	0.59	1.06

$\bar{X}$ = arithmetical media; SD = standard deviation; n = number of elements.

TABLE 3—*History of substance dependence according to DSM-IV-TR criteria in prisoners and to WURS results.*

	WURS Positive	WURS Negative	
	n (%)	n (%)	χ^2, p
Heroin and/or cocaine			
Yes	32 (64)	18 (36)	0.0051*
No	18 (36)	32 (64)	
Heroin			
Yes	25 (71)	10 (29)	0.0017*
No	25 (38)	40 (62)	
Cocaine			
Yes	31 (66)	16 (34)	0.0027*
No	19 (36)	34 (64)	
Cannabis			
Yes	7 (70)	3 (30)	0.1824
No	43 (48)	47 (52)	
Benzodiazepine			
Yes	12 (86)	2 (14)	<0.0040*
No	38 (44)	48 (56)	
Alcohol			
Yes	5 (56)	4 (44)	0.7268
No	45 (49)	46 (51)	
Treatment with methadone			
Yes	14 (70)	6 (30)	0.0455*
No	36 (45)	44 (55)	

WURS, Wender Utah Rating Scale.

WURS positive = selected 25 items of the study of Rodríguez-Jiménez et al. (12), score ≥ 32; WURS negative = selected 25 items of the study of Rodríguez-Jiménez et al. (12), score < 32; χ^2 = chi-square test; p = probability value; *$p < 0.05$.

Limitations of the Study

According to WURS criteria, the diagnosis of ADHD cannot be established in the presence of psychiatric comorbidity, such as major depression, psychosis, or severe personality disorders (30,31). These restrictions could be useful in research, because these disorders, especially the antisocial and the borderline personality disorders, are frequently observed in the penitentiary environment (32), and symptoms of comorbid disorders could overlap with those of adult ADHD. For this reason, only the history of childhood-onset ADHD was evaluated to avoid the exclusion of a significant number of inmates with adult-onset ADHD in the study.

Hence, according to the findings of this study, although it could be indicated that the history of childhood-onset ADHD is highly prevalent in the Spanish penitentiary population sample, it is difficult to conclude the exact prevalence of ADHD among prisoners. There is a wide range of persistence of this disorder in the general adult population as indicated in other studies (33), and it oscillates between 4 and 80% depending on the criteria of remission period which are used by each author (34).

The prevalence of adult ADHD in the penitentiary population oscillates between 25 and 41% (35–37). The prevalence observed in this study is higher because we studied the childhood history of ADHD, and as was mentioned above, this disorder tends to improve over time and thus its prevalence is higher in childhood than in adulthood.

Considering all the variables, it is not an easy task to make comparisons of ADHD prevalence of different studies in the penitentiary

TABLE 4—*Conduct and personality disorders according to DSM-IV-TR criteria in prisoners and to WURS results.*

	WURS Positive	WURS Negative	
	n (%)	*n* (%)	χ^2, *p*
Conduct disorder			
Positive	22 (71)	9 (29)	0.0049*
Negative	28 (41)	41 (59)	
Personality disorder			
Positive	39 (65)	21 (35)	0.0002*
Negative	11 (27)	29 (73)	
Paranoid disorder			
Positive	8 (67)	4 (33)	0.2184
Negative	42 (48)	46 (52)	
Antisocial disorder			
Positive	20 (67)	10 (33)	0.0291*
Negative	30 (43)	40 (57)	
Borderline disorder			
Positive	14 (82)	3 (18)	0.0034*
Negative	36 (43)	47 (57)	
Histrionic disorder			
Positive	2 (100)	0 (–)	0.1531
Negative	48 (49)	50 (51)	
Avoidance disorder			
Positive	2 (50)	2 (50)	1.0000
Negative	48 (50)	48 (50)	
Obsessive-compulsive disorder			
Positive	2 (67)	1 (33)	0.5577
Negative	48 (49)	49 (51)	
Nonspecific disorder			
Positive	10 (71)	4 (29)	0.0838
Negative	40 (47)	46 (53)	

WURS, Wender Utah Rating Scale.

WURS positive = selected 25 items of the study of Rodríguez-Jiménez et al. (12), score ≥ 32; WURS negative = selected 25 items of the study of Rodríguez-Jiménez et al. (12), score < 32; χ^2 = chi-square test; *p* = probability value; $*p < 0.05$.

population. The slight coincidence observed can be explained because of several reasons. On one hand, characteristics of the samples that have been used in penitentiary studies vary in each setting and ADHD has been evaluated in penitentiary psychiatric hospitals, in jails for young people as well as for adults, in violent inmates, in inmates with personality disorders, in inmates with substance use, etc. On the other hand, the instruments and the diagnostic criteria used were also different. In a study of young inmates, a prevalence of ADHD of 45% was found using DSM-IV diagnostic criteria, but it was only of 21.7% using ICD-10 criteria (38,39).

Usefulness of WURS

Some authors have criticized the discriminative validity of WURS (40), pointing out that this instrument presents low specificity because approximately half of the individuals who do not have ADHD were incorrectly classified when this instrument was used (41). On one hand, it seemed that the scores of the WURS were falsely elevated by negative emotional items, while, on the other hand, those items related to impulsivity are more common to other disorders and as such cannot be attributed to ADHD (42).

In this study, the 25 most discriminative questions of WURS in the Spanish validated version were used to evaluate childhood history of ADHD. Among these items, there were more questions referring to signs of hyperactivity and behavior problems than in the original reduced version of Ward et al. (11). Hence, bias may have occurred in the results because it might be considered that subjects with behavior problems could have been overrepresented in the study sample.

It has also been brought up that the statement of the questions may lead to confusion because of linguistic issues, because when asking: "When I was young, I was or I had…", it is not clear to which specific moment one is making a reference. Even though in the DSM-IV-TR, some symptoms are required to be present before the age of 7 years, there may be a bias using the WURS. The questions could be answered referring to near-adolescence memories, because they are more accessible, which do not correspond to the age required for the diagnosis of childhood ADHD. Moreover, at later ages, attention difficulties and impulsive behavior may not be of primary origin and may appear, for example, as a consequence of early use of alcohol or drugs.

Results of WURS may also be affected by other factors such as the lack of introspection to identify the symptoms of the illness they have or the presence of other psychiatric comorbidity disorders that may affect the accuracy of the answers and, finally, by the difficulty to access other sources of information from the penitentiary setting like the information that could be given by family members or school records.

Directions for Future Research

It is necessary to have more valid instruments for routine evaluation of ADHD in prison inmates. This will lead to identification of those who require further study for ADHD diagnosis (43).

It is essential to continue investigating about the relation of ADHD with aggressive conduct because it is possible that subjects who cause injuries or mutilation to themselves differ clinically from those who present a history of suicide attempts. It has been observed that a history of self-injury in prisoners is associated with a history of childhood ADHD, while suicide attempts are associated with mood disorders and anxiety (44).

Currently, it is considered that legal problems later on in life of childhood hyperactivity depend on the existence of childhood behavior problems, antisocial conduct in adolescence, substance use, and the low level of education, which these subjects frequently present (45). There should be more research studying the relation of adult ADHD with the conduct disorder.

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