

Psychiatric comorbidity in a sample of cocaine-dependent outpatients seen in the Community of Madrid drug addiction care network

Comorbilidad psiquiátrica en una muestra de pacientes con dependencia de cocaína atendidos ambulatoriamente en la red drogas de la Comunidad de Madrid

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Abstract

The objective of this study was to estimate the current prevalence of psychiatric disorders in cocaine-dependent patients who attend different treatment centres in the Community of Madrid. A prospective multicentre study was used, and a total of 197 cocaine-dependent subjects were assessed. The assessment instrument used for diagnosis was the Psychiatric Research Interview for Substance and Mental Disorders (PRISM-IV). The main findings of this study were a high prevalence of psychiatric comorbidity in cocaine-dependent patients seeking treatment (64.0%). The most common Non Substance Use Disorders found were attention-deficit/hyperactivity Disorders (34.5%) and depressive disorders (13.7%). The most common Substance Use Disorder was alcohol dependence (28.4%). Cocaine-dependent patients who had a depressive disorder and were alcohol dependent presented a more severe clinical profile and a higher degree of psychopathology, measured using different assessment tools, than the patients who were only cocaine dependent. These data suggest that the presence of psychiatric comorbidity could constitute a risk factor associated with the severity of cocaine dependence. The clinical heterogeneity found also indicates the need to search for individualised treatments that more specifically fit the needs of this population.

Keywords: Cocaine, Substance-Related Disorders, Alcohol Dependence, Depressive Disorder, PRISM.

Resumen

El objetivo de este estudio fue estimar la prevalencia actual de trastornos psiquiátricos en pacientes dependientes de cocaína atendidos en los diferentes centros de tratamiento en la Comunidad de Madrid. Se trata de un estudio multicéntrico prospectivo realizado con una muestra de 197 sujetos con dependencia de cocaína. El instrumento de evaluación utilizado fue la Psychiatric Research Interview for Substance and Mental Disorders (PRISM-IV) (Entrevista de Investigación Psiquiátrica para Trastornos Mentales y Sustancias). La prevalencia actual de comorbilidad psiquiátrica encontrada fue del 64.0%. Los trastornos psiquiátricos más frecuentes no relacionados con el consumo fueron el trastorno por déficit de atención e hiperactividad (34,5%) y los trastornos depresivos (13,7%). El trastorno por uso de sustancias más frecuente fue la dependencia del alcohol (28,4%). Los pacientes dependientes de cocaína que presentaron un trastorno depresivo y los que presentaron dependencia del alcohol mostraron un perfil clínico de mayor gravedad y un mayor grado de psicopatología medido a través de diferentes instrumentos de evaluación en relación con los pacientes que sólo presentaban dependencia de la cocaína. Estos datos sugieren que la presencia de comorbilidad psiquiátrica podría constituir un factor de riesgo asociado a la gravedad de la dependencia de la cocaína. La heterogeneidad clínica encontrada recomienda la búsqueda de tratamientos individualizados que se ajusten de manera más específica a las necesidades de esta población.

Palabras clave: Cocaína, Trastornos Relacionados con Sustancias, Dependencia del Alcohol, Trastornos Depresivos, PRISM.

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Cocaine dependence is a disorder with a chronic course and frequent relapses (McLellan, Lewis, O'Brien, & Kleber, 2000). The consequences of this disorder are associated with a significant number of medical, psychological and social impairments, including the spread of infectious diseases (e.g. AIDS, hepatitis and tuberculosis) and leads to both the individual and society incurring healthcare and legal costs, therefore it has become a substantial public health problem.

According to the European Monitoring Centre for Drugs and Drug Addiction (2014), Spain is one of the European countries with the highest prevalence of cocaine use among the general population. Cocaine is the second most consumed, illegal, psychoactive substance in Spain. Epidemiological surveys estimate that 2.2% of the Spanish population between 15-65 years used cocaine once in the last year (Spanish Drug Observatory, 2011).

On the other hand in Spain, there is little data on the prevalence of psychiatric disorders in cocaine abusers. Information from clinical samples and non-clinical samples (Herrero, Domingo-Salvany, Torrens, & Brugal, 2008; Herrero, Domingo-Salvany, Brugal, & Torrens, 2011; Tortajada et al., 2012) estimate that 42.0% to 65.0% of cocaine abusers have a concurrent psychiatric disorder.

Cocaine use is associated with a wide variety of mental and psychological disorders. Those most usually found are substance abuse (Arias et al., 2013; Carroll & Rounsaville, 1992; Falck, Wang, Siegal, & Carlson, 2004; Herrero et al., 2008; Kleinman et al., 1990; Malow, West, Corrigan, Pena, & Lott, 1992; Regier et al., 1990; Rounsaville et al., 1991; Falck et al., 2004), mood and anxiety disorders (Falck et al., 2004; Herrero et al., 2011; Rounsaville et al., 1991) and those related to impulsivity (Kjome et al., 2010; LoBue et al., 2014; Moeller et al., 2001; Vonmoos et al., 2013), and ADHD (Levin, Evans, & Kleber, 1998; Levin et al., 2004; Vergara-Moragues et al., 2011).

The treatment outcome for cocaine dependence is not particularly good. The high failure rate in outpatient treatment of cocaine-dependent individuals is very frequent and has a very negative impact on their families, on society and on the patients themselves (Ahmadi et al., 2009; Poling, Kosten, & Sofuoglu, 2007). Amongst the different variables that have been associated with the treatment outcome for cocaine dependence, there is a notable presence of associated psychiatric disorders such as alcohol dependence, impulsive disorders and mood disorders (Agosti, Nunes, Stewart, & Quitkin, 1991; Ahmadi, Kampman, & Dackis, 2006; Ahmadi et al., 2009; Alterman et al., 2000; Carroll, Rounsaville, & Bryant, 1993; Heil, Badger, & Higgins, 2001; Levin et al., 2004; Moeller et al., 2001; Poling et al., 2007; Siqueland et al., 2002) but the bearing these variables may have on the prognosis of these patients is not known. An aspect that has been little touched upon in this field of study is the bearing that the presence of a comorbid disorder has on the treat-

ment outcome for these kinds of patients. We think that going into depth in these aspects could be useful for designing strategies for encouraging adherence to treatment and improved handling of these patients.

The objective of this study was to evaluate psychiatric and psychological comorbidity in cocaine-dependent patients in a prospective follow-up study carried out on patients attending different treatment centres in the Community of Madrid. Subjects included in this sample were recruited as part of a prospective multicentre study, aimed at investigating the influence of clinical variables in the prognosis of cocaine dependent patients during the course of one year. This study is part of a general, wider project carried out by the research group "GIPA" (Addiction Psychiatry Investigation Group) for the purpose of determining the weight of the clinical variables in the prognosis of cocaine-dependent patients during one year. To carry out this project, assessment tools designed for dual diagnosis patients (the PRISM interview) (Torrens, Serrano, Astals, Perez-Dominguez, & Martin-Santos, 2004) along with other psychological assessments aimed at determining the severity of the affective symptoms (the Hamilton Rating Scale for Depression), impulsivity (the Barratt Impulsiveness Scale) and other scales for measuring the severity of dependence on cocaine and abuse of other substances (the Addiction Severity Index among others) were used.

Methods

Participants

During the study period 625 outpatients seeking treatment for cocaine dependence from January 2009 to September 2009 were seen in seven centres in the drug addiction care network of the Community of Madrid. Of these, 206 were excluded because they were former patients who came after having relapsed or because the severity of their dependence required their referral to a hospital unit. A total of 57 patients were excluded for being principally dependent on opiates. After completing detoxification treatment, the purpose of the study was explained to the patients and 155 subjects declined to participate. The main reason for not accepting was not wanting to spend the extra time required to complete assessments that were included in the project. Ten patients were not included for failing to attend the interview in which they would have had to sign the informed consent. The sample size was calculated taking into account that 20-30% of those included in the study would drop out.

The target population consisted of 197 individuals with a diagnosis of cocaine dependence and who attended one of the seven-centres in the study, namely those within the network of drug addiction care in the Community of Madrid (the Madrid City Centre Council and the Drug Enforcement Agency). The centres were selected to represent the

overall public drug treatment network in Madrid (two centres were located in the outskirts of the Community and the rest in the central area of the city of Madrid).

The main inclusion criteria to enter the study were: (1) DSM-IV-RT diagnosis of cocaine dependence for the last 12 months; (2) being at least 18 years old (age between 18 and 65); (3) having completed a cocaine detoxification process; (4) knowing how to read and write; and (5) signing the informed consent form. The exclusion criteria were: (1) having medical or neuropsychiatric conditions that entail neuropsychological deterioration (head trauma or intellectual quotient (IQ) <80).

Procedure

The patients went to one the public centres where the study was carried out, voluntarily seeking treatment for their drug addiction. The assessment system used in these centres was similar. Detoxification was undertaken on an outpatient basis and went on for between 10-15 days during which urine drug testing was carried out twice a week. A patient was deemed to be detoxified once he or she had three consecutive urine tests showing him or her to be free of drugs (10 days). Afterwards, the patient was given an appointment so that the study could be explained and once the consent was signed (10 days later) an appointment was scheduled with the researchers to finalise the study protocol (7 days later). Subsequently the clinical examination was conducted (psychological, psychopathological and psychiatric) and the patients were included in the treatment programme in each of the drug centres included in the project. The Ethics Committees from the different hospitals approved the study protocol.

Assessments

Sociodemographic data. The following variables were collected as part of the study protocol: sex, age, current marital status, socioeconomic status, years of education, employment status, legal status, drug use history (age when cocaine use began, age when regular or daily use took place, cumulative use in the last month), prior treatment and status regarding sexually transmitted diseases, tuberculosis, HIV and viral hepatitis.

Diagnosis. In order to diagnose the mental disorders a structured clinical interview was used for patients with psychiatric comorbidity (Psychiatric Research Interview for Substance and Mental Disorders and the Structured Clinical Interview for DSM-IV; PRISM) Spanish version (Torrens et al., 2004). The PRISM was administered by a trained psychiatrist in each centre, who assessed patient demographics, and "current" (previous 12 months) DSM-IV Axis I disorders (substance use and psychiatric disorders, mood, anxiety, psychotic and eating disorders), and two Axis II disorders; borderline and antisocial personality disorders. The PRISM interview has demonstrated good psychometric properties in

terms of test-retest reliability (Hasin et al., 2006), inter-rater reliability (Morgello et al., 2006) and validity (Torrens et al., 2004) for diagnosing psychiatric disorders among substance users. Prior to the start of the study a pilot project to improve agreement between researchers (concordance of 75% for the diagnosis of affective and psychotic disorders) was carried out. Diagnoses were assigned using the current diagnoses (criteria met within the last 12 months). Personality disorders were assumed to be characteristic of both current and past adult functioning.

Where there was a suspected diagnosis of adult Attention Deficit Hyperactivity Disorder (ADHD), the adult ADHD self-report scale (ASRS-VI.1) was used (Kessler et al., 2005a). To be diagnosed with adult ADHD, the participant must be deemed to have (1) met full DSM-IV-RT criteria for ADHD (e.g. have at least 6 of the 9 inattentive and/or hyperactive/impulsive symptoms to a clinically significant degree) as an adult, without any remission since childhood, (2) met full DSM-IV-RT criteria for ADHD as a child (in retrospect), and (3) have no other psychiatric disorder that would better explain the ADHD symptomatology.

Assessment of Psychosocial domains. The Hamilton Depression Rating Scale (HDRS) was used for measuring the severity of depressive symptoms. It is an interviewer-administered test, designed to quantitatively assess the severity of the symptoms and the changes in depressed patients (Ramos-Brieva & Cordero-Villafila, 1988). Impulsivity was measured using The Barratt Impulsiveness Scale, Version 11 (BIS-11), which is a self-report, multidimensional measure of impulsivity consisting of 30 items and cognitive, motor and non-planning subscales (Patton, Stanford, & Barratt, 1995). Using a Spanish translation of BIS-11, a good alpha coefficient for the total scale (0.75) was found and the factor structure supported Barratt's 3-factor impulsivity model (Oquendo et al., 2001). Severity of cocaine dependence patterns and circumstances of cocaine use over the 12 months prior to the interview were assessed with the Spanish version of the Severity of Dependence Scale (SDS) (González-Saiz & Salvador-Carulla, 1998). The SDS is a rating scale made up of 5 items that aim to measure the most psychological components of dependence. More specifically, it evaluates the subject's perception of the extent to which their control over their drug use has deteriorated, as well as their concern and anxiousness to obtain the drug. The answer to each item is rated using a Likert-type scale, with scores ranging from 0 to 3. The overall score of the SDS therefore ranges from 0 to 15 and a higher score indicates a greater level of dependence on the drug in question. The seriousness of the withdrawal symptoms when stopping cocaine use was measured by the Cocaine Selective Severity Assessment (CSSA) (Kampman et al., 1998). The CSSA is an 18-item, interviewer-administered instrument that measures the signs and symptoms most often associated with the abrupt cessation of cocaine use. Each item on the CSSA is rated on a 0-7

scale and a total score is obtained by summing up all the individual items. The CSSA appears to be a valid measure of cocaine withdrawal symptoms. Items that receive the highest score on the CSSA are consistent with criteria for cocaine withdrawal identified in DSM-IV-TR. To evaluate the seriousness of the addiction we used the Addiction Severity Index (EuropASI, Addiction Severity Index) (Bobes et al., 2007). It is a semi-structured interview designed to address seven potential problem areas in substance-abusing patients: medical status, employment and support, drug use, alcohol use, legal status, family/social status, and psychiatric status. Finally, the overall impression of the clinical seriousness as well as the global assessment of functioning were evaluated by the Clinical Global Impression Scale (CGI) (Rockville, 1976) and the Global Assessment of Functioning Scale (GAF) (American Psychiatric Association, 2000) respectively. The CGI is a descriptive scale that provides qualitative information about the severity of the symptoms. The GAF, is a scale set out in axis V of the DSM-IV RT Multiaxial diagnostic system, that seeks to determine, with a score from 0 to 100, the adaptability and functioning of an individual.

Statistical Analysis

Simple descriptive statistics were calculated using frequencies and percentages for categorical data and mean and standard deviations for continuous data. Comparisons were carried out using the χ^2 and Fisher's exact tests for categorical variables and the t-test and analysis of variance (ANOVA) for continuous variables. A logistic regression model was used to assess the influence of other variables on psychiatric morbidity. To determine the variables associated with the presence of comorbidity, backward stepwise logistic regression analysis was carried out using the presence of psychiatric comorbidity as the dependent variable. In a second and third regression analysis we determined the variables that could predict the presentation of alcohol dependence or an affective disorder using alcohol dependence and depressive disorders respectively as dependent variables. The Hosmer-Lemeshow statistic was used to assess the goodness of fit of the logistic regression model. SPSS (version 20.0) was used for all analyses.

Results

Of the 197 subjects, 85.8% were men and 14.2% were women. The mean age was 35.2 (SD: 6.0). Mean years of education were 15.0 (SD: 1.2). About 66.5% were currently employed. Nearly 57.4% had never married, 26.4% were married or cohabiting and 29.6% were separated, divorced or widowed. About 76.6% did not have a criminal record, 15.7% had been held at a police station and 7.6% had been in jail or prison overnight or for longer (Table 1). Men tended to be older than women ($p = 0.023$), more likely to be married ($p = 0.000$) and to be employed ($p = 0.043$) but

woman tended to have fewer years of education ($p = 0.016$) and above all more history of having been in prison ($p = 0.001$) (Table 1).

The mean age at which cocaine was first used was 21.6 (SD: 5.4) and the mean age when cocaine was regularly being used (daily use) was 25.6 (SD: 6.9). Subjects showed an average cumulative consumption of cocaine in the last month of 3.0 gr (SD: 1.3). Controlling by gender we did not find any statistical differences.

Overall, 49.7% of the sample had received some lifetime psychiatric or psychological treatment related to drug use (32.0% outpatient treatment, 6.1% in day centres and 5.1% in therapeutic communities). No differences due to gender were found among subjects receiving treatment and those who were not. Regarding infectious diseases 63.0% of the sample had some sort of marker of viral hepatitis. HIV infection was present in only 3.0% of the sample while 79.0% had previously been seropositive.

As shown in Table 2, 64.0% of the subjects had comorbidity with some psychiatric disorder. 36.5% did not meet the criteria for DSM-IV psychiatric disorders except for cocaine dependence. About 40.6% had only one comorbid psychiatric disorder and about 22.8% had one or more comorbid psychiatric disorders. Regarding type of disorder, 50.8% had a current Axis I diagnosis other than cocaine dependence, 3.0% only had a current Axis II diagnosis and 9.6% had both Axis I and Axis II diagnoses (Table 2).

Axis I Disorders

With regard to Substance Use Disorders (SUDs) other than cocaine dependence, 28.4% were diagnosed as having alcohol dependence. With regard to Non Substance Use Disorders (NSUDs), 13.7% met the criteria for current depressive disorders, 3.6% for current bipolar disorder, 4.1% for current psychotic disorders and 34.5% for current (Table 2).

Axis II Disorders

12.7% of the subjects met the criteria for a personality disorder (borderline or antisocial personality disorder (Table 2)).

Gender

There were no significant differences in psychiatric comorbidity due to gender. Nonetheless significant differences were found in alcohol dependence, which was more prevalent among men ($p = 0.024$) and in personality disorders, which were more prevalent in women ($p = 0.003$) (Table 2).

Associated factors with psychiatric comorbidity

As the Table 2 shows, the comorbid disorders most frequently found in our sample were in axis I: ADHD, alcohol dependence and depressive disorders. Since a criterion of the diagnosis of ADHD and personality disorders requires that the onset of these conditions took place during child-

Table 1. Socio-demographic variables and drug use patterns, in the overall sample

	TOTAL N = 197	Men N = 169 (85.8)	Women N = 28 (14.2)	χ^2/f	Significance ♂ vs. ♀
Age [mean (SD)]	35.2 (6.0)	35.6 (6.0)	32.7 (5.8)	0.121	0.023*
Current marital status					
Never married	113 (57.4)	94 (55.6)	19 (67.9)	18.113	0.000***
Married/cohabiting	52 (26.4)	49 (29.0)	3 (10.7)		
Divorced/separated	26 (13.2)	24 (14.2)	2 (7.1)		
Widowed	6 (3.0)	2 (1.2)	4 (14.3)		
Socioeconomic status					
Low	73 (37.1)	59 (34.9)	14 (50.0)	4.408	0.110
Medium	106 (53.8)	96 (56.8)	10 (35.7)		
High	8 (9.1)	14 (8.3)	4 (14.3)		
Years of education [mean (SD)]	15.0 (1.3)	15.2 (1.3)	14.5 (1.3)	1.532	0.016*
Work					
Employed	131 (66.5)	108 (63.9)	23 (82.1)	3.586	0.043*
Unemployed	66 (33.5)	6 (36.1)	5 (17.9)		
Criminal record					
No criminal record	151 (76.6)	133 (78.7)	18 (64.3)	14.141	0.001**
Police station	31 (15.7)	28 (16.6)	3 (10.7)		
Prison	15 (7.6)	8 (4.7)	7 (25.0)		
Age at first cocaine use [mean (SD)]	21.6 (5.4)	21.4 (5.7)	19.9 (3.4)	7.023	0.059
Age regular use Cocaine [mean (SD)]	25.6 (6.9)	25.5 (6.7)	25.9 (8.1)	0.369	0.799
Cumulative amount of cocaine (gr) during the last month [mean (SD)]	3.0 (1.3)	2.9 (1.22)	3.0 (1.5)	4.565	0.784
Previous treatment					
Yes	98 (49.7)	83 (49.1)	15 (53.6)	0.191	0.688
None	99 (50.3)	86 (50.9)	13 (46.4)		

Note. * p < 0.05; ** p < 0.005; *** p < 0.001; N= Number of subjects

hood or adolescence, and our study focused on the presence of current comorbid disorders, when analysing the variables related to the presence of comorbidity and those related to the clinical course, we excluded those disorders from the analysis.

In the logistic regression analysis, we found that among the demographic variables and the dependent variables of use, age when cocaine use began and cumulative cocaine use in the last month respectively were some of the variables retained in the model and showed a statistically significant

OR value, so that these variables would increase the likelihood of developing psychiatric comorbidity (Table 3). In order to analyse which variables could predict the presentation of alcohol dependence only men (vs women) showed a statistically significant OR value, so that men had a higher likelihood of developing alcohol dependence (Table 3).

In a third regression analysis we found that the fact of having received previous treatment would be predictive of the presentation of a comorbid depressive disorder (Table 3).

Table 2. Current psychiatric diagnoses in overall sample categorised by gender

	TOTAL N (%) 197 (100.0)	Men N (%) 169 (85.8)	Women N (%) 28 (14.2)	χ^2 /f value	Significance ♂ vs. ♀
Comorbidity	126 (64.0)	105 (62.1)	20 (16.0)	0.896	0.402
Number of disorders					
No disorder (except cocaine dependence)	72 (36.5)	62 (39.0)	8 (28.6)	1.024	0.599
1 disorder	80 (40.6)	68 (40.2)	14 (50.0)		
> 1 disorder	45 (22.8)	39 (23.1)	6 (21.4)		
Axis I other than cocaine dependence	100 (50.8)	89 (52.7)	11 (39.2)	1.720	0.223
Axis II	6 (3.0)	0 (0.0)	6 (21.4)	37.352	0.000
Axis I and Axis II other than cocaine dependence	19 (9.6)	16 (9.5)	3 (10.7)	0.043	0.738
Axis I					
Substance use disorders					
Alcohol	56 (28.4)	53 (31.4)	3 (10.7)	5.033	0.024
Other dependence	2 (1.0)	2 (1.2)	0 (0.0)	0.335	1.000
Non-substance use disorders					
Depression disorders	27 (13.7)	22 (15.6)	5 (17.8)	0.476	0.552
Bipolar disorders	7 (3.6)	5 (2.9)	2 (7.1)	1.227	0.260
Psychotic disorders	8 (4.1)	5 (2.9)	3 (10.7)	3.709	0.088
Attention-deficit/hyperactivity disorder	68 (34.5)	59 (34.9)	9 (32.1)	0.081	0.833
Axis II					
Personality disorders	25 (12.7)	16 (9.5)	9 (32.1)	11.147	0.003

Note. N= Number of subjects.

Table 3. Logistic Regression. First regression analysis using the presence of comorbidity as a dependent variable. Second regression analysis using the presence of alcohol dependence as a dependent variable. Third regression analysis using the presence of depressive disorders as a dependent variable.

Variable	Coefficient	S.E.	Wald	p-value	OR	95% CI
Comorbidity						
Age at first cocaine use	0.09	0.03	7.34	0.007	1.10	1.03-1.18
Cumulative amount of cocaine (gr) during the last month	0.57	0.17	10.98	0.001	1.75	1.25-2.44
Alcohol dependence						
Male	1.24	0.64	3.70	0.054	3.48	0.98-12.39
Depressive disorders						
Previous treatment	2.04	0.65	9.65	0.002	7.733	2.12-28.09

Note. SE = Standard Error; OR = Odd Ratio; CI = Confidence interval for the odds ratio.

Variables related to the clinical course

As shown in the Table 4 the cocaine-dependent patients who also had a comorbid depressive disorder exhibited significantly higher scores in the ASI drugs, legal, family and psychiatric status and in the depression scores measured by the HRSD than the cocaine-dependent only patients. In addition, these subjects exhibited higher scores in the SDS and exhibited significantly higher scores in the BIS attentional and non-planning subscales.

On the other hand, the patients with cocaine and alcohol dependence exhibited significantly higher scores in the ASI medical, employment, alcohol, drugs, legal and psychiatric

status and in CSSA subscales in comparison with those patients who only were only cocaine dependent. With regard to the HRDS they exhibited significantly higher scores than cocaine-dependent only patients. On the contrary, the GAF scores were significantly lower than cocaine-dependent only patients. Finally, in terms of the BIS scores, this patient group exhibited higher scores in the BIS motor subscale (Table 4).

Discussion

This study examined the current psychiatric diagnoses among a clinical sample of cocaine-dependent subjects seek-

Table 4. Variables related to the clinical course

	Only Cocaine Dependence N = 72 (64.9)		Cocaine Dependence and Depressive Disorder N = 11 (9.9)			Only Cocaine Dependence N = 72 (64.9)		Cocaine and alcohol Dependence N = 28 (25.2)		
	M	SD	M	SD	p-value	M	SD	M	SD	p-value
ASI medical	0.4	0.9	0.7	1.6	0.196	0.4	0.9	1.0	1.8	0.050
ASI employment	0.7	1.5	0.2	0.4	0.714	0.7	1.5	2.0	3.3	0.007
ASI alcohol	0.8	1.7	0.7	1.6	0.259	0.8	1.7	1.5	2.3	0.040
ASI drugs	1.8	2.5	5.1	2.7	0.045	1.8	2.5	3.0	3.4	0.021
ASI legal	0.2	0.7	1.3	2.8	0.004	0.2	0.7	0.9	1.2	0.015
ASI family	1.1	1.8	3.5	1.1	0.041	1.1	1.8	1.7	2.3	0.154
ASI psychiatric	1.1	2.3	2.8	0.6	0.043	1.1	2.3	2.4	2.9	0.005
SDS	7.3	4.1	10.5	1.4	0.039	7.3	4.1	8.2	4.6	0.190
CSSA	9.2	8.6	11.8	10.2	0.435	9.2	8.6	13.9	9.4	0.025
HDRS	3.4	2.8	8.0	2.1	0.000	3.4	2.8	4.5	3.8	0.036
CGI	2.4	1.2	2.9	1.7	0.928	2.4	1.2	2.3	1.8	0.135
GAF	59.3	36.8	57.3	34.6	0.830	59.3	36.8	49.4	35.4	0.087
BIS - Attentional	12.1	3.5	14.1	4.2	0.035	12.1	3.5	12.7	3.5	0.603
BIS - Motor	10.7	7.1	12.0	5.8	0.465	10.7	7.1	14.0	5.9	0.006
BIS - Non - Planning	18.2	4.5	20.5	2.6	0.025	18.2	4.5	17.4	5.6	0.192
BIS - Total	41.0	12.4	42.8	11.4	0.578	41.0	12.4	43.4	12.9	0.262

Note: M=Mean; SD= Standard Deviation; ASI= Addiction Severity Index; SDS= Severity of Dependence Scale; CSSA= Cocaine Selective Severity Assessment; HDRS= Hamilton Rating Scale for Depression; CGI= Clinical Global Impression Scale; GAF= Global Assessment of Functioning Scale; BIS= Barratt Impulsiveness Scale.

ing treatment, assessed using the PRISM. The main findings of this study were: Firstly, a high prevalence of psychiatric comorbidity in cocaine-dependent outpatients that were recruited from different treatment settings in the Community of Madrid (64.0%). Secondly, the most common NSUDs found were ADHD (34.5%) and depressive disorders (13.7%) and the most common SUDs was alcohol dependence (28.4%). Thirdly, the cocaine-dependent patients with depressive disorders exhibited a more serious profile as well as a higher level of impulsivity than patients who were only cocaine dependent. Fourthly, the cocaine and alcohol-dependent patients presented a more serious profile, as well as a higher degree of impulsivity than cocaine-dependent only patients.

As we have previously indicated, we will focus the discussion about our results on those disorders that do not need to have begun in childhood or adolescence in order to be diagnosed, as is the case with personality disorders and ADHD. In our sample of cocaine abusers, rates of primary comorbidity of other mental disorders, specifically alcohol dependence and affective disorders were very high. This suggests that these disorders may be risk factors that influence the development or severity of cocaine abuse.

Our results showed a high current prevalence of psychiatric diagnoses (64.0%) although these figures were lower than those found by other authors who calculated prev-

alence rates between 73.5% to 75.0% (Alonso & Lepine, 2007; Andrews, Slade, & Issakidis, 2002; Arias et al., 2013; Carroll & Rounsaville, 1992; Chan, Dennis & Funk, 2008; Falck et al., 2004; Grant et al., 2004; Herrero et al., 2008; Kessler, Chiu, Demler, Merikangas, & Walters, 2005b; Levin, Evans, & Kleber, 1998; Rounsaville et al., 1991; Tortajada et al., 2012; Vergara-Moragues et al., 2012; Ziedonis, Rayford, Bryant, & Rounsaville, 1994). These differences may be a result of the variations in the study methodologies used on the population analysed, including tools used to obtain diagnoses, eligibility criteria and other variables as cohort effects.

We found that 13.7% of the cocaine-dependent patients had a current depressive disorder. The data available on comorbid mood disorders estimate figures between 14.0% and 61.0%, which are higher than those found in our study (Araos et al., 2014; Brown et al., 1998; Falck et al., 2004; Herrero et al., 2008; López & Becoña, 2007; McKay et al., 2002; Weiss, Griffin, & Mirin, 1992; Ziedonis et al., 1994). In the studies showing higher prevalence rates of depressive disorders, one relevant factor is the timing of diagnostic assessments. While we placed assessments between 7-10 days after admittance, some previous studies conducted diagnoses shortly after the patients entered into treatment, thus maximizing possible confounding effects of intoxication/withdrawal. The high prevalence of cocaine use in patients with a depressive disorder is not easy to explain. On the one

hand, it supports the notion that cocaine abusers with affective illness may be more pharmacologically sensitive to the effects of cocaine (Sofuoglu, Brown, Babb, & Hatsukami, 2001). Alternatively, it could be that these patients use cocaine as a way of self-medicating their depression (Khant-zian, 1985) or that both disorders share common risk factors (Kessler, 2004). Given the complexity of this relationship, treatment must be individualised in each case, determining the relevance of each disorder independently. In the regression analysis the only variable that increased the likelihood of suffering an affective disorder was having a history of receiving previous treatment. These data were consistent with the clinical observation that cocaine-dependent patients with a depressive disorder have a greater need to consume cocaine and there is a greater likelihood that they will drop out of treatment than cocaine users who do not have an associated depressive disorder (Brown et al., 1998). In addition, some studies have shown that cocaine-dependent patients with an affective disorder perceive a greater need for drug abuse treatment than those without depression (Falck, Wang, Carlson, Eddy, & Siegal, 2002). On the other hand, the patients who were cocaine-dependent and had an associated affective disorder differed from cocaine-dependent only patients in that they had higher scores in the ASI drugs, legal, family and psychiatric status, more severity of dependence, more psychopathology, an overall more serious condition and greater attentional and non-planning impulsivity. These data are consistent with data reported by other authors (Falck et al., 2002; McKay et al., 2002). Because the clinical characteristics associated with comorbid depression may interact with treatment, it is important to understand the clinical profiles of single diagnosis and dual diagnosis cocaine users in order to consider whether cocaine abusers with clinical depression may benefit from acute treatments targeting depressive symptoms.

Regarding impulsivity, it has been stated that unipolar depressive disorder is associated with increased impulsivity during depressive episodes (Corruble, Benyamina, Bayle, Falissard, & Hardy, 2003). Also impulsivity appears to be associated with susceptibility to substance abuse and with behavioural effects of abused drugs (Jentsch & Taylor, 1999; Moeller et al., 2002). Behavioural and rating scale measures of impulsivity are elevated in patients with substance abuse (Allen, Moeller, Rhoades, & Cherek, 1997; Moeller et al., 2002). Acute administration of either alcohol (Dougherty, Bjork, Bennett, & Moeller, 1999) or cocaine (Casella et al., 1994; Fillmore, Rush, & Hays, 2002) increases behavioural laboratory measures of impulsivity. Bearing in mind this data it is possible to hypothesise that cocaine dependent-subjects with a depressive disorder have a higher level of impulsivity than cocaine-dependent patients who do not have a depressive disorder.

With regard to alcohol dependence, 28.4% of the sample had an alcohol dependence disorder. Alcohol dependence

is a more frequent disorder among the cocaine dependent population. In the general population, 84.0% of individuals with lifetime cocaine abuse have also had an alcohol use disorder (Helzer & Pryzbeck, 1988). Results from the Epidemiological Catchment Area study indicate a higher degree of association between alcohol and cocaine dependence than between alcohol and any other type of drug dependence (Helzer & Pryzbeck, 1988). Studies of treatment-seeking and non treatment-seeking cocaine-dependent patients suggest that 60.0% or more of these individuals also meet criteria for a lifetime diagnosis of alcohol dependence (Carroll et al., 1993; Heil et al., 2001; Higgins, Budney, Bickel, Foerg, & Badger, 1994). Results from the present study demonstrate that patients concurrently dependent on cocaine and alcohol have a broader array and more complex set of problems than cocaine-dependent patients who are not alcohol dependent. We found that these patients had more serious medical, unemployment, alcohol, drugs, legal and psychiatric problems, more serious withdrawal symptoms, more depressive symptomatology and a more serious overall condition (Table 4). In this respect our results concur with the profile described by other authors that indicate that individuals with concurrent cocaine and alcohol dependence show greater behavioural, psychological, and psychiatric impairment than individuals with only one of the disorders (Brady, Sonne, Randall, Adinoff, & Malcolm, 1995; Carroll et al., 1993; Cunningham, Corrigan, Malow, & Smason, 1993; Hedden, Malcolm, & Latimer, 2009; Heil et al., 2001). This pattern of dual substance abuse may result from a variety of factors, including the use of alcohol to "come down" from a binge or to cope with cocaine cravings (Magura & Rosenblum, 2000).

The relationship between substance abuse and impulsivity is a relevant research topic that has been examined in recent years. Several studies have shown higher rates between substance misuse and impulsivity-related disorders (Dawe & Loxton, 2004a; Petry, Stinson, & Grant, 2005). These findings support the hypothesis that dysfunctional personality as a personality trait may increase vulnerability to alcohol and cocaine disorders (Bjork, Hommer, Grant, & Danube, 2004; Dawe, Gullo, & Loxton, 2004b). In this respect our data support the link between impulsivity and alcohol dependence shown in another studies (Dawe et al., 2004b; Rubio et al., 2008).

These results underscore the importance of individualised treatments for cocaine dependence to address the multiple needs of this heterogeneous population, including the substantial subgroup of patients who are also alcoholic.

The prevalence of psychotic disorders found in the study was low (4.1%), lower than the figures found in other studies [6.9% in samples who did not seek treatment (Herrero et al., 2008), 12.0% in patients hospitalized in any type of department of a General Hospital (Sopeña et al., 2008), 15.5% in outpatients seeking treatment (Araos et al., 2014)

and up to 100% in experimental studies of users who met substance dependence criteria (Kalayasiri et al., 2006)]. This low prevalence has not permitted the examination of risk factors associated with substance-induced psychotic disorders. It is possible that patients with psychotic disorders were not captured in our samples recruited from treatment settings, as these settings were limited to substance abuse treatment centres. Dual diagnosis patients with psychosis are more frequently seen in emergency departments and mental health services than in substance abuse treatment services (Martín-Santos et al., 2006).

This study has a number of limitations. Firstly, our study consisted of cases of cocaine-dependent outpatients and therefore may not be representative of the overall cocaine-dependent population. Samples of patients in treatment are likely to be skewed toward more severity and chronicity of illness and more comorbidity (Cohen & Cohen, 1984). Another problem is that samples of cocaine abusers may be subject to rapid cohort effects, since changes in cocaine price, availability, and social attitudes alter its penetration into different demographic groups. Secondly, our study emphasizes current prevalence, whereas other studies have reported lifetime prevalence (Arias et al., 2013; Carroll & Rounsaville, 1992; Falck et al., 2004; Herrero et al., 2008; Herrero et al., 2011; Tortajada et al., 2012; Vergara-Moragues et al., 2012). Thirdly, most parameters in the study were self-reported and recall bias could be expected. However, some previous studies have shown that assuring confidentiality and anonymity of the data (as was done in this study) maximizes the subjects' response accuracy. In this way, the information obtained from substance users tends to be reliable and valid (Del Boca & Darkes, 2003):

Despite these limitations, the study contained a number of strengths in comparison to other studies of its kind. For instance, all participants were examined using the same diagnostic criteria (DSM-IV) and the assessment instrument (PRISM) was administered by trained professionals. In addition, the study was conducted in the same urban area, from January 2009 to September 2009 when there were no changes with regard to the availability of and accessibility to treatment, in the availability of and accessibility to legal and illegal drugs and no change in the rate of other relevant events, such as HIV or hepatitis C infection. Finally, before making any conclusive decisions regarding our findings, this study should be replicated in other regions/countries to determine whether these findings vary in accordance with geographical region.

In summary we can conclude that this study has shown a high prevalence of psychiatric comorbidity in cocaine users seeking treatment. These data suggest that the presence of psychiatric comorbidity could constitute a risk factor associated with the severity of cocaine dependence. The clinical heterogeneity found also indicates the need to search for

individualised treatments that fit the needs of this population more specifically.

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Competing interests

The authors declare that they have no competing interests.

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