

The Relationship Between Harming Behavior and Substance Use Profile, and Attention Deficit Hyperactivity Disorder Symptoms in Antisocial Personality Disorder

Onur Durmaz¹

¹Balikesir State Hospital, Department of Psychiatry, Balikesir - Turkey

ABSTRACT

The relationship between harming behavior and substance use profile, and attention deficit hyperactivity disorder symptoms in antisocial personality disorder

Objective: The aim of this study was to investigate the relationship between substance use and harming behavior profile, and attention deficit hyperactivity disorder (ADHD) symptoms in young adult male population diagnosed with antisocial personality disorder (ASPD).

Method: The study enrolled 119 ASPD subjects who reported substance use history. All participants were administered sociodemographic data and clinical information form, Addiction Profile Index (API), and Adult ADD/ADHD DSM IV- Based Diagnostic Screening and Rating Scale (Adult ADHD Scale).

Results: The diagnosis subscale of API and hyperactivity/impulsivity subscale of Adult ADHD Scale scores were significantly higher in subjects with a history of suicide attempt. All subscales of Adult ADHD scale and all API subscales other than motivation subscale scores were significantly higher in forensic cases. In pairwise comparison, attention deficit, hyperactivity/impulsivity and total scores of Adult ADHD scale were significantly higher in moderate and high level addiction groups than low level addiction group. There was a significant correlation between all subscales of Adult ADHD scale and API except motivation subscale.

Conclusion: Our study suggests a considerable relationship between substance use profile and harming behavior, and ADHD symptoms in people with ASPD.

Keywords: Antisocial personality, attention deficit hyperactivity, harming behaviour, substance use

ÖZET

Antisozyal kişilik bozukluğunda zarar verici davranış örüntülerinin ve madde kullanım profilinin dikkat eksikliği hiperaktivite bozukluğu belirtileri ile ilişkisi

Amaç: Bu çalışma ile antisozyal kişilik bozukluğu (ASKB) tanısı almış genç erişkin erkek popülasyonda madde kullanımı ve zarar verici davranış profili ile dikkat eksikliği hiperaktivite bozukluğu (DEHB) belirtileri arasındaki ilişkinin araştırılması amaçlanmıştır.

Yöntem: Çalışmaya madde kullanım öyküsü tarifleyen 119 ASKB olgusu alındı. Olgulara sosyodemografik veriler ve klinik bilgi formu, Bağımlılık Profil İndeksi (BAPİ), Erişkin Dikkat Eksikliği ve Hiperaktivite Ölçeği (EDHÖ) uygulandı.

Bulgular: İntihar girişimi olan ASKB tanılı bireylerde, BAPİ tanısı alt ölçeği ve EDHÖ aşırı hareketlilik/dürtüsellik alt ölçeği daha yüksek saptandı. Adli olaya karışanlarda motivasyon alt ölçeği hariç tüm BAPİ ve EDHÖ skorları daha yüksek saptandı. Bağımlılık şiddetine göre grupları ikili karşılaştırmalarında EDHÖ dikkat eksikliği, aşırı hareketlilik/dürtüsellik ve toplam puanı ortalamaları orta ve yüksek bağımlılık şiddeti olanlarda düşük bağımlılık şiddeti olanlara göre anlamlı düzeyde yüksek saptandı. Motivasyon alt skoru hariç tüm BAPİ skorları ile EDHÖ skorları arasında pozitif korelasyon tespit edildi.

Sonuç: Çalışmamız, ASKB olan bireylerde madde kullanımı ve zarar verici davranış profilinin DEHB bulguları ile yakın ilişkisi olduğunu desteklemektedir.

Anahtar kelimeler: Antisozyal kişilik, dikkat eksikliği hiperaktivite, zarar verici davranış, madde kullanımı



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Address reprint requests to / Yazışma adresi:
Onur Durmaz,
Balikesir State Hospital, Department of
Psychiatry, Turgut Solak Hizmet Binası, 10170
Balikesir, Turkey

Phone / Telefon: +90-266-239-6000

E-mail address / Elektronik posta adresi:
drodurmaz@gmail.com

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INTRODUCTION

Antisocial personality disorder (ASPD) is characterized by intolerance to authority, violation of social rules, violation and neglect of others' rights, impulsivity and various behavior problems. The life-long occurrence rate of antisocial personality disorder in the general population is reported as 2-3% (1,2). Antisocial personality disorder is three times more common in males than females, and it has been also reported to be up to 5-7 times (3-5). One of the most common co-morbidities in ASPD cases, which can threaten the social order and easily interfere with various criminal offenses is psychoactive substance use disorders (PSUD). The incidence of ASPD in patients with psychoactive substance use has been reported between 18% and 40% (6). Studies have shown that psychoactive substance use is 13 times more frequent in individuals with ASPD, PSUD is the most commorbidity, and ASPD is associated with a significant increase in substance use and behavioral problems in patients with severe mental illnesses (7). Antisocial personality disorder presents common symptoms with other psychiatric disorders such as impulsivity, anger control difficulties, impaired affect, destructive behavior-self or others, and substance abuse. These psychiatric disorders are mainly affective disorders and attention deficit and hyperactivity disorder (ADHD). Diagnostic awareness of ADHD in children as well as in adults has increased in recent years. ADHD, like personality disorders, presents with several symptoms since the childhood, has a rate of 5% in children and adolescents and 4% in adults, and frequently associated with co-morbidities (8,9). Although impulsivity, hyperactivity, and attention problems are the most significant symptoms of this disorder, a number of behaviors seen in ASPD, such as aggression, novelty seeking behavior, substance abuse, and harm to self or others can be seen in ADHD as well (10-12). Similar clinical findings may occasionally cause confusion in diagnosis. Besides, it is known that the rate of PSUD and ASPD diagnosis in the young adulthood period is common in cases with a childhood ADHD diagnosis (13,14). The frequent co-occurrence

of psychoactive substance use disorders in both ASPD and adult ADHD causes difficulty in the diagnosis and management of these disorders. In particular, the fact that impulsivity which is a typical symptom of ASPD is also one of the fundamental symptoms of ADHD, is important in terms of substance use disorders (15). However, substance use has been reported to start earlier in ASPD patients with ADHD (16). The aim of this study was to investigate the relationship between substance abuse and harmful behavior profile and ADHD symptoms in young adult male population who have ASPD diagnosis and substance use.

METHOD

Among the patients who were admitted to the psychiatry outpatient clinic between June 2014 and January 2015, were diagnosed with ASPD according to the diagnostic criteria of DSM-IV-TR (The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision) and reported a history of substance abuse, 119 consecutive cases that met the inclusion criteria were included in the study. The inclusion criteria for the study were defined as: having an ASPD diagnosis according to the DSM-IV-TR diagnostic criteria, having reported psychoactive substance abuse, being able to read, and being at an adequate sociocultural level to complete the forms. Patients with active psychotic symptoms, who were under the influence of substance, who met the criteria for mood disorders, psychiatric or organic mental disorders which may cause impulsivity/behavior disorder other than ASPD, were not included in the study. Written informed consent was obtained from each individual participating in the study. The ethics committee approval has been obtained.

Measures

Sociodemographic Data and Clinical Information Form: The form has been prepared by the author to collect the sociodemographic characteristics and the clinically relevant data. Age, gender, marital status, occupation, and monthly

income information were included in the sociodemographic data. The number of psychiatric hospitalizations; past and current psychotropic drugs; presence, duration, number and pattern of self-mutilation (skin cutting, burning with cigarette, other); presence, duration, number and pattern of suicide attempt (drug intoxication, hanging, firearm wounds, throwing down, other), family history of mental diseases, history of criminal offense, nature of antisocial offenses (bodily injury, murder, extortion, theft, other); the number of convictions; past and current substance abuse; the types of substances were questioned in terms of clinical information. Sociodemographic data and all data in the clinical information form were questioned by the clinician during the clinical interview.

Following the completion of sociodemographic data and the clinical information form, self report scales of Addiction Profile Index (API) and Adult ADHD Scale were administered to the patients. In order for the patients to fill the scales alone, a suitable physical environment was supplied and sufficient time was allowed.

Addiction Profile Index (API): It is a measure developed by Ogel et al. (17) to assess various dimensions and the severity of addiction in adults, reliability and validity were studied by Ogel as well. The scale consists of 5-point Likert type 37 questions and 5 subscales. Subscales are listed as substance use characteristics, diagnostic criteria, effect on everyday life, craving, and motivation. Total score indicates severity of addiction. Scores below twelve points indicate low severity of addiction; 12-14 points indicate moderate severity of addiction; and scores above 14 points indicate high severity of addiction.

Adult ADD/ADHD DSM IV-Based Diagnostic Screening and Rating Scale (Adult ADHD Scale): A measure developed by Atilla Turgay in 1995 to measure the severity of attention deficit and hyperactivity symptoms in adults. It consists of 3 subsections containing items that can be scored 0-3. The subsections are Attention Deficit (9 items), Hyperactivity/Impulsivity (9 items) and

ADHD-related characteristics (30 items). Turkish validity and reliability study of the measure was conducted by Gunay et al. (18).

Statistical Analysis

Descriptive values with normal distribution were reported as mean and standard deviation values. In presenting the data, besides the percentages, independent t test and chi-square test were used to compare two independent groups. Statistical analysis of the data was performed using the SPSS 20.0 (SPSS Inc, Chicago, IL) software. For comparing the means of more than two independent groups, one-way analysis of variance (ANOVA test) was used for normally distributed groups and Kruskal-Wallis test was used for non-normal distributed groups. Tukey test was used for post hoc analysis of groups with homogeneous variance, and Tamhane's T2 test for comparison of non-homogeneously variances. A Pearson correlation analysis was used to determine the direction and strength of the relationship between the two variables.

RESULTS

All of the 119 subjects included into the study were male. The mean age of the patients was 20.92 ± 2.08 . Of the 119 patients, 88.2% (n=105) were single, and 11.8% (n=14) were married. Educational status of the sample was; 5% (n=6) literate, 84.9% (n=101) elementary school graduates, and 10.1% (n=12) high school graduates. Among the patients, 16.0% (n=19) were unemployed, 30.3% (n=36) were workers and 53.8% (n=64) were self-employed. Monthly income distributions were; 37.8% (n=45) 0-500 Turkish Lira (TL), 32.8% (n=39) 500-1000 TL, 18.5% (n=22) 1000-1500 TL, 5.9% (n=7) 1500-2000 TL, 2.5% (n=3) 2000-2500 TL, and 2.5% (n=3) over 2500 TL. A history of hospitalization for the treatment of substance abuse has been reported by 5% of the cases (n=6). The mean age at onset of substance use was 14.7 ± 2.53 . Twenty-nine patients (24.4%) had a history of attempted suicide. Self-injurious behavior was present

in 88.2% (n=105) of the patients and the onset age of self-injurious behavior was found to be 15.10 ± 2.76 . History of psychiatric treatment in first degree relatives was present in 22 cases (18.5%). Psychiatric treatment history revealed that quetiapine was the most commonly used psychotropic agent in 23.5% (n=28) of the cases. Buprenorphine treatment, which is one of the most preferred and most effective agents for the treatment of psychoactive substance use, was reported by 6 cases (5.1%).

There was no statistically significant difference between the groups with and without suicide attempt in terms of age, monthly income, and education level ($p > 0.05$), whereas there was significant difference in marital status ($p = 0.04$). No significant difference was found in the age of onset of substance use, the age of onset of self-injurious behavior, the number and the types of self-injurious behaviors between the groups ($p > 0.05$). There was no significant difference between the two groups in terms of forensic history ($p = 0.35$). The API diagnosis subscale and Adult ADHD Scale hyperactivity/impulsivity subscale scores were found to be higher in patients with a history of attempted suicide ($p = 0.04$, $p = 0.03$, respectively) (Table 1).

There was no statistically significant difference in terms of mean age, marital status, monthly income, and education level between the groups with and without a history of criminal offense ($p > 0.05$). The number of self-injurious behaviors, the age of onset of substance use, all Adult ADHD Scale scores, and all API scores—except for API motivation subscale scores—were higher in those with a history of criminal offense ($p < 0.05$), the age of onset of substance use was lower in those without a history of criminal offense ($p = 0.03$) (Table 2).

In the grouping according to the types of criminal offenses, the sample was divided into three groups; bodily injury group, theft/extortion group and illicit drugs group. There was no significant difference in the mean API and Adult ADHD Scale scores between the groups (ANOVA test, $p > 0.05$).

According to the addiction profile index scores, 54 (45.4%) of the cases had moderate severity of addiction, 28 (23.5%) had moderate addiction severity, and 37 (31.1%) had high addiction severity. In the comparison of three groups determined according to API substance addiction severity in terms of Adult ADHD Scale subscores and total scores, mean scores

Table 1: Comparison of groups with and without a history of attempted suicide in terms of clinical characteristics and psychometric evaluations

	History of Attempted Suicide (n=29)		No History of Attempted Suicide (n=90)		χ^2	t	p
	Mean	SD	Mean	SD			
Criminal offense	22 (75.9%)		60 (66.7%)		0.86		0.350*
Age of onset of self-injurious behavior	15.0	3.1	15.2	2.6		-0.33	0.740
Number of self-injurious behavior	3.6	2.8	2.8	2.8		1.36	0.170
Age of onset of substance use	14.5	2.7	14.7	2.4		-0.29	0.770
API Subscale scores							
Diagnosis	16.4	4.2	13.8	6.5		2.07	0.040
Motivation	6.7	4.3	6.9	3.8		-0.28	0.770
Substance use characteristics	3.7	1.6	3.2	1.9		1.23	0.210
Effects on life	8.4	1.5	10.7	1.1		1.68	0.090
Craving	11.2	3.6	10.2	5.7		0.80	0.420
API Total Score	12.5	2.8	11.3	4.3		1.46	0.140
Adult ADHD Scale Subscale Scores							
Attention deficit	16.8	6.9	15.0	8.1		1.09	0.270
Hyperactivity/impulsivity	15.9	5.9	12.8	6.9		2.15	0.030
ADD/ADHD	62.7	16.7	53.5	23.6		1.94	0.055
Adult ADHD Scale Total Score	95.5	26.4	81.4	36.9		1.90	0.060

API: Addiction Profile Index, Adult ADHD Scale: Adult ADD/ADHD DSM IV- Based Diagnostic Screening and Rating Scale, ADD: Attention Deficit Disorder, ADHD: Attention Deficit Hyperactivity Disorder, SD: Standard deviation, †Independent T test, *Chi-square test

of attention deficit, hyperactivity/impulsivity, ADD/ADHD and Adult ADHD Scale total scores were found to be significantly different between the groups ($p < 0.001$) (Table 3). The post-hoc analysis result revealed that the difference was between low and moderate severity of addiction; and low and high severity of addiction groups ($p < 0.001$).

In the correlation analysis between the API scores and the Adult ADHD Scale scores, there was a moderate and high positive correlation between all the Adult ADHD Scale scores and the API scores ($r = 0.5-0.7$, $p < 0.001$) except for the motivation subscore.

DISCUSSION

The data obtained in our study support the presence of ADHD symptoms in individuals with ASPD. It has been reported that in patients diagnosed with antisocial personality disorder, childhood ADHD has been diagnosed more frequently than in the normal population (19). Although childhood ADHD diagnosis rate of the study group is unknown because of our study's cross-sectional nature and limited data on psychiatric history, our study indicates that ADHD symptoms may persist in adulthood despite the possible

Table 2: Comparison of groups with and without a history of criminal offense in terms of clinical characteristics and psychometric evaluations

	History of Criminal Offense (n=82)		No Criminal Offense (n=37)		t	p
	Mean	SD	Mean	SD		
Age of onset of self-injurious behavior	15.0	2.6	15.5	2.9	-0.89	0.370
Number of self-injurious behavior	3.5	3.1	1.8	1.2	3.19	0.002
Age of onset of substance use	14.3	2.5	12.2	6.5	2.12	0.030
API Subscale scores						
Diagnosis	15.4	5.6	13.8	6.5	2.74	0.007
Motivation	6.6	3.9	7.4	3.9	-0.92	0.360
Substance use characteristics	3.6	1.8	2.6	1.8	2.86	0.005
Effects on life	29.1	9.2	20.6	10.3	4.49	<0.001
Craving	11.5	5	8.2	5.4	3.15	0.002
API Total Score	12.4	3.6	9.9	3.9	3.35	0.001
Adult ADHD Scale Subscale Scores						
Attention deficit	16.4	7.6	13.4	7.9	1.98	0.040
Hyperactivity/impulsivity	14.5	6.5	11.4	6.9	2.40	0.010
ADD/ADHD	59.5	20.9	47.3	23.8	2.81	0.006
Adult ADHD Scale Total Score	90.5	32.7	72.1	37.3	2.71	0.008

API: Addiction Profile Index, Adult ADHD Scale: Adult ADD/ADHD DSM IV- Based Diagnostic Screening and Rating Scale, ADD: Attention Deficit Disorder, ADHD: Attention Deficit Hyperactivity Disorder, SD: Standard deviation

Table 3: Comparison of addiction severity groups in terms of age and Adult ADHD Scale Scores

	Low Severity of Addiction (n=54)		Moderate Severity of Addiction (n=28)		High Severity of Addiction (n=37)		χ^2	F	p
	Mean	SD	Mean	SD	Mean	SD			
Age	21.0	2.2	20.6	0.9	20.8	2.5		0.30	0.740*
Adult ADHD Scale Subscale Scores									
Attention Deficit	10.7	7.6	19.0	5.6	19.7	5.4	33.82		<0.001**‡
Hyperactivity/ Impulsivity	9.7	6.3	16.7	4.9	16.8	5.7		21.60	<0.001**‡
ADD/ADHD	41.5	22.0	66.8	14.4	68.1	14.9	39.26		<0.001**‡
Adult ADHD Scale Total Score	61.9	34.0	102.6	22.7	104.8	22.5	39.36		<0.001**‡

ADD: Attention Deficit Disorder, ADHD: Attention Deficit Hyperactivity Disorder, Adult ADHD Scale: Adult ADD/ADHD DSM IV- Based Diagnostic Screening and Rating Scale, SD: Standard deviation, *ANOVA test, **Kruskal-Wallis test, ‡: Low Severity of Addiction - Moderate Severity of Addiction $p < 0.001$, Low Severity of Addiction - High Severity of Addiction $p < 0.001$, Moderate Severity of Addiction - High Severity of Addiction $p > 0.05$.

change in the diagnosis. A similar study showed 65% ADHD co-morbidity in individuals with ASPD and that ADHD symptoms were predictive of self-injurious behavior in ASPD-diagnosed individuals (20). Another finding is the presence of the relationship between psychoactive substance use profile and ADHD symptoms. It is reported that in adults with psychoactive substance use disorder, ADHD diagnosis association is about 21-23% and undiagnosed ADHD association is about 12% (21). In addition, there are findings indicating that in patients with PSUD and ADHD co-morbidities, the rate of an additional psychiatric comorbidity including ASPD is about 75%, whereas this rate is about 37% in PSUD patients without ADHD (22,23). Besides, in several studies it has been reported that alcohol and substance use is associated with impulsivity, and impulsivity is one of the most fundamental symptoms of ADHD and addiction (21,24,25). In the evaluation of ADHD symptoms in our study, it was observed that the severity of impulsivity was associated with the severity of addiction. It was observed that addiction severity was also higher in individuals with high impulsivity scores. These data support the judgment that impulsivity affects substance use profiles in individuals with ASPD, such as in individuals with ADHD and psychoactive substance dependence. The results of our study suggest that attention deficit and total ADHD symptom severity are also positively related to addiction severity in addition to impulsivity. All these data indicate that ADHD symptoms may be an important factor in determining substance use profile and substance addiction severity in individuals with ASPD. ADHD, however, can often be an unrecognized diagnosis in adults. It has also been reported that 75% of patients with ADHD may have a co-morbid diagnosis and 12-27% of these patients have ASPD as co-morbid diagnosis (18,26). The fact that the presence and severity of ADHD symptoms rather than the diagnostic dimension is assessed in our study is important in terms of evaluating the clinical effects of this disorder which is also reported in the literature with a high rate of co-morbidity. However, a positive correlation between ADHD symptom scores and

addiction profile scores suggests that these two clinical patterns are closely related in individuals with ASPD. Other studies also support that there is a relationship between severity of addiction and the presence of ADHD in patients with PSUD (27). In the formation of this relationship, dysfunctions in the reward pathways that play a role in the physiopathology of both disorders including cortico-talamo-striatal circuits, dopaminergic and noradrenergic systems take place (28). The presence of psychoactive substance use in some of the individuals with ADHD stemming from self medicating and the novelty-seeking behavior, besides, the frequent presence of impulsivity, behavioral problems and novelty seeking behaviors in individuals with PSUD suggests that there may be a bilateral relationship between these two clinical conditions (28,29). Another finding in our study is that the hyperactivity/impulsivity and addiction diagnosis scores of the individuals with a history of attempted suicide are higher than the ones without suicide attempts. There are studies in the literature that suggest that the presence of ADHD is a predictor of aggression and suicidal behavior in individuals with substance use (30). In the light of this data, our study supports that suicidal behavior in individuals with ASPD may be related to ADHD symptoms and substance addiction.

As is known, one of the most important factors in individuals diagnosed with ASPD is the criminal offenses. In the study, it was determined that the substance use treatment motivation scores of the ASPD patients with a history of criminal offense were lower, whereas the scores of all other addiction profiles and the ADHD scale scores were higher than those of the ones without criminal history. This data suggests that in individuals diagnosed with ASPD and having ADHD symptoms treatment motivation for substance use is low, substance use is more severe, and behavioral problems in the form of a criminal act are significantly higher.

The limitations of our study include the lack of a structured assessment regarding ADHD diagnosis, the relatively small number of the sample, the lack of a control group, and the cross-sectional design of the study.

In conclusion, antisocial personality disorder is a clinical condition which has important effects in social life and has difficulties in both diagnosis and therapeutic aspects. Substance abuse is also an increasing problem that is frequently observed in individuals with ASPD and negatively affects the social order. ADHD, about which there has been an increasing awareness in recent years, is closely related to ASPD and PSUD. Our study supports the judgment that substance use profile in individuals with ASPD is closely related to ADHD symptoms and that factors such as involvement in criminal offenses and suicidal behavior in these individuals are related to severity of substance use, severity of ADHD symptoms, and low treatment motivation. In conclusion, the screening of ADHD symptoms is considered to be supportive in terms of clinical evaluation and treatment in individuals diagnosed with ASPD and having substance use. It is believed that future studies

involving larger samples with diagnostically structured assessments are important for a better understanding of ASPD and related disorders and for improving diagnostic accuracy.

Contribution Categories	Name of Author
Development of study idea	O.D.
Methodological design of the study	O.D.
Data acquisition and process	O.D.
Data analysis and interpretation	O.D.
Literature review	O.D.
Manuscript writing	O.D.
Manuscript review and revision	O.D.

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