

# Mental status and suicide probability of young people: A cross-sectional study

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## SUMMARY

**Objective:** The most important determinant of suicide ideation, tendency and initiative is the presence of mental disorders. Since the number of those who lost their lives due to suicide in the world rose rapidly among the young population, the World Health Organization emphasizes the importance of assessing young people in the high-risk age group to prevent suicidal behavior. This study aimed to determine psychological symptom levels and suicide probability in young people.

**Method:** The cross-sectional research consisted of 15-24 year-old individuals (N=348), who have sought a psychiatric clinic between February and June, 2015. The Research Data was collected by applying Data Collection Form, Suicide Probability Scale (SPS) and Brief Symptom Inventory (BSI). SPSS 22.0 statistical package program was used for data analysis.

**Results:** There was a statistically significant difference ( $p < 0.05$ ) between the mean SPS scores according to education, psychiatric treatment, self-harm, smoking and drinking status of the participants in the study. Apart from this, there was also a statistically significant correlation between anxiety, depression, negative self and hostility according to the SPS and BSI subscales ( $p < 0.001$ ,  $r = 0.739$ ;  $p < 0.001$ ,  $r = 0.729$ ;  $p < 0.001$ ,  $r = 0.747$ ;  $p < 0.001$ ,  $r = 0.715$ ; respectively).

**Conclusion:** The results of our study show that suicide risk is significantly higher in young people with depression, anxiety, negative self-perception and hostility symptoms. In this regard, we suggest the relevance of assessing the suicide risk of young people seeking a psychiatric clinic, with thorough attention to those who have high potential for suicide.

**Keywords:** Anxiety. Depression. Hostility. Suicide. Young Adult. Adolescent.

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## INTRODUCTION

Suicide is a multifaceted behavior that occurs as a result of many psychological, sociological, economic and cultural factors. Therefore, suicide rates have been reported to be associated with physical, biological and mental health variables, as well as variables such as the country's lifestyle, religious tendencies, social class, age, gender, education, marital status.<sup>1,2</sup>

The World Health Organization (WHO) reports that around one million people die due to suicide each year in the world and the suicide rate increases in the young age group.<sup>3</sup> It has also been reported that the worldwide annual suicide rate is 16 per 100,000, which has increased by 60% in the last 45 years.<sup>4,5</sup> In Turkey, the number of

suicide deaths in 2013 is 4.19 per 100,000. It is reported that the highest figures in these deaths belong to the young population between the ages of 15-19 years and the suicide cases in the age range of 15-24 are reported to be high.<sup>6</sup> In a survey conducted by the Turkish Statistical Institute in Izmir, it was determined that, in 2012, 44.9% of all suicide attempts occurred in young people between 15-24 years of age.<sup>7</sup>

Young people apply various lethal methods with the aim of suicide. These methods include firearms, drug intake, self-suffocation, burning, stabbing, jumping to traffic, drowning in water. It has been reported that the most common method of attempting suicide among adolescents is deliberately overdosing on drugs. Further-

more, it is known that suicide attempts among women are more frequent and that women apply less lethal methods than men.<sup>8,9</sup>

The most important determinants of suicide ideation, suicidality and suicide attempt are the presence of mental disorders.<sup>10</sup> It has been determined that more than 90% of people who have attempted suicide have at least one psychiatric disorder, according to various researches.<sup>11,12</sup> One of the largest epidemiological studies performed in our country, the Turkey Mental Health Profile Study, revealed that 18% of the Turkish population have a mental disorder during their lifetime. Suicide rates related to these mental illnesses have been considered very high.<sup>13</sup>

As the number of people losing their lives due to suicide increases rapidly, it has to be accepted as an important public health problem both in the world and in our country.<sup>14</sup> The WHO emphasizes the importance of evaluating young people who are in high risk groups (15-24 years) and of performing studies (early diagnosis and treatment, planning of preventive mental health services, elimination of lack of knowledge on the subject etc.) to prevent suicidal behavior.<sup>14,15</sup> This duty and responsibility belongs to the health professionals who are working with young people. With the suicide prevention work performed by professionals, the risk factors will be reduced, protective factors will be strengthened and thus reveal the healthy behaviors of youngsters.<sup>16,17</sup>

After a literature review, it has been determined that there are insufficient studies analyzing the relation between mental symptoms and suicide variables and that problematic behaviors seen during one's youth increase the rates of suicide. Considering that young individuals who have sought a psychiatric clinic due to mental problems comprise a risk group, our study aimed to analyze the mental symptom levels of these patients and to prevent suicide by determining preventive and protective mental health studies accordingly. Additionally, we aimed to determine the psychological symptoms and probability of suicide according to their perception.

## METHOD

This is a cross-sectional study that included young individuals aged 15-24 years who sought the psychiatry outpatient clinic of the Ankara Education and Research Hospital due to mental problems. The research was conducted between February and June 2015. 348 consecutive patients, 29.9% (104) of males and 70.1% (n = 244) of females between 15-24 years, who sought our psychiatric outpatient clinic comprised our sample. They all had primary school education and no problems of speech,

understanding and communication. In the power analysis conducted to determine the adequacy of the sample volume, the power of the study was set at 80% with a confidence level of 95% and a significance level of 0.05. These figures indicate that the sample volume is sufficient.

Research data were collected by applying a Data Collection Form, Suicide Probability Scale (SPS) and Brief Symptom Inventory (BSI). This was carried out by filling the forms during 20 minutes of face-to-face interviews under the supervision of the researchers.

The Data Collection Form consisted of questions establishing individual traits of the participants (age, gender, education level, family support, family type, economic status, receiving psychiatric treatment etc.).

The Suicide Probability Scale (SPS) is a Likert-type scale, which has been developed by John G. Cull and Wayne S. Gill (1990) in order to evaluate suicide probability and consists of 36 articles for self-assessment (self-report). It is used on adolescents and adults to evaluate suicide risk. Scale adaptation, reliability and validity studies by the Turkish Society were performed for the first time by Tugcu (1996), while validity and reliability studies on the Atli clinic sampling were performed in 2007. It was identified that the internal coefficient of consistence of analyzed scale for "total point" is .87, test re-test reliability is .98, similar scale validity is .84. The sum of all scores in the scale yields a general suicide probability. High scores indicate that the probability of suicide is high.<sup>16,18</sup>

The Brief Symptom Inventory (BSI) is a likert-type self-assessment scale that scans psychological symptoms such as anxiety (articles 12, 13, 28, 31, 32, 36, 38, 42, 43, 45, 46, 47 and 49), depression (articles 9, 14, 16, 17, 18, 19, 20, 25, 27, 35, 37 and 39), negative self-perception (articles 15, 21, 22, 24, 26, 34, 44, 48, 50, 51, 52 and 53) somatization (articles 2, 5, 7, 8, 11, 23, 29, 30, and 33) and hostility (articles 1, 3, 4, 6, 10, 40 and 41); it consists of five subscales and 53 articles. The point range is between 0-212. The scale is intended for adolescents and adults, individually or as a group. There is no time limit to answer the scale. The height of the total points obtained from the scale indicates the frequency of symptoms of the individual.<sup>19,20</sup> The validity and reliability for adolescents have been established by Sahin et al. and the internal coefficient of consistence of subscales has been found as follows: .70 (somatization) and .88 (depression), while the coefficient of internal consistency of the inventory was identified as .94.<sup>19</sup>

### Ethical aspect of the research

Before starting the research, the institution's approval (03.12.2014 / 0572) was obtained. This study was carried

out after having obtained Ankara Training and Research Hospital Ethics Committee (08.01.2015 / E-15-317) approval. Additionally, the adolescents voluntarily participating were informed about the purpose of the study and their written consent was obtained.

#### Data evaluation

Statistical Package for the Social Sciences (SPSS software version 22.0, SPSS Inc., Chicago, IL, USA, undergraduate, Hitit University) was used for data analysis. Number and percentage values are given in the distribution of findings on the individual characteristics of the participants. Continuous data are presented as mean  $\pm$  standard deviation. Normal distribution was examined by Shapiro Wilks normality test. Based on individual characteristics, the participants were divided in two independent groups and compared by means of Student's t-test and Kruskal-Wallis test results. Spearman's rho correlation coefficient and linear regression analysis were used to investigate the relations between SPS and KSE subscales, which was accepted as  $p < 0.05$  for statistical significance.

#### Limitations of the study

This research was carried out to determine the psychological indications and suicide probabilities of young people aged 15-24 years and is limited to the data obtained

from 348 young people who have sought the psychiatric clinic between February and June 2015. In addition, the research data for determining suicide probabilities and the psychological symptoms of the participants are limited to the answers given by them.

## RESULTS

A total of 348 young individuals participated in the survey, 70.1% were female and 29.9%, male. The mean age of the participants was  $21.04 \pm 15.02$  years and their distribution according to individual characteristics is given in Table 1.

It has been reported that the total SPS mean point of young people participating in the study is  $77.52 \pm 13.21$  (Min: 43; Max: 113). An examination of the relation between SPS scores according to some characteristics of the adolescents is given in Table 1 and there is a statistically significant difference between SPS mean scores according to education, present psychiatric treatment, self-harm, smoking and drinking status ( $p < 0.05$ ).

BSI mean score of the surveyed participants has been determined as  $78.33 \pm 41.47$ . When the means of the scores of BSI anxiety, depression, negative self-perception, somatization and hostility subscales were examined, the mean depression score was found to be higher than the other subscale scores (Figure 1).

**TABLE 1** Comparison of the average scores for Suicide Probability Scale (SPS) according to the individual characteristics of youth (N=348).

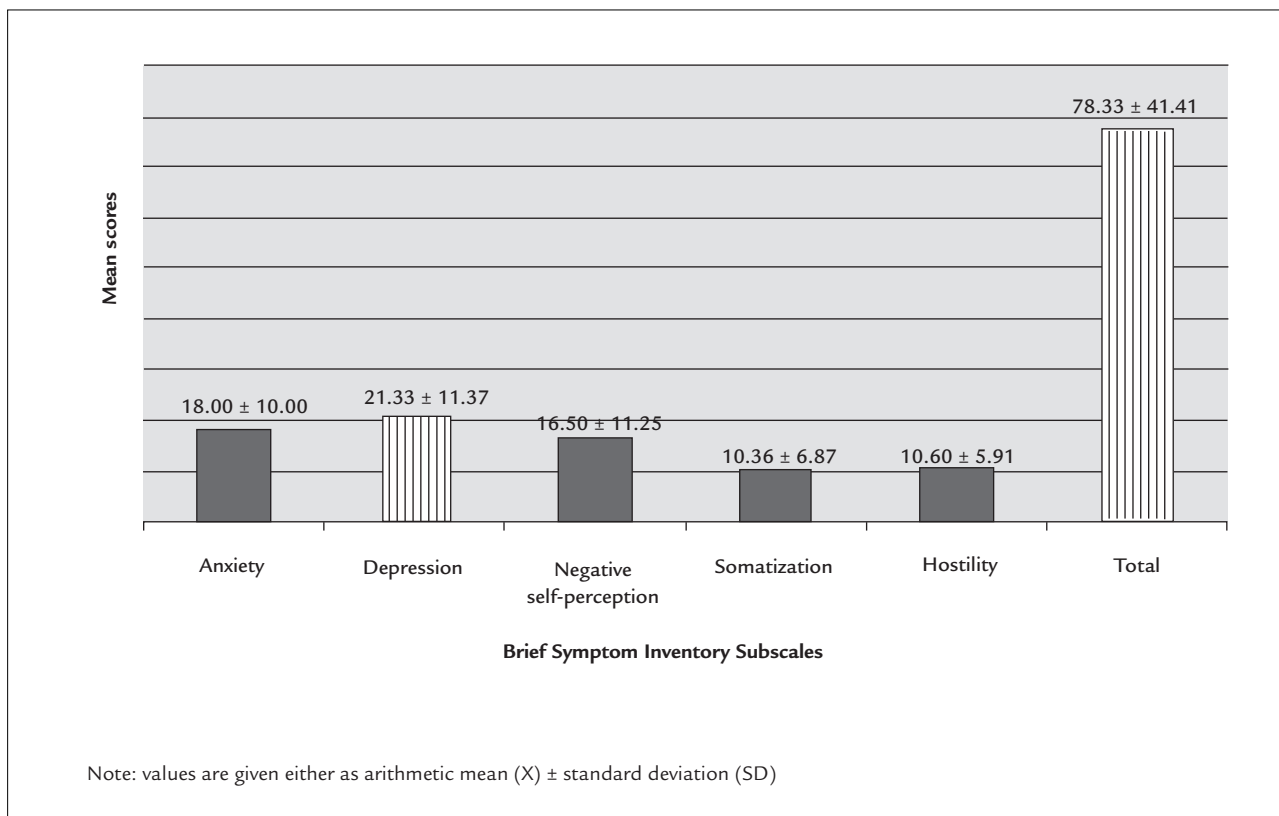
Individual characteristics	n	%	Suicide Probability Scale X $\pm$ SD	Statistical analysis
Age				
15-18	102	29.4	79.23 $\pm$ 12.38	p=0.102
19 and older	246	70.6	76.62 $\pm$ 13.93	
Gender				
Male	104	29.9	76.90 $\pm$ 12.16	p=0.300
Female	244	70.1	77.78 $\pm$ 13.68	
Educational level				
Elementary	54	15.5	81.14 $\pm$ 17.55	p=0.049*
High school	154	44.3	75.49 $\pm$ 12.36	
University	140	40.2	78.35 $\pm$ 11.96	
Family support				
Yes	70	20.1	77.41 $\pm$ 12.66	p=0.677
No	278	79.9	77.94 $\pm$ 15.42	
Family type				
Nuclear	262	75.3	78.00 $\pm$ 12.84	p=0.654
Extended	44	12.6	76.68 $\pm$ 13.40	
Broken	42	12.1	81.28 $\pm$ 12.29	

(Continues)

**TABLE 1** (Cont.) Comparison of the average scores for Suicide Probability Scale (SPS) according to the individual characteristics of youth (N=348).

Individual characteristics	n	%	Suicide Probability Scale X±SD	Statistical analysis
Family income status				
Income lower than expenses	98	28.2	75.97±12.67	p=0.588
Income equal to expenses	206	59.2	76.94±12.70	
Income higher than expenses	44	12.6	83.68±15.54	
Received currently psychiatric treatment				
Yes	154	44.3	79.71±15.08	p=0.012*
No	194	55.7	75.78±11.30	
Bodily harmed him or herself				
Yes	144	41.4	82.88±14.83	p=0.008**
No	204	58.6	73.50±11.09	
Smoking habit				
Yes	230	66.1	80.23±12.26	p<0.001***
No	118	33.9	72.23±13.50	
Alcohol drinking habit				
Yes	166	52.3	79.48±12.80	p=0.048*
No	182	47.7	75.37±13.40	
Total	348	100	77.52±13.21	

Note. Values are given either as %, \* p<0.05, \*\* p<0.01, \*\*\*p<0.001, arithmetic mean (X) ± standard deviation (SD).



**FIGURE 1** Distribution of Youth' Brief Symptom Inventory Subscales mean scores.

After investigating which of the BSI subscales had a greater effect on the SPS subscales according to the results of correlation analysis, there was a statistically significant correlation between anxiety, depression, negative self and hostility ( $p < 0.001$ ,  $r = 0.739$ ;  $p < 0.001$ ,  $r = 0.729$ ;  $p < 0.001$ ,  $r = 0.747$ ;  $p < 0.001$ ,  $r = 0.715$ ; respectively), as well as a significant moderate correlation with somatization ( $p < 0.001$ ,  $r = 0.582$ , Table 2). In the single variable regression model, the BSI subscales of anxiety, depression, negative self, somatization and hostility variables of the explanatory coefficients were  $R^2 = 0.537$ ,  $R^2 = 0.510$ ,  $R^2 = 0.538$ ,  $R^2 = 0.346$ ,  $R^2 = 0.501$ , respectively (Figure 2).

## DISCUSSION

According to the WHO and the Turkish Statistical Institute data, suicidal behavior has been increasing in many countries over the years and is now considered a universal problem. Psychiatric disorders are seen as the most common cause of suicide.<sup>6,12,21</sup> Our study, which evaluates the possibility of suicide in the 15-24 age group seeking our psychiatry clinic, is important as it draws attention to the need of suicide risk assessment and risk management in psychiatric clinics within the scope of patient safety.

We observed that 29.4% of the participants who sought our psychiatry clinic were in the age range of 15-18 years and 29.9% were male (Table 1). It has been reported that male adolescents have a slightly higher rate of admission to psychiatry clinics during early adolescence, this ratio is equal for both genders in mid-adolescence, and a significant increase is observed in young adulthood in girls.<sup>22</sup> Our findings support the literature if we consider that the young people participating in our study are among the 15-24 age group and 70.1% are girls.

The United Nations International Children's Emergency Fund (UNICEF) analyzed the Situation of Child and Youth Population in Turkey in 2012 and 36% of the youth between the ages of 15-24 years were in full-time general or vocational education in 2011; 32% of the young population were employed; and 32% were not either studying or working.<sup>23</sup> In our study, 44.3% of the youth are high school graduates and 79.9% are not receiving family sup-

port (Table 1). The fact that the vast majority of our study's participants have a high school diploma and do not receive financial support from their families suggests that this specific population works more hours than the mean for this age group in Turkey.

Drug use is seen as a major social problem. The number of substance addicts increases every day, causing the problem to grow more and more. Measures to prevent drug addiction are also being attempted in our country, where the young population is large and efforts are being made to prevent the spread of substance use.<sup>24</sup> According to the Global Adult Tobacco Survey Turkey Report conducted in our country in 2012, it has been reported that the frequency of smoking among those aged 15 years and older in our country is 27.1% and that this rate is 8.4% in young people.<sup>25</sup> Ozcebe reported that there is a 33.2% prevalence of cigarette smoking among young people and the progression from school to the labor market is affecting smoking behavior.<sup>26</sup> The result of our study shows that the vast majority of young people who seek psychiatric clinics do not receive family support, 66.1% smoke and 52.3% use alcohol (Table 1), which is in line with the literature. Although prevention has been portrayed as the most important step against smoking and alcohol use among the young, active interventions targeting current users are also extremely important.

According to the literature, the majority of individuals who have suicide ideation or attempt suicide are between 15-24 years old.<sup>27,28</sup> While the ratio of those who attempted or succeeded in committing suicide in Turkey is lower than in European countries, the majority of young people who have attempted suicide are in the age range of 15-19 years.<sup>4,6</sup> The probability of suicide found in our study was higher in the 15-18 age range than in those aged 19 years or more (Table 1). Our result supports the literature.

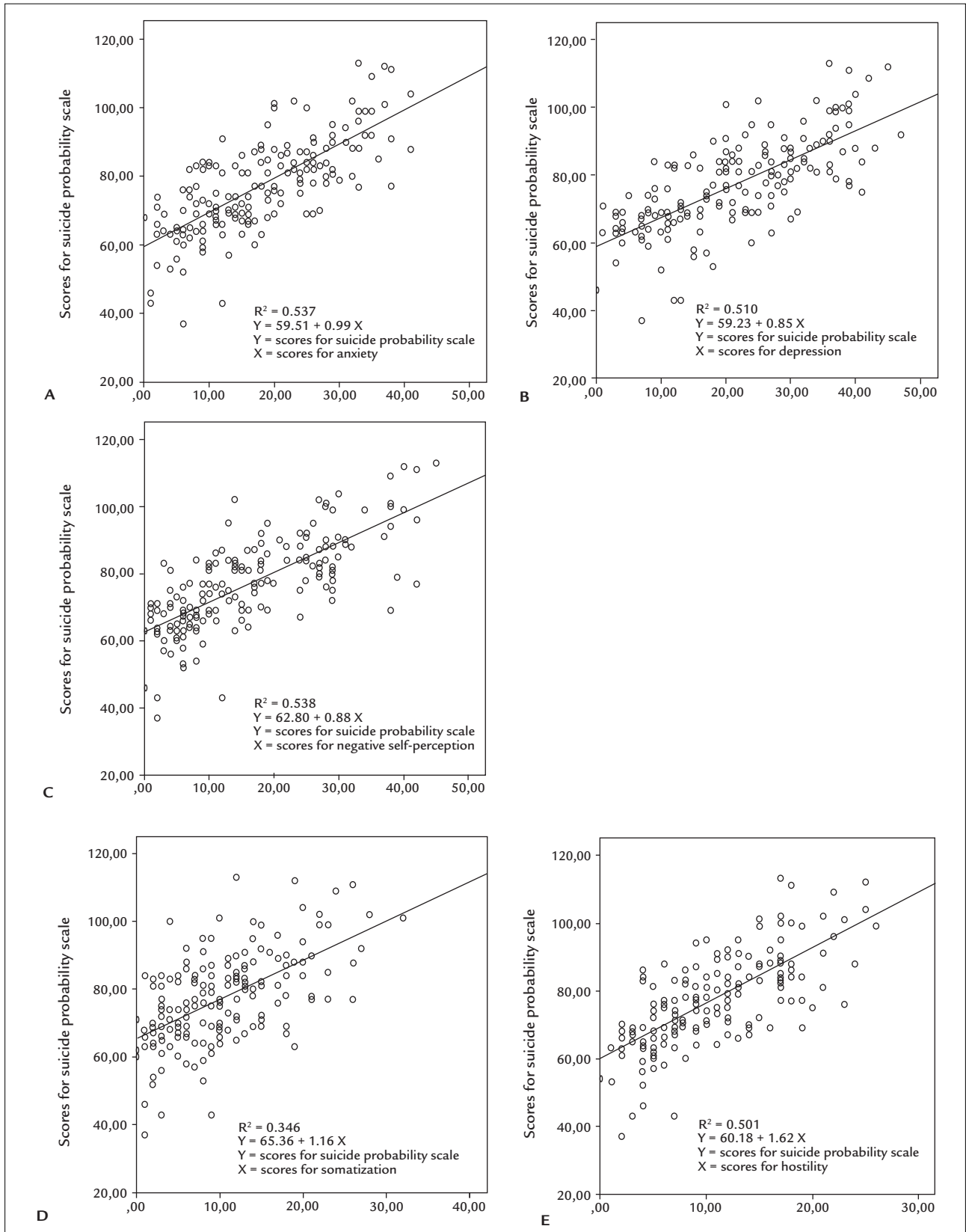
Mean SPS score of women in our study ( $77.78 \pm 13.68$ ) has been found to be higher than that of men ( $76.90 \pm 12.16$ ), although no statistically significant difference has been identified regarding gender and suicide probability ( $p > 0.05$ ; Table 1). While in the study conducted by Langhinrichsen-

**TABLE 2** Correlation coefficients of youth' Suicide Probability Scale and Brief Symptom Inventory Subscales.

Suicide Probability Scale	Brief Symptom Inventory Subscales				
	Anxiety	Depression	Negative self-perception	Somatization	Hostility
r	0.739	0.729	0.747	0.582	0.715
p	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*

Note. \*Spearman's correlations statistically significant,  $p < 0.001$ . Correlation is statistically significant ( $0.00 < r < 0.25$ : little if any correlation;  $0.26 < r < 0.49$ : low correlation;  $0.50 < r < 0.69$ : moderate correlation;  $0.70 < r < 0.89$ : high correlation;  $0.90 < r < 1.00$ : very high correlation).





**FIGURE 2** Regression analysis for scores of Suicide Probability Scale and Brief Symptom Inventory Subscale; scores for (A) anxiety, (B) depression, (C) negative self-perception, (D) somatization, (E) hostility.

Rohling et al.<sup>29</sup> no difference could be found between genders regarding suicide ideation, Molina and Duarte<sup>30</sup> reported that the number of women in their study was higher than that of men. However, Whetstone et al.<sup>31</sup> determined that men have more suicide ideation than women.<sup>29-31</sup> In various studies carried out in Turkey, it has been identified that the number of women who have attempted suicide is higher than that of men.<sup>16,32</sup> This may be caused by the manner women are traditionally perceived and respond to social convention in Turkey.

The literature indicates that the more the education level decreases, the more suicide rates increase. The most important determinant for increasing the suicide rate has been identified as low education level. It is thought that the ability to think of people with suicide risk weakens due to a sense of helplessness, hopelessness and stress, and that their problem-solving skills are reduced.<sup>33,34</sup> The suicide rate of university graduates is low, according to the statistics and studies carried out in Turkey.<sup>6</sup> While the high suicide probability of primary school graduates in our study supports the literature, the reasons for higher suicide probability of university graduates compared to high school graduates have to be examined.

In our study, it was determined that those who do not receive family support, live with a single parent or belong to a nuclear family, and have lower income than expenditures show a higher suicide risk compared to those who receive family support, have a big family and have an income equal to or higher than their expenditures (Table 1). According to the literature, the majority of individuals who have attempted suicide come from a broken family and present a bad economic income level; it has been reported that this situation is a factor that effects suicidal behavior.<sup>34,35</sup> Furthermore, studies<sup>35,36</sup> reported that suicide attempts are frequently seen in nuclear family members and as a reason for that the inadequate support system compared to the support system in extended families has been asserted. Interfamilial support in traditional family structure is very strong, thus strengthening the individual's coping mechanisms and reducing the frequency of suicide attempts. Kleiman and Liu<sup>37</sup> noticed that lifelong social support is related with the decrease of suicide attempt probability and therefore suggest that this can be used as a factor in developing the current suicide prevention programs worldwide.<sup>37</sup>

According to the literature, 90-95% of those who have put an end to his own life or attempted suicide have at least one mental illness and the suicide rate in all psychiatric patients was 3-12 times higher than in the normal population.<sup>11,16</sup> In our study, we report that the suicide rate of those (79.71±15.08) who receive psychiatric treat-

ment is higher than that of those who do not receive treatment (75.78±11.30) (Table 1). The findings of our study support the view that psychiatric treatment has a direct effect on suicide ideation and reveal the importance that professionals working with young people have in being more cautious with those who receive psychiatric treatment in terms of suicide probability.

In our study, it was determined that young people who have ever bodily harmed themselves have a higher probability of suicide (Table 1). In line with our findings, it is mentioned in the literature that people with physical self-injurious behavior are more likely to commit suicide.<sup>13,38</sup> Additionally, the view of a strong relationship between physical self-harm and suicide probability is supported by the literature. Hawton and James<sup>39</sup> reported that self-injurious behavior in adolescents is often impulsive and that they think for only a few minutes before taking action.<sup>39</sup> As a result of this suicidal behavior, the action can be serious and life-threatening even if there is no apparent wish to die. Therefore, all kinds of attempt, even if there is no apparent wish to die, should be handled very seriously because of the suicide probability.

It has been noticed that the majority of adolescents in our study smoke (66.1%) and drink alcohol (52.3%). It has been identified that young individuals who smoke and drink alcohol show a higher suicide probability compared to those who do not smoke and drink and this difference has been found statistically significant ( $p < 0.001$  and  $p < 0.05$ , respectively, Table 1). Our finding is compatible with the fact that suicide ideation and attempts are mostly seen combined with cigarette and alcohol consumption, as in studies mentioned in the literature.<sup>32,40</sup> Deveci et al.<sup>32</sup> reported that cigarette and alcohol consumption is statistically frequently seen in individuals who have suicide ideation while high cigarette consumption is related to suicide attempts.<sup>32</sup> Carballo et al.<sup>40</sup> reported that adolescents who consume alcohol tend more to suicide when they show depression or anxiety disorder symptoms.<sup>40</sup>

When the BSI subscales used for psychiatric evaluation in our study were evaluated, the depression score was the highest and somatization was the lowest (Figure 1). Similarly to our results, Tanrıverdi and Ekinci<sup>41</sup> also found the highest means for depression and the lowest for somatization. Findings differ in various studies. While in the study of Yıldırım et al.<sup>42</sup> the highest mean was attributed to somatization, depression was the second highest. According to Barlas et al.,<sup>43</sup> the highest mean refers to anxiety and the second highest, to depression. These results suggest that young people experience different mental problems and are especially at risk for depression and anxiety.

In our study, according to the BSI subscale and SPS score averages reached regression equation as a result of regression analysis, 1 unit increased anxiety 0.99, depression 0.85, negative self 0.88, somatization 1.16, and hostility 1.62 increased the suicide score (Figure 2). We also determined that the probability of suicide was close to that of all diagnostic groups when the total SPS score average was evaluated according to the diagnostic groups of the participants, with a risk of suicide significantly higher in young people with depression, anxiety, negative self-esteem and hostility symptoms (Figure 2 and Table 2). Similar to our findings, the literature emphasizes that people with mental problems should be carefully evaluated for the possibility of suicide.<sup>44,45</sup>

Based on these results, we recommend that a top priority suicide risk assessment should be performed on adolescents who seek psychiatric clinics, who have high suicide potential and indication of suicidal intent. In addition, health professionals working with young people should be made aware of risk management and improved risk management understanding.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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