

Comparison of substance users under judicial supervision with controls in terms of attention deficit hyperactivity disorder and emotion regulation difficulties

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SUMMARY

Objective: Substance abuse and addiction are reported to be approximately 2 times more common in individuals diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) compared to the general population. Adults with ADHD have been stated to have difficulties in emotion regulation as well as core symptoms of the disease. In this study, it was aimed to evaluate individuals who applied to a university hospital psychiatry clinic probation clinic in terms of attention deficit hyperactivity disorder and emotion regulation difficulties. The hypothesis of the study is that individuals who apply to the outpatient clinic will have higher ADHD symptoms and emotion regulation difficulties than healthy controls.

Method: The research was conducted between 18.06.22-30.10.22. 135 male patients diagnosed with substance use disorder and 141 healthy volunteers without any psychiatric disease were included in the study. Adult ADHD self-report scale (ASRS), Difficulty in Emotion Regulation Scale Short Form (DERS-16), and sociodemographic data form were administered to the participants.

Results: The probation group's ASRS total score, attention deficit and hyperactivity/impulsivity subscale scores were found to be statistically significantly higher than the control group ($p=0.004$, $p=0.005$, $p=0.007$, respectively). Also DERS-16 impulse and nonacceptance subscale scores of the probation group were statistically significantly higher than the control group ($p=0.001$, $p=0.015$, respectively).

Discussion: ADHD and accompanying emotion regulation difficulties may increase the risk of substance use in adults. Considering these clinical features in individuals applying to the probation outpatient clinic may make therapeutic interventions more effective.

Key Words: Probation outpatient clinic, attention deficit hyperactivity disorder, emotion regulation difficulties, substance abuse

INTRODUCTION

Substance-related and addiction disorders are increasingly significant public health problems in Turkey and across the world (1, 2). Probation practices (PP) are used to deal with drug use and related crimes in various countries worldwide. Before Turkey, PP was implemented in the United States and Europe (3, 4). PP was initiated in Turkey in 2005. Article 191 of the Turkish Penal Code No. 5237 defines the procedures for treating individuals sentenced to probation for offences related to

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“purchasing, accepting, or possessing drugs or stimulant substances for personal use, or using drugs or stimulant substances.” Individuals referred to probation are required to visit a healthcare facility within 5 days following the instructions of the probation office. These individuals must visit the institution three times with a two-week interval between visits. During each visit, urine analysis for substance detection is conducted, and a psychiatric evaluation is carried out. If the test results are positive or the interviews confirm substance use, the probation is extended, and three more visits with a

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two-week interval are required. Based on clinical evaluations and repeated toxicological analyses, if it is determined that the individual is still using substances, they are referred to an addiction treatment center (5). It has been reported that PP has yielded effective results in treating individuals with substance use disorders in society (6).

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that begins in childhood, can persist into adulthood, and is characterized by varying degrees of attention deficit, hyperactivity, and impulsivity (7). Epidemiological studies have shown that ADHD occurs in approximately 5% of children and adolescents and 2.5% of adults (8). It has been reported that some or all of the ADHD symptoms can persist in adulthood in about 50% of the cases (9). Untreated individuals with ADHD in adulthood can exhibit risky behaviors such as alcohol and substance abuse, self-injury, propensity for crime, and involvement in traffic accidents (10). Maladaptive behaviors in childhood (such as adjustment problems, impulsive behaviors, academic underachievement) can potentially lead to criminal behavior as individuals grow older (11). Individuals with ADHD and alcohol or substance dependence may engage in illegal activities to obtain alcohol or substances, thereby increasing their propensity for criminal behavior (12).

Adult ADHD manifests with a more heterogeneous clinical presentation and causes impaired functioning compared to its typical symptoms in childhood. It has been reported that most adults with ADHD have at least one psychiatric comorbidity, including anxiety and mood disorders, substance use disorders, and personality disorders (13). Substance use disorder, particularly alcohol and/or nicotine, cannabis, and cocaine, has been suggested as the most common comorbid condition accompanying ADHD (14). It has been stated that substance abuse or addiction is approximately twice as prevalent in individuals with ADHD compared to the general population (15). Ozen et al. showed that about one-third of individuals with substance use disorders met the diagnostic criteria for ADHD (16). Patients with both ADHD and substance use disorder as comorbidities exhibit more complex and chronic substance use patterns

than those without ADHD comorbidity. Some of the factors associated with this condition include a higher prevalence of psychiatric comorbidity and multiple substance use, lower treatment adherence, and poorer prognosis (7, 17). Therefore, it is important to consider the possibility of ADHD comorbidity in the follow-up of patients with substance use disorders.

Emotion regulation can be defined as the ability of an individual to monitor, evaluate, control, and modify their emotional responses to achieve their goals. Parents play an important role in developing emotion regulation skills by showing appropriate sensitivity to their children's emotional reactions (18). Emotion regulation skills continue to develop from childhood to adolescence, from adolescence to adulthood, and with aging (19). Studies have evaluated difficulties in emotion regulation from similar perspectives and have made various definitions. Gratz and Roemer emphasized the necessity of flexibility in controlling behaviors toward desired goals. They stated that effective emotion regulation requires being aware of and understanding emotions, accepting emotions, controlling impulses and behaviors in line with the goal, and using appropriate strategies depending on the situation (20). Studies have shown that emotion regulation difficulties are associated with numerous psychiatric disorders such as ADHD, alcohol and substance use disorders, post-traumatic stress disorder, anxiety and mood disorders, and borderline personality disorder (21). It has been stated that adults with ADHD experience difficulties in emotion regulation as much as the core symptoms of the disorder, which disrupts their peer and social relationships and increases risky behaviors (22).

This study aimed to evaluate individuals with substance use disorder who were referred to the probation polyclinic of a university hospital, in terms of their clinical and socio-demographic characteristics, ADHD symptoms, and difficulties in emotion regulation. The study's hypothesis is as follows: Individuals with substance use disorder have higher ADHD symptoms and difficulties in emotion regulation compared to healthy controls. Our goal is to test this hypothesis and contribute to the literature in this regard.

METHODS

Study Sample

This study was conducted in the psychiatry clinic of a university hospital from June 18, 2022, to October 30, 2022. Approval was obtained from the University Clinical Research Ethics Committee (2022/27 - June 17, 2022) for conducting the study. The research included patients with substance use disorder referred to the probation clinic and healthy controls without a history of mental illness. Orum et al. found a difference of 15 in the ASRS mean scores of patients with substance use disorder and healthy controls (17). Based on this study, it was estimated that there would be a 5-point difference in the ASRS mean scores of probation and control groups, and a power analysis based on these data, with $\alpha = 0.05$ and power $(1-\beta) = 0.80$, showed that at least 51 subjects were required in each group to obtain a 5-point difference in the ASRS mean scores of the groups. The inclusion criteria for the study were as follows: agreeing to participate in the study, being between the ages of 18-65 years, being male, having a diagnosis of substance use disorder, and being literate. Since most individuals referring to the probation clinic were male, only male patients were included in the study. The exclusion criteria for the study were as follows: incomplete filling out of forms and scales. The control group was composed of healthcare workers who did not have a history of mental illness or psychiatric drug use and were matched to the probation group in terms of age and gender. A total of 151 patients with substance use disorder in the medical records of the probation clinic were collected for the study. However, 16 of them did not complete the necessary forms and scales for evaluation and were therefore not included in the study. Accordingly, a total of 135 patients were included in the study to form the probation group. To compare the data between the groups, 141 healthy individuals were included in the study. Structured psychiatric interviews for diagnosis were not conducted with those in the groups. Written informed consent was obtained from all participants. Then they were administered the Adult ADHD Self-Report Scale (ASRS), the Difficulties in Emotion Regulation Scale-16 item version (DERS-16), and a sociodemographic data form.

Psychiatric Assessment Scales

Adult ADHD Self-Report Scale (ASRS): The ASRS is a self-report scale developed by Ustun et al. in collaboration with the World Health Organization for screening ADHD in adults (23). It consists of two subscales, Attention Deficit and Hyperactivity/Impulsivity, each comprising 9 items. The items assess the frequency of each symptom occurring in the past 6 months. As the scale score increases, the severity of psychopathology also increases. The Turkish validity and reliability study of the scale was conducted by Doğan et al. (Cronbach's alpha = 0.88) (24).

Difficulties in Emotion Regulation Scale-16 item version (DERS-16): The DERS is a 36-item self-report scale developed by Gratz and Roemer to assess various dimensions of difficulties in emotion regulation (20). The 16-item short form of the scale was developed by Bjureberg et al. (25). It consists of five subscales: Non-acceptance, Clarity, Impulse, Strategies, and Goals. As the scale score increases, the severity of difficulties in emotion regulation increases. The validity and reliability study of the scale was conducted by Yiğit and Kuzey (Cronbach's alpha = 0.92) (26).

Socio-demographic Data Form: The authors prepared this form and includes questions about the participants' socio-demographics and clinical characteristics such as education level, age, marital status, duration, frequency, and type of substance use.

Statistical Analysis

SPSS Statistics version 22.0 was used for conducting statistical analysis in this study. Qualitative data were expressed as numbers and percentages. The suitability of the quantitative data in terms of normal distribution was evaluated with the Kolmogorov-Smirnov test. Data that did not show normal distribution were expressed as median (min-max), and data with normal distribution were expressed as mean \pm standard deviation. Qualitative and quantitative data were compared between probation and control groups. This evaluation was made using the Chi-square test for qualitative data and the Mann Whitney-U test for quan-

titative data. Correlation analysis between ASRS and DERS-16 scores was performed using Spearman's Ordered Correlation Test. A value of $p < 0.005$ was considered statistically significant.

RESULTS

Clinical and Sociodemographic Data

A total of 135 patients with substance use disorder referred to the probation outpatient polyclinic of the university hospital were included in the probation group, and 141 healthy individuals were included in the control group. The mean age of those in the probation and control groups was 28 ± 6.37 and 26 ± 8.12 years, respectively. Both groups were similar to each other in terms of age. In addition, 123 (91.1%) of those in the probation group and 54 (38.3%) of those in the control group were smokers; and 88 (65.2%) of those in the probation group and 39 (27.7%) of those in the control group were alcohol uses. The number of participants who reported smoking and alcohol use was significantly higher in the probation group than in the control group ($p < 0.001$ for both). Table 1 presents the

groups' clinical and socio-demographic characteristics.

In the probation group, the age of first substance use experience was 19 (10-47) years, and the duration of substance use was 5 (1-26) years. The majority of them (59 individuals, 43.7%) had their first substance use experience in the age range of 16-20 years, and they most commonly used cannabis (63.7%), followed by methamphetamine (51.9%). Table 2 and Figure 1 present the substance use-related clinical characteristics of patients in the probation group.

Participants' Scale Scores

Patients in the probation group had statistically significantly higher ASRS total and subscales (attention deficit, hyperactivity/impulsivity) scores than individuals in control ($p = 0.005$, $p = 0.007$, $p = 0.004$, respectively). In addition patients in the probation group had statistically significantly higher DERS-16 impulse and nonacceptance subscales scores than individuals in the control group ($p = 0.001$, $p = 0.015$, respectively). Although patients in the

Table 1: Comparison of the groups in terms of clinical and sociodemographic characteristics

	Probation Mean-Sd n (%)	Control	p
Age	28-6.37	26-8.12	0.115
Marital status			0.760
Married	55 (40.7)	61 (42.6)	
Single	80 (59.3)	80 (57.4)	
Education level			<0.001
High school or lower	116 (85.9)	21 (14.9)	
University	19 (14.1)	120 (85.1)	
Failed year			<0.001
Yes	60 (44.4)	26 (18.4)	
No	75 (55.6)	115 (81.6)	
Employment			0.525
Yes	76 (56.3)	74 (52.5)	
No	59 (43.7)	67 (47.5)	
Physical illness			0.245
Yes	15 (11.1)	10 (7.1)	
No	120 (88.9)	131 (92.9)	
Cigarette			<0.001
Yes	123 (91.1)	54 (38.3)	
No	12 (8.9)	87 (61.7)	
Alcohol			<0.001
Yes	47 (34.8)	102 (72.3)	
No	88 (65.2)	39 (27.7)	
Total	135 (100)	141 (100)	

Sd: Standard deviation. Chi-square test was used for the analysis of categorical data, and Mann Whitney U test was used for the analysis of numerical data. Bold font indicates statistical significance. $p < 0.005$

Table 2: Descriptive statistical analyzes in the probation group

	Median (Min-Max) n(%)
Substance use duration	5 (1-26)
Substance first experienced age	19 (10-47)
Previous addiction treatment history	
Yes	50 (37.0)
No	85 (63.0)
Frequency of substance use	
Every day	34 (25.2)
Several times a week	31 (23.0)
Several times a month	20 (14.8)
Every few months	50 (37.0)
Cannabis	
Yes	86 (63.7)
No	49 (36.3)
Synthetic cannabinoid	
Yes	18 (13.3)
No	117 (86.7)
Heroin	
Yes	7 (5.2)
No	128 (94.8)
Methamphetamine	
Yes	70 (51.9)
No	65 (48.1)
Ecstasy	
Yes	20 (14.8)
No	115 (85.2)
Cocaine	
Yes	11 (8.1)
No	124 (91.9)
Benzodiazepine	
Yes	12 (8.9)
No	123 (91.1)
Biperiden	
Yes	5 (3.7)
No	130 (96.3)
Pregabalin	
Yes	44 (32.6)
No	91 (67.4)
Other	
Yes	3 (2.2)
No	132 (97.8)
Total	135 (100)

probation group had higher DERS-16 total scores than individuals in the control group, this difference was not statistically significant ($p=0.097$). Table 3 compares the groups' scale scores.

Evaluation of the Correlation between ASRS and DERS-16 Scores

There was a positive correlation between the

Table 3: Comparison of the groups in terms of scale scores

	Probation Median (Min-Max)	Control	p
Clarity	4 (2-10)	4 (2-10)	0.074
Goals	7 (3-15)	8 (3-15)	0.419
Impulse	6 (3-15)	5 (3-13)	0.001
Strategies	10 (5-25)	9 (5-25)	0.064
Nonacceptance	6 (3-15)	6 (3-15)	0.015
DERS-16total	36 (16-79)	32 (16-76)	0.097
Attention deficit	13 (1-34)	10 (1-30)	0.005
Hyperactivity/Impulsivity	14 (1-35)	11 (1-30)	0.007
ASRS total	26 (2-69)	20 (2-57)	0.004

DERS-16: Difficulties in Emotion Regulation Scale-16 item version, ASRS: Adult ADHD Self-Report Scale. Mann Whitney U test was used for the analysis of numerical data.

Bold font indicates statistical significance. $p<0.005$

groups' total and subscale scores for both scales ($p<0.001$ for all analyses). There was a high level of correlation between the groups' ASRS and DERS-16 total scores ($p<0.001$, $r=0.731$). Table 4 presents the correlation between the groups' ASRS and DERS-16 scores.

DISCUSSION

As one of the most important results of this study, patients in the probation group had significantly higher ASRS total and subscale scores than individuals in the control group. Orum et al. evaluated cognitive errors and ADHD symptoms in individuals diagnosed with substance use disorder in Turkey. They reported that the patient group had a significantly higher ASRS total score than the control group (17). Another study reported that individuals diagnosed with substance use disorder referred to the probation outpatient polyclinic showed higher ADHD symptoms than controls (27). ADHD is associated with an increased risk of developing substance use disorder later in life. Studies have reported high rates of comorbidity between ADHD and substance use disorder. A meta-analysis of 29 studies reported that 23.1% of individuals diagnosed with substance use disorder have ADHD (28). Studies have also shown that in patients with substance use disorder, ADHD is associated with an earlier onset of substance use, increased likelihood of hospitalization, increased risk of suicide attempts, multiple substance use, low treatment adherence, and lower abstinence (13).

Various theories have been proposed regarding the relationship between ADHD and substance use disorder, but the underlying mechanism has not been fully understood yet. It has been suggested that impulsivity, executive function impairments,

Table 4: Evaluation of the correlation between participants' ASRS and DERS-16 scores

Spearman's rho		CLAR	GOA	IMPUL	STRA	NONAC	DERS-16	ATT DE	HA/IMP	ASRS
CLAR	r	1	0.530	0.507	0.640	0.596	0.721	0.565	0.433	0.532
	p		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	n	276	276	276	276	276	276	276	276	276
GOA	r	0.530	1	0.631	0.761	0.603	0.853	0.650	0.542	0.632
	p	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	n	276	276	276	276	276	276	276	276	276
IMPUL	r	0.507	0.631	1	0.750	0.617	0.822	0.557	0.577	0.607
	p	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
	n	276	276	276	276	276	276	276	276	276
STRA	r	0.640	0.761	0.750	1	0.759	0.947	0.670	0.619	0.684
	p	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001
	n	276	276	276	276	276	276	276	276	276
NONAC	r	0.596	0.603	0.617	0.759	1	0.824	0.555	0.523	0.580
	p	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001
	n	276	276	276	276	276	276	276	276	276
DERS-16	r	0.721	0.853	0.822	0.947	0.824	1	0.719	0.654	0.731
	p	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001
	n	276	276	276	276	276	276	276	276	276
ATT DE	r	0.565	0.650	0.557	0.670	0.555	0.719	1	0.759	0.929
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001
	n	276	276	276	276	276	276	276	276	276
HA/IMP	r	0.433	0.542	0.577	0.619	0.523	0.654	0.759	1	0.941
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001
	n	276	276	276	276	276	276	276	276	276
ASRS	r	0.532	0.632	0.607	0.684	0.580	0.731	0.929	0.941	1
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	n	276	276	276	276	276	276	276	276	276

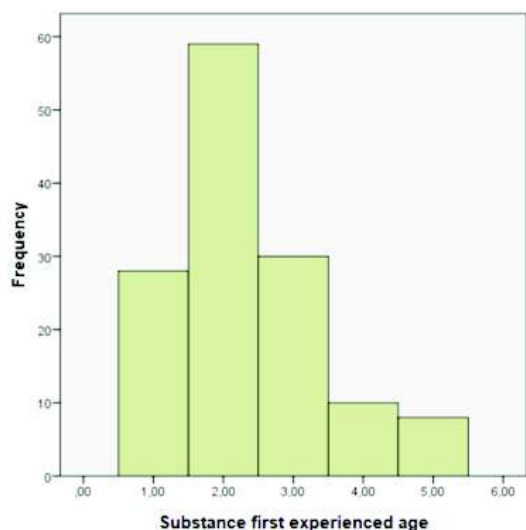
CLAR: Clarity, GOA: Goals, IMPUL: Impulse, NONAC: Nonacceptance, DERS -16: Difficulties in Emotion Regulation Scale -16 item version, ATT DE: Attention Deficit, HA/IMP: Hyperactivity/Impulsivity, ASRS: Adult ADHD-Self Report Scale, p<0.050

and weakened judgment in ADHD contribute to the risk of developing substance use disorder. The central role of dopamine transmission in both ADHD and substance use disorder models has attracted researchers' attention, and it has been reported that individuals with ADHD have higher dopamine transporter density compared to those without ADHD. This may result in rapid clearance and lower synaptic dopamine levels. Substance use increases synaptic dopamine concentrations, primarily in the nucleus accumbens, the brain's reward center (29, 30). Stimulant drugs manage ADHD symptoms by increasing synaptic dopamine levels in the striatum, including the nucleus accumbens (31). Individuals with ADHD may use substances to increase synaptic dopamine concentrations for self-medication. A recent study has reported that individuals with ADHD who use cannabis mentioned acute beneficial effects of cannabis on many symptoms related to ADHD, improving most of the side effects of medication, such as anxiety and irritability (32).

As commonly reported by previous studies, the characteristics associated with ADHD in childhood are not equally sensitive in adulthood. The overlapping symptomatology between ADHD and anxiety disorders, mood disorders, or substance use disorders

presents various challenges to clinicians in the diagnosis and treatment of ADHD. Studies have found that difficulties in emotion regulation are frequently observed in adults with ADHD, but these symptoms can be misdiagnosed as mood disorders (13). Similarly, substance use can mask ADHD symptoms (32). Clinicians are more familiar with mood and anxiety disorders in adults. All of these factors can lead to overlooking the diagnosis of ADHD in adults and delays in treatment. Multimodal treatment is necessary for individuals with ADHD and substance use disorders. Clinicians should be cautious about the risk of drug abuse in treating these patients (13).

The higher ASRS scores in the probation group compared to the control group in our study suggest that there may be more individuals with ADHD in the probation group than in the control group. Due to the design of our study, structured psychiatric interviews were not conducted with the participants, has prevented us from making a definitive conclusion about this suggestion. Participants were evaluated using scales, and the focus was on the level of symptoms. The fact that some participants in the probation group were accompanied by law enforcement and the need for evaluation in a short time were among the reasons we chose this



(1: 10-15 years; 2: 16-20 years; 3: 21-25 years; 4: 26-30 years; 5: \geq 31 years)

Figure 1: Substance first experienced age range of participants in the probation group

method. Therefore, this is a limitation of our study. The results of our study support previous studies in the literature. Our findings show the importance of considering when approaching the individual in probation polyclinics practice that this individual may have ADHD-based substance use. Clinical features such as the early onset of substance use, multiple substance use, low adherence to treatment, and more complex substance use patterns, including high psychiatric comorbidity, are remarkable in these individuals. The treatment and rehabilitation services considering these clinical features, will contribute to more effective outcomes for both individual and public health.

As another important result of our study, patients in the probation group had significantly higher DERS-16 impulse and non-acceptance subscales scores than individuals in the control group. Additionally, there was a high level of correlation between the groups' DERS-16 and ASRS total scores. Various studies have evaluated emotion regulation and emotion regulation difficulties in patients with substance use disorders (33, 34). The ability to effectively regulate emotions is associated with resilience to psychopathology. It has been reported that individuals with substance use disorders show less skill in regulating negative moods compared to healthy controls, suggesting a potential link to the development and maintenance of addiction behavior (34). Dingle et al. found that adults receiving substance use disorder treatment

had more difficulties in emotion regulation than healthy ones (35). A meta-analysis by Stellam et al., including 22 studies, reported that individuals with substance use disorders had higher scores on all DERS subscales, especially strategies and impulse, compared to controls (34). A study compared individuals with cocaine addiction and healthy controls in terms of difficulties in emotion regulation and reported that addicted individuals had significantly higher difficulties in understanding, managing, and controlling emotions during the first week of treatment. Their difficulties in impulse control persisted at the end of treatment. The study also emphasized that there could be a high risk of relapse in the early period after cocaine addiction treatment due to exposure to stressors (36). Another study reported that having emotional distress after addiction treatment is the number one trigger for relapse (35).

To achieve success in addiction treatment, therapeutic interventions should be provided to help addictive individuals develop appropriate emotion regulation strategies when exposed to potential stressors (33). Improvements in emotion regulation difficulties play a mediating role in maintaining abstinence (37). A modified and abbreviated 6-session group program for substance users called "the Tobacco, Alcohol and Drug Dependence Treatment Program (SAMBA)", is implemented in probation polyclinics in Turkey. Ögel et al. evaluated the effectiveness of SAMBA programs implemented in probation polyclinics and reported that it increases treatment adherence in substance-using individuals (38). In addition to the SAMBA, additional therapeutic approaches aimed at improving emotion regulation skills in substance users can contribute to developing more comprehensive and effective treatment programs. They can help achieve more successful results in probation polyclinics. Our study found that patients in the probation group had significantly higher DERS-16 impulse and non-acceptance subscale scores than individuals in the control group. Therefore, patients in the probation group had weaker skills in accepting emotional reactions and more difficulties in impulse control during negative emotional experiences. Our results are consistent with those in the literature.

As another significant result of our study, there was a positive correlation between the participants' ASRS and DERS-16 total and subscales scores. Studies have indicated that adults with ADHD experience difficulties in emotion regulation as much as the disorder's core symptoms, causing them to have significant problems in their social lives (22). However, it is impossible to solely attribute the difficulties in emotion regulation to ADHD based on our results. In the study, diagnostic psychiatric interviews were not conducted with the participants. Therefore, our result may also be attributed to other comorbid psychiatric disorders accompanying substance use disorder. Emotion regulation difficulties have been associated with numerous psychiatric disorders such as ADHD, alcohol and substance use disorders, mood and anxiety disorders, borderline personality disorder, and eating disorders (21).

In the present study, the mean age of patients in the probation group was 28 ± 6.37 , and the age of their first substance use was 19 (10-47) years. In addition, 43.7% of them had their first experience with substances between the ages of 16-20 years. Although substance use rates in Turkey are lower compared to Western countries, there has been a significant increase in substance use frequency in recent years, and the age of initial substance use has significantly decreased in Turkey (39). The prevalence and severity of substance use under the age of 25 years have been reported to be higher than in those over 25 years old (1). Bulut et al. examined the sociodemographic characteristics of individuals who received treatment in the alcohol and substance use disorder unit of a university hospital in Gaziantep, Turkey and emphasized the most common substance abuse as heroin, followed by cannabis. In their study, the age of first substance use among substance-using individuals was reported as 22.44 ± 7.15 years, and the age of first alcohol and substance use ranged from 11 to 20 (40). Sehliskoğlu et al. also examined the clinical characteristics of individuals who received treatment in a probation polyclinic in Adiyaman, Turkey and reported the mean age of the participants as 27.21 ± 6.77 years and the most common age range for first substance use as 16-20 years, with rare instances of substance use initiation after the age of 30. In their study, the most commonly used sub-

stance was reported to be cannabis (94.9%), followed by ecstasy (52.6%) (41). The results of our study are consistent with those in the literature. In our study, the most commonly used substance was cannabis (63.7%), followed by methamphetamine (51.9%). Based on our results, the type of substance used by substance users may vary over time and regionally. Our results, parallel to previous research results, indicate that adolescents constitute a significant risk group for substance use disorders. Therefore, it would be beneficial to add necessary lessons to the curriculum before high school to increase awareness about substance abuse and addiction at an early age.

In our study, patients in the probation group had significantly higher cigarette and alcohol use than individuals in the control group. This result can be explained by the presence of similar mechanisms in the etiopathogenesis of addiction (42). Based on our results, the participants in the probation group may carry a higher risk for cigarette and alcohol addiction than those in the control group. Due to the lack of diagnostic psychiatric interviews with the participants, further interpretations could not be made in this regard.

Our study has some strengths. Firstly, it is the first study in Turkey to evaluate the clinical characteristics of individuals referred to probation polyclinic, along with ADHD and difficulties in emotion regulation. In the literature, there are mainly retrospective studies about the sociodemographic and some clinical characteristics of individuals referring to probation polyclinics. Data loss is a significant problem in these types of studies. The prospective design of our study is important in minimizing data loss.

Our study also has some limitations. First, our study lacked diagnostic psychiatric interviews with the participants and focused on their symptoms using scales. Therefore, their scale scores may have been influenced by comorbid mental disorders. Second, although the content and design of the study were explained to the participants, those in the probation group may not have provided objective answers to the questions on the scale and sociodemographic data form as they were brought

to the clinic by law enforcement. Third, only male participants were included in the study. Therefore, a comparison between genders could not be made. Finally, the study's cross-sectional design and the small sample size are also among its limitations.

This study found significantly higher ASRS total and subscales scores and DERS-16 impulse and nonacceptance subscales scores for patients in the probation group compared to individuals in the control group. Our results are significant in bringing to mind clinical features such as substance use based on ADHD, a more complex substance use pattern, more emotion regulation difficulties, and a tendency to impulsive and risky behaviors in evaluating the individual who applied to the probation outpatient clinic. Therefore, providing them with proper treatment and rehabilitation services considering these clinical characteristics will contribute to achieving more effective outcomes for both individual and public health. In this regard, it seems necessary to expand PP and develop relevant fun-

damental health and safety policies. There is a need for multivariate and better-structured studies with larger sample sizes to evaluate the mechanisms of ADHD and difficulties in emotion regulation in individuals diagnosed with substance use disorder who are referred to probation polyclinics.

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