Psychiatric comorbidity in treatment seeking substance use disorder patients with and without ADHD: results of the IASP study.

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Psychiatric comorbidity in treatment seeking substance use disorder patients with and without ADHD: results of the IASP study.

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Abstract

Aims: Additional comorbidity may influence treatment retention and outcome in

Substance Use Disorder (SUD) patients with Attention Deficit Hyperactivity Disorder

(ADHD). This paper aims to compare comorbidity patterns of treatment seeking SUD

patients with and without ADHD.

Design: Data were obtained from the cross-sectional International ADHD in Substance

use disorder Prevalence (IASP) study.

Setting: 47 centers of SUD treatment in 10 countries

Participants: 1205 treatment seeking SUD patients.

Measurements: structured diagnostic assessments of ADHD, antisocial personality

disorder, borderline personality disorder, major depression and (hypo)manic episode.

Findings: The prevalence of DSM-IV adult ADHD in this SUD sample was 13.9%.

Antisocial personality disorder (OR=5.25), borderline personality disorder (OR=3.30),

major depression (OR=1.82) and (hypo)manic episode (OR=3.96) were all more

prevalent in SUD patients with ADHD than in SUD patients without ADHD (*p*<0.01).

Comorbidity patterns differed between ADHD subtypes with increased major depression

only in the inattentive subtype and increased (hypo)mania only in the

hyperactive/impulsive and combined subtypes. 75% of SUD patients with ADHD had at

least one additional comorbid disorder compared to 37% of SUD patients without

ADHD. Logistic regression analyses showed that all comorbid disorders except major

depression were independently associated with the presence of ADHD in this treatment

seeking SUD population.

Conclusions: Treatment seeking Substance Use Disorder patients with Attention Deficit

Hyperactivity Disorder are at a very high risk for additional externalizing disorders. The

discussion provides an explanation for this finding and implications for treatment.

Keywords

Substance use disorder, ADHD, comorbidity, antisocial personality disorder, borderline

personality disorder, depression, bipolar disorder

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is a highly comorbid disorder in patients with substance use disorders (SUD) [1,2]. Moreover, both SUD and ADHD are associated with various other comorbid conditions. Substance use disorders are reported to co-occur with a variety of other Axis I and Axis II disorders with mood and anxiety disorders, borderline personality disorder, and antisocial personality disorder being the most frequently reported in the literature [3,4]. ADHD is also associated with a broad range of comorbid conditions [5,6]. However, few studies have investigated the comorbidity of patients with both ADHD and SUD, but they consistently report a higher prevalence of additional psychiatric disorders in SUD patients with ADHD compared to SUD patients without ADHD [7-10].

Overall, these studies show that ADHD and SUD independently confer an enhanced risk of comorbidity with mood, anxiety, and personality disorders, and that a combination of ADHD and SUD results in an even higher risk. This pattern of multiple co-occuring mental disorders is associated with severe emotional and interpersonal problems in the daily life of patients and constitutes a serious challenge for clinicians. Moreover, SUD patients with ADHD are reported to have worse treatment outcomes for both SUD [11] and ADHD [12]. More knowledge about the complex patterns of co-occurring mental disorders in SUD patients with and without ADHD is important, because different patterns of comorbidity may be partly responsible for lower treatment retention and worse outcomes in patients with SUD and ADHD compared to those with SUD alone. However, there is no detailed information on comorbidity patterns of SUD patients with and without ADHD mainly due to the relatively small sample sizes of the studies so far. For example, it is unclear whether comorbidity profiles are different in men and women

with SUD and ADHD, whether genetic factors may determine specific combinations of disorders (e.g. internalizing or externalizing disorders) or whether different comorbidity patterns are associated with different substances of abuse. Finally, no information is available on the different patterns of comorbidity in SUD patients with different subtypes of ADHD (inattentive, impulsive/hyperactive, combined). Information on the specific comorbidity patterns of different groups of SUD patients is necessary for the development of targeted and integrated treatment interventions, which not only focus on addiction problems, but also take into account other disorders that are present. Although there are sporadic data on this subject in earlier papers, this is the first large-scale study to investigate the comorbidity patterns in SUD patients with and without adult ADHD.

The main objective of this paper is to determine whether treatment seeking SUD patients with ADHD have a psychiatric comorbidity pattern that is different from SUD patients without ADHD. Both internalizing and externalizing disorders will be taken into account, focusing on current major depressive disorder, current (hypo)mania, antisocial personality disorder and borderline personality disorder. In addition, comorbidity patterns in subgroups according to gender and different substance use disorders will be studied, as well as comorbidity patterns in patients with different subtypes of ADHD.

Methods

This study was part of the International ADHD in Substance use disorders Prevalence study (IASP study) conducted by the ICASA research group (International Collaboration on ADHD and Substance Abuse, http://www.adhdandsubstanceabuse.org). In this two-stage study, a total of 3,558 treatment seeking SUD patients from 10 countries were screened for ADHD (screening phase). At a selection of study sites, all patients (both

screen-positive and screen-negative) were asked to participate in an extensive psychiatric

interview which took place within a few weeks after screening (full assessment phase).

During the full assessment, all patients were evaluated for the presence of ADHD, SUD,

and other comorbid psychiatric disorders by trained professionals. For a detailed

description of the IASP study, the reader is referred to van de Glind et al. [13]. Here we

provide a short summary of the methodology.

Participants

In the IASP study, patients aged 18-65 years consecutively referred to participating

addiction treatment centers in the period July 2009 to November 2011 were invited to

participate. A total of 47 centers in 10 countries (Australia, Belgium, France, Hungary,

The Netherlands, Norway, Spain, Sweden, Switzerland, and the USA) participated in the

screening phase, including both inpatient and outpatient treatment facilities serving both

alcohol and/or illicit drug dependent patients. Seven of these countries (France, Hungary,

Netherlands, Norway, Spain, Sweden, and Switzerland) also participated in the full

assessment phase. There were no formal exclusion criteria for participation in the IASP

study, but for practical reasons some patients could not participate in the study (e.g.

incapacity to fill out the screening questionnaire due to limited literacy, acute

intoxication, or acute deterioration of a serious psychiatric or somatic disorder). Only

patients with all measures of the full assessment phase were included in the current

comorbidity study.

Design and procedure

The IASP study was approved by the regional medical-ethical committees of all

participating centers. All participants provided written informed consent. In the screening

phase of the study, a short questionnaire was filled out covering demographic

information, information on substance use, and an ADHD screener. All participants were

then invited to take part in the full assessment phase, which took place within two to four

weeks after the screening, and included a diagnostic evaluation for ADHD, SUD, current

and lifetime major depression, current and lifetime (hypo)mania, borderline personality

disorder and antisocial personality disorder. Patients had preferably reached abstinence

by that time, but also in the case of ongoing substance use, the diagnostic evaluation was

performed.

Measures

For a detailed description and indications regarding the reliability and validity of the

assessment instruments, the reader is referred to the methods publication of the IASP

study.[13]

The Conners' Adult ADHD Diagnostic Interview for DSM-IV (CAADID) [14]

was used for the diagnosis of DSM-IV ADHD. Modules of the Mini International

Neuropsychiatric Interview (MINI Plus) [15] were used to assess alcohol use disorders,

non alcohol substance use disorders, lifetime and current major depression, lifetime and

current (hypo)mania, and antisocial personality disorder (ASP). The presence of a

borderline personality disorder (BPD) was evaluated with the relevant section of the

Structured Clinical Interview for DSM-IV Axis II (SCID II) [16,17].

In analyzing the data on major depression, no distinction was made between

major depressive episode, substance induced major depressive episode, or major

depressive episode following bereavement. Likewise, (hypo)mania also included

substance induced (hypo)mania. Data are presented here for current major depression and

current (hypo)mania only.

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Data analysis

Chi-square and Fisher's exact tests were used to test for significant differences in demographic variables and primary substance of abuse between the study population (N=1205) and the patients who dropped out before completing the full assessment in the seven countries where full assessments were performed (N=1392). Chi-square and Fisher's exact tests were also used to compare the proportion of patients with comorbid disorders in treatment seeking SUD patients with and without ADHD, and in SUD patients with different subtypes of ADHD. The magnitude of the association between comorbid disorders and ADHD in terms of odds ratios (ORs) was assessed with logistic regression. Finally, stepwise logistic regression analysis was used to investigate which comorbid disorders were (independently) associated with the presence of ADHD when controlling for sex, primary substance of abuse and the other comorbid disorders.

For all analyses, $p < 0.05$ was regarded as statistically significant. To correct for multiple testing of 4 disorders, we used Bonferroni correction (by dividing the significance threshold value by 4).

In the current report, we provide unweighted estimates of the prevalence rates, which may be slightly different from the weighted estimates of ADHD in the paper on ADHD prevalence.[2]

All statistical analyses were conducted with SPSS 17.0.1 (SPSS Inc; 2008).

Results

Study population characteristics

1205 patients completed the entire diagnostic assessment in the IASP study and were included in this study. 3558 participants were included in the screening phase of the IASP study[13], of whom 1276 completed at least the CAADID in the full assessment phase. 71 participants had missing values on one or more of the other instruments of the full assessment, resulting in a total of 1205 patients who had completed all measures of the full assessment and could be included in the current study. There were no significant differences between the study population (N=1205) and the patients who dropped out (N=1392) in gender or in primary substance of abuse. However, the study sample was slightly older than the patients who dropped out in the countries Norway (mean age difference 3.1 years, p = 0.003) and Spain (mean age difference 3.3 years, p < 0.001).

Table 1 shows that the majority of the patients included in this study were male (73.4%) with a mean age of 40 years. The majority were single (54.3%) or divorced (18.9%) and only one third of the patients (31.7%) was employed at the time of the study. Half of the patients (55.5%) had reported alcohol as their primary drug of abuse. For the other half, stimulants were the most frequently reported primary substance (15.0%), followed by cannabis (10.7%) and opioids (10.5%).

Table 1 also shows that adult ADHD was present in 13.9% of these treatment seeking SUD patients, whereas current major depression, current (hypo)mania, ASP and BPD were diagnosed in 21.8%, 5.6%, 19.9%, and 14.3% of the sample, respectively.

----------INSERT TABLE 1 (study population characteristics)-----------------

Comorbid disorders

Table 2 shows that all comorbid disorders were more frequently present in the SUD patients with ADHD than in the SUD patients without ADHD with odds ratios ranging

from 1.82 for major depression to 5.25 for ASP. When the analyses were repeated in

subgroups of patients with alcohol or drugs as their primary substance of abuse, similar

results were found, except for major depression which was equally present in drug

dependent patients with and without ADHD. When the analyses were repeated separately

for men and women, major depression was no longer more prevalent in patients with

ADHD compared to patients without ADHD. All other disorders, however, were still

more prevalent in patients with ADHD than in patients without ADHD. When Bonferroni

correction for multiple testing was applied, all significant results in Table 2 remained

statistically significant.

----------INSERT TABLE 2 (prevalence of comorbid conditions)-----------

Overall, 37% of the SUD patients without ADHD had at least one comorbid disorder,

while 75% of the SUD patients with ADHD had at least one additional comorbid

disorder. Table 3 shows the number of comorbid disorders for SUD patients with and

without ADHD. The difference in the number of comorbid disorders between the two

groups was statistically significant ($\chi^2 (4) = 119.1$; $p < 0.001$), as were the differences

when post-hoc analyses were performed with the presence of one or more comorbid

disorders ($\chi^2 (1) = 85.4$; $p < 0.001$, OR=5.1, 95%C.I. 3.5–7.4) or with the presence of at

least two comorbid disorders apart from ADHD ($\chi^2 (1) = 67.1$; $p < 0.001$, OR=4.4,

95%C.I. 3.0–6.3).

----------INSERT TABLE 3 (number of comorbidities)----------------------------

Logistic regression analysis

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Logistic regression analyses were performed to investigate which comorbid disorders

were independently associated with the presence of ADHD when controlling for sex,

primary substance of abuse and the other disorders. ASP, BPD and (hypo)mania were

independently associated with the presence of ADHD; major depression no longer

contributed to the logistic model after BPD was introduced. Primary substance of abuse

was also a statistically significant variable in the final model; the likelihood of having a

diagnosis of ADHD among patients with a drug use disorder was greater than that among

patients with an alcohol use disorder (OR 1.8). Gender did not contribute to the logistic

regression model. It should be noted, however, that in combination, these variables only

explained 17% of the variance in the presence of ADHD in these treatment seeking SUD

patients.

----------INSERT TABLE 4 (logistic regression)----------------------------------

Comorbidity in subtypes of ADHD

Finally, analyses were repeated to estimate the proportion of patients with comorbid

disorders in patients with the different subtypes of ADHD. Table 5 shows the results for

patients with the inattentive, hyperactive/impulsive and combined subtypes of ADHD.

After Bonferroni correction, ASP and BPD remained significantly more prevalent in

SUD patients with all types of ADHD compared to SUD patients without ADHD.

(Hypo)mania was more prevalent in patients with the hyperactive/impulsive subtype or

combined subtype of ADHD, but not in patients with the inattentive ADHD subtype,

compared to patients without ADHD. Major depression was more prevalent only in the

ADHD patients with the inattentive subtype of ADHD compared to patients without

ADHD. Between the different subtypes of ADHD, we only found significant differences

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in the prevalence of ASP: the prevalence of ASP was significantly higher in the

combined subtype than in the inattentive subtype and the hyperactive/impulsive subtype.

------------- INSERT TABLE 5 Comorbid disorders in SUD patients with different

subtypes of ADHD--

Discussion

Main findings

This study clearly shows that additional comorbid disorders are far more prevalent in

treatment seeking SUD patients with ADHD than in treatment seeking SUD patients

without ADHD. This applies to all four investigated disorders namely ASP and BPD,

(hypo)mania and major depression, with odds ratios ranging from 1.82 for major

depression up to 5.25 for ASP. Comorbidity patterns differed between ADHD subtypes

with increased major depression only in the inattentive subtype and increased

(hypo)mania only in the hyperactive/impulsive and combined sybtypes. The vast majority

(75%) of SUD patients with ADHD had at least one additional comorbid disorder,

compared to "only" 37% for the SUD patients without ADHD. Logistic regression

analyses showed that ASP, BPD and (hypo)mania were independently associated with the

presence of ADHD. The relationship between major depression and ADHD, however,

was no longer significant after controlling for the presence of BPD.

Our results are in line with earlier reports in the literature that comorbidity is more

prevalent in SUD patients with ADHD than in SUD patients without ADHD. These

findings are of direct relevance for daily practice in addiction treatment centers. It shows

that the subpopulation of SUD patients with ADHD, which constitutes 10-25% of

treatment seeking SUD patients, is suffering from substantially more comorbid disorders than SUD patients in general. These findings also confirm the importance of the current trend to integrate psychiatric care and addiction treatment [18].

Strengths and limitations

This is by far the largest study to date to evaluate a SUD population for the presence of ADHD, ASP, BPD, major depression, and (hypo)mania using the same standardized interviews by trained professionals. Great care was taken to correctly interpret symptoms and previous history using validated instruments, which is especially important when diagnosing ADHD in SUD patients. Another strength of the study is the inclusion of different types of SUD patients (alcohol and/or drug dependent patients, inpatients and outpatients), men and women, and patients from several countries and different socio-economic and cultural backgrounds, altogether strongly enhancing generalizability. As there were only small differences in age between the study sample and the patients who dropped out before completing the full assessment, the study sample can be regarded to be representative of the total population in the IASP study. However, this study also has an important limitation. Diagnostic assessments were preferably performed after initial stabilization of the SUD, but abstinence was not required. This may have led to some overestimation of the comorbidity rates due to the presence of substance induced symptoms.

Discussion

Numerous studies have reported on the role of ASP and its precursor conduct disorder (CD) in the development of SUD and found that CD increased the risk of later SUD in children with ADHD [19,20] although controversy remains as to the exact mechanism. In

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line with these findings, the association between the presence of ADHD and ASP was the strongest association that we found in this treatment seeking SUD population.

The presence of so many comorbid disorders in our patient population also raises fundamental questions on the concept of comorbidity. Milberger et al showed that ADHD was not just the result of overlapping symptoms present in depression, bipolar disorder, and anxiety disorders [21]. However, if the presence of comorbidity is not explained by overlapping symptoms, one could still argue whether the combination of, for example, ADHD, borderline personality disorder and major depression should be seen as the simultaneous presence of three distinct disorders or, rather, as the expression of a common underlying pathophysiology. The latter view is supported by our finding that the association between ADHD and major depression is no longer significant after controlling for the presence of BPD. Consistent with this, family studies suggest that ADHD shares familial risk factors with substance use and other comorbid disorders [22,23], although this may be different for alcohol use disorders and drug use disorders [22].

Moreover, the classification system that is currently used in psychiatry has been challenged and a more dimensional view on symptoms and clusters of symptoms has been proposed [24]. In the revision of the DSM, a more dimensional view is proposed for the classification of personality disorders (www.dsm5.org). In recent studies [25,26] in which Axis I and II disorders were studied in a large sample of young adult twins, evidence was found for a clustering of symptoms and disorders in externalizing and internalizing spectra across Axis I and Axis II disorders, which contributes to a more coherent view on clinical disorders and personality disorders. This four factor model has been corroborated with findings from genetic research [25], indicating that the association of disorders in our study might be due to a clustering of externalizing

symptoms with a shared underlying genetic structure. The observation that major

depression, the only internalizing disorder in our study, was the only disorder that did not

have an independent association with ADHD in logistic regression analyses, appears to

be in accordance with this idea. Moreover, we found that the externalizing disorder ASP

was more prevalent in the combined subtype of ADHD than in the other subtypes. This

also is consistent with the concept of ADHD as a dimensional disorder, in which more

symptoms and more comorbid conditions occur in the combined subtype.

The implications of these findings for patient management and treatment are not

yet fully clear. For example, if a patient suffers from SUD, ADHD, BPD and a major

depression at the same time, what should be the first focus of therapy? Moreover, if all

these disorders are to be seen as the result of one underlying externalizing cluster of

symptoms, how should this be treated? The discussion on the validity of our classification

system is inevitably linked to the way we shape our treatment strategies. For example,

Farchione et al addressed this issue for the treatment of anxiety and mood disorders and

postulated that the diversity of Cognitive Behavioral Therapy (CBT) treatment protocols

developed for single disorders is redundant, since in reality therapists are faced with

patients who have multiple comorbid conditions [27]. Heterogeneity in the expression of

emotional symptoms should in their view be seen as variation in the manifestation of an

underlying broader syndrome, which requires a more unified approach in treating these

symptoms.

Future research should therefore focus on the development of integrated treatment

programs for SUD patients with varying comorbid symptoms in the externalizing cluster.

From a clinical perspective, it is of interest to investigate whether unfavorable treatment

outcomes in SUD patients with ADHD are associated with particular comorbidities or

clusters of disorders, in order to have better tools to identify the patients that are at risk for treatment drop out.

In summary, this multinational study confirms that psychiatric comorbidity is the rule rather than the exception for SUD patients with ADHD. It clearly demonstrates the need for adequate diagnostic and treatment interventions for this patient population and strongly supports a further integration of addiction treatment facilities with general mental health services.

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Table 1

Demographic characteristics and general information on SUD and comorbidity (N=1205)

Variable	N (%)
Demographics	
Age: mean (SD)	40.0 (11.2)
Gender (male)	885 (73.4)
Social status	
- Single	647 (54.3)
- Married	212 (17.8)
- Divorced	225 (18.9)
- Living with partner	107 (9.0)
Housing	
- Homeless	49 (4.2)
- Shelter, health care	51 (4.4)
- Alone	492 (42.3)
- With partner	321 (27.6)
- With friends	56 (4.8)
- With parents	194 (16.7)
Employment status	
- Employed	372 (31.7)
- Unemployed	463 (39.5)
- Sick leave	201 (17.1)
Disability	137 (11.7)
Illness related characteristics	
Primary substance of abuse *	

- Opioids	126 (10.5)
- Stimulants	180 (15.0)
- Cannabis	128 (10.7)
- Other drug	99 (8.3)
- Alcohol	665 (55.5)
ADHD, persisting in adulthood	168 (13.9)
Current major depression	240 (19.9)
Current (hypo)mania	67 (5.6)
Antisocial personality disorder	263 (21.8)
Borderline personality disorder	172 (14.3)

Note.

- * indicates self-reported

- Prevalences of ADHD, current major depression, current (hypo)mania, antisocial personality

   disorder and borderline personality disorder are unweighted estimates.

Table 2

Prevalence of comorbid psychiatric disorders in SUD patients with and without ADHD

Comorbid conditions	In patients without ADHD N (%)	In patients with ADHD N (%)	OR (95% CI)
Full sample (N = 1205)	*N = 1037*	*N = 168*	
Current depression	191 (18.4)	49 (29.2)	1.82 (1.26-2.64) **
Current (hypo)mania	42 (4.1)	25 (14.9)	3.96 (2.33-6.73) ***
Antisocial pers. dis.	176 (17.0)	87 (51.8)	5.25 (3.73-7.41) ***
Borderline pers. dis.	121 (11.7)	51 (30.4)	3.30 (2.26-4.82) ***
Alcohol use disorder only (N = 665)	*N = 607*	*N = 58*	
Current depression	93 (15.3)	23 (39.7)	3.63 (2.05-6.43) ***
Current (hypo)mania	18 (3.0)	9 (15.5)	6.01 (2.57-14.08) #***
Antisocial pers. dis.	63 (10.4)	16 (27.6)	3.29 (1.75-6.19) ***
Borderline pers. dis.	50 (8.2)	20 (34.5)	5.86 (3.17-10.83) ***
Drug use disorder (N = 533)	*N = 426*	*N = 107*	
Current depression	97 (22.8)	26 (24.3)	1.09 (.66-1.79)
Current (hypo)mania	24 (5.6)	16 (15.0)	2.95 (1.50-5.77) **
Antisocial pers. dis.	113 (26.5)	68 (63.6)	4.83 (3.08-7.56) ***
Borderline pers. dis.	71 (16.7)	31 (29.0)	2.04 (1.25-3.33) **
Women (N = 320)	*N = 279*	*N = 41*	
Current depression	63 (22.6)	12 (29.3)	1.42 (.68-2.94)
Current (hypo)mania	13 (4.7)	9 (22.0)	5.76 (2.28-14.52) # ***
Antisocial pers. dis.	31 (11.1)	18 (43.9)	6.26 (3.04-12.88) ***
Borderline pers. dis.	60 (21.5)	21 (51.2)	3.83 (1.95-7.53) ***

Men (N = 885)	*N = 758*	*N = 127*	
Current depression	128 (16.9)	37 (29.1)	2.02 (1.32-3.10) **
Current (hypo)mania	29 (3.8)	16 (12.6)	3.62 (1.91-6.89) ***
Antisocial pers. dis.	145 (19.1)	69 (54.3)	5.03 (3.39-7.45) ***
Borderline pers. dis.	61 (8.0)	30 (23.6)	3.53 (2.17-5.75) ***

Note.

- In two tests (#) Fisher's exact test was used because of low numbers. For all other tests, χ^2 was used.

- uncorrected values (without correction for multiple testing) are reported. After Bonferroni correction, all

significant values remain significant.

- * indicates $p < 0.05$
  ** indicates $p < 0.01$
  *** indicates $p < 0.001$

- Prevalences of ADHD, current major depression, current (hypo)mania, antisocial personality disorder and

    borderline personality disorder are unweighted estimates.

Table 3

Presence of comorbid psychiatric disorders in SUD patients with and without ADHD

Number of comorbid conditions	0 comorbid disorder N (%)	1 comorbid disorder N (%)	2 comorbid disorders N (%)	3 comorbid disorders N (%)	4 comorbid disorders N (%)
SUD patients without ADHD (N=1037)	653 (63.0)	272 (26.2)	82 (7.9)	26 (2.5)	4 (0.4)
SUD patients with ADHD (N=168)	42 (25.0)	68 (40.5)	39 (23.2)	10 (6.0)	9 (5.4)

Note.

χ^2 (4) = 119.1; p < 0.001

Post hoc analysis for at least 2 comorbid disorders: χ^2 (1) = 67.1; p < .001. OR=4.4 (95% CI 3.0–6.3).

Post hoc analysis for at least 1 comorbid disorder: χ^2 (1) = 85.4; p < .001. OR=5.1 (95% CI 3.5–7.4).

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Table 4

Multiple logistic regression analysis of variables potentially associated with ADHD

	B	SE	Wald	df	Sig	Exp(B)
Constant	-3.004	.239	158.157	1	<0.001	.050
Gender	.224	.218	1.054	1	0.305	1.215
Current major depression	.225	.212	1.120	1	0.290	1.252
Current (hypo)mania	.680	.306	4.954	1	0.026	1.974
Antisocial pers. dis.	1.270	.189	44.941	1	<0.001	3.561
Borderline pers. dis.	.844	.225	14.073	1	<0.001	2.325
Primary substance of abuse	.590	.189	9.779	1	0.002	1.804

Note.

Cox and Snell R^2 = 0.096; Nagelkerke R^2 = 0.174

Table 5

Comorbid disorders in SUD patients with different subtypes of ADHD

	No ADHD (N=1037) N (%)	ADHD, inattentive subtype (N=47) N (%)	ADHD, hyperactive/imp. subtype (N=47) N (%)	ADHD, combined subtype (N=74) N (%)
Current major depression	191 (18.4)	17 (36.2)**	10 (21.3)	22 (29.8)*
Current (hypo)mania	42 (4.1)	5 (10.6)*	6 (12.8)**	14 (18.9)***
Antisocial pers. disorder	176 (17.0)	18 (38.3)***	21 (44.7)***	48 (64.9)***
Borderline pers. disorder	121 (11.7)	14 (29.8)***	12 (25.5)**	25 (33.8)***

Note

- Uncorrected results of post hoc testing of the ADHD subtype group against 'no ADHD' group are indicated by * (p value < 0.05), ** (p value < 0.01) and *** (p value < 0.001). After Bonferroni correction for multiple testing, current major depression in the ADHD combined subtype group and current (hypo)mania in the ADHD inattentive subtype group lose significance.

- The reported prevalences are unweighted estimates