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Coexistence between personality disorders and substance use disorder. Madrid study about prevalence of dual pathology

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Introduction. Personality disorders (PD) and substance use disorders (SUD) have a high prevalence and an important health and socioeconomic impact so, it is interesting to study the relationship between them. The objectives of the study are: to compare the prevalence of SUD between patients with and without diagnosis of PD, to analyze if any PD is related to the SUD, and if a specific PD is associated with a specific SUD.

Material and methods. Cross-sectional study in 837 patients from centers of attention to drug addiction and mental health in Madrid, Spain. The Mini International Neuropsychiatric Interview (MINI) and the Personality Diagnostic Questionnaire-4+ (PDQ4+) are used to detect mental disorder and PD, respectively.

Results. SUD is significantly higher in antisocial PD (p<0.01); sedative (p<0.01) and alcohol (p<0.05) use disorder in borderline PD; cocaine (p<0.05) and alcohol (p<0.01) use disorder in paranoid PD; and alcohol use disorder in histrionic PD (p<0.01). The SUD for cocaine is lower in obsessive-compulsive PD (p<0.05) and depressive PD (p<0.01). There is a positive correlation between the number of PD of a subject and the number of SUD that it presents. The risk of an alcohol [OR of 1,08 CI (1,01-1,16)] or sedatives [OR of 1,08 CI (1,001-1,17)] use disorders increases if an individual presents more than one type of PD.

Conclusions. There is not differences of SUD prevalence between PD and not PD groups. We found an association between SUD and PD of cluster B (antisocial, borderline and histrionic) and also with paranoid PD. The SUD are more common among man with the exception of sedatives.

Keywords: Substance use disorder, Personality disorder, Dual pathology, Madrid Study
Actas Esp Psiquiatr 2019;47(6):218-28

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Coexistencia entre los trastornos de personalidad y el trastorno por uso de sustancias. Estudio Madrid sobre prevalencia de patologia dual

Introducción. Los trastornos de personalidad (TP) y los trastornos por uso de sustancias (TUS) presentan una alta prevalencia y un impacto sanitario y socioeconómico importante. Por este motivo es interesante estudiar la posible relación entre ambos trastornos. Los objetivos del trabajo son: comparar la prevalencia de TUS entre pacientes con y sin diagnóstico de TP, analizar si algún TP se relaciona con el TUS, y si algún TP específico se asocia con un TUS concreto.
Material y métodos. Estudio transversal en 837 pacientes procedentes de centros de atención a drogodependencias y de salud mental de Madrid, España. Se utiliza la *Mini International Neuropsychiatric Interview* (MINI) y el cuestionario *Personality Diagnostic Questionnaire-4+* (PDQ4+) para detectar trastorno mental y TP respectivamente.

Resultados. No se encuentran diferencias en la prevalencia de TUS entre los sujetos con TP y sin él. Dentro de los sujetos con TP son más frecuentes los TUS en el TP antisocial (p<0,01). En el TP límite es más prevalente el trastorno por uso de sedantes (p<0,01) y de alcohol (p<0,05); en el TP paranoide el trastorno por uso de cocaína (p<0,05) y de alcohol (p<0,01); y en el TP histriónico el trastorno por uso de alcohol (p<0,01). El TUS de cocaína es menor en el TP obsesivo-compulsivo (p<0,05) y depresivo (p<0,01). El riesgo de un trastorno por uso de alcohol [OR de 1,08 IC (1,01-1,16)] y sedantes [OR de 1,08 IC (1,001-1,17)] aumenta si un individuo presenta más de un tipo de TP.

Conclusiones. No se encuentran mayor prevalencia de TUS en los TP que en los no TP. Encontramos asociación entre los TUS y los TP del clúster B (antisocial, límite e histriónico) y con el TP paranoide. Todos los TUS son más prevalentes entre varones, salvo el TUS de hipnóticos.

Palabras clave: Trastorno por uso de sustancias, Trastorno de personalidad, Patología dual, Estudio Madrid

INTRODUCTION

Personality is described as a set of persistent patterns in the way we perceive, relate to, and think about the environment and ourselves, manifested in many social and personal contexts over time. An individual is considered to have a personality disorder (PD) when his or her thoughts, emotional manifestations, impulsiveness, and interpersonal behaviour deviate markedly from the expectations of that individual's culture[1]. Between 6 % and 10 % of the global population is estimated to suffer from a PD[2], and many studies have reported high rates of concurrence with substance use disorders (SUDs)[3-5]. In fact, substance use is listed among the possible diagnostic criteria for borderline and antisocial personality disorders. SUDs and PDs are quite prevalent in the general population and have high health system, social, and economic repercussions[6]. Research into the nature of the concurrence between the two disorders thus holds out considerable interest.

Until the 1980s, substance addiction was viewed as the result of maladaptive personality traits[7]. This view was reflected in the diagnoses set out in DSM-I and DSM-II as "addiction as antisocial personality disorder" and "addiction as personality disorder", respectively[8,9]. These theories fell out of use with the publication of DSM-III in 1980 and with the publication of prospective and retrospective studies that disproved the presumption of pre-addictive personalities[10]. At the present time, there is renewed interest in the association between substance use and personality disorders[11-14]. Various kinds of articles have been produced in this respect: some focus on the study of certain dimensions of personality and their association with substance use disorders, while others relate personality disorders and substance use disorders using categorical classifications.

The NESARC study has indicated that such variables as a low educational or economic level are associated with a greater risk of substance abuse and dependence. Nevertheless, having a mental disorder, a psychotic disorder or a personality disorder in particular, is the best predictor of having a substance abuse problem[15]. The study has also pointed up the dearth of descriptive analyses considering the prevalence of SUDs among PD patients. Some of the main results were higher rates of alcohol use disorder among patients with histrionic PD (29.1%), antisocial PD (28.7%), dependent PD (21.6%), and paranoid PD (19.5 %), and higher rates of other substance use disorders among patients with dependent PD (18.5%), antisocial PD (15.2%), and histrionic PD (12.8%)[16].

In addition, therapeutic management of individuals who exhibit these concurrent disorders (SUD and PD) is more complicated, with higher rates of relapse and treatment failure[17-19]. Conventionally, these disorders have been treated separately; yet, dual-focus integrated therapeutic approaches are associated with better outcomes, and failing to take both disorders into account can be a cause of burnout among therapist[20].

The primary object of this study was to compare the prevalence of SUD over the life course of patients who have and have not been diagnosed with a PD. The patients in question were in follow-up by two of the healthcare services systems operated by the Autonomous Community of Madrid in Spain (mental health centres and addiction treatment centres). A further object was to consider whether any type of PD was particularly associated with SUD and whether any specific PD was associated with a specific SUD.

MATERIAL AND METHOD

Design

This study, designated the "Madrid Survey", was a descriptive cross-sectional study performed on a population of patients undergoing outpatient treatment at Mental Health Centres (MHCs) or at Drug Addiction Centres (DACs) and Integrated Drug Addiction Centres (IDACs) operated by the Autonomous Community of Madrid (ACM) in Spain. The survey includes post-hoc analysis of the results presented in a previous study. The materials and methods have been described in greater detail in that study[21].

Sample

The patients who took part in the survey were recruited at the drug addiction treatment centres (IDACs and DACs) and MHCs run by the ACM. All such centres in the ACM were invited to participate in the survey, and participating centres contributed a researcher in charge and enrolled between 10 and 20 patients each. Therapists who took part in the project selected patients consecutively as they arrived for their visits. Inclusion criteria were being a patient who came to a centre for an initial evaluation or who were in follow-up and being 18 years of age or older. Accordingly, selection of centres and patients was not random. In order to gather a broad sample and achieve substantial external validity, the only exclusion criterion was not being able to complete the questionnaire because of cognitive impairment or an extremely low educational level. Participants signed an informed consent form.

Enrolment was 837 patients: 208 (24.9%) came from MHCs and 629 (75.1%) from DACs/IDACs. A total of 414 of the 837 patients evaluated suffered from a PD, and of these 108 came from MHCs and 306 from DACs/IDACs. The PD

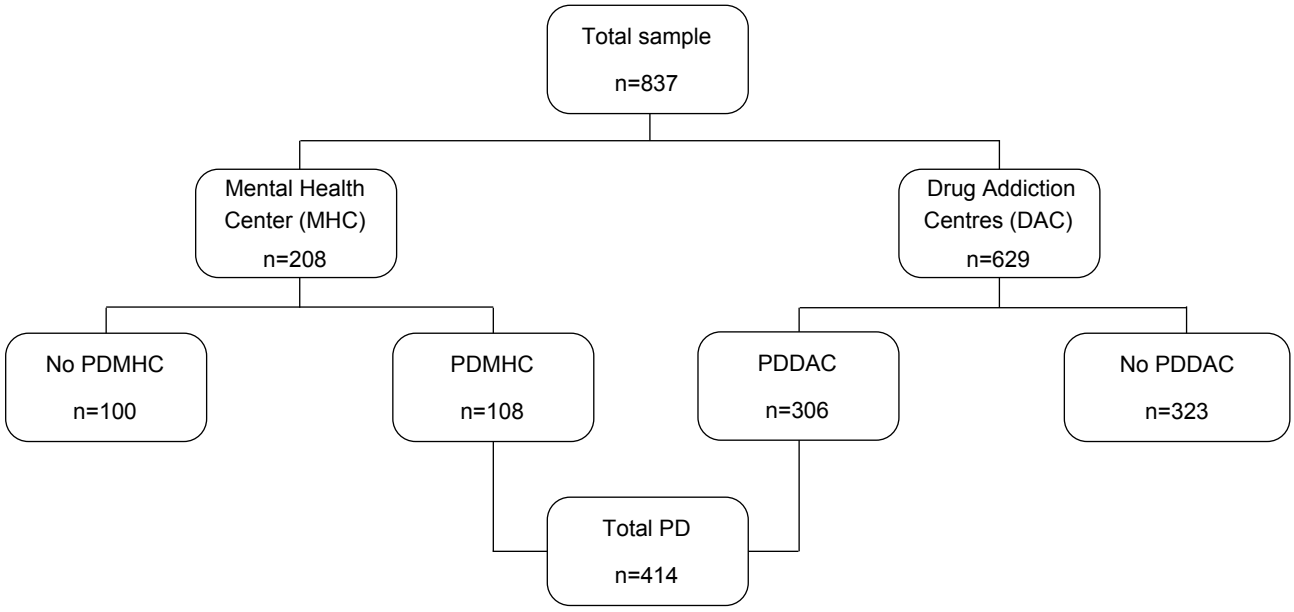

Figure 1 | *Diagram of the provenance of the sample and the prevalence of PD*

patient group was compared with subjects who had not been diagnosed with PD. Use disorders of individual substances (alcohol, cannabis, cocaine, opiates, and tranquilisers) were also assessed by PD type.

Process

In all, there were 81 interviewers (psychiatrists, psychologists, or primary care physicians with broad experience in treating addiction) at 64 drug treatment centres and 17 MHCs in the ACM. All interviewers underwent training in how to administer the survey tools. Two one-hour sessions were held to explain the survey methodology before the data were collected. All questions raised by the interviewers in this connection were adequately addressed.

Non-responses were mainly attributable to failure to cooperate on the part of patients after enrolment. Sociodemographic variables were collected at the first interview, and the MINI survey was then administered. The self-reporting PDQ4+ was then given to the subject, and the answers were evaluated by the interviewer, who completed the clinical significance scale. Participation was 87.2%. This study was approved by the Institutional Review Board of the Gregorio Marañón Hospital in Madrid.

Instruments

Data Collection Forms were filled out taking into account the data compiled on the most informative and clinically significant variables in a pilot study performed by the *Sociedad Española de Patología Dual* [Spanish Society of Dual Disorders] (SEPD)[22]. The structured Mini International Neuropsychiatric Interview (MINI) was used to assess the occurrence of mental disorders (sensitivity: 0.89; specificity: 0.92; no details about the positive and negative predictive value in the contexts described have been located)[23] for diagnosis according to the criteria of DSM-IV and ICD-10[24]. This interview enables the main current and life course axis I psychiatric disorders to be explored. Those lifetime course mental disorders not assessed by the interview were explored by means of the clinical interview.

PD diagnoses were established using the PDQ4+ (Personality Disorder Questionnaire) scale[25]. This tool combines the speed and convenience of a self-administered questionnaire with the effective assessment of the symptoms of a condition achieved by an interview. This tool consists of a self-reporting portion and a clinician-administered portion (the clinical significance scale) designed to confirm or refute the self-reported results. Both portions were used. This clinical screening tool acts like a diagnostic tool using the criteria of DSM-IV on administering the clinical significance scale[26].

Statistic analysis

Descriptive statistics were calculated for all variables: the mean and standard deviation for quantitative variables and the relative percentage frequencies for qualitative variables. Inter-group comparisons were performed by means of the chi-squared ($\chi 2$) test or, where appropriate, Fischer's exact test for the categorical variables, and Student's t-test or the Mann-Whitney U test for the quantitative variables. For variables encompassing more than two categories, the Bonferroni correction was applied. The 95% confidence intervals for the principal variable were calculated. The level of significance was $p< 0.05$. Pearson's coefficient was used to establish the correlation between the number of PD diagnoses and the number of SUDs across the life course. When it had been established that the two variables were correlated, logistic regressions were carried out to see which specific SUDs increased in patients who received a larger number of PD diagnoses. For this purpose, the logistic regressions used Bayesian analysis to assess whether a higher number of PD diagnoses raised the likelihood of having an SUD. Five multiple logistic regressions were carried out to ascertain whether sex and recruiting centre type were confounding factors. These analyses demonstrated that these variables were not confounders. Lastly, five simple logistic regressions were performed (number of PD diagnoses on use disorder for the five substances considered, i.e., alcohol, cannabis, tranquilisers, cocaine, and opiates). Statistical analyses were carried out using the SPSS statistical package v. 21 and R statistical software.

RESULTS

Prevalence of personality disorder and sociodemographic characteristics of the sample

Table 1 sets out the sociodemographic variables for the two groups considered, namely, PD/non-PD. Of the 837 patients surveyed, 414 (49.5%) had a PD. There were more men (617) than women (218) in our sample, but no difference in the prevalence of PDs was recorded. Analysing the PDs by category, antisocial PD was significantly higher in the men ($p< 0.01$), but no differences were found for the other PDs. Most of the men (85.4%) and approximately half the women (45.9%) in our sample were recruited at the DACs/IDACs. Analysis of all the substance use disorders across the lifetime course by sex showed them to be significantly greater ($p<0.01$) in the men except for tranquiliser use ($p=1$). The comparison of the PD and non-PD groups yielded significant differences according to marital status or type of cohabitation arrangement. Patients with PD were more often unmarried and lived alone. No significant differences were found for any of the other sociodemographic variables.

Substance use disorder and alcohol, cocaine, opiates, cannabis and sedatives use disorders throughout life in patients with and without personality disorder

Comparing the PD and non-PD groups, there were no significant differences in the prevalence of SUDs or lifetime use of cannabis, cocaine, opiates, or tranquilisers. A greater prevalence of alcohol use disorder was recorded in patients who were diagnosed with a PD (66.4% vs 59.8%), but the difference was not statistically significant ($p=0.053$) (Table 2).

Characteristics of the group of patients diagnosed with personality disorder

Depressive PD (PDQ4+ criteria, not included in international mental disorder classifications) was the most common, followed by obsessive-compulsive PD, avoidant PD, borderline PD, paranoid PD, and antisocial PD. Frequencies for the remaining PDs were less than 10%. Cluster C PDs were most prevalent, followed by those in clusters B and A (Table 3). An analysis was run to ascertain whether there were differences by recruiting centre type (MHC vs DAC/IDAC), but no statistically significant differences were detected (cluster A: $p=0.92$; cluster B: $p=0.1$; cluster C: $p=0.14$). An analysis of PD types by sex was also performed and showed a greater prevalence of antisocial PD in the men ($p<0.01$).

The PD patient group included patients who met the criteria for more than one diagnostic category of PD concurrently. Most patients were diagnosed with one, two, or three types of PD (Table 4).

Comparison of the prevalence of specific substances use disorders among subjects with a certain type of personality disorder

Table 5 summarises the diagnoses of life course substance use disorder for the range of substances (alcohol, cannabis, cocaine, tranquilisers, and opiates) by PD type and compares them with the rest of the sample (other PDs and non-PD patients). One finding of note was the greater prevalence of SUDs for each substance considered in patients with antisocial personality disorder (APD). In addition, tranquiliser and alcohol use disorders were significantly more common in patients with borderline personality disorder (BPD). Paranoid PD was associated with cocaine and alcohol use disorders, and histrionic PD with alcohol use. In its turn,

Table 1 ociodemographic characteristics of patients with and without personality disorder

Variable (n)	Patients with personality disorders (n=414)	Patients without personality disorders (n=423)	p (PD vs no PD)
Age (mean and standar deviation)	37.54 (9.94)	39.21 (10.21)	0.23
Sex			
Males	296 (71.1%)	321 (76.1%)	0.16
Civil status			
Single	243 (60%)	211 (50.5%)	0.01
Married	95 (23.5%)	138 (33%)	
Others	67 (16.5%)	69 (16.5%)	
Type of coexistence			
Alone	78 (18.9%)	43 (10.2%)	0.01
Own family	125 (30.5%)	150 (35.6%)	
Family of origin	162 (39.2%)	183 (43.5%)	
Institution	17 (4.1%)	13 (3.1%)	
Others	31 (7.5%)	32 (7.6%)	
Cultural level			
Without studies	9 (2.2%)	4 (1%)	0.16
Basic studies	176 (43%)	194 (46.2%)	
Secundary studies	150 (36.7%)	162 (38.6%)	
University studies	67 (16.4%)	58 (13.8%)	
Others	7 (1.7%)	2 (0.5%)	
Employment situation			
Without work of subsidy	10 (2.4%)	18 (4.3%)	0.08
Employed	186 (45%)	217 (51.4%)	
Unemployed	134 (32.4%)	123 (29.1%)	
Laboral inhability	42 (10.2%)	36 (8.5%)	
Retired	6 (1.5%)	8 (1.9%)	
Others	35 (8.5%)	20 (4.7%)	

PD: personality disorder

cocaine use disorder was significantly less common in patients with obsessive-compulsive PD and depressive PD.

Correlation between the number of personality disorders diagnosed and the number of substance use disorders

The potential relationship between the number of PD diagnoses in a patient and the number of substance use disorder diagnoses made for the different substances (alcohol, cannabis, cocaine, tranquilisers, and opiates) was evaluated. To that end, correlation analysis for two quantitative variables, Pearson's coefficient, was used. This coefficient demonstrated a positive though very low correlation, r=0.08

Table 2 Comparation of the presence of substance use disorder and of alcohol, cocaine, opiates, cannabis and sedatives use disorders throughout life among patients with and without personality disorder

Variable	Patients with PD	Patients without TP	p (PD vs no PD)
SUD	289 (69.8%)	292 (69%)	0.43
Alcohol UD	275 (66.4%)	253 (59.8%)	0.053
Cocaine UD	242 (58.5%)	246 (58.2%)	0.94
Opiates UD	112 (27.1%)	100 (23.6%)	0.27
Cannabis UD	186 (43.5%)	173 (40.9%)	0.48
Sedatives UD	67 (16.2%)	52 (12.3%)	0.11

PD; personality disorder; SUD; substance use disorder; UD: use disorder

Table 3 Prevalence of the different types of personality disorders in our simple

Type of PD	Prevalence (%)
Paranoid	139 (16.6%)
Esquizoid	52 (6.2%)
Esquizotipic	77 (9.2%)
Antisocial	102 (12.2%)
Borderline	153 (18.3%)
Histrionic	48 (5.7%)
Narcisist	55 (6.6%)
Evitative	153 (18.3%)
Dependent	71 (8.5%)
Obssesive Compulsive	155 (18.5%)
Negativist	81 (9.7%)
Depresive	177 (21.1%)
Cluster A	192 (22.9%)
Cluster B	235 (28.15)
Cluster C	263 (31.4%)

PD: personality disorder

Table 4 Analysis of the number of personality diagnoses in the subjects of the simple

Number of different types of PD diagnosed	Patients with PD diagnosed
1	124 (29.95%)
2	101 (24.40%)
3	59 (14.25%)
4	44 (10.63%)
5	28 (6.76%)
>6	58 (13.28%)

PD: Personality disorder

(p=0.02), between the number of PDs and the number of SUDs. When this correlation was analysed by sex, the results remained similar, r=0.08 (p=0.06) in the men and r=0.18 (p=0.01) in the women.

Logistic regressions using Bayesian analysis were run to assess whether a higher number of PD diagnoses raised the likelihood of having an SUD. To this end, five multiple logistic regressions were performed, taking each of the different substance use disorders (opiates, cannabis, tranquilisers, cocaine, and alcohol) as the dependent variable and the number of PD diagnoses, sex, and recruiting centre type (MHC/DAC) as the independent variables. One of the purposes was to ascertain whether sex and recruiting centre type might be confounding factors. It was determined that none of these variables were confounders, because the change in the coefficient for the variable number of PDs was quite small (<10%) compared with simple regression.

Lastly, five simple regressions were run (number of PD diagnoses on use disorder for the five substances considered), and the results are shown in Figure 2. The Figure shows the mean value and the 95-% credible interval (CI) for each substance use disorder. Alcohol use disorder and tranquiliser use disorder increased in individuals diagnosed with more than one type of PD (OR=1.08; CI: 1.01-1.16 and

Table 5 Comparison of the prevalence of specific substances use disorders among subjects with a certain type of personality disorder with the rest of the sample (other PDs and non-PD patients)

PD / SUD	Paranoid (n=139)	Schizoid (n=52)	Schizotyp (n=77)	Antisoc (n=102)	Border (n=153)	Histrion (n=48)	Narcis (n=55)	Evitat (n=153)	Depend (n=71)	OC-PD (n=155)	Depressiv (n=177)
Alcohol	**104** (19.4%)**	36 (69.2%)	54 (70.1%)	**78** (76.5%)**	**108* (70.6%)**	**37* (77.1%)**	38 (69.1%)	103 (67.3%)	52 (73.2%)	96 (61.9%)	108 (61%)
Cocaine	**92* (66.2%)**	26 (50%)	41 (53.2%)	**83** (81.4%)**	96 (62.7%)	32 (66.7%)	35 (63.6%)	90 (58.8%)	41 (57.7%)	**77* (49.7%)**	**85** (48%)**
Opiates	48 (34.5%)	14 (26.9%)	21 (27.3%)	**46** (45.1%)**	41 (26.8%)	10 (20.8%)	10 (18.2%)	46 (30.1%)	17 (23.9%)	36 (23.2%)	48 (27.1%)
Cannabis	69 (49.6%)	22 (42.3%)	36 (46.8%)	**69** (67.6%)**	70 (45.8%)	22 (45.8%)	24 (43.6%)	65 (42.5%)	25 (35.2%)	**53* (34.2%)**	71 (40.1%)
Sedatives	27 (19.4%)	6 (11.5%)	13 (16.9%)	**24** (23.5%)**	**39** (22.2%)**	10 (20.8%)	9 (16.4%)	27 (17.6%)	10 (14.1%)	10 (12.9%)	32 (18.1%)

In bold those stastistically significant percentages.* p<0,05; ** p<0,01; PD: personality disorder; SUD: substances use disorder; Paranoid: paranoid; Schizoid: schizoid; Schizotyp: schizotypal; Antisoc: antisocial; Border: borderline; Histrion: histrionic; Narcis: narcissit; Evitat: evitative; Depend: dependent; OC-PD: obsessive compulsive personality disorder; Depressiv: depressive

OR=1.08; CI: 1.001-1.17, respectively). Based on these results, when evaluating a new patient for whom the number of PDs diagnosed is known, we can predict that that patient will, on average, be 1.08 times more likely to have an additional use disorder involving alcohol or tranquilisers.

DISCUSSION

Characteristics of the sample

The high prevalence of PDs was similar to that reported in other studies. The prevalence of PDs in psychiatric patients, with or without SUDs, is estimated to be four times greater than in the general population[4]. The PD rate in our sample (49.5%) was similar to that reported by Zimmerman et al. They reported that 45.5% of patients in mental health outpatient care had a PD[27]. As in that article, in our survey, depressive, avoidant, obsessive-compulsive, and borderline PDs were the most prevalent personality disorders. These results contrast with those for surveys of samples of the general population (who are not necessarily in mental health follow-up). For example, in a publication ensuing from the NESARC study, obsessive-compulsive (7.9%), paranoid (4.4%), antisocial (3.6%), and schizoid (3.1%) PDs were most prevalent[16]. This discrepancy suggests that people with paranoid or antisocial personality disorder may not avail themselves of the network of mental health outpatient clinics compared with patients who have other personality disorders like obsessive-compulsive, avoidant, or borderline PDs. Another finding by Zimmerman et al. also seen in our survey was that over half the patients met the diagnostic criteria for more than one concurrent PD.

Analysis of all the substance use disorders by sex showed them to be more prevalent in the men (p<0.01) than in the women, except for tranquiliser use. A recently published article has also reported higher consumption of tranquilisers by women[28]. On the other hand, this difference in the prevalence of substance use disorder among men and among women could be attributable to the fact that most of the men in our sample came from DACs/IDACs, while the distribution of women was more even.

Overall, there were more men (74%) than women (26%) in our sample, but no differences in the prevalence of PDs were recorded between the two groups. However, analysing the PDs by category, antisocial PD was significantly higher in the men (p<0.01). Like our survey, many other studies have also found antisocial personality disorder to be more prevalent among men[29,30]. Some reports have indicated that this could be caused by bias in the diagnostic criteria in DSM-IV, which include items focused on observable behaviours that are more prevalent among men, though the different internal motivation may differ[31].

Types of personality disorder and substance use disorder

Based on an epidemiological study of the general population (the NESARC study), Grant et al. reported that 28.6% of individuals with alcohol use disorder and 47.7% of indi-

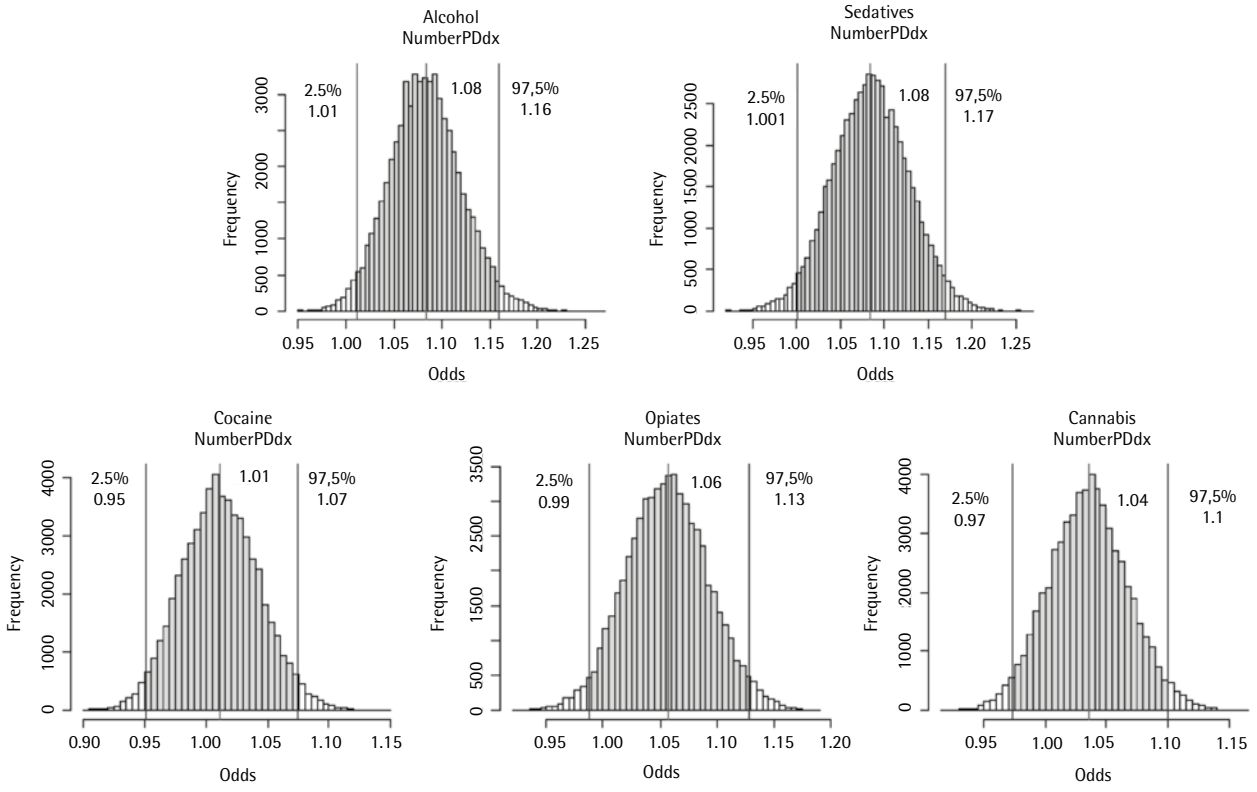

Figure 2 | *Simple logistic regressions. Analysis of the relationship between the number of the personality disorders diagnosed in the subjects and the alcohol, sedatives, cocaine, opiates and cannabis use disorders*

viduals with other substance use disorders had at least one PD. However, in our analysis of the prevalence of PD patients with alcohol use disorder and other substance use disorders, the rates were lower, 16.4% for alcohol and 6.5% for other drugs[16]. The SUD prevalence rate recorded in our survey was higher but is not comparable to that previous study, because our sample came from the clinical population at health care centres, not from the general population. According to our findings, PD patients tended to have a higher alcohol use disorder rate, though the difference was not statistically significant. Turning to the remaining substances, our findings did not indicate that patients with a PD (of any type) had a higher lifetime course SUD rate than non-PD patients. These results contrasted with the greater prevalence of SUD in PD patients reported by most studies. The difference was probably because our study population came mostly from the DACs, where patients normally go mainly to treat SUDs, regardless of the concurrence of other mental disorders. This could be why the relationship between PDs and SUDs was not so clear as it likely would have been had the patients come only from MHCs.

In our analysis by cluster type, cluster B PDs (especially antisocial and borderline PDs) were chiefly associated with life course SUDs. Several articles have propounded a solid relationship between SUDs and cluster B PDs[11,32,33]. From the standpoint of personality traits, recent studies have found self-harm and impulsiveness to play a significant role both in cluster B PDs and in SUD patients, as well as in the relationship between the two[28]. Nevertheless, other authors have held that negative emotionality may be more relevant to understanding the concurrence of SUDs and cluster B PDs[34].

Our analysis revealed the association between APD and substance use disorder for all the substances to be significantly greater. These findings were consistent with results reported by other authors[35]. In APD patients, alcohol use disorder was more severe, consumption had an earlier onset, and dependence developed more rapidly. Research has also shown that the traits associated with APD, such as executive function and response regulation deficit and anxious-impulsive personality traits, are phenotypes associated with a greater propensity to develop cocaine and amphetamine use

disorder[19]. Turning to BPD, cross-sectional studies have shown that between 30% and 50% of patients with BPD meet the criteria for a concurrent SUD[36]. Furthermore, BPD patients exhibit greater vulnerability to developing an SUD compared with the other PDs, APD excepted. Certain authors have put forward primarily impulsiveness, other authors emotional dysregulation/negative emotionality, as the key factors that explain the propensity of these patients to develop a persistent SUD. From a neuroscience perspective, some studies have suggested that BPD patients have lower levels of endogenous opioids and that the high prevalence of alcohol use in patients with this disorder is an attempt to regulate the opioid system[19]. Nevertheless, why these patients do not regulate this dysfunction by consuming opiates directly, a conduct more closely associated with antisocial personality disorder, remains to be elucidated. This could be further evidence of the limitations of the categorical classification of PDs.

A diagnosis of both disorders (APD and BPD) is associated with earlier onset of substance use and a higher number of relapses[37], and, for this reason, detecting these personality disorders is important to be able to implement the most suitable therapeutic approach. At the present time, research prompts us to consider personality from a more dimensional perspective rather than based on the categories described in diagnostic manuals. In section III, DSM-5 proposes making diagnoses based on traits and on their greater or lesser dysfunctionality, reserving the category of PD for the most severe alterations (DSM-5)[1].

In the case of paranoid personality disorder, we found a higher prevalence of alcohol and cocaine use disorders compared with the other PDs. These findings were similar to those reported by the NESARC study[16], which indicated that paranoid PD patients exhibited higher prevalence rates of alcohol use disorder compared with other PD patients. Verheul stated that this PD is associated with substance use more than other PDs[4]. In connection with cluster A, some authors have suggested ideas of reference and social anxiety as schizotypal traits that could predict cannabis consumption[38-40]. Our survey results included no findings of this kind. However, the percentage of schizotypal patients was very low compared with other diagnoses, hence it is not clear how inclusion of more patients with this diagnosis might have impacted the results. The low prevalence of this PD in our sample may be because these patients are not particularly interested in treating cannabis use disorder and therefore do not seek treatment at drug addiction centres, the main source of subjects for our survey[19]. Pérez et al. reported that patients with cocaine use disorder in remission presented a high prevalence of narcissistic traits[12]. However, according to our findings, these patients did not consume cocaine more than patients with other PDs.

While we found lower cocaine consumption by obsessive-compulsive and avoidant PD patients, we have not found any reports of any protective factor in these populations in the literature. It might be postulated that certain of these patients' traits, e.g., harm avoidance or inhibition, may deter them from starting to consume this substance or prevent continued consumption. However, this would not explain why these traits do not protect them from other SUDs.

At the same time, cocaine use disorder was significantly lower in cluster C patients. As already mentioned above, some studies dealing with vulnerability and resilience in the development of SUDs have recently appeared and have proposed that certain traits (high positive emotionality/extraversion, control/restriction, and low negative emotionality/neuroticism) are associated with a lower likelihood of substance use[41].

Polydiagnosis of personality disorders

Another interesting finding in our survey was that patients diagnosed as having more than one PD also exhibited a higher propensity to have more than one substance use disorder. Our analysis by substance revealed that the more PDs diagnosed in a given patient, the greater the probability that that patient would have an alcohol or tranquiliser SUD. Many patients in our survey met the criteria for more than one PD, something that has been described in other studies, and a higher number of diagnoses has been related to more difficult therapeutic management[16].

Limitations

From a methodological standpoint, it is relevant to mention the moment at which the patients were evaluated. The inclusion criteria encompassed patients who came to one of our centres for an initial evaluation. Some of these patients might be deemed to exhibit acute symptoms of another psychiatric disorder, which could lead to overestimation of the prevalence of PD patients. Our survey used the PDQ4+ questionnaire, which as discussed above consists of two parts: a self-administered portion and a second clinical significance scale. This structure is an attempt to counter the effects of possible overestimation. It should be noted that PD patients with an additional psychiatric disorder (e.g., mood disorders or substance use disorders) exhibit a more refractory progression[42]. Excluding patients who were affected by another mental illness would probably have meant excluding many of the PD patients. The high prevalence rates notwithstanding, clinically speaking this survey may better portray the clinical reality of health care under working conditions.

As concerns limitations, since the study is a cross-sectional study, it is not possible to infer causality or draw conclusions with respect to causation. Furthermore, as explained above, the PD diagnoses could be outsized as a result of the clinical moment of patients and because the sample was drawn from a clinical setting rather than from the general population.

In addition, the results provide further evidence of the limitations of categorical classifications of personality disorders. Many patients exhibited several concurrent PDs, yet this does not mean that they were more severely afflicted than those with a diagnosis of only one PD. Unfortunately, DSM-IV, and hence PDQ4+, do not measure the degree of severity in terms of the social or relational dysfunction of patients in the same category[43]. We are currently experiencing a paradigm shift in diagnosing personality disorders. In this connection, the DSM-5 task force has proposed a model for personality disorders that includes a severity evaluation (criterion A) and a description of 25 traits (criterion B) arranged into five domains. This new classification is set forth in the manual under the title "Alternative Model for Personality Disorders", while the categorical classification remains in effect. Nevertheless, many research teams are deciding to use this new classification, which makes a number of contributions, because measuring severity is important when designing a therapeutic approach.

CONCLUSIONS

A higher prevalence of SUD is not found when comparing PD with the rest of the sample (subjects treated in drug dependency centers or ambulatory centers). In view of the results of our work, the cluster B PD (especially borderline and antisocial personality disorder) and the paranoid PD are significantly associated with SUD; while cluster C PD, avoidant and obsessive-compulsive, are associated with lower prevalence of cocaine use disorder. In our study the alcohol, cocaine, cannabis and opiates use disorders are more prevalent in males, although these results could be due to an overrepresentation of males in the sample.

ACKNOWLEDGMENTS

The authors thank Dr. Rafel Xampeny Solaní for his help in understanding the new statistical concepts.

REFERENCES

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Washington DC: APA Press; 2013.
2. Huang Y, Kotov R, De Girolamo G, Preti A, Angermeyer M, Benjet C, et al. DSM-IV personality disorders in the WHO World Mental Health Surveys. Br J Psychiatry. 2009;195(1):46-53.
3. Skodol AE, Oldham JM, Gallaher PE. Axis II comorbidity of substance use disorders among patients referred for treatment of personality disorder. Am J Psychiatry. 1999;156:733-8.
4. Verheul R. Co-morbidity of personality disorders in individuals with substance use disorders. Eur Psychiatry. 2001;16(5):274-82.
5. Hasin D, Kilcoyne B. Comorbidity of psychiatric and substance use disorders in the United States: current issues and findings from the NESARC. Curr Opin Psychiatry. 2012;25(3):165.
6. Hasin D, Fenton MC, Skodol A, Krueger R, Keyes K, Geier T. et al. Personality disorders and the 3-year course of alcohol, drug, and nicotine use disorders. Arch Gen Psychiatry. 2011;68(11):1158-67.
7. Verheul R, Ball SA, van den Brink W. Substance abuse and personality disorders. In: Kranzler HR, Rounsaville BJ, editors. Dual diagnosis and treatment: substance abuse and comorbid medical and psychiatric disorders. New York: Marcel Dekker; 1997. p. 317-363.
8. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 1st ed. Washington DC: American Psychiatric Press; 1952.
9. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 2nd ed. Washington DC: American Psychiatric Press; 1968.
10. Barnes GE. The alcoholic personality: a reanalysis of the literature. J Stud Alcohol. 1979;40:571-634.
11. Bolinches F, De Vicente P, Gómez MC, Pérez-Gálvez B, Haro G, Martínez-Raga J, et al. Personalidades impulsivas y trastornos por uso de sustancias: algo más que un diagnóstico dual. Trastornos adictivos. 2002;4(4):216-22.
12. Pedrero Pérez EJ, Puerta García C, Lagares Roibas A, Sáez Maldonado A. Prevalencia e intensidad de trastornos de personalidad en adictos a sustancias en tratamiento en un centro de atención a las drogodependencias. Trastornos Adictivos. 2003;5(3):241-55.
13. Conway KP, Swendsen JD, Rounsaville BJ, Merikangas KR. Personality, drug of choice, and comorbid psychopathology among substance abusers. Drug Alcohol Depend. 2002;65(3):225-34.
14. Belin D, Belin-Rauscent A, Everitt BJ, Dalley JW. In search of predictive endophenotypes in addiction: insights from preclinical research. Genes Brain Behav. 2016;15(1):74-88.
15. Lev-Ran S, Imtiaz S, Rehm J, Le Foll B. Exploring the association between lifetime prevalence of mental illness and transition from substance use to substance use disorders: results from the National Epidemiologic Survey of Alcohol and Related Conditions (NESARC). Am J Addict. 2013;22(2):93-8.
16. Grant BF, Stinson FS, Dawson DA, Chou SP, Ruan WJ, Pickering RP. Co-occurrence of 12-month alcohol and drug use disorders and personality disorders in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. Arch Gen Psychiatry. 2004;61(4):361-8.
17. Pedrero Pérez EJ, Segura López I. Los trastornos de la personalidad en drogodependientes y su relación con la dificultad de manejo clínico. Trastornos Adictivos. 2003;5(3):229-40.
18. Langås AM, Malt UF, Opjordsmoen S. Comorbid mental disorders in substance users from a single catchment area-a clinical study. BMC Psychiatry. 2011;11(1):25.
19. Szerman N, Peris L. Personality Disorders and Addiction Disorders. Textbook of Addiction Treatment: International Perspectives. 2015;2063-83.
20. Trujols J, Tejero A, Casas M. El fenómeno de las recaídas en el tratamiento de las conductas adictivas. Adicciones. 1996;8:349-67.

21. Arias F, Szerman N, Vega P, Mesias B, Basurte I, Morant C, et al. Estudio Madrid sobre prevalencia y características de los pacientes con patología dual en tratamiento en las redes de salud mental y de atención al drogodependiente. Adicciones. 2013;25(2):121-8.
22. Szerman N, Arias F, Vega P, Babin F, Mesias B, Basurte I, et al. Estudio piloto sobre la prevalencia de patología dual en pacientes en tratamiento en la Comunidad de Madrid. Adicciones. 2011;23:249-56.
23. Lecubrier Y, Sheehan DV, Weiller E, Amorim P, Bonora I, Sheehan, et al. The Mini International Neuropsychiatric Interview (MINI). A short diagnostic structured interview: reliability and validity according to the CIDI. Eur Psychiatry. 1997;12(1):224-31.
24. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, et al. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J Clin Psychiatry. 1998; 59(2):22-57.
25. Calvo Pinero N, Caseras Vives X, Gutierrez Ponce De Leon F, Torrubia Beltri R. Spanish version of the personality diagnostic questionnaire-4+ (PDQ-4+). Actas Esp Psiquiatr. 2002;30(1):7-13.
26. Calvo N, Gutiérrez F, Caseras X, Torrubia, Casas M. Psychometric properties of the Spanish version of the self-report Personality Diagnostic Questionnaire-4+(PDQ-4+) in psychiatric outpatients. Psicothema. 2012;24(1):156-60.
27. Zimmerman M, Rothschild L, Chelminsk I. The prevalence of DSM-IV personality disorders in psychiatric outpatients. Am J Psychiatry. 2005;162(10):1911-8.
28. Teixidó-Compañó E, Espelt A, Sordo L, Bravo MJ, Sarasa-Renedo A, Indave BI, et al. Differences between men and women in substance use: the role of educational level and employment status. Gac Sanit. 2017;32:41-7.
29. Grant BF, Hasin DS, Stinson FS, Dawson DA, Chou SP, Ruan W, et al. Prevalence, correlates, and disability of personality disorders in the United States: results from the national epidemiologic survey on alcohol and related conditions. J Clin Psychiatry. 2004;65:948.
30. Moran P. The epidemiology of antisocial personality disorder. Soc Psychiatry Psychiatr Epidemiol. 1999;34(5):231-42.
31. Jane JS, Oltmanns TF, South SC, Turkheimer E. Gender bias in diagnostic criteria for personality disorders: Ani ten response theory analysis. J Abnorm Psychol. 2007;116(1):166-75.
32. Hudziak JJ, Boffeli TJ, Kriesman JJ, Battaglia MM. Clinical study of the relation of borderline personality disorder to Briquet's syndrome (hysteria), somatization disorder, antisocial personality disorder, and substance abuse disorders. Am J Psychiatry. 1996;153(12):1598.
33. Casillas A, Clark LA. Dependency, impulsivity and self-harm: traits hypothesized to underlie the association between cluster B personality and substance use disorders. J Pers Disord. 2002;16(5):424-36.
34. James LM, Taylor J. Impulsivity and negative emotionality associated with substance use problems and Cluster B personality in college students. Addict Behav. 2007;32(4):714-27.
35. Mackesy-Amiti ME, Donenberg GR, Ouellet LJ. Prevalence of psychiatric disorders among young injection drug users. Drug Alcohol Depend. 2012;124(1):70-8.
36. Trull TJ, Sher KJ, Minks-Brown C, Durbin J, Burr R. Borderline personality disorder and substance use disorders: A review and integration. Clin Psychol Rev. 2000;20(2):235-53.
37. Verheul R. Clinical utility of dimensional models for personality pathology. J Pers Disord. 2005;19(3):283-302.
38. Schiffman J, Nakamura B, Earleywine M, La Brie J. Symptoms of schizotypy precede cannabis use. Psychiatry Res. 2005;134(1):37-42.
39. Buckner JD, Zvolensky MJ, Schmidt NB. Cannabis-related impairment and social anxiety: The roles of gender and cannabis use motives. Addict Behav. 2012;37(11):1294-7.
40. Fenton MC, Keyes K, Geier T, Greenstein E, Skodol A, Krueger B, et al. Psychiatric comorbidity and the persistence of drug use disorders in the United States. Addiction. 2012;107(3):599-609.
41. Belcher AM, Volkow ND, Moeller FG, Ferré S. Personality traits and vulnerability or resilience to substance use disorders. Trends Cogn Sci. 2014; 18(4):211-7.
42. Reich JH, Green AI. Effect of personality disorders on outcome of treatment. J Nerv Ment Dis. 1991;179:74-82.
43. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 4 th ed. Washington DC: American Psychiatric Press; 1984.