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RESEARCH ARTICLE

Prevalence of attention deficit hyperactivity disorder in individuals with psychoactive substance dependence

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ABSTRACT

Attention Deficit Hyperactivity Disorder (ADHD) is the most common neurodevelopmental childhood disorder, which in most cases persists into adulthood, causing severe functional impairment. ADHD constitutes an important risk factor for the onset of use and the development of dependence on psychoactive substances. Impulse control disorders, anxiety, mood disorders, and substance abuse are the most common comorbid disorders. The present study aims to estimate the prevalence of ADHD in adult users of psychoactive substances who have attended a treatment program in a special detoxification unit for psychoactive substances. The study concerns the examination of one hundred eighteen psychoactive substance users using the following diagnostic tools: (a) Section 12 of the semi-structured interview SCAN 2.0, which assesses diagnostic criteria of psychoactive substance abuse and dependence. (b) The structured clinical interview CIS-R, which investigates the presence of psychopathological symptoms of "common mental disorders". (c) The WURS scale retrospectively probes into ADHD symptoms up to the age of 7. The prevalence of ADHD in the sample of individuals with psychoactive substance use disorders was found to be 38.1%. Analyses were also performed concerning age and the comorbidity of common psychiatric disorders and ADHD. Findings are consistent with the results of other studies. The drug users of psychoactive substances, regardless of the ADHD comorbidity, had an increased prevalence of common psychiatric disorders. The most common comorbidities were other psychoactive substance disorders, anxiety, and depressive disorders. The small number of participants, the exclusive use of one substance by the participants, and the type of unit where the present study was conducted restrict the generalizability of its results.

KEYWORDS: ADHD, psychoactive substance use, WURS scale, prevalence, comorbidity.

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Introduction

Attention-deficit hyperactivity disorder (ADHD) is the most common neurodevelopmental disorder of childhood, which in the majority of cases persists into adulthood, causing significant functional impairment.¹ The main problems of ADHD are considered to be behavioral dysregulation, deficits in executive functions, especially in inhibitory control and active memory, and delayed aversion, i.e., the behavioral tendency of these individuals to show a preference for smaller immediate rewards over larger delayed rewards.² The prevalence of ADHD in school-age children is 3-7% if DSM-IV³ criteria are applied, or 1-2% according to the more stringent ICD-10.⁴ Longitudinal studies of children and adolescents with ADHD have shown that the disorder persists into adulthood to a significant degree. Another study suggests that the prevalence of ADHD in school-age children is estimated at 2-18%.⁵

The ratio of boys to girls ranges from 3:1 to 5:11.¹ ADHD symptomatology varies according to developmental stages and is characterized by age-inappropriate inattention, hyperactivity, and impulsivity.^{1,2} Impulse control disorders, anxiety and emotional disorders, and substance abuse are the most common comorbid conditions.⁶ The lifestyle of individuals and the impact of comorbid conditions on major areas of functioning form the basis of diagnostic assessment. It is primarily differentiated from bipolar disorder and borderline personality disorder.

ADHD is an important risk factor for initiating and developing dependence on psychoactive substances. The prevalence of ADHD in people with psychoactive substance use disorders varies greatly between studies and across substances of abuse/dependence, between 5,2 - 50,6%,⁷⁻¹² whereas the prevalence of psychoactive substance use in individuals with a history of ADHD was found to be between 15-50,7%.^{6,9,13,17} This comorbidity is related to serious personal and social problems and poor academic performance.¹⁸

Comorbidity between substance-use disorders and ADHD has not been studied so far in Greece. The present study aims to investigate the prevalence of ADHD in adult psychoactive substance users attending a treatment program in a psychoactive substance treatment facility. More specifically, the study aimed to retrospectively investigate the prevalence of ADHD in psychoactive substance users by examining whether they met the criteria for the disorder by the age of 7 years.

Existing literature⁶⁻²⁴ suggests an association between substance use and ADHD, and therefore, we felt it was necessary to study adults with psychoactive substance use for retrospective assessment of ADHD symptoms. The same users would have to meet the ICD-10⁴ criteria for psychoactive substance use and dependence. In addition, the presence of co-occurring psychopathology was assessed in them.

Materials and methods

Sample

The sample consists of 118 adult users of psychoactive substances aged 18-40 with heroin as the main substance of use, either intravenously or as a smoker, and with a frequency of daily use in the last month. The users entered the rehabilitation unit between January 2008 and October 2013. The minimum duration of regular use, at least twice a week, was set at one year. 101 persons refused to participate in the survey. The patients (psychoactive drug users) came from a Rehabilitation Unit where they were undergoing psychotherapy and physical rehabilitation. All patients were included as consecutively registered in the waiting book when they had expressed their request for admission to the program. All patients met the criteria for psychoactive substance use disorder. In the first session, the users were almost always in use. Users with psychotic disorders and persons with irreversible brain damage were excluded from the study.

Methodology

Individuals participating in the study were screened with three diagnostic tools. Users enter the Addiction Counselling Centre, in Athens (Greece), with the request to detoxify from substances, and are almost always using, they were tested with the following psychometric tools:

- (a) Section 12 of the semi-structured SCAN 2.0 interview,²⁵ which assesses whether users meet the criteria of psychoactive substance abuse and dependence. The reliability of the interview has been tested and found to be high.²⁶
- (b) The CIS-R structured clinical interview,²⁷ which examines the presence of psychopathology symptoms of 'common mental disorders' that can be used for diagnostic categorization according to ICD-10. The interview investigates the presence, in the last seven days, of 14 common symptoms. These symptoms are, in order, the following: physical symptoms, fatigue, concentration and attention, sleep problems, irritability, concern about physical health, depression, depressive ideas, anxious ideas (worries), anxiety (physical), phobias, panic, obsessions, and compulsions. The reliability of the interview has been tested and found to be high.²⁸⁻³⁰
- (c) With the WURS scale,^{31,3} which retrospectively screens for ADHD symptoms up to the age of 7 years. The diagnostic criteria for ADHD in adults, as defined by the DSM-IV, require a history of ADHD from childhood. Unfortunately, many patients evaluated with the disorder in adulthood were not psychiatrically assessed for ADHD as children. Therefore, a prerequisite for the diagnosis of ADHD in adults is a retrospective assessment from childhood. The Wender Utah Rating Scale (WURS) was preferred because it includes symptoms of other disorders that often coexist with ADHD.³²

Subjects rate these items, thus describing their childhood behavior, with the following rating: not at all or very mild (0), very little (1), moderate (2), quite a bit (3), or very much (4). Psychometric studies of the Wender scale³² demonstrated that ADHD can be diagnosed with as few as 25 of the original 61 items on the scale. According to these studies, if the total score of the 25-item scale is 46 or more, it is considered a positive diagnosis of ADHD. In the present study, for the diagnosis of ADHD, the 25-item scale was used.³² We requested the author's permission to use the Wender scale in our research in Greece. His reply was positive. We used the scale after first translating it using the translation back-translation method.³³

Statistical analysis was performed on the relationships between the ADHD status as defined by the WURS questionnaire (WURS score expressed as a dichotomous variable rated as positive for ADHD (score ≥ 46) or negative (score ≤ 45)), and sociodemographic variables, as well as the presence of other psychiatric disorders, by use of contingency tables (chi square statistic). Reliability of the WURS questionnaire was assessed by measuring internal consistency (Cronbach's alpha).

Results

WURS Reliability

In international studies, reliability testing of WURS, both in 61 and 25 scales, using the internal consistency method showed excellent results (alpha 0.87-0.91).^{34,35} In the present study, the results were also satisfactory (0.55-0.88). In particular, in the following 4 sub-units, the results were: ADHD diagnosis 0.84, unselected items for ADHD assessment 0.70, Health problems 0.55, and School problems 0.59.

Socio-demographic characteristics of the sample

As shown in table 1, of the 118 users screened with the three diagnostic tools, 96.6% were male and 3.4% female, 93.2% lived alone, 5.1% were cohabiting, and 1.7% were married. 83.9% were unemployed, 7.6% had full-time jobs and 5.9% had part-time jobs, 0.8% were

engaged in domestic work, and 1.7% were students. 72.0% had more than 10 years of education.

Table 1.

Prevalence of ADHD and common mental disorders

Table 2 shows the prevalence of ADHD in phase 1 of the study. 38.1% of subjects met the criteria for an ADHD diagnosis, while 61.9% did not meet the criteria and were therefore classified as having a negative ADHD diagnosis. Due to the small number of women, we did not analyze the prevalence by gender. It also shows the prevalence of ADHD by age in the whole sample. Positive in ADHD was 46.4% of the sample at age 18–25, 40.8% at age 26–30, and 29.3% at age 31–40. Comparison results showed non-statistically significant differences between age and ADHD diagnosis (chi-square= 2.33, $p= 0.311$).

Table 2.

Table 3 reports the prevalence of co-occurring psychiatric disorders according to the CIS-R structured interview by age in the total sample. Of the total of 118 users, 75% had psychiatric disorders at age 18-25, 67.3% at age 26-30, and 85.4% at age 31-40. Comparison results showed non-statistically significant differences between age and psychiatric diagnosis (chi-square=3.91, $p=0.141$).

Table 3.

In table 4, the presence of ADHD is not associated with the high proportion of psychiatric disorders in our sample of heroin users. It is the presence of use that determines the high rate of psychiatric disorders. The comparison results showed non-statistically significant differences between ADHD and psychiatric disorders (chi-square 1.82, $p=0.769$).

Table 4.

Discussion

The purpose of this study was to investigate whether psychoactive substance users who were retrospectively screened for ADHD symptoms met the criteria for the disorder by age 7 years. 118 adult psychoactive substance users aged 18–40 years with heroin as the main substance of use, intravenously or smoked, with a frequency of daily use in the last month, were examined. The minimum duration of regular use, at least twice a week, was set at 1 year. The SCAN 2.0 and CIS-R interviews were administered to assess psychopathology and psychoactive substance use, and the Wender questionnaire to assess and diagnose ADHD. The total sample of 118 users consisted mainly of males. The mean age of the sample was 27.8 years. The education level of the group was 11.0 years of education on average, with 72.0% having 11–16 years of education. 83.9% were unemployed, while 5.9% were part-time employed.

The prevalence of ADHD in the first phase of the study was 38.14%. It is observed that the highest prevalence of ADHD was found in the age group of 18–25 years, with 46.4%, perhaps because at this age, due to the proximity to the onset of the disorder, users can recall and distinguish the necessary symptoms. At the age of 26–30 years, the prevalence of ADHD was 40.8. Finally, at the age of 31–40 years, the prevalence of ADHD was 29.3%, perhaps because at this age, the ability to recall the symptoms of the disorder was lower than in other age groups. Our results are similar to a study that found that 36% of adults who met the criteria for ADHD in childhood continued to meet the criteria as adults.³⁶ Many cases of ADHD

from childhood, around 60% in some studies, continue to have significant symptoms as adults.³⁷⁻³⁹

Regarding the co-occurrence of psychiatric disorders, 75% of the sample were found positive for psychiatric disorders at age 18–25, 67.3% at age 26–30, and 85.4% at age 31–40, respectively. The analysis of the data shows that the presence of psychoactive substance use seems to be associated with a high prevalence of common psychiatric disorders. This finding is consistent with those of other studies,⁴⁰⁻⁴⁹ which have shown that in heroin-dependent users, major depression, alcohol dependence, antisocial disorder, and borderline personality disorder occurred at a much higher frequency than in the general population. It should be noted here that concentration and memory problems, motor restlessness, irritability, anhedonia, and sleep problems may be symptoms of ADHD and should not be taken as symptoms of depression.⁵⁰ Concerning children with ADHD, another earlier study⁵¹ notes that 30–50% of children with ADHD meet the criteria for communication disorder or ADHD, with a prevalence of comorbidity more in boys than in girls.

Regarding the relationship between ADHD and substance use, this has been the subject of research, with the prevailing view that the presence of conduct disorder is necessary for a person with ADHD to develop a substance use disorder. Antisocial personality disorder and substance abuse are more common in adults with a history of childhood ADHD than in individuals without childhood psychopathology. Childhood ADHD can be considered a precursor condition to adolescent antisocial personality disorder.² There appears to be a deficit in behavioral regulation, which explains the comorbidity between ADHD and substance use disorder.⁵² Thus, conduct disorder has been found to increase the risk for substance use disorder,⁵³ while the presence of ADHD or conduct disorder in childhood is also an important predictor of substance use disorder.⁵⁴ Adolescents with ADHD are usually immature and engage in high-risk activities such as risky driving, smoking, unprotected sexual intercourse, and hashish use.⁵⁵⁻⁵⁸ The hyperactivity present in children is experienced by adults as subjective motor anxiety. Adults with ADHD, as discussed above, in addition to a higher prevalence of anxiety and depression, have an increased risk of poor physical health, including serious road accidents.⁵⁹⁻⁶²

In summary, in our study, the user sample meets the criteria for ADHD, with a prevalence higher compared to most epidemiological studies, whereas both psychoactive substance use and ADHD are associated with a high prevalence of psychiatric disorders, similar to that found in other studies.

Our study has serious limitations in terms of the generalizability of its results. First, it took place in a service that receives the most severe cases of people with psychoactive substance use disorders, mainly heroin. Consequently, we cannot claim that the sample represents the profile of psychoactive substance users in Greece, which may influence the true prevalence of ADHD among psychoactive substance users. Moreover, the sample consists exclusively of people who use heroin, which limits the results to this particular substance. Secondly, our findings on the prevalence of ADHD in persons with substance abuse are at high rates, compared with some other studies that reported much lower rates. This is probably because a self-rated questionnaire was used instead of a diagnostic interview. Studies in which the diagnosis of ADHD was made by use of an interview report much lower rates.¹¹ Bowling (2005) and Rickwood and Coleman-Rose (2023),^{63,64} reported the pros and cons of using interviews and questionnaires. Interviews may suffer from social desirability bias (i.e., under-reporting undesirable behaviors and over-reporting desirable ones) and self-administered questionnaires from recall effects (i.e., the time frame during which a behavior occurs) and, in addition, respondents are prone to reveal sensitive information they would likely not report in interviews. Nevertheless, interviews, especially semi-structured ones, allow the interviewer to ask additional probes to determine accurately the existence and timing of pathological symptoms and behaviors. Questionnaires must be validated against a “Golden Rule”, that is,

the diagnosis, usually obtained using a structured or semi-structured interview. The Greek translation of the WURS scale has not been validated yet using a similar method. In determining the prevalence of ADHD, we used the cut-off points suggested by the creator of the questionnaire. Therefore, although our rates are on the high end, these may have been somehow inflated by the use of the unvalidated instrument. Finally, the small sample size is another drawback, but this is justified by the difficulties in collecting a large sample of people with psychoactive substance use. With these limitations, it is understood that further research with a larger number of subjects is necessary to reach more reliable conclusions.

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Table 1: Sociodemographic data of the patient group

Age	18-25	28	23.7		
	26-30	76	41.5		
	31-40	14	34.8		
				27.9	3.9
Gender					
Male		114	96.6		
Female		4	3.4		
Family Status					
Married		2	1.7		
Cohabiting		6	5.1		
Unmarried		110	93.2		
Professional Status					
Full-time employment		9	7.6		
Part-time employment		7	5.9		
Unemployed		99	83.9		
Household		1	0.8		
Students		2	1.7		

Years of education				
	0-10	33	28.0	
	11-16	85	72.0	
				11.0 1.7

Table 2. Prevalence of ADHD by Age

	Age			
ADHD diagnosis	18-25	26-30	31-40	Total
Negative	15	29	29	73
	53.6%	59.2%	70.7%	61.9%
Positive	13	20	12	45
	46.4%	40.8%	29.3%	38.1%
Total	28	49	41	118

Table 3. Prevalence of psychiatric disorders (CIS-R) by age

	Age			
Diagnosis	18-25	26-30	31-40	Total
Negative	7	16	6	29
	25.0%	32.7%	14.6%	24.6%
Positive	21	33	35	89
	75.0%	67.3%	85.4%	75.4%
Total	28	49	41	118

Table 4. Comorbidity (CIS-R) of psychiatric disorders and ADHD

Psychiatric disorder	ADHD (+)	ADHD (–)	Total
Anxiety disorders	9 (12.3%)	3 (6.7%)	12 (10.2%)
Anxiety disorders + Emotional disorders	22 (30.1%)	18 (40.0%)	40 (33.9%)
Emotional disorders	24 (32.9%)	13 (28.9%)	37 (31.4%)
Without a psychiatric disorder	18 (24.7%)	11 (24.4%)	29 (24.5%)
Total	73 (100%)	45 (100%)	118 (100%)

ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

Επιπολασμός διαταραχής ελλειμματικής προσοχής και υπερκινητικότητας σε άτομα με εξάρτηση από ψυχοδραστικές ουσίες

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ΠΕΡΙΛΗΨΗ

Η διαταραχή ελλειμματικής προσοχής – υπερκινητικότητας (ΔΕΠΥ) αποτελεί τη συχνότερη νευροαναπτυξιακή διαταραχή της παιδικής ηλικίας, η οποία στην πλειονότητα των περιπτώσεων επιμένει στην ενήλικη ζωή, προκαλώντας σημαντική λειτουργική επιβάρυνση. Η ΔΕΠΥ αποτελεί σημαντικό παράγοντα κινδύνου για την έναρξη χρήσης και ανάπτυξη εξάρτησης από ψυχοδραστικές ουσίες. Οι διαταραχές ελέγχου των παρορμήσεων, οι αγχώδεις και συναισθηματικές διαταραχές, καθώς και η κατάχρηση ουσιών, αποτελούν τις πιο συχνές συννοσηρές καταστάσεις. Στόχος της παρούσας έρευνας είναι η μελέτη του επιπολασμού της ΔΕΠΥ σε ενήλικους χρήστες ψυχοδραστικών ουσιών, οι οποίοι παρακολουθούσαν θεραπευτικό πρόγραμμα σε ειδική μονάδα για ψυχοδραστικές ουσίες. Η έρευνα αφορά την εξέταση 118 χρηστών ψυχοδραστικών ουσιών οι οποίοι ελέγχθηκαν με τρία διαγνωστικά εργαλεία: α) την ενότητα 12 της ημιδομημένης συνέντευξης SCAN 2.0 με την οποία εκτιμάται αν οι χρήστες πληρούν τα κριτήρια της εξάρτησης από ψυχοδραστικές ουσίες β) τη δομημένη κλινική συνέντευξη CIS-R η οποία διερευνά την παρουσία στοιχείων ψυχοπαθολογίας των «συνήθων ψυχικών διαταραχών» και γ) την κλίμακα WURS η οποία διερευνά αναδρομικά για συμπτώματα ΔΕΠΥ έως την ηλικία των 7 ετών. Ο επιπολασμός ΔΕΠΥ στο δείγμα ατόμων με διαταραχές από χρήση ψυχοδραστικών ουσιών βρέθηκε στο 38,14 % των χρηστών, ενώ αναλύσεις έγιναν και για τον επιπολασμό ανά ηλικιακή ομάδα, όπως και για τη συννοσηρότητα με τις συνήθεις ψυχιατρικές διαταραχές, η οποία βρέθηκε αυξημένη, ανεξάρτητα από την παρουσία ΔΕΠΥ. Οι πιο συχνές συννοσηρότητες ήταν οι διαταραχές χρήσης άλλων ψυχοδραστικών ουσιών, οι αγχώδεις και οι καταθλιπτικές διαταραχές. Ο μικρός αριθμός συμμετεχόντων, η αποκλειστική χρήση από τους συμμετέχοντες μιας και μοναδικής ουσίας, και η υπηρεσία στην οποία έλαβε χώρα η μελέτη περιορίζουν τη γενίκευση των αποτελεσμάτων της.

ΛΕΞΕΙΣ ΕΥΡΕΤΗΡΙΟΥ: ΔΕΠΥ, χρήση ψυχοδραστικών ουσιών, κλίμακα WURS, επιπολασμός, συννοσηρότητα.

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