

# Suicidal Thought and Behavior in High School Students in Adana, Turkey

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## ABSTRACT

*Fifty years ago adolescents mostly died of natural causes, whereas they now die from more preventable causes. Part of this change has been a worldwide rise in adolescent suicide rates in both developed and developing countries. Suicides are probably under reported due to cultural and religious stigma attached to self-destruction. Objectives of this study were to collect data about suicidal thoughts, plans and attempts and related sociodemographic details in high school students. The population comprised 2,480 randomly selected students among 46,271 students from 72 high schools in 1999–2000 in Adana and 2,352 (94.8%) students from 10 schools were reached and given a questionnaire modified using Youth Risk Behavior Survey Questionnaire (YRBSQ).  $\chi^2$  and Kolmogorov-Smirnov tests were used. Mean age was  $16.5 \pm 1$  (14–21) year, 1,187 (50.5%) students reported severe desperation, 526 students (22.4%) had suicidal thoughts, 332 (14.1%) planned committing suicide, 145 (6.2%) attempted suicide. The occurrence rate of desperation, suicidal thoughts, plans, attempts and the mean number of attempts were significantly higher in females than males. Adolescent suicide is a tragedy affecting individual, family, peers, and community. Families, teachers, and physicians should be aware of risk factors for suicide.*

**Key words:** suicide, attempt, adolescent, YRBSQ, Turkey

## Introduction

The past several decades have witnessed a dramatic change in causes of adolescent mortality. Fifty years ago adolescents mostly died of natural causes, whereas they now die from more preventable causes. Part of this change has been a worldwide rise in adolescent suicide rates in both developed and developing countries. Suicides are probably under reported due to cultural and religious stigma attached to self-destruction<sup>1</sup>. In 2000, suicide was the 11th leading cause of death in adults and the third leading cause for young people ages 15–24 with rate of 10.4 per 100,000 – after unintentional injury and homicide, in the United States of America (USA)<sup>2</sup>. The death rate due to suicide among Australian males aged 15–24 years increased from 8.7 per 100,000 in 1964 to 30.9 per 100,000 in 1997<sup>3</sup>. The suicide rate of males was four times that of females, but females were hospitalized for attempted suicide at about one and a half times more than males<sup>4</sup>. The aim of this study is to obtain data for the gender specific prevalence of suicidal thoughts and attempts and to explore the relationship between sociodemographic variables such as parental

educational status, family income and suicidal thoughts and attempts among high school students in Adana city.

## Materials and Methods

### Sample

Sampling procedure was as follow: Adana city has two main regions named Yuregir and Seyhan. We randomly selected 3 high schools out of 9 in Yuregir region and 7 high schools out of 63 in Seyhan region after classifying the schools as »high schools with female students in majority«, »high schools with male students in majority« and »high schools mixed by gender«. Two thousand four hundred and eighty students (5% of all students) were randomly selected among 46,271 students in 72 high schools in 1999–2000 education years in Adana city center. Sample size was calculated using the sampling scheme in Figure 1.

The sample size needed for the study was calculated from the total population of high school students in

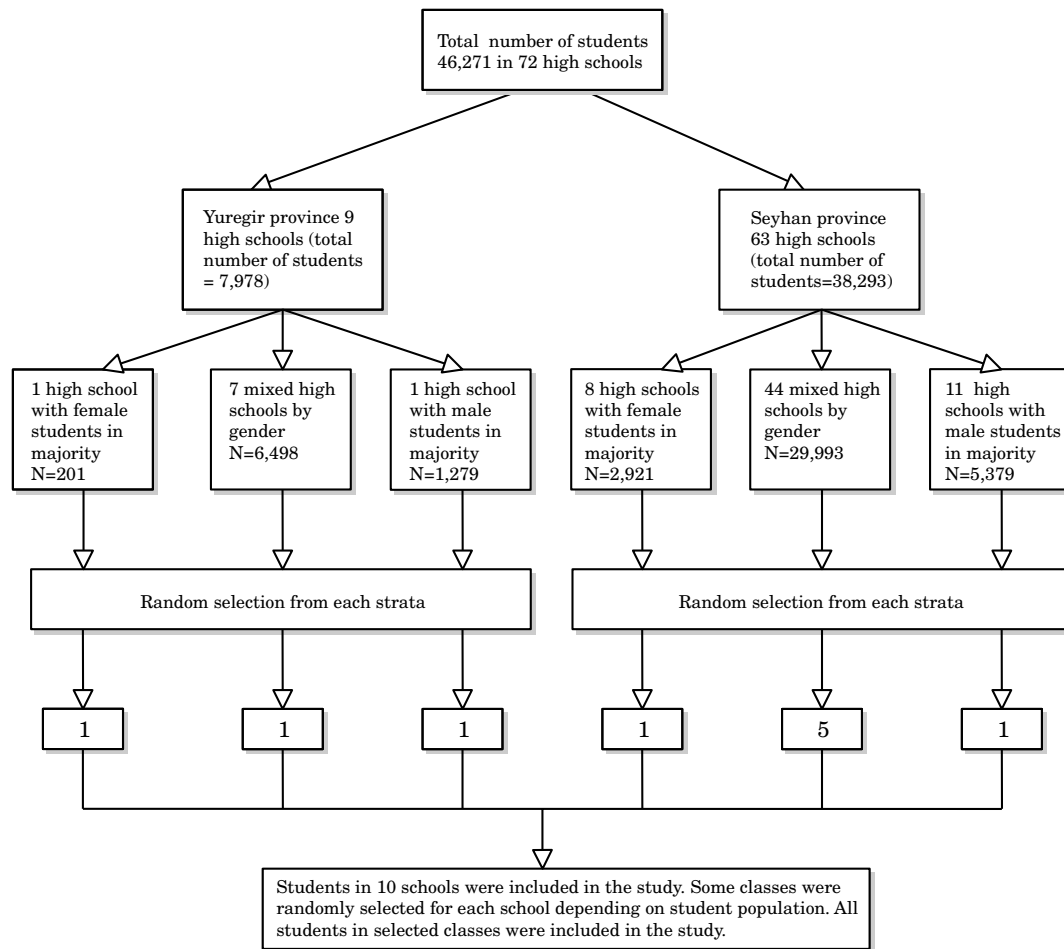


Fig. 1. Sampling scheme.

Adana (n=46,271). Maximum acceptable difference was set as 10%, design effect was taken as 2, with the total number of clusters 6, estimated true rate at 10%, and confidence interval of 95%, the required sample size needed was 70 (6 clusters with 12 in each) students<sup>5</sup>. Out of targeted 2,352 students, 2,224 accepted to participate in the study (94.8%). Of 2,224 students, 50.1% were male and 49.9% female. Mean age was 16.5±1 (14–21) years.

Massachusetts Youth Risk Behavior Survey (MYRBS) is a student health survey conducted every two years since 1990 by the Massachusetts Department of Education AIDS/HIV Program with funding and technical assistance provided by the Division of Adolescent and School Health (DASH) of the U.S. Centers for Disease Control and Prevention (CDC)<sup>6</sup>. Specifically, the survey was developed to monitor the prevalence of health risk behaviors among high school students (grades 9 through 12) which lead to the top causes of morbidity and mortality among youth and adults in the United States. The final 1999 MYRBS instrument consists of 99 multiple choice questions. The survey is written at a seventh-grade reading level, and is designed to be completed in a

forty-minute class period<sup>6</sup>. We used Turkish version of YRBS questionnaires and it was administered to students in a single session at school after informed consent taken by the study coordinator. Students were asked not to write their names and school numbers. Assurance for confidentiality was provided. Ethic Committee of Faculty of Medicine, Cukurova University approved the study.

**Statistics**

Data was installed using Visual dBase program and was analyzed using Statistical Package for Social Science (SPSS) for Windows version 9.0<sup>7</sup>.  $\chi^2$  and Kolmogorov-Smirnov tests were used for statistical analysis.

**Results**

One thousand one hundred and eighty seven students (50.5%) said that they felt hopelessness and sadness for more than 15 days during the last 12 months in a degree that affected their daily activities. The prevalence of feeling hopelessness and sadness was higher in females and in third grade students and the difference

was statistically significant ( $\chi^2=36,269$ ,  $df=1$ ,  $p=0.0001$ , Table 1 and  $\chi^2=28,998$ ,  $df=2$ ,  $p=0.0001$ , respectively). There was no significant relationship between family income, parental educational status and feeling hopelessness and sadness.

**TABLE 1**  
OCCURANCE RATE FOR FEELING DESPERATE IN A DEGREE THAT AFFECTED THEIR DAILY ACTIVITIES FOR MORE THAN 15 DAYS DURING THE LAST YEAR (N=2,352)

Gender	Feeling desperate in a way that it affected daily activities for more than 15 days during the last year					
	Yes		No		Total	
	N	% <sup>a</sup>	N	% <sup>a</sup>	N	% <sup>b</sup>
Male	522	44.3	657	55.7	1,179	50.1
Female	665	56.7	508	43.3	1,173	49.9
p <sup>c</sup>						0.0001

<sup>a</sup>row percentage, <sup>b</sup>column percentage, <sup>c</sup>Pearson  $\chi^2$

Five hundred and twenty six students (22.4%) had suicidal thoughts during the last 12 months and the prevalence for suicidal thoughts was higher in females than males ( $\chi^2=53,163$ ,  $df=1$ ,  $p=0.0001$ , Table 2). There was no significant relationship between grade and suicidal thoughts. As family income increased the frequency of suicidal thoughts also increased and the relationship was significant ( $\chi^2=13,115$ ,  $df=3$ ,  $p=0.004$ ). There was no significant relationship between parental educational status and suicidal thoughts.

**TABLE 2**  
THINKING OF SUICIDE DURING THE LAST YEAR (N=2,352)

Gender	Thinking of suicide					
	Yes		No		Total	
	N	% <sup>a</sup>	N	% <sup>a</sup>	N	% <sup>b</sup>
Male	190	16.1	989	83.9	1,179	50.1
Female	336	28.6	837	71.4	1,173	49.9
p <sup>c</sup>						0.0001

<sup>a</sup>row percentage, <sup>b</sup>column percentage, <sup>c</sup>Pearson  $\chi^2$

Three hundred and thirty two students (14.1%) made plan during the last 12 months about how they would commit suicide. The occurrence rate for suicide plan in female students was higher than that of males and the difference between groups was statistically significant ( $\chi^2=47,883$ ,  $df=1$ ,  $p=0.0001$ , Table 3). There was no significant relationship between grade, parental educational status, family income and making plan about how to commit suicide.

One hundred and forty five (6.2%) students attempted suicide during the last 12 months with a mean number of  $1.4 \pm 0.6$ . Attempting suicide and the mean number

**TABLE 3**  
MAKING A PLAN ABOUT HOW TO COMMIT SUICIDE DURING THE LAST YEAR (N=2,352)

Gender	Making a plan about how to commit suicide					
	Yes		No		Total	
	N	% <sup>a</sup>	N	% <sup>a</sup>	N	% <sup>b</sup>
Male	108	9.2	1,071	90.8	1,179	50.1
Female	224	19.1	949	80.9	1,173	49.9
p <sup>c</sup>						0.0001

<sup>a</sup>row percentage, <sup>b</sup>column percentage, <sup>c</sup>Pearson  $\chi^2$

of attempts were higher in females than males (Table 4). There was no significant relationship between grade, parental educational status, family income and attempted suicide.

Thirty five (24.1%) students who attempted suicide during the last 12 months received treatment. There was no significant relationship between gender, grade, parental educational status, family income and treatment need.

## Discussion

Our study showed that hopelessness and sadness were quite common in adolescents living in Adana city centre. The occurrence rates for feeling desperate, thinking, planning and attempting suicide were all similar to rates in the literature in our study (50.5% vs. 29%, 22.4% and 24% vs. 20%, 14.1% vs. 15%, 6.2% vs. 10%, respectively). The suicidal thoughts and behavior were more frequent in females than males<sup>8,9</sup>. The rates of attempted and completed suicides per 100,000 Turkish inhabitants over 15 years of age were 31.9 for males and 85.6 for females, and 9.9 for males and 5.6 for females, respectively<sup>10</sup> and 621 (34.5%) of 1802 reported suicide cases in 2000 were in 15–24 age group<sup>11</sup>. Male gender is a risk factor for completed suicide and female gender for attempted suicide<sup>10,12</sup>. Compared with the results from other European research centers, attempted suicide rates in Turkey were relatively lower than in Western Europe however reached comparable levels. This upward trend may be related to the intense economic difficulties, increasing unemployment, and rapid social change experienced in Turkey in recent years<sup>10</sup>.

Although females attempted more, prevalence of treatment need for suicide attempt did not show any difference between genders. This situation may be due to males using more destructive methods for their suicide attempts than females. Studies showed that males prefer guns, hanging, jumping from high, females prefer overdose<sup>12</sup>. The relationship between higher family income and increased frequency of suicidal thoughts was surprising for us and is difficult to explain.

The alarming numbers of suicide deaths and attempts emphasize the need for carefully designed prevention efforts<sup>2</sup>. Schools can play a role in suicide prevention.

**TABLE 4**  
SUICIDE ATTEMPT DURING THE LAST YEAR (N=2,352)

Gender	Attempting suicide during the last year						X±SD
	Yes		No		Total		
	N	% <sup>a</sup>	N	% <sup>a</sup>	N	% <sup>b</sup>	
Male	34	2.9	1,145	97.1	1,179	50.1	1.2 ± 0.4
Female	111	9.5	1,062	90.5	1,173	49.9	1.5 ± 0.6
p <sup>c</sup>	0.01						0.05

<sup>a</sup>row percentage, <sup>b</sup>column percentage, <sup>c</sup>Kolmogorov-Smirnov

There is a broad spectrum of youth suicide prevention programs ranging from general education about suicide to crisis center hotlines. Gatekeeper training and screening programs may be designed to identify people at risk of suicide and refer them to mental health services. Conversely, hotlines are intended to help people who are experiencing a crisis<sup>13</sup>. Families, teachers and physicians have to be aware of risk factors for suicide and be cautious about preventive interventions. Children and adolescents who have been noticed by family physician to have psychological problems should be referred to Child and Adolescent Psychiatry Centers and should be followed-up in collaboration with specialists. Further studies on suicide, its risk factors and methods of prevention, should be developed. All physicians should receive education in adolescent biopsychosocial development, should be trained to identify early signs and symptoms of physical, emotional, and social distress, assessment of suicidal risk, treatment and referral options for self-destructive behaviours in their adolescent patients. Health care systems should facilitate the establishment of mental health consultation services aimed at preventing suicide, and cover the socio-medical care given to patients who have attempted suicide.

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## Limitations

This study could not go beyond prevalence rates for suicide. We did not study the relationship between suicide and drug use, violent and aggressive behaviors and the lack of physical activity. The risk factors and potential confounders and/or effect modifiers in the association of gender and suicidal behaviors were not fully analysed. Besides, there may be reporting bias and selection bias. Another limitation of our study was the lack of information about the methods used for previous suicide attempts and the lack of clinical interview with the students who attempted suicide.

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## **SUICIDALNE MISLI I PONAŠANJE KOD UČENIKA SREDNJIH ŠKOLA U ADANI, TURSKA**

### **S A Ž E T A K**

Prije pedeset godina adolescenti su uglavnom umirali zbog prirodnih razloga dok danas umiru uslijed razloga koji se mogu više spriječiti. Ova promjena je dijelom zbog svjetskog povećanja stope samoubojstava adolescenata u razvijenim zemljama te zemljama u razvoju. Samoubojstva vjerojatno nisu dobro evidentirana zbog kulturnih i religijskih razloga vezanih uz samouništenje. Ciljevi ovog istraživanja bili su prikupiti podatke o suicidalnim mislima, planovima i pokušajima te o odgovarajućima sociodemografskim značajkama učenika srednjih škola. Populaciju od 46,271 učenika iz 72 srednje škole u Adani u periodu od 1999–2000 predstavljao je uzorak od 2,480 nasumično odabranih učenika od kojih je 2,352 (94.8%) iz 10 srednjih škola ispunilo upitnik modificiran prema upitniku za istraživanje rizičnog ponašanja mladih (Youth Risk Behavior Survey Questionnaire –YRBSQ). Korišteni su  $\chi^2$  i Kolmogorov-Smirnov testovi. Srednja dob ispitanika bila je  $16.5 \pm 1$  (14–21) godina. 1,187 (50.5%) učenika prijavilo je ozbiljan osjećaj očajja, 526 učenika (22.4%) imalo je misli o samoubojstvu, 332 (14.1%) planiralo je počinuti samoubojstvo, 145 (6.2%) pokušalo je samoubojstvo. Učestalost osjećaja očajja, suicidalnih misli, planova, pokušaja te srednji broj pokušaja bio je značajno viši kod djevojaka nego kod mladića. Samoubojstvo adolescenata je tragedija koja utječe na osobu, obitelj, vršnjake i zajednicu. Obitelji, učitelji i liječnici trebali bi biti svjesni rizičnih čimbenika za samoubojstvo.