

# The relationship between suicide attempt and smoking, alcohol and substance use and psychosocial characteristics in adolescents

## Ergenlerde intihar girişimi ile sigara, alkol ve madde kullanımı arasındaki ilişki ve psikososyal faktörler

Denizhan Bağrul<sup>1</sup>, Fatma İnci Arıkan<sup>2</sup>

<sup>1</sup>Rize Recep Tayyip Erdoğan Üniversitesi, Eğitim ve Araştırma Hastanesi, Pediatri Anabilim Dalı, Rize, Türkiye

<sup>2</sup>Bozok Üniversitesi, Tıp Fakültesi, Pediatri Anabilim Dalı, Yozgat, Türkiye

**Corresponding author:** Denizhan Bağrul, MD, Rize Recep Tayyip Erdoğan Üniversitesi, Eğitim ve Araştırma Hastanesi, Pediatri Anabilim Dalı, Rize, Türkiye

**E-mail:** Denizhanbagrul@hotmail.com

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### SUMMARY


**Objective:** Our study mainly aims to identify the relationship between suicidal behavior and psychosocial factors, and smoking, alcohol and substance use habits.


**Method:** The study group consisted of 188 adolescents aged 13-18, who applied to Pediatric Emergency Outpatient Clinic due to suicide attempt between November 2011 and December 2012, and a control group of 142 adolescents who applied to the outpatient clinics. The Demographic Questionnaire Form and Substance Use Form employed in the study was applied to all the cases by the researcher. The cases were also asked to complete a Beck Depression Inventory.

**Results:** In this study, 83.2% of the suicide attempt cases consisted of girls and the mean age was 15.5 years. It was determined that, in relation to the control group, the educational life period of those who attempted suicide was shorter ( $p=0.002$ ), they more frequently come from a divorced family ( $p=0.02$ ), their parents have a lower level of education ( $p=0,015$ ;  $p=0,04$ , respectively), and their parents more frequently use cigarette and alcohol. Use of cigarette among those who attempted suicide was ascertained to be at a high level, which was significant in relation to the control group ( $p=0.001$ ). Though use of alcohol and substance among those who attempted suicide were determined to be at a higher level in relation to the control group, it was not significant statistically. In cases with repeated suicide attempts, the use of cigarette, alcohol and substance was found to be increased evidently. Depression scale points of those who attempted suicide were significantly higher than that of the control group ( $p=0.001$ )

**Conclusions:** It was found that various factors play a role on suicidal behavior among adolescents. In addition to demographic factors such as gender, education level, family structure, family characteristics and parents' educational level, previous suicide attempt, smoking, alcohol and substance use, depressive mood were also found to be closely correlated with suicidal behavior. Further studies on determinants of suicidal behavior and determination of risk factors will guide professionals working on this subject to foresee suicide attempts.

**Keywords:** Adolescent, suicide attempt, substance use; depression

 Denizhan Bağrul

 Fatma İnci Arıkan

ORCID IDs of the authors:

D.B. 0000-0003-0375-1726

F.İ.A. 0000-0002-9139-2737

## ÖZET

**Amaç:** Çalışmamızın temel amacı, intihar davranışı ile psikososyal özellikler, sigara, alkol ve madde kullanım alışkanlıklarının ilişkisini ortaya koymaktır.

**Yöntem:** Kasım 2011 ile Aralık 2012 tarihleri arasında S.B. Ankara Eğitim ve Araştırma Hastanesi Çocuk Acil Polikliniği'ne intihar girişimi nedeniyle başvuran, 13-18 yaşları arasındaki 188 ergen çalışma grubunu ve polikliniklere başvuran 142 ergen kontrol grubunu oluşturdu. Çalışmada kullanılan Demografik Anket Formu ve Madde Kullanım Formu araştırmacı tarafından tüm olgulara uygulandı. Ayrıca olguların Beck Depresyon Ölçeği'ni tamamlamaları istendi.

**Bulgular:** Bu çalışmada, intihar girişiminde bulunan ergenlerin % 83,2'sini kız olguların oluşturuyordu ve ortalama yaş 15,5 yıl idi. İntihar girişiminde bulunanların kontrol grubuna göre eğitim süreleri daha kısa ( $p=0,002$ ), daha sık parçalanmış aileden geldikleri ( $p=0,02$ ), anne ve babalarının daha düşük eğitim düzeylerine sahip oldukları ( $p=0,0015$ ,  $0,04$ , sırasıyla), İntihar girişiminde bulunanlarda sigara kullanımı kontrol grubuna göre anlamlı olarak yüksek saptandı ( $p< 0.001$ ). Alkol ve madde kullanımında intihar girişiminde bulunanlarda kontrol grubuna göre daha yüksek kullanım oranları saptanmasına rağmen istatistiksel olarak anlamlı değildi. Tekrarlayan intihar girişiminde bulunanlarda sigara, alkol ve madde kullanımı belirgin artmış olarak saptandı. İntihar girişiminde bulunanların kontrol grubuna göre depresyon ölçeğinden aldıkları puanlar anlamlı olarak daha yüksekti ( $p=0,001$ ).

**Sonuç:** Ergenlerde intihar davranışında birçok faktörün etkili olduğu görülmüştür. Cinsiyet, eğitim düzeyi, aile yapısı, aile özellikleri, anne-baba eğitim düzeyi gibi demografik faktörlerin yanında daha önceden intihar girişiminde bulunma, sigara, alkol ve madde kullanımı, depresyon ve umutsuzluk durumunun intihar davranışını ile yakından ilişkili olduğu saptanmıştır. İntihar girişiminin belirleyicisi olma özelliğini taşıyan bulgular konusunda yapılan çalışmaların yaygınlaştırılması ve risk faktörlerinin belirlenmesi, bu konuda çalışan profesyonellerin intihar girişimini önceden saptayabilmeleri konusunda yol gösterici olacaktır.

**Anahtar sözcükler:** Ergen; intihar girişimi; madde kullanımı; depresyon

## INTRODUCTION

Suicide is defined as any event of death which is the direct or indirect result of a positive or negative act that the deceased attempted intentionally, knowing that it would result in death. If any such act is stopped before death occurs, it is called a "suicide attempt"<sup>1</sup>. About one million people commit suicide every year in the world. The number of deaths due to suicide each year is far more than deaths due to murder and wars. For this reason, suicidal behavior is regarded as an important public health issue all over the world. While suicides are less common in children, the frequency of suicide increases markedly with the transition to adolescence. It is suggested that increased psychiatric disorders and drug use during adolescence independently increase the risk of suicide and suicide attempts<sup>2,3</sup>.

The risk of suicide is the possibility that someone will kill himself/herself in the near future. As part of the diagnosis and treatment plan, priority should be given to assessment of this risk in individuals who are prone to suicide and attempted suicide. Many risk factors related to suicidal behavior are known and it is possible to take measures against these risk factors<sup>4</sup>.

Our study mainly aims to identify the relationship between suicidal behavior and sociodemographic characteristics, smoking, alcohol and substance use habits.

## MATERIAL AND METHODS

The study group consisted of 188 adolescents aged 13-18, who applied to M.H. Ankara Training and Research Hospital, Pediatric Emergency Outpatient Clinic due to suicide attempt between November 2011 and December 2012. The control group consisted of 142 adolescents who were admitted general pediatric outpatient clinics at the same age group who did not at the time of application have a chronic disease and accepted to participate in the study. Following the completion of the required medical procedures, those among the cases who accepted to participate in the study signed an informed consent within the first week following the suicide attempt. The Demographic Questionnaire Form and Substance Use Form employed in the study was applied to all the cases by the researcher. The cases were also asked to complete a Beck Depression Inventory. "Ethical approval" was obtained from the Training, Planning and Coordination Board of the Ankara Training and Research Hospital (November 16, 2010 - decision numbered 440/3664) for the study. An "informed consent" form has been signed by all the participants' parents and themselves.

### Beck Depression Inventory

This inventory was developed by Beck in 1961. It consists of a group of 21 questions that the patient should answer in order to rate the patient's depression from the cognitive perspective. It quantitatively evaluates the perceived depressive symptoms. Each symptom category consists of

four self-assessment items. These items are scored between 0 and 3. Each question was developed on the basis of symptoms clearly visible in depressive patients. A score between 0-13 suggests no depression, a score between 14-24 suggests moderate depression, and a score of 25 suggests severe depression<sup>5</sup>.

### Smoking, Alcohol and Substance Use Form

Smoking, alcohol and substance use frequencies were evaluated differently. Therefore, with a view to facilitating assessment during the analysis, "rare use" has been defined as a few times a week for smoking, 3-9 times lifetime for alcohol, and 2-5 times lifetime for other substances. "Frequent use" has been defined as daily use for tobacco, 10 or more times lifetime for alcohol and 5 or more times lifetime for other substances. This form was based on the study of Ögel et al<sup>7</sup>. In addition, the study

group was questioned about smoking, alcohol and substance use by their friends and parents.

### Statistical analysis

Statistical analysis of data was performed using SPSS for Windows version 15.0 package software. Chi-Square and Fisher-Exact tests were used in the analysis of categorical data, whereas Student's t-test was used in the analysis of quantitative data. Pearson's correlation analysis was employed to determine the relationship between Beck Depression Inventory and suicide attempt. Frequencies-percentages and arithmetic means were used as descriptive values for categorical data and quantitative data, respectively. The limit of significance was taken as 0,05.

## RESULTS

### Sociodemographic Findings (Table 1).

**Table 1.** Comparison of sociodemographic characteristics of the patient and the control group

	Patient Group		Control Group		P value
Age (years)	15,5		15,7		NS
Gender, (n,%)					
Female	153	81,3	77	54,2	<0,001
Male	35	18,7	65	45,8	
Educational status (n,%)					
Attending primary education	34	18,1	51	36	0,05
Attending High school	122	64,9	84	59,1	NS
Attending University	1	0,5	-	-	NS
Abandoned School	31	16,5*	7	4,9	0,002
Location (n,%)					
Village or town	53	28,1	26	18,3	NS
County or City Center	135	71,9	116	81,7	NS
With whom he lived (n,%)					
Parents	155	82,5	135	95	0,04
Mom or dad	32	17*	7	5	0,022
Nursing home	1	0,5	-	-	NS
Family type (n,%)					
Nuclear family	136	72,3	115	81	NS
Extended family	19	10,1	20	14	NS
Scattered family	33	17,5*	7	5	0,02
Income level (n,%)					
Low	141	75,1	106	74,6	NS
Moderate	35	18,6	23	16,3	NS
Good	12	6,3	13	9,1	NS
Total (n,%)	188	100	142	100	

NS: Not significant

**The study** included patients aged 13-18 who applied to M. H. Ankara Training and Research Hospital Pediatric Emergency Service after a suicide attempt. Of the patients who participated in the research, 153 (81,3 %) were female and 35 (18,7%) were male. The mean age of the patients was  $186.5 \pm 18.7$  (126-214) months.

In terms of educational status, 16,4% of those who attempted suicide ( $n = 31$ ) did not attend school, whereas 4.9% ( $n = 7$ ) of those in the control group did not attend school ( $p = 0.002$ ). 17% ( $n = 32$ ) of the patients who attempted suicide lived either with their mother or father or separately from both ( $p = 0.022$ ). The level of education of the mothers and

fathers of the patients who attempted suicide was found significantly lower than the control group ( $p=0,015$ ;  $p=0,04$ , respectively). 71.8% ( $n = 155$ ) of the patients were living in the city whereas 28.1% ( $n = 53$ ) were living in the country ( $p = 0.204$ ). There was no statistically significant difference between the two groups in terms of income levels and working conditions of parents.

### Findings on Suicide Attempt

It was found that 168 (89.3%) of the patients who attempted suicide had no previous suicide attempt; 15 (7,9%) had a 2<sup>nd</sup> suicide attempt, 3 (1.6%) had a 3<sup>rd</sup> suicide attempt, 1 (0.5%) had a 4<sup>th</sup> suicide attempt and 1 (0.5%) had a 6<sup>th</sup> suicide attempt. There was no statistically significant difference in the number of suicide attempts among the genders ( $p = 0.12$ ). The method of attempted suicide was drug intake in 98% of the cases. Three cases were taken to the emergency department with both multiple drug intake and with the use of cutting tool to damage the body, and one patient with suicide attempt by hanging himself.

45.7% ( $n = 86$ ) of the cases were found to be taking more than one drug concomitantly. In suicide attempts, drugs affecting the central nervous system (antidepressant, antipsychotic and anxiolytic) ( $n = 47$ ; 25%) and analgesic-antiinflammatory drugs ( $n = 31$ ; 16,4%) were found to be the most widely used agents.

In terms of months, it was found that patients attempted suicide mostly in December, March, June and September, when we examined the period between December 2011 and December 2012. When we examined the seasons of admission of patients, it was found that 29% of the patients attempted suicide in winter, and 20% of the patients attempted suicide in summer. There was no statistically significant difference in terms of the admission month and seasonal distribution over a period of one year ( $p = 0.257$ ).

When the reasons of suicide were examined in the patient group, 62,7% ( $n = 114$ ) had problems with the family, 19,1% ( $n = 36$ ) problems with friends, 9% ( $n = 17$ ) problems with the school, 17% ( $n=32$ ) had problems with the family and friends, and no problems were identified in 4.7% ( $n = 9$ ) of the patients. From the perspective of gender, the most common reason was family problems in 57.8% of the females and 40% of the males.

### Smoking

32.3% of those who committed suicide stated that they smoked. It was found that 11.1% of the patients smoked rarely (a few times a month and a few times a week) and 21,2% smoked frequently

(every day). 4.9% of the control group stated they rarely smoked, whereas 8.5% stated they frequently smoked. There was a statistically significant difference in terms of smoking between the two groups ( $p < 0.001$ )

There was no statistically significant difference in terms of smoking between those who attempted suicide and the control group when they were compared by age groups, income levels, school attendance, and places of residence.

It was found that there was a statistically significant relationship between gender ( $p < 0.001$ ), living separately from mother and / or father ( $p = 0,048$ ), repeatedly attempting suicide ( $p = 0.012$ ), mother and/or father being a smoker ( $p < 0.001$ ) in those who attempted suicide.

Smoking among friends of those who attempted suicide was found to be 62,7% ( $n = 118$ ). Smoking was observed to be 70.1% in males and 51.8% in females who had friends smoking ( $p = 0.006$ ).

### Alcohol and substance use

10,6% of those who attempted suicide said they used alcohol rarely (3-9 times in lifetime) and 6.2% of them said they used alcohol frequently (more than 9 times in lifetime). 8,2% of the control group stated they rarely took alcohol, whereas 4.2% stated they frequently took alcohol. ( $p = 0.105$ ).

There was no statistically significant difference in terms of alcohol use between those who attempted suicide and the control group when they were compared by age groups, income levels, school attendance, parents living together, alcohol or substance use by mother and/or father, Beck Depression Inventory scores and places of residence.

Substance use rate was found to be 11% as 6.7% of those who attempted suicide used substances rarely (2-5 times lifetime) and 4.3% of them used substances frequently (more than 5 times lifetime). 2,8% of the control group stated they rarely used substances, whereas 1,4% stated they frequently used substances ( $p = 0.045$ ).

36.4% of the patients who attempted suicide repeatedly stated that they used a substance. 8.6% of those who attempted suicide for the first time stated that they used a substance ( $p = 0.001$ ).

### Depression State

According to the Beck Depression Inventory scores of those attempting suicide who said they use substances, it was found that 35,1% had no depression (<14 points), 38% had moderate depression (14-24 points) and 26,9% had severe depression (> 25 points). There was statistically

significant difference between the two groups ( $p = 0.001$ ).

There was no statistically significant difference between the suicide attempt group and the control group in terms of smoking habits, alcohol and substance use, income level, the parent whom they lived with, where they lived, family type, alcohol use by parents, alcohol and substance use by friends, and Beck Depression Inventory scores.

## DISCUSSION

The primary aim of this study was to identify the relationship between suicidal behavior and smoking, alcohol and substance use, and sociodemographic characteristics in adolescents aged 13-18. For this purpose, sociodemographic characteristics, smoking, alcohol and substance use of 188 adolescents who attempted suicide and 142 adolescents who constituted the control group were examined.

In this study, 82,3% of the adolescents who attempted suicide were girls and the girl/boy ratio were 4.3/1. There is a consensus that suicide attempts are more frequent in women for all ages<sup>8-10</sup>.

When we investigated the education periods of those who attempted suicide, it was found that the education periods of the adolescents in our study were shorter than those in the control group. Shaffer<sup>11</sup> and Brent<sup>12</sup> found lower school success in adolescents who they examined for suicide attempts. Beautrais et al.<sup>13</sup> reported that they found increased risk of suicide attempt in adolescents with poor education and low socioeconomic level. It was suggested that the short education period found in adolescents in our study who attempted suicide might depend on problems in family, school and friend relationships.

When we look at the places of residence, the vast majority of the cases in our study who attempted suicide lived in the city center. In a study, Lifshitz and Gavrilov<sup>14</sup> reported that the vast majority of the 324 adolescents aged 12 to 18 years who applied to the hospital for suicide attempts between 1990 and 1998 were living in urban areas. The fact that the vast majority of the cases live in the city center may be due to the fact that urban people have easier access hospital services and that the social factors that instigate suicide are more common in cities.

17% of adolescents who attempted suicide in our study were found to be from broken families. It is reported that the prevalence of suicide attempts in adolescents from broken families is quite high<sup>12,15</sup>. Turgay<sup>16</sup>, and Yüksel et al.<sup>17</sup> stated that, respectively, 54.6% and 36.4% of the children and

adolescents who attempted suicide were from broken families. In this study also, in line with the literature, it was found that adolescents who attempted suicide were from broken families significantly more frequently than those in the control group.

In our study, it was seen that those who attempted suicide had a lower income level than those in the control group, but there was no statistically significant difference. There are several studies showing that there is no association between low socioeconomic level and suicidal behavior in studies conducted to date and that there is a relationship between suicide and suicide attempt and low socioeconomic level<sup>18,19</sup>.

It was found that the education levels of adolescents who attempted suicide were significantly lower than those in the control group. There are studies in the literature suggesting that low maternal education level increases the risk of suicide attempt<sup>20,21</sup>.

It was shown in a variety of researches that there is a close relationship between stressful life events and suicidal behavior in young people. It is known that both short-term and long-term life events play a triggering role in adolescent suicide attempts<sup>18,19,22,23</sup>. In particular, it is emphasized that a broken family structure and functioning are very important risk factors for adolescent suicides<sup>14,21,24</sup>. In our study, family problems were found to be the triggering factor for suicide attempts in more than half of the cases. In many studies on adolescent suicides in the literature, it is stated that friendship problems are an important risk factor for suicide attempts and it is suggested that this problem becomes more important in young people<sup>15,25,26</sup>.

In our study, the highest suicide attempt rate was in December (17.2%), followed by March (13.8%) and June and September (13.8%). In terms of seasonal distribution, the highest number of attempts were in winter (29%). Based on the data published by the State Institute of Statistics, it is understood that suicides among children were reported most in May, when analyzed in terms of distribution by months<sup>27</sup>. Kocabaş et al.<sup>28</sup> reported that the number of suicide attempts was significantly high in April, May, June, and July and that these months are near the end of the semesters and are associated with the increase in the number of attempts.

All of the cases in our study attempted suicide by drug overdose. In a study conducted in the UK, it was reported that 90% of suicide attempts were committed by drug overdose<sup>29</sup>. In many studies conducted in our country it was also found that

drug overdose was the most commonly used method in suicide attempts. Çuhadaroğlu et al.<sup>18</sup> and Eğrilmez et al.<sup>25</sup> stated that almost all of the adolescents attempting suicide attempted to commit suicide by drug overdose.

Looking at the number of suicide attempts in our study, it was found that 89.3% of cases had their first suicide attempt and 10.7% had repeated suicide attempts. The fact that 89.3% of the cases were the first suicide attempts can be a finding which was affected by the age variable. Previous suicide attempt is reported to be one of the biggest risk factors for suicide and suicide attempts<sup>30,31</sup>. In a study on suicide attempts by drug overdose, it was reported that 34% of patients had previously another attempt<sup>32</sup>. In another study on adolescent suicide attempts, it was reported that 21% of patients had previously another attempt<sup>24</sup>.

In our study, 32.4% of those who attempted suicide stated that they smoked. Smoking was found to be significantly higher when those who committed suicide were compared to the control group ( $p < 0.001$ ). In a study, Yaworski, D et al.<sup>33</sup> investigated nicotine addiction and suicide attempts. Nicotine addiction level lifetime and a year ago were found to be associated with lifetime suicide attempts. However, many epidemiological and clinical studies have reported that there is a positive association between smoking status and suicide attempt and suicidal ideation<sup>34,35</sup>.

In this study, smoking rate was found to be high in those whose parents are smokers. In many studies, smoking habits have been found to be closely related to smoking habits of family members<sup>36,37</sup>. This makes it easier for students both to start smoking and become regular smokers.

In our study, alcohol use rate was found to be 14.8% in the suicide attempt group. There was no significant difference in terms of alcohol use between the control group and suicide attempt group. Studies have shown that alcohol or substance addiction increases the risk of suicide by five times<sup>38</sup>. The suicide rate of students who use alcohol and substances was found to be high in self-report studies conducted in schools<sup>39</sup>.

In this study, adolescents who attempted suicide were found to have higher levels of alcohol or substance use in their parents. However, there was no statistically significant difference. In the literature, it is reported that those who bring up those who commit suicide have a higher rate of alcohol or substance abuse<sup>40,41</sup>. Cohen-Sandler et al.<sup>23</sup> showed that parents of suicidal children have a higher rate of alcohol/substance abuse (40%) than the other groups in a study they conducted on

suicidal, depressive, and psychotic controls. Eğrilmez<sup>25</sup> found that 25% of adolescents who attempted suicide had alcohol abuse or dependence in their families.

Substance use was found to be higher in the suicide attempt group than the control group. There is a strong relationship between substance use and completed suicide and attempted suicide in the literature<sup>42,43</sup>. In a study, Kandel et al.<sup>44</sup> found that substance use, combined with depression, was the most important risk factor for suicide attempts.

There was no significant relationship between income level and substance use in our study. In one study, the risk of using volatile substances was found to be increased in primary school children with low income level, whereas the other items could not correlate with income level. In the same study, secondary school children from families with higher income levels were found to have a higher risk of stimulant use than children with lower income levels<sup>44</sup>.

In our study, a significant proportion of adolescents who attempted suicide were found to have a depressive disorder according to the scores they received from the Beck Depression Inventory, and this was found to be significantly higher than the controls. Most of the researches in the literature show that depression is the most important risk factor for suicide and suicide attempts during adolescence as in many other age groups<sup>18,45,46</sup>. Pfeffer et al.<sup>47</sup> showed that the most common group of psychiatric diagnoses encountered among the adolescents who attempted suicide was mood disorders with a rate of 33.5%. In another study, 42% of the adolescents who attempted suicide were found to have major depression<sup>48</sup>. As a result of interviews held with the families of adolescents who died due to suicide, it was found that 63-76% of them were individuals with a mood disorder<sup>49</sup>.

As a result, it was found that various factors play a role on suicidal behavior among adolescents. In addition to demographic factors such as gender, education level, family structure, family characteristics and parents' educational level, previous suicide attempt, smoking, alcohol and substance use, depressive mood and hopelessness were also found to be closely correlated with suicidal behavior. Further studies on determinants of suicidal behavior and determination of risk factors will guide professionals working on this subject to foresee suicide attempts.

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