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Why Do Adolescents Relapse? A Multicenter, Cross-sectional Study

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ABSTRACT

Background: Adolescents use drugs once, then use them regularly, then start and stop many times. In addiction treatment, relapse is a major barrier to recovery. Relapse is more common among adolescents and is a major problem. Thus, this study aimed to identify the factors impacting the duration of relapse in adolescents.

Methods: This is a multicenter, cross-sectional study. A total of 157 adolescents who applied to 4 different child and adolescent addiction treatment centers between January 2020 and March 2020 were included in the study. The "Addiction Profile Survey Adolescent Form" was administered to the participants face to face. According to the duration of relapse determined with this form, the cases were analyzed separately as before and after 1 month.

Results: The sample consisted of 112 (71.34%) males and 45 (28.66%) females, with a mean age of 17.1 ± 0.8 years. Cannabis use (P=.010), late treatment initiation (P=.003), less psychosocial (P=.001), outpatient (P=.006), and inpatient (P=.006) treatment history were significantly associated with relapse before 1 month. Cannabis users were approximately 4 times more likely to relapse in less than a month, while ecstasy users were approximately 4 times more likely to relapse over a month (OR=0.26, CI=0.1-0.69), (OR=4.16, CI=1.26-13.78). In the multiple logistic regression analysis performed to determine the factors predicting the duration of relapse, it was found that not attending school (P=.018) and receiving less inpatient treatment (P=.019) predicted relapse occurred within 1 month.

Conclusion: This study is considered remarkable in terms of demonstrating the necessity of early interventions and post-treatment care services. Currently, there are very few studies in the literature that investigate the factors that contribute to relapse in addicted adolescents. According to our literature review, no study examined factors affecting relapse duration in adolescents.

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INTRODUCTION

Substance use disorder or addiction is an important public health problem that negatively affects the physical and mental health of adolescents. It is generally accepted that addiction is a brain disease that continues after recovery and relapse.[1] In addiction treatment, relapse is a major barrier to recovery. Prevention of relapse should be one of the most important goals of treatment.[2] Relapse is more common in adolescents and is an important problem.[3] Adolescents use substances once then use regularly, and then they start and quit consecutively.

Relapse refers to regular use in a certain period following treatment, re-use at the level before starting treatment, or reuse at a level that meets the diagnostic criteria and is usually observed in the early stages of the recovery process.[4] In a study involving 59 adolescents, it was shown that relapse was observed in half of the patients in the first 3 months after treatment and in two-thirds in the first 6 months.[5] In studies including adult samples, relapse was reported between 72 and 84%.[2,6-8] Previous studies support the idea that relapse occurs between the first month and 1 year after treatment.[9-12] Kabisa et al showed in their study that the duration of relapse varied between 2 weeks and 3 months and could be observed in 90% of the participants.[4] For cigarette, alcohol, and heroin users, the duration is shortened from 4 days to 32 days.[9,11,12]

Factors that cause relapse can be analyzed as pre-treatment, during-treatment, and post-treatment causes. The pre-treatment factors include sociodemographics (age, gender, socioeconomic status, etc.), individual characteristics (psychopathologies, personality traits,

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motivation, coping skills, etc.), environmental factors (substance use in family and peers, support systems, family relations, etc.), as well as the substance used (the amount, the duration, etc.). Factors associated with the treatment process include family involvement in the treatment process, duration of treatment, and variety of individual and group-based therapeutic approaches. There is evidence that practices such as 12-step treatment programs, support groups (family therapy, peer support groups, and extracurricular activities), and continuous care programs are effective in preventing relapse after treatment.[13-16]

The causes of relapse can also be categorized into environmental, interpersonal, and personal factors. Environmental factors include accessibility, poverty, unemployment, the person who is influential in initiating addiction, the environment and reasons, and re-exposure. The presence of a peer circle with substance use as well as a lack of skills related to managing substance-related risks is viewed as a potential risk factor for relapse. Conditions such as emotional dysregulation, high stress levels, and being depressed lead to the use of the wrong coping mechanisms and cause relapse. Another factor causing relapse is the physical symptoms that can be observed during the withdrawal period.[4,7,11]

Research on post-treatment relapses in adolescents with alcohol and substance abuse is limited. Generally, studies with adolescents have shown that the factors leading to relapse are similar to those in adults. However, it is considered that the factors causing relapse may be more complex since adolescents are in the process of cognitive, social, and emotional development; incomplete brain maturation; the high incidence of psychopathologies in this period; the involvement of school and family in the process; legal situations; and low treatment motivations.[11,17]

We think that the factors affecting relapse differ according to the stages of recovery. There are studies with adult samples supporting this situation.[18] We also believe that the maintenance of post-treatment care services delays the duration of relapse. For this reason, this study aimed to identify the factors affecting the duration of relapse among adolescents. The number of studies investigating the factors associated with relapse in addicted adolescents is quite low. According to our literature review, no study examined factors affecting relapse duration in adolescents. The determination of these factors is thought to contribute to treatment and follow-up programs.

MAIN POINTS

- In addiction treatment, relapse is a major barrier to recovery.
- Relapse is more common in adolescents and is an important problem.
- It was concluded that cannabis use, late initiation of treatment, and not attending school were risk factors for relapse before 1 month.
- Relapse duration has been shown to be longer than 1 month in who gives outpatient, inpatient, and outpatient psychosocial treatment and in ecstasy users.
- This study is considered remarkable in terms of demonstrating the necessity of early interventions and post-treatment care services.

MATERIAL AND METHODS

The data for this study were obtained from the general data of the "Addiction Profile Research." The Addiction Profile Research is a project conducted with the support of the Republic of Turkey Ministry of Health and the Turkish Green Crescent Society, examining the general profile, substance use characteristics, social risks, and needs of addicted patients in Turkey. The research was designed as a multicenter, cross-sectional study. Informed consent was obtained from all participants and their parents according to the Declaration of Helsinki.

Information on Child and Adolescent Substance Abuse Treatment Centers

Patients under the age of 18 with alcohol and substance abuse are treated in child and adolescent substance abuse treatment centers. Rarely, in some cases, follow-up continues for several years after the age of 18. Some centers provide only outpatient treatment, while others provide additional inpatient treatment. Outpatient and inpatient treatment is provided in all 4 centers included in this study. The centers are staffed by child and adolescent psychiatrists, psychologists, social workers, and nurses. Generally, the treatment services provided by these centers are similar. There are ongoing efforts to standardize the follow-up services provided by the centers. The average duration of the first 2 weeks after hospitalization is considered the "detoxification" period. The resumption of substance use, the need for re-treatment, and the deterioration of functionality after discharge are considered "relapses."

- Outpatient treatment: It includes practices administered by a physician in an outpatient clinic, where psychiatric interviews are conducted, medication is prescribed, and urine toxicological analyses are evaluated.
- Inpatient treatment: It is used when outpatient treatment is inadequate, family support is low, and withdrawal symptoms are severe. There are several applications covered by inpatient treatment, including detoxication, medication support, group counseling, and occupational therapy.
- Outpatient psychosocial treatment: The program consists of psychological support, relapse prevention, and life regulation activities that are administered by psychologists, nurses, and social workers following outpatient or inpatient treatment.

Participants

This study is a multicenter, cross-sectional study. The sample of the study consisted of 157 adolescents who applied to 4 different child-adolescent addiction treatment centers between January 2020 and March 2020, which were selected by paying attention to the regional distribution. Of these adolescents, 77 (49%) received outpatient treatment and 80 (51%) received inpatient treatment. Inclusion criteria were volunteering to participate in the study, being between the ages of 14 and 18, applying to the center due to substance use, and being diagnosed with substance use disorder. Exclusion criteria were having an active psychiatric disorder that would prevent participation in the study, mental retardation, and being in the detoxification period.

Measures

Participants were administered the "Adolescent Addiction Profile Research Questionnaire" prepared by the researchers. The Addiction Profile Survey Adolescent Form consists of a total of 50 questions in 13 different categories. In these sections, information about the institution, general information, housing, social support, employment, occupation, economic and legal status, history of addiction, use of treatment services, motivation for treatment, medical status, and living arrangements are questioned with sub-questions, respectively.

Procedure

Before the questionnaire administration, the patient was examined by a child and adolescent mental health and disease specialist working at the center. The diagnosis of substance use disorder was based on the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).[19] The Addiction Profile Survey Adolescent Form was administered through face-to-face interviews by psychologists or social workers working in centers. Two sessions of training were given to the practitioners about the general model of the study and the application of the questionnaire form before the study (12th National Alcohol Substance Addiction Congress-2018 in Turkey).

Relapse time was determined by the question in the "Addiction Profile Survey Adolescent Form" that assessed the time of relapse after the last treatment. Based on the information obtained in the literature regarding the duration of relapse,[4,9,11,12] the cases were analyzed separately as before and after 1 month.

Due to the fact that the study was conducted at different institutions at different times, it was completed between January 2020 and March 2020. Ethics committee approval dated October 21, 2019, and numbered 2019/67 was obtained from Hasan Kalyoncu University. The study was also approved by the Turkish Ministry of Health.

Statistical Analysis

Data were recorded in the Statistical Package for Social Sciences Statistics software, version 22.0 (IBM SPSS Corp.; Armonk, NY, USA). Shapiro–Wilk normality test was conducted for normality assumptions. In descriptive analyses, data on categorical variables were expressed as n and percentage (%). Considering the information obtained from the literature, the patients were divided into 2 groups: before and after 1 month in terms of relapse time. The chi-square test was used to compare categorical data. While giving the *P*-values obtained from the chi-square test results, Yates continuity correction, the Fisher's exact test, the Fisher–Freeman–Halton exact test, and the Pearson chi-square test were taken into consideration by considering the expected and minimum expected values. The chi-square type is indicated below the tables. In order to determine the factors affecting the duration of relapse, a model was established by considering the relevant literature.[4,9,11,12] Variables such as sex, housing, dropping out of school, school adaptation problems, having economic difficulties for basic needs, intravenous use, probation, age at onset of substance use, cannabis, heroin, ecstasy use, previous outpatient treatment, previous inpatient treatment, psychosocial support in outpatient treatment, free time during the day, agonist treatment, and the presence of addicted individuals in the family were included in the model. Reference values are indicated in brackets in the table. Multiple logistic regression analysis was applied to the created model with the enter method. Odds ratios (ORs) and 95% confidence intervals were calculated for each variable. In the study, 0.05 was accepted as the significance level.

RESULTS

A total of 157 adolescent substance users were included in the study. Approximately three-quarters of the sample was male, and the rates of outpatient and inpatient treatment were close. The majority of the sample is in the 16-18 age group (Table 1).

The effect of sociodemographic data such as gender ($P=.437$), housing status ($P=.320$), educational status ($P=.402$), living with mother and/or father ($P=1.000$), problems with educational life ($P=.115$), and economic status ($P=.197$) on the duration of relapse was not significant. Sociodemographic data examining the effect of relapse duration are given in detail in Table 2.

While 20 (74.07%) cannabis users relapsed before 1 month, 7 (25.93%) relapsed after 1 month (Table 3, $P=.010$). Relapse was observed before 1 month in 4 (23.52%) and after 1 month in 13 (76.48%) ecstasy users (Table 3, $P=.028$). Cannabis users were approximately 4 times more likely to relapse in less than a month, while ecstasy users were approximately 4 times more likely to relapse over a month (OR=0.26, CI=0.1-0.69) (OR=4.16, CI=1.26-13.78).

Table 1. Sociodemographic and Clinical Characteristics of the Sample (n = 157)

	n = 157	%
Sex		
Male	112	71.34
Female	45	28.66
Age		
15 years and under	5	3.19
16-18 years old	150	95.54
19 years old	2	1.27
Addiction treatment center (city)		
Diyarbakır	50	31.86
İzmir	46	29.30
İstanbul Erenköy	44	28
Konya	17	10.84
Treatment modality		
Outpatient	77	49.04
Inpatient	80	50.96
Number of previous inpatient hospitalizations		
No history of hospitalization	105	66.87
1-time hospitalization	29	18.47
2-time hospitalization and above	23	14.66

Table 2. Comparison of Relapse Duration According to Sociodemographic Characteristics

	Relapse Before 1 Month		Relapse After 1 Month		*p*
	n = 54	%	n = 52	%	
Sex					
Male	42	53.84	36	46.16	.437[a]
Female	12	42.85	16	57.15	
Housing status					
Suitable	47	48.95	49	51.05	.320[b]
Not suitable	7	70	3	30	
Educational status					
Ongoing	8	40	12	60	.402[a]
Discontinued	46	53.48	40	46.52	
Living with mother and/or father					
Yes	44	51.16	42	48.84	1.000[a]
No	10	50	10	50	
Problem with education life					
Yes	40	57.14	30	42.86	.115[a]
No	14	38.88	22	61.12	
Economical situation					
Can meet basic needs	51	53.12	45	46.88	.197[b]
Unable to meet basic needs	3	30	7	70	

Chi-square test; [a]Yates continuity correction. [b]Fisher exact test.

Table 3. Comparison of Relapse Duration According to Substance Use Characteristics

	Relapse Before 1 Month		Relapse After 1 Month		*P*
	n = 54	%	n = 52	%	
Age of first substance use					
Under 15 years old	35	47.29	39	52.71	.352[a]
15-18 years	19	59.37	13	40.63	
Preferred substance					
Cannabis	20	74.07	7	25.93	**.010**[a*]
Ecstasy	4	23.52	13	76.48	**.028**[a*]
Heroin	15	50	15	50	1.000[a]
Methamphetamine	4	36.36	7	63.64	.482[a]
Probation history					
None at all	41	54.66	34	45.44	.465[c]
Experienced in the past	8	44.44	10	55.56	
Present at the time of the interview	5	38.46	8	61.54	
Intravenous substance use					
Yes	9	75	3	25	.143[a]
No	45	47.87	49	52.13	
Substance use history in parents					
Yes	17	60.71	11	39.29	.324[a]
No	37	47.43	41	52.57	

Chi-square test; [a]Yates continuity correction, [c]Pearson chi-square test, *p<.05.

Relapse was observed in 15 (50%) heroin users before 1 month and in 15 (50%) after 1 month (Table 3, *P* = 1.000). Relapse was observed before 1 month in 4 (36.36%) and after 1 month in 7 (63.64%) methamphetamine users (Table 3, *P* = .482).

When the relationship between treatment history and relapse time was analyzed, early relapse was observed in 48 (60%) and late relapse in 32 (40%) patients aged 16 years and older; early relapse was observed in 5 (21.73%) and late relapse in 18 (78.27%) patients aged 15 years and older (Table 4, *P* = .003). Relapse was observed before 1 month in 18 (72%) and after 1 month in 7 (28%) patients without a previous outpatient visit. Among patients with 1 previous outpatient admission, 13 (65%) had a relapse before 1 month, and 7 (35%) had a relapse after 1 month. Among patients with 2 or more previous outpatient visits, 23 (37.70%) had relapse before 1 month and 38 (62.30%) had relapse after 1 month (Table 4, *P* = .006). Early relapse was observed in 39 patients (62.90%) and late relapse in 23 patients (37.10%) who had no previous inpatient treatment. Early relapse was observed in 15 (34.09%) and late relapse in 29 (65.91%) patients who had received inpatient treatment once before (Table 4, *P* = .006). Early relapse was observed in 9 (25.72%) and late relapse in 26 (74.28%) patients who received outpatient psychosocial

Table 4. Comparison of Relapse Time According to Treatment Characteristics

	Relapse Before 1 Month		Relapse After 1 Month		*P*
	n = 54	%	n = 52	%	
Age at which the subject applied for the treatment					
Under 15 years old	5	21.73	18	78.27	**.003**[a]
Over 16 years old	48	60	32	40	
Number of previous outpatient treatments					
None	18	72	7	28	**.006**[c]
1 time	13	65	7	35	
2 times or more	23	37.70	38	62.30	
Number of previous inpatient treatments					
None	39	62.90	23	37.10	**.006**[a*]
1 time	15	34.09	29	65.91	
Outpatient psychosocial treatment					
Yes	9	25.72	26	74.28	**.002**[a*]
No	43	60.57	28	39.43	
Substitution therapy					
No	25	50	25	50	.608[d]
Have received	2	28.57	5	71.43	
Currently under substitution therapy	11	50	11	50	
Free time during the day					
Almost all-day	39	58.20	28	41.80	.078[a]
Rarely or none	15	38.46	24	61.54	

Chi-square test; [a]Yates continuity correction. [c]Pearson chi-square test. [d]Fisher-Freeman-Halton exact test.*p<.05.

Table 5. Multiple Logistic Regression Analysis of Factors Predicting Relapse Duration

	OR	95% CI OR	*P*
Sex (male)	0.208	0.020-2.123	.185
Housing (not suitable)	0.000	0.000-8.161	.999
Dropping out of school (yes)	0.021	0.001-0.517	**.018**
School adaptation problem (yes)	0.446	0.067-2.983	.405
Economic hardship for basic needs (yes)	4.528	0.284-72.165	.285
Intravenous use (yes)	0.121	0.008-1.739	.120
Probation (yes)	2.018	0.633-6.427	.235
Age of starting the substance (low)	0.868	0.134-5.641	.882
Cannabis (yes)	0.140	0.009-2.145	.158
Heroin (yes)	0.035	0.000-4.637	.178
Ecstasy (yes)	0.899	0.067-12.086	.936
Number of previous outpatient treatments (low)	1.243	0.246-6.290	.792
Number of previous inpatient treatments (low)	14.633	1.543-138.786	**.019**
Psychosocial support in outpatient treatment (none)	6.767	0.470-97.346	.160
Free time during the day (almost all-day)	0.638	0.357-1.139	.129
Agonist therapy (no)	5.022	0.451-55.909	.189
The addicted individual in the family (yes)	0.481	0.055-4.239	.510

OR, odds ratio; model *P*-value = .001.

treatment. 43 (60.57%) and 28 (39.43%) patients who did not receive outpatient psychosocial treatment had early and late relapse, respectively (Table 4, *P* = .002). Among those who had free time almost all day, 39 (58.20%) relapsed before 1 month and 28 (41.80%) after 1 month.

A multiple logistic regression analysis was conducted by establishing a model to determine the factors affecting whether relapse occurred before 1 month (−-2 log likelihood 53.787; *P* = .001). The Nagelkerke R^2 was 0.643; in other words, the model explained 64% of the variance. In the multiple logistic regression analysis conducted to determine the factors predicting relapse before and after 1 month, it was found that not attending school (OR = 0.021, CI = 0.001-0.517, *P* = .018) and receiving less inpatient treatment (OR = 14.633, CI = 1.543-138.786, *P* = .019) predicted relapse before 1 month (Table 5).

DISCUSSION

This study aimed to investigate the factors affecting the duration of relapse in addicted adolescents after treatment. At the end of the study, it was concluded that cannabis use, late initiation of treatment, and not attending school were risk factors for relapse before 1 month. Relapse duration has been shown to be longer than 1 month in outpatient, inpatient, and outpatient psychosocial treatment and in ecstasy users.

Cannabis is the most commonly used illicit psychoactive substance worldwide.[20] In a study conducted with 2 high school students in Turkey, it was reported that cannabis was the most frequently used substance after volatile substances, with a rate of 5.8%.[21] Such frequent use of cannabis can be attributed to the fact that it is old, easily accessible, and more accepted than other substances. In a study conducted in South Africa in which the risk factors causing relapse in young adult patients hospitalized in an addiction treatment center were examined, it was shown that acceptance and accessibility were significantly associated with relapse.[11] Cannabis is also a substance with "daily use." In a 2013 study investigating the 38-year substance use statistics of high school students, it was reported that the rate of daily use of cannabis among 12th graders was 6.5%.[22] Similarly, in a study investigating the prevalence of cannabis use among young people in Canada, it was shown that cannabis was used daily at a high rate.[23] In the addiction literature, cannabis is recognized as a gateway drug.[24,25] In a study investigating the frequency and causes of relapse in Mauritian-addicted men, it was reported that the most commonly used substance in patients with relapse was cannabis.[14] According to our study, earlier

relapse among cannabis users may be explained by the fact that cannabis is commonly preferred by young people, its accessibility, and its use regularly, as discussed previously.

Ecstasy, also known as MDMA (3,4-methylene deoxymethamphetamine) is an amphetamine derivative. Its effects are similar to both amphetamines and hallucinogens.[26] Because of this feature, its place in diagnostic classification systems varies.[19,27] There are many stimulants and hallucinogens, and there may be switching between substances during use. In our study, participants may have received a different stimulant instead of MDMA. This may have caused us to incorrectly overestimate the duration of the relapse of MDMA. A study evaluating long-term relapse in young people using ketamine, methamphetamine, and MDMA supports this hypothesis. In this study, 34% of ketamine users switched to MDMA or methamphetamine, and 15% of MDMA or methamphetamine users switched to ketamine. Methamphetamine and MMDA were not evaluated separately.[28]

Ecstasy is not a substance used daily like cannabis, and withdrawal symptoms are not severe and long-lasting.[26] This results in a lower frequency of use. Ecstasy is referred to in the literature as a "club drug" like gamma-hydroxybutyrate, ketamine, and Rohypnol (flunitrazepam).[29] It is typically preferred in environments such as parties for entertainment purposes. The fact that relapse was observed later with ecstasy in our study may be due to these properties of the substance.

In a cross-sectional study conducted with 221 addicted individuals, those with first substance experience before the age of 17 and after the age of 18 were divided into 2 groups. It has been reported that earlier age at first substance use is associated with more illicit substance use, intravenous use, and relapse. However, it has been reported that psychosocial problems (comorbidity, social relationships, work, school, etc.) are more prevalent in early substance users.[24] In a study including patients aged between 12 and 21 years, it was similarly shown that the risk of addiction increased as the age of alcohol and cannabis use decreased, and it was emphasized that adolescence is a risky period for substance use disorder.[30] In a 12-year follow-up study, it was shown that early alcohol use in adolescents was associated with an increased risk of addiction and poor outcomes.[31] In the literature, "early use" refers to substance use during adolescence. It is thought that the fact that there was no correlation between the age of substance initiation and the duration of relapse in this study is due to the fact that the sample consisted entirely of adolescents.

The common conclusion from studies examining the relationship between the age of substance use and prognosis is that prevention programs and early intervention programs are necessary.[30,32] In a recently published study, it was shown that most of the participants started using substances before the age of 18, and the average time between starting substance use and seeking treatment was 8 years.[33] There is a need for a holistic approach to treating alcohol and drug addiction that combines pharmacological treatments with psychosocial interventions both in outpatient settings and inpatient settings. Cognitive behavioral therapy, motivational interviewing, 12-step treatment, and family therapies are the methods used in adolescent addiction.[26] Given the chronic nature of addiction, early treatment approaches will be crucial. Consistent with this information, early relapse was less common in patients aged 15 years and younger at the age of first treatment compared to those aged 16 years and older. In a review investigating the effect of early interventions in adolescents with substance use, it was shown that early interventions were effective in reducing substance use and related behavioral problems.[34] In a large-sample study investigating the barriers to recovery that lead to relapse, it was concluded that delayed treatment initiation was associated with increased relapse rates.[35]

Alcohol and substance use disorder is a chronic disorder with remission and relapses. Hence, the number of treatments and the importance of outpatient psychosocial interventions come to the fore. In our study, it was demonstrated that relapse was seen earlier in those with a low number of previous outpatient or inpatient treatments and in those with a low number of outpatient psychosocial treatments. Adolescents may stop using substances for a short period after treatment. Long-term recovery is a process that involves lapses and relapses. For this reason, care should continue to sustain the gains in treatment.[36] In a review investigating the impact of continuing care in the treatment of substance use disorders in adolescents, it was concluded that the majority of adolescents treated for substance use do not complete treatment, thus there is a need for continuing care after treatment. It has been shown that treatment outcomes are good and fewer relapses are observed in centers where continuous care is provided.[37] In a study in which the relationship between resilience and low relapse risk in individuals with substance use was revealed, the cruciality of continuing treatment was emphasized.[38]

It is well documented that school attendance and the quality bond established with the school are protective against substance use.[39] Reports from child and adolescent rehabilitation centers have shown that school attendance rates and academic success are low and disciplinary problems are high.[40] It is evident that a significant portion of the sample did not attend school. Not attending school leads to a significant gap in the lives of adolescents. The school, which has functions such as social support and prevention of behavioral problems, has a great role in preventing substance use.[41] In a study examining the 12-year results of prevention programs in Iceland, it was shown that programs in which parents were monitored and adolescents participated in sports

activities were associated with a good prognosis, while leisure time was associated with a poor prognosis.[42] A study examining the relationship between leisure time activities and substance use among adolescents, including 1843 ninth and tenth graders, found that individual sports were associated with less substance use.[43] The fact that earlier relapses were observed in those who did not attend school and had free time during the day supports the literature.

The limitations of the study include the inability to examine the comorbid psychopathologies of the adolescents included in the study, the non-use of toxicological analyses, no power analysis, not detailing the use of multiple substances, categorization of "age," missing data on relapse status, and the inability to equalize the sex distribution of the participants. Further studies involving large samples and investigating the effects of more factors are needed.

Substance use disorder or addiction is an important public health problem that negatively affects the physical and mental health of adolescents. This study aimed to investigate the factors impacting the relapse time after treatment in adolescents with alcohol substance use disorder. At the end of the study, it was concluded that cannabis use, late initiation of treatment, and not attending school were risk factors for relapse before 1 month. Relapse duration has been shown to be longer than 1 month in who givoutpatient, inpatient and outpatient psychosocial treatment and in ecstasy users. This study is considered remarkable in terms of demonstrating the necessity of early interventions and post-treatment care services. Currently, there are very few studies in the literature that investigate the factors that contribute to relapse in addicted adolescents. However, according to our literature review, no study examined factors affecting relapse duration in adolescents.

Ethics Committee Approval: This study was approved by Ethics Committee of Hasan Kalyoncu University (Approval No: 67, Date: October 21, 2019).

Informed Consent: Verbal and written informed consent was obtained from all participants and their parents who agreed to take part in the study.

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