

ORIGINAL ARTICLE

Sociodemographic and Clinical Characteristics of Adolescents who Attempted Suicide and Differences in Clinical Characteristics Related to Tobacco, Alcohol, and Substance Use

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Main Points

- Those who presented to the emergency department due to a suicide attempt were most commonly female, and the most frequently used method was ingesting drugs or poison.
- Self-injurious behaviors and repeated suicide attempts were significantly higher in adolescents who used tobacco, alcohol, or substances.
- Among the psychiatric diagnoses of adolescents who attempted suicide, the most common were conduct disorder, major depressive disorder, and attention-deficit hyperactivity disorder.

Abstract

To assess the sociodemographic and clinical characteristics of adolescents who attempted suicide and the clinical differences in terms of different variables between cases with and without tobacco, alcohol, and substance use groups. The medical records of 237 adolescents referred from the pediatric emergency department to the child and adolescent psychiatry clinic for suicide attempts over the last 5 years were retrospectively reviewed. Clinical variables of adolescents with and without tobacco, alcohol, and substance use were compared. Of the participants, 82.7% were female, 29.1% were not attending formal education, and 32.5% had a history of tobacco, alcohol, and substance use. The most common suicide method was drug ingestion (87.3%), primarily psychiatric medication (42.8%). Impulsive attempts accounted for 55.3%. Family problems were the most common stressor (72.6%). Conduct disorder was the most common psychiatric diagnosis. In the tobacco, alcohol, and substance user group, being male ($p < .01$), having a father who smokes ($p = .05$) or consumes alcohol ($p < .01$), having self-injurious behavior ($p < .001$), having a history of recurrent suicide attempts ($p < .05$), having a psychiatric diagnosis ($p < .001$), and not being in the formal education system ($p = .01$) were more common than in non-tobacco, alcohol, and substance users. Tobacco, alcohol, and substance use in the family, a history of self-injurious behavior, and being outside the educational system increase suicide risk in vulnerable adolescents. This highlights the need for preventive interventions and psychoeducation to enhance problem-solving skills in response to stressors, given the impulsive nature of most suicide attempts. In addition, since the clinical characteristics of adolescents who admit to the emergency department with a suicide attempt are different from those with tobacco, alcohol, and substance use, treatments for the use of tobacco, alcohol, and substance should be planned during treatment and follow-up.

Keywords: Adolescent, alcohol, risk factors, self-injurious behavior, smoke, substance abuse, suicide

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Introduction

Suicide is defined as a deliberate act of ending one's own life (Nock & Kessler, 2006). Suicidal behavior is defined as suicide ideation, plans, attempts, and death by a specific action (Bertolote et al., 2009). In the literature, suicidal behavior is classified into three categories: suicide ideation related to engaging in behaviors to end one's life; suicide plan referring to the formulation of a specific method for death; and suicide attempt indicating potentially self-injurious behavior (SIB) with at least some intention to die (Nock & Kessler, 2006). Suicide ideation is common during adolescence, which is considered the period of greatest intensity of suicidal thoughts (Hawton et al., 2012).

In recent times, suicide has emerged as a significant global public health issue among young people. According to the World Health Organization's 2019 data, suicide is the fourth leading cause of death among 15 – 29-year-olds worldwide (World Health Organization, 2021). In the adolescent period, the prevalence of suicidal ideation is approximately 15 – 25%, and its severity ranges from passive thoughts to planned suicidal ideation and death (Brezo et al., 2007). Every year, more than 700,000 people die by suicide worldwide, with 77% of suicides occurring in low- and middle-income countries. In Türkiye, the completed suicide rate in both genders aged 15 – 19 is reported to be 2.63 per 100,000 (World Health Organization, 2021). The Turkish Statistical Institute's 2021 data show that the highest percentage of female suicides is in the 15 – 19 age group at 17.3% (Turkish Statistical Institute, 2022). When the distribution is examined by age group, it is observed that 9% of both male and female suicides occur in the 15 – 19 age range (Turkish Statistical Institute, 2019).

It is well known among mental health professionals that suicidal behavior tends to recur. Predictions regarding the risk of suicidal behavior recurrence vary from 10% in a 6-month follow-up to 42% in a 21-month follow-up, with a median recurrence rate of 5 – 15% per year (Bridge et al., 2006).

It is stated in the literature that adolescents experience significant changes during the adolescence period, acquire new skills, and tend to confront challenges that may trigger suicidal behaviors (Alves & Dell'Aglia, 2015). Numerous studies in the literature investigate the risk factors associated with suicide among adolescents. These risk factors include age, gender, ethnicity, socioeconomic status, living apart from parents, lack of social support, psychological factors, being a member of the lesbian, gay, bisexual, transgender and queer (LGBTQ+) community, being a refugee or immigrant, and substance use (Hawton et al., 2012; World Health Organization, 2021).

Furthermore, in recent years, numerous studies have reported links between smoking, alcohol, and substance use and suicidal behavior (Li et al., 2021; World Health Organization, 2021). It has been found that smokers have a higher risk of suicidal ideation, suicide attempts, and completed suicide (Boden et al., 2008).

The aim of this study is to determine the frequency of smoking, alcohol, and substance use habits, in addition to the risk factors that prepare for suicidal behavior, such as socio-demographic characteristics, clinical features of the adolescent, self-injurious behavior, psychiatric diagnoses, family factors, stressors, and

suicide methods, in adolescents. Furthermore, this study aims to contribute to the literature on the impact of tobacco, alcohol, and substance (TAS) use characteristics on certain socio-demographic and clinical variables among adolescents with suicide attempts.

Material and Methods

The study was approved by the Aydın Adnan Menderes University Medical Faculty Non-Interventional Ethics Committee (24.11.2022-2022/150). The archive files of 298 patients aged between 12 and 18 years who presented to the pediatric emergency department of Aydın Adnan Menderes University Hospital due to attempted suicide and were consulted at the child and adolescent psychiatry outpatient clinic between August 2017 and August 2022, and were retrospectively reviewed. Cases of non-suicidal medication ingestion/falls from heights, cases outside the determined age group, and cases with missing data were excluded from the study. The archive files of a total of 237 patients were included in the study.

The study retrospectively evaluated the sociodemographic characteristics of the patients, number of suicide attempts, method used for suicide attempt, substance used in case of drug/poison intake, triggering factors before the attempt, any medical illnesses, history of SIB, age of onset of SIB, psychiatric diagnoses according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013), psychiatric treatment history, TAS use, legal history, scores on the Screen for Child Anxiety Related Emotional Disorders and the Children's Depression Inventory, history of TAS use in parents, and history of suicide attempt in the family, as well as psychiatric diagnoses and treatment history of the parents.

Children's Depression Inventory

An adaptation of Kovacs' Children's Depression Inventory (CDI), which is a 27-item self-report measure of depressive symptoms for children aged 6 – 17, was used to assess the severity of depressive symptoms in this study (Kovacs, 1981). Each item in the CDI is scored on a scale of 0, 1, or 2, based on the severity of the symptom. The maximum possible score on the CDI is 54, with a cutoff score of 19 recommended for identifying clinically significant levels of depressive symptoms. The validity and reliability of the CDI have been established in Turkish by Öy (Öy, 1991).

The Screen for Child Anxiety Related Emotional Disorders

This is a 41-item self-report measure designed to screen for childhood anxiety disorders. Each item is scored 0, 1, or 2 based on the severity of the symptom. A score of 25 or higher is considered indicative of the presence of an anxiety disorder. The scale was developed by Birmaher et al. and its Turkish validity and reliability were established by Çakmakçı (Birmaher et al., 1997; Karaceylan Çakmakçı, 2004).

Statistical Analysis

The data were analyzed using SPSS (IBM Statistics for Windows, Version 22.0, Armonk, NY, USA) statistical software. The normality of the data was determined using the Kolmogorov – Smirnov test. Independent samples *t*-test was used to compare the scores of the Screen for Child Anxiety Related Emotional Disorders (SCARED), CDI, and SIB onset age between the groups with and

without TAS use. The chi-square test was used to compare categorical variables. A significance level of $p < .05$ was considered statistically significant.

Results

The mean age of the 237 adolescents who attempted suicide was 15.63 ± 1.55 years. When examining gender distribution, 196 (82.7%) were female and 41 (17.3%) were male. The sociodemographic characteristics of the cases are presented in Table 1

When the cases were examined according to their place of residence, 108 (45.6%) of them lived in the district, 82 (34.6%) in the city center, and 47 (19.8%) in the village. Except for one case (mild intellectual disability), all cases had normal intelligence. When all cases were examined according to the type of attempt, it was found that 207 (87.3%) cases attempted suicide by medication/poisoning, 12 (5.1%) cases by jumping from a height, 10 (4.2%) cases by cutting, four (4.2%) cases by hanging, three (1.3%) cases by inhalation, and one case by injecting medication. Of those who attempted suicide with medication, 65 (31%) used their own medication, and 145 (69%) used others' medications. Of those who attempted suicide with medication, 42.8% used psychiatric drugs, 39.6% used analgesics, 9.9% used antibiotics, and 31.9% used multiple drugs. In 131 (47.9%) cases, the attempts were impulsive. When psychiatric diagnoses were examined, conduct disorder (17.29%) was the most common (Figure 1).

The distribution of psychiatric medications used before suicide attempts is presented in Figure 2. Recurrent suicide attempts were present in 58 (24.5%) cases. Tobacco, alcohol, and substance use were identified in 77 (32.5%) cases. Familial problems were found in 72.6% of the cases when stressor factors were examined (Table 2). SIB was detected in 34.6% ($n = 82$) of the cases. A history of legal problems was reported in 34 (14.3%) cases. Among them, 21 (8.9%) were victims of sexual abuse (Table 2).

In the comparison between groups with and without TAS use, there was no statistically significant difference in age distribution ($p > .05$), while there were significant differences in gender, attending formal education, father's alcohol use, history of SIB, psychiatric diagnoses, and recurrent suicide attempt variables (Table 3). The mean scores of CDI were 24.25 ± 9.19 in the TAS use group and 21.16 ± 10.41 in the TAS non-use group. The mean scores of SCARED were 39.03 ± 14.85 in the TAS use group and 35.74 ± 13.77 in the TAS non-use group. There was no difference in the mean scores of SCARED and CDI between the TAS use and non-use groups ($p > .05$). The mean age of onset of SIB in the cases was 14.21 ± 1.67 , while it was 14.06 ± 1.73 in the TAS group and 14.43 ± 1.58 in the non-TAS group, and there was no significant difference in the mean age of onset between the groups ($p > .05$).

Discussion

In our study, we examined the sociodemographic characteristics and TAS usage patterns of adolescents who attempted suicide. Fifty-seven percent of the adolescents who attempted suicide were in the 16 – 18 age range, and 82.7% of them were girls. According to the Youth Risk Behavior Surveillance System, a large-scale survey conducted by the Centers for Disease Control and Prevention (CDC) in 2021, there has been an increase in suicide planning

Table 1.
Sociodemographic Characteristics of Cases with Suicide Attempt ($n = 237$)

Variables	<i>n</i>	%
Gender		
Female	196	82.7
Male	41	17.3
Age range		
12 – 15	102	43
16 – 18	135	57
Education		
Secondary school	35	14.8
High school	130	54.9
Open high school	12	5.1
Not going to school	57	24.1
Missing data	3	1.3
Formal education		
Yes	165	69.6
No	72	29.1
Missing data	3	1.3
Foster care		
Yes	30	12.7
No	207	87.3
Marital status of parents		
Married	142	59.9
Divorced/separated	78	32.9
One parent deceased	11	4.6
Missing data	6	2.5
Living with		
Family	194	81.9
Foster care	10	4.2
Relative/family elder	26	11
Only with step-parent	1	0.4
Partner	4	1.7
Missing data	2	0.8
Mother's education level		
Illiterate	21	8.9
Only literate	8	3.4
Primary school graduate	111	46.8
Secondary school graduate	25	10.5
High school graduate	36	15.2
University graduate	13	5.5
Missing data	23	9.4
Mother's employment status		
Working	88	37.1

(Continued)

Table 1.
Sociodemographic Characteristics of Cases with Suicide Attempt (n = 237) (Continued)

Variables	n	%
Not working	133	56.1
Missing data	16	6.8
Father's education level		
Illiterate	11	4.6
Only literate	6	2.5
Primary school graduate	107	45.1
Secondary school graduate	33	13.9
High school graduate	35	14.8
University graduate	19	8
Missing data	26	11
Father's employment status		
Working	187	78.9
Not working	34	14.3
Missing data	16	6.8
Family financial situation		
Income is less than expenses	143	60.3
Income is equal to expenses	66	27.8
Income is greater than expenses	24	10.1
Missing data	4	1.7

and attempts among young people since 2011. In 2021, 25% of girls reported making suicide plans, with 10% attempting suicide. The rates were found to be higher among the LGBTQ+ group (Centers for Disease Control and Prevention, 2021). This is consistent with previous research indicating that being female is a risk factor for suicide attempts (Silva et al., 2023).

When examining the education levels of the study sample, it was observed that 29.1% did not attend formal education, 12.7% had

a history of living in foster care, and 10.5% repeated a grade. In previous studies, high family conflict, weak family function, low school attachment, and school dropout have been found to be associated with suicide attempts (Tang et al., 2009). Additionally, it has been reported that childhood maltreatment increases the risk of suicide attempts rather than being under protective care (Palmer et al., 2021).

Of the cases in our study, 80.2% lived in a city or town. In studies conducted in our country, it has been reported that the majority of individuals who attempted suicide live in the city center (Sayar et al., 2004; Aşlıoğlu et al., 2009). This may be due to easier access to hospitals in urban areas, and the fact that suicide attempts in more remote areas are more likely to be referred to healthcare institutions outside of university hospitals. On the other hand, it is thought that living in urban areas, where there is more exposure to stressors, may increase the risk of suicide attempts and be associated with less social and family support.

According to the 2021 Population and Housing Census data of the Turkish Statistical Institute, the percentage of males with middle school or higher education in Aydın province was determined to be 67.41%, while it was 56.7% for females (Turkish Statistical Institute, 2022). In our study, it was observed that the rates of middle school or higher education for mothers (31.2%) and fathers (36.7%) were lower than the provincial average. Sixty percent of the families reported that their income was lower than their expenses. A recent meta-analysis study indicated that the relationship between parental education level and suicide risk in youth varies according to cultural, geographical, and economic factors, and that low parental education level increases the risk of suicide in youth in high-income countries, but this is not observed in middle and low-income countries (Chen et al., 2022).

The most common method of suicide attempt among the cases in our study was ingestion of medication/poison. Among adolescents, self-poisoning is the most common method of suicide (Lee et al., 2019; Poyraz Fındık et al., 2022). It was observed that adolescents who attempted suicide most commonly used medications

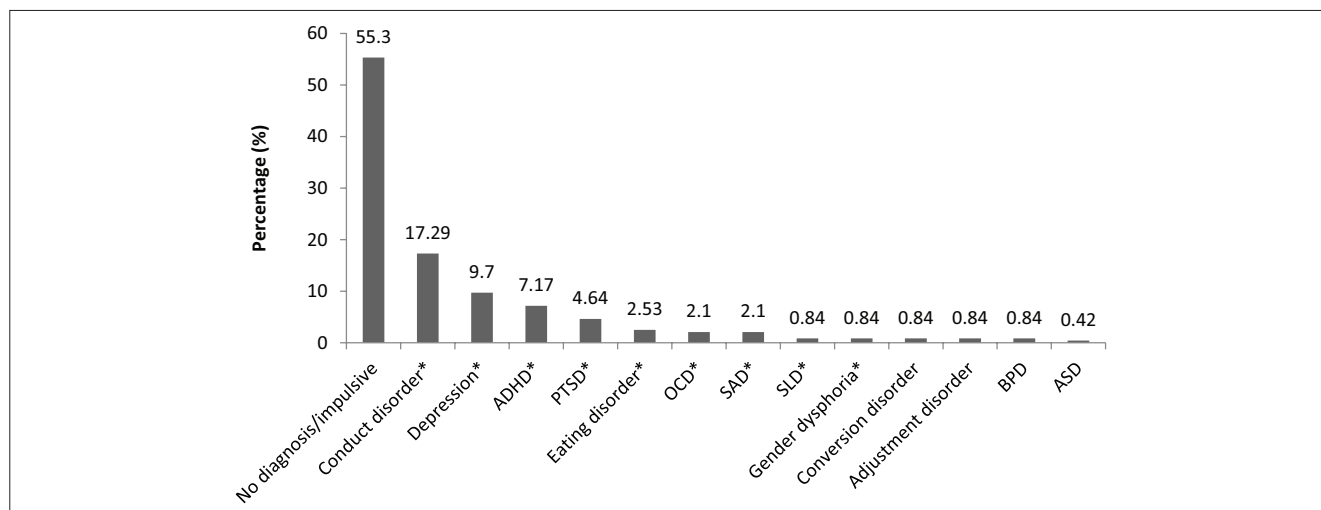


Figure 1. The Distribution of Psychiatric Diagnoses Among Cases with Suicide Attempts. *Thirteen Cases Have Comorbid Diagnosis. ADHD = attention deficit hyperactivity disorder; ASD = acute stress disorder; BPB = brief psychotic disorder; OCD = obsessive – compulsive disorder; PTSD = post-traumatic stress disorder; SAD = social anxiety disorder; SLD = specific learning disorder.

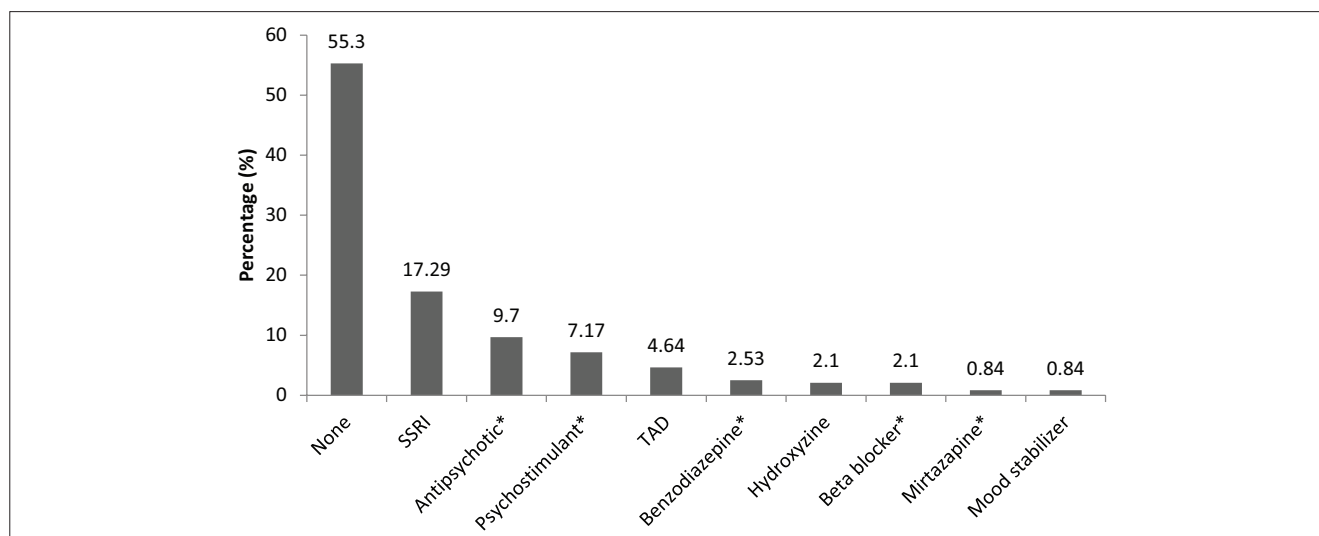


Figure 2. The Distribution of Psychiatric Medication Use Among Suicide Attempters. *Forty-five Cases Have Multiple Drug Use. SSRI = selective serotonin reuptake inhibitor; TAD = tricyclic antidepressant.

belonging to others in the household. When the literature was reviewed, it was reported that toxic substances taken for the purpose of suicide are easily accessible medications in the medicine cabinet at home (Garrido Romero et al., 2000; Sayar et al., 2004). Additionally, attempting suicide with psychiatric medications was significant among all medication groups. We believe that, in particular, the use of psychiatric medication therapy among adolescents should be carried out under parental supervision and with restricted access to the medication, as limiting access to medication may reduce the risk of suicide attempts. Furthermore, it is important that accessible medications are not present anywhere in the house for adolescents with suicidal ideation or at risk of impulsive suicide attempts.

When examining the stressor factors in our cases' suicide attempts, family problems and problems in friendships and romantic relationships were found to be the most common. Family problems, academic failure, and problems in friendships and romantic relationships have been reported as the most commonly identified triggers for suicide attempts (Aşiloğlu et al., 2009; Silva et al., 2023). Identifying these triggers can be helpful in working with the adolescent in the context of therapy to address the situations that lead to suicidal behavior, and to change the behavioral responses to these triggers.

It is noteworthy that in our cases, there is a high rate of recurrent SIB (89%), and 24.9% of suicide attempts are also recurrent. Studies in the literature suggest that non-suicidal self-injury (NSSI) may have a gateway function for suicidal behavior (Whitlock et al., 2013). Many studies have suggested that family dysfunction is associated with NSSI (Tang et al., 2009), and in young people where the family does not provide social and emotional support, there is a high correlation between suicide, depression, behavioral disorders, and substance abuse (Nock & Kessler, 2006). In Brazil, attempted suicide risk factors among high school students were found to include female gender, high socio-economic level, weak social support from family and friends, alcohol use in the last month, NSSI, attempts to lose weight, and increased levels of depression, anxiety, and stress

(Silva et al., 2023). In our study, it was determined that more than half of the cases did not have a supportive close relative, had a fragmented family structure, and some were being cared for by relatives or institutions other than their parents.

In our study, similar to previous studies, 55.3% of suicide attempts were found to be impulsive. Studies have shown that 50% of adolescents begin to think about self-harm 1 hour before the act (O'Connor et al., 2009). In the study by Poyraz Fındık et al., the most commonly diagnosed conditions in adolescents who attempted suicide were major depressive disorder, conduct disorder, and mental retardation (Poyraz Fındık et al., 2022). In our study, conduct disorder, major depressive disorder, and ADHD were the most commonly observed diagnoses. Additionally, TAS users' psychiatric diagnoses were statistically significantly higher than non-TAS users. It is known that suicidal behavior can accompany various types of psychopathology. Therefore, it is predicted that the treatment of psychiatric disorders can prevent repeated suicide attempts. Another notable finding in our study was that 53.2% of cases had previous psychiatric referrals, and 77% did not continue with follow-up appointments. The barriers faced by patients with psychiatric diagnoses who do not continue follow-up appointments, the methods that can be applied to ensure treatment continuity, and the problems in accessing health services, if any, should be examined. This study has shown that preventive interventions for suicide attempts should be planned to include not only interventions related to the individual's psychosocial environment, but also interventions related to the psychiatric treatment process.

In our study, the TAS use among males was found to be significantly higher than among females ($p < .05$). When examined by educational status, the use of TAS was found to be significantly higher among the group not attending formal education ($p = .01$). When examined by history of residence in foster care, parental psychiatric illness, maternal smoking, alcohol or substance use, paternal psychiatric illness, paternal substance use, family history of suicide, personal and family history of legal problems, and social support, there was no statistically significant difference

Table 2.
Clinical Characteristics of Cases with Suicide Attempts and Their Parents

Psychiatric Illness in Mother	<i>n</i>	%
Yes	53	22.4
No	167	70.5
Missing data	17	7.2
Psychiatric illness in father		
Yes	41	17.3
No	179	75.5
Missing data	17	7.2
Familial suicide history		
Yes	19	8
No	210	88.6
Missing data	8	3.4
Crime in family		
Yes	44	18.6
No	184	77.6
Missing data	9	3.8
Family history of addiction treatment		
Yes	8	3.4
No	217	91.6
Missing data	12	5.1
Legal history		
None	203	85.7
Victim of sexual abuse	21	8.9
Substance use	4	1.7
Marriage permission	3	1.3
Juvenile delinquent	6	2.5
SIB		
Yes	82	34.6
No	153	64.6
Missing data	2	0.8
Repeated SIB		
Yes	73	30.8
No	161	67.9
Missing data	3	1.3
Social support		
Yes	98	41.4
No	139	58.6
Stressor factor		
Family problems	172	72.6
School/academic failure	11	4.6
Issues in friendships/romantic relationships	43	18.1
Physical appearance/health problems	11	4.6
Repeated suicide attempts		

Psychiatric Illness in Mother	<i>n</i>	%
Yes	59	24.9
No	178	75.1
Number of suicide attempts		
1 time	178	75.1
2 times	40	16.9
3 times	11	4.6
>3 times	8	3.4
Psychiatric treatment before suicide attempt		
Yes	126	53.2
No	111	46.8
Continuation of psychiatric treatment before suicide attempt		
Regularly followed-up	9	7.1
Irregularly followed-up	20	15.9
Not followed-up	197	77
TAS use		
Yes	77	32.5
No	160	67.5
Tobacco use		
Yes	74	31.2
No	161	67.9
Missing data	2	0.8
Alcohol use		
Yes	44	18.6
No	191	80.6
Missing data	2	0.8
Substance use		
Yes	25	10.5
No	212	89.5

Note: SIB = self-injurious behavior; TAS = tobacco, alcohol, substance.

in the TAS use. In the literature, a family history of psychiatric illness has been reported as a significant risk factor for suicidal behavior (Maguire et al., 2022). In our study, the rates of psychiatric illness in the family were found to be low. The reason for this may be that the study relied on retrospective file scanning and the presence of psychiatric diagnosis was limited to self-reports by the individuals. In the literature, it has been reported that children of parents who use tobacco, alcohol, and substances are more likely to use TAS (Włodarczyk et al., 2017). In our study, TAS use was significantly higher among fathers who smoked ($p = .05$) and among those with fathers who used alcohol ($p < .01$). Smoking habits have been found to be closely related to the smoking habits of family members (Santano-Mogena et al., 2021). The children of parents with alcohol or drug use disorders are at higher risk of mental health and behavioral problems as well as drug use (Solis et al., 2012). It has been suggested that parental alcohol and drug use may have a negative impact on family functioning, as it affects parenting practices and child care (McKeganey et al., 2002).

Table 3.*Comparison of Variables Between Suicide Attempters With and Without Tobacco, Alcohol, and Substance Use*

Variables	TAS User n (%)	TAS Non-User n (%)	p
Gender			
Female	55 (71.4)	141 (88.1)	.003
Male	22 (28.6)	19 (11.9)	
Formal education			
Yes	44 (58.7)	121 (76.1)	.01
No	31 (41.3)	38 (23.9)	
Foster care			
Yes	12 (15.6)	18 (11.3)	.46
No	65 (84.4)	142 (88.8)	
Psychiatric diagnosis			
Presence	49 (63.6)	57 (35.6)	< .001
Absence	28 (36.4)	103 (64.4)	
Psychiatric illness in mother			
Yes	17 (22.1)	36 (22.5)	1.00
No	54 (70.1)	113 (70.6)	
Missing data	6 (7.8)	11 (6.9)	
Tobacco use in mother			
Yes	33 (42.9)	63 (39.4)	.55
No	37 (48.1)	84 (52.5)	
Missing data	7 (9.1)	13 (8.1)	
Alcohol use in mother			
Yes	6 (7.8)	6 (3.8)	.2
No	64 (83.1)	141 (88.1)	
Missing data	7 (9.1)	13 (8.1)	
Substance use in mother			
Yes	1 (1.3)	2 (1.3)	1.00
No	69 (89.6)	145 (90.6)	
Missing data	7 (9.1)	13 (8.1)	
Psychiatric illness in father			
Yes	15 (19.5)	26 (16.3)	.69
No	57 (74)	122 (76.3)	
Missing data	5 (6.5)	12 (7.5)	
Tobacco use in father			
Yes	49 (63.6)	84 (53.5)	.05
No	20 (26)	63 (39.4)	
Missing data	8 (10.4)	13 (8.1)	
Alcohol use in father			
Yes	31 (40.3)	36 (22.5)	.002
No	38 (49.4)	111 (69.4)	
Missing data	8 (10.4)	13 (8.1)	
Substance use in father			

Variables	TAS User n (%)	TAS Non-User n (%)	p
Yes	4 (5.2)	3 (1.9)	.21
No	65 (84.4)	144 (90)	
Missing data	8 (10.4)	13 (8.1)	
Familial history of suicide attempt			
Yes	4 (5.2)	15 (9.4)	.44
No	68 (88.3)	142 (88.8)	
Missing data	5 (6.5)	3 (1.9)	
Legal history in family			
Yes	18 (23.4)	26 (16.3)	.19
No	54 (70.1)	130 (81.3)	
Missing data	5 (6.5)	4 (2.5)	
Legal history of youth			
Yes	16 (20.8)	18 (11.3)	.07
No	61 (79.2)	142 (88.8)	
SIB			
Yes	48 (62.3)	34 (21.3)	< .001
No	28 (36.4)	125 (78.1)	
Missing data	1 (1.3)	1 (0.6)	
Social support			
Yes	34 (44.2)	64 (40)	.54
No	43 (55.8)	96 (60)	
Repeated suicide attempts			
Yes	26 (33.8)	32 (20)	.03
No	51 (66.2)	128 (80)	

Note: SIB = self-injurious behavior; TAS = tobacco, alcohol, and substance.

In our case, TAS use was statistically significantly higher in those with SIB ($p < .001$) and those with a history of recurrent suicide attempts ($p < .05$). Studies examining the effects of early smoking on the developing adolescent brain have shown that nicotine can cause lasting changes in neural connectivity in various brain regions, including the nucleus accumbens. The medial prefrontal cortex and amygdala are also regions related to emotional regulation, and impaired emotional regulation has been found to be associated with suicidal behavior (Smith et al., 2015). In addition, smoking may be an indicator of other risk factors for suicidal behavior such as social deprivation, low self-esteem, and emotional instability (Neacsu et al., 2018).

There are some limitations to this study. The retrospective nature of our study presents several limitations and potential biases, which can impact the validity and reliability of the findings. Participants may have inaccurately recalled past events or behaviors, leading to recall bias and either under- or over-reporting of information, particularly regarding TAS usage. Additionally, confounding factors were not pre-identified or consistently documented in this retrospective design, making

it difficult to establish causation or control for all influencing variables. Although efforts were made to verify the accuracy of initial information during follow-up visits, key details may have been missed, as family-reported information was collected in an emergency room setting and may have focused primarily on the most immediate concerns. Some sociodemographic data could not be accessed from the medical records. Additionally, the data should be carefully interpreted as this study only included patients admitted to a tertiary hospital in one province and the information cannot be generalized to the entire population. The absence of a healthy control group limits the study's comparative analysis. Another limitation is that the amounts of TAS use were not uniformly questioned for all cases.

In conclusion, it can be considered that continuing formal education has a protective effect on reducing TAS use in individuals with suicide attempts. Since family TAS use, SIB history, and not being within the education system increase the TAS risk in suicide-prone adolescents, at-risk adolescents can be protected from suicide with preventive interventions. Given that most suicide attempts are impulsive in nature and often accompanied by a diagnosis of behavioral disorders, we believe that comprehensive implementation of family and school-based skill development programs, along with psychoeducation given during health service delivery to increase problem-solving skills in the face of stressors, will be useful in reducing suicide frequency.

Future studies can focus on identifying the obstacles to continued psychiatric follow-up for adolescents who have attempted suicide. Longitudinal studies will shed light on the clinical responses of the suicide attempt group using TAS to different treatment interventions. Identifying the common societal risk factors for suicide attempts in adolescents specific to each culture and country can guide mass prevention efforts, and evaluating individual-based risk factors meticulously in child psychiatry and applying the necessary preventive and therapeutic interventions tailored to the needs of the individual is essential.

Data Availability Statement: The data that support the findings of this study are available on request from the corresponding author.

Ethics Committee Approval: The study was approved by Aydın Adnan Menderes University Medical Faculty Non-Interventional Ethics Committee (approval number: 2022/140, date: 24.11.2022).

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