

Analysis of suicide deaths in a 15-year period in Eskisehir, western Anatolia, Turkey and the determination of risk factors

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BACKGROUND AND OBJECTIVES: It is estimated that every year 1 million people die all around the world due to suicide. The average rate of suicide in the world is reported as 16/100 000. In this study, we aimed to evaluate and discuss the suicide cases in our city Eskisehir that is located in western Anatolia.

DESIGN AND SETTINGS: This is a retrospective study covering the period 1997–2011.

METHODS: All deaths in Eskisehir caused due to the consumption of forensic medicines in a 15-year period between 1997 and 2011 were evaluated retrospectively. A total of 553 cases were determined to be suicidal following both forensic and criminal investigations, and were included in the study. Furthermore, death examination and autopsy reports were investigated, and judicial investigation records were also taken into account.

RESULTS: In this period, the average rate of suicide in our city was determined as 5.1/100 000 of which 71.4% of the cases were male. It was determined that the suicides most commonly occurred between the ages of 19 and 29 (32.4%, n=179). The most commonly encountered suicide method was hanging (60.9%, n=337).

CONCLUSION: It was ascertained that the suicide rate in our city was lower than the average rate in the world, but it was higher than the average rate in Turkey. Unemployment was determined as the most common risk factor in our study. A follow-up should be provided for people with a history of attempting to commit suicide or with a tendency to committing suicide due to a psychological disorder.

Suicide is accepted as a serious problem all over the world. Its rate, type, and demographic features differ according to local reasons such as cultural features and religious beliefs. It is estimated that 10 to 20 million people attempt to commit suicide every year, and 1 million people die due to suicide.¹ Various reasons such as family and social problems, love-related problems, financial difficulties, and health problems cause suicide in all the societies.²⁻⁴ It is reported that suicide rates are below 6.5 per 100 000 in Latin America countries and Muslim Middle East countries, and above 30 per 100 000 in countries such as Finland, Latvia, and Russia.⁵ The suicide rate is 6.7 per 100 000 in Islamic Republic of Iran.⁶ Researches about Islamic countries are quite poor, failing to take into account the ethnic background and the Islamic sect at the suicidal subjects. Reasons for the low rate of

suicide in Muslims include differences in social rules and socioeconomic status. Generally, Islamic countries show lower suicide rates compared to the other countries.^{7,8} The Eskisehir population is mainly consisted of Muslims.

In the USA, suicide is the second most common cause of death in the age group of 25 to 34 years and the third most common cause of death in the age group of 15 to 24 years.⁹ Durkheim accepts suicide as a social fact. Changes in the suicide rate and its types, different methods, and figures prove that society has an impact on the issue of suicide. Social features, religious beliefs, and culture have effects on the suicide rate.¹

In this study, we aimed to share and evaluate data of suicide cases in our city that is located in western Anatolia.

METHODS

All deaths in Eskisehir related with the forensic medicine in a 15-year period between 1997 and 2011 were evaluated. A total of 553 cases were determined to be suicides following the forensic and criminal investigations, and included in the study. The cases that were not suicide and whose investigations were still on progress were excluded.

The cases were assessed in terms of both sociodemographic data such as age, gender, occupation, marital status, method of suicide, and equipment used for suicide. The people who were unemployed or retired/retired due to disability, housewives, and convicted/prisoners were included in the study group as cases without active business lives. Data were evaluated by using SPSS, version 16.0 (Windows 7), and frequency tables showing distribution of the variables were formed. $P < .05$ was assumed as statistically significant.

Findings

A total of 3611 forensic deaths occurred in Eskisehir in the 15-year period between 1997 and 2011. The reason of 553 (15.3 %) of these deaths were suicide. Population, number of suicides, and years of suicides (rate in 100 000) are presented in **Figure 1**. No statistically significant difference was observed among years. The highest rate of suicide ($n=48$, 6.6/100 000) was in

2007 and the lowest rate ($n=21$, 3.1/100 000) was in 1998. The suicide rate in 15-year period was recorded as approximately 5.1 per 100 000 in Eskisehir.

Following investigation, it was revealed that 71.4% ($n=395$) of the cases were male, 28.6% ($n=158$) were female, and the male/female ratio was 2.5. The youngest person was 10 years old and the oldest one was 93 years old. The data suggested that 7.6% ($n=42$) of the cases were below 19 years old, and 9% ($n=50$) of the cases were above 64 years old. The distributions of the population and suicide cases in the 15-year period are presented by age in **Figure 2**. The suicide cases most commonly occurred between the ages of 19 and 29 (32.4%, $n=179$) years according to the data obtained.

As far as the marital status is concerned, 286 (51.7 %) of the cases were married, 201 (36.3 %) of them were single, 44 people (8.0 %) were widowed, 21 people (3.8 %) were divorced, and 1 person was married as per Islamic rules. There was a slight difference between genders in terms of marital status.

A total of 231 cases (48.4%) were primary school graduates, 143 cases (30%) were secondary school graduates, and 103 cases (21.6%) were university graduates; 45.6% ($n=47$) of the university graduates were unemployed. It was determined that 53.7% ($n=256$) of the cases were unemployed (**Table 1**). A significant difference between male and female cases was detected

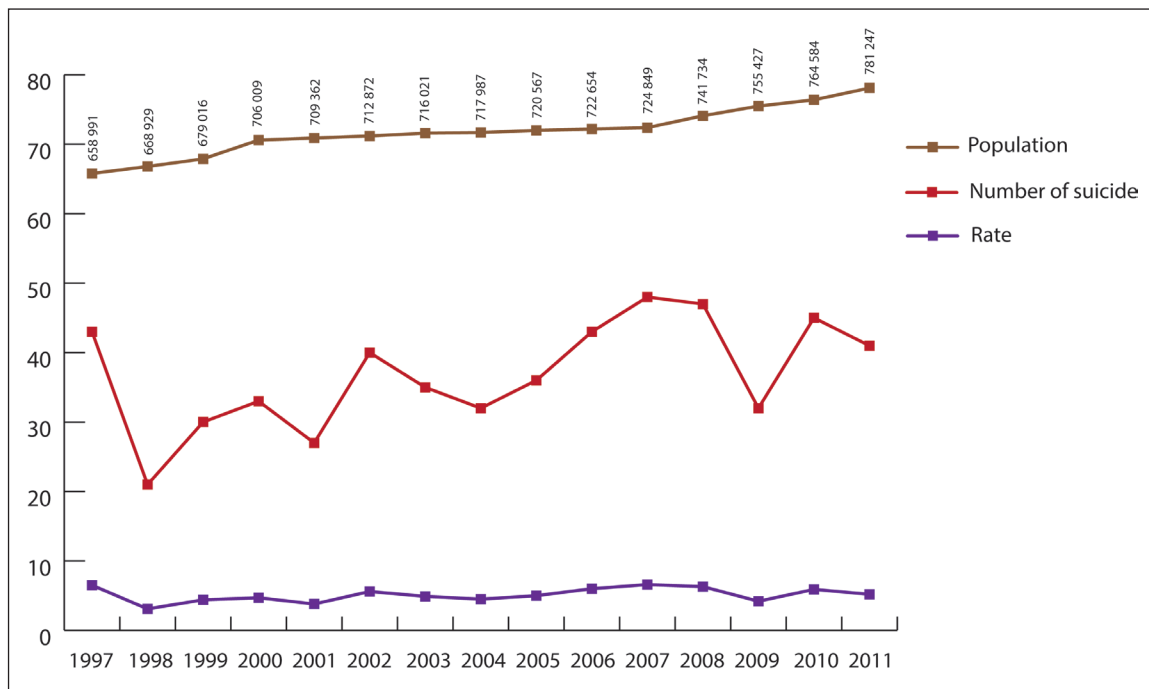


Figure 1. Distribution of population and number of suicide to years and distribution of suicide rate to population rates.

according to the status of working: 47.0% of the men (n=166) and 72.6% of the women (n=90) were unemployed. Data revealed that 13.7% (n=76) of the cases were students, 7.1% (n=39) were retired, and 3.1% (n=17) were in prison.

According to the method used for suicide, 60.9% (n=337) of the cases committed suicide by hanging, 15.9% (n=88) by firearms, 9.6% (n=53) by jumping from height, 8.9% (n=49) by toxic materials, 2.9% (n=16) by drowning, 1.4% (n=8) by jumping in front of a train, and 0.4% (n=2) by self-burn.

The distribution of suicide methods by age groups is presented in Table 2. The rate of firearm usage in the age group over 64 was very low comparing to other age groups (P<.05). A total of 15 of old cases (30%) committed suicide by jumping from the height. The rate of suicide in women by firearm was lower than men (Table 3, P<.001). As per the data, 7% of the women (n=11) and 19.5% of the men (n=77) committed suicide by using a firearm in our study group.

According to the data obtained, the accepted risk factors that were taken from forensic investigation files are presented in Table 4, and the distribution according to gender is also shown. Psychological disorders, death of a close relative, infertility, and unemployment were more common risk factors in women. However, history of alcohol abuse, history of reattempt to committing suicide, unemployment, and financial difficulties were more common in men.

DISCUSSION

Various factors such as psychiatric disorders, financial difficulties, emotional and family problems may cause people to commit suicide.^{4,10-13} It was estimated that every year a million people die as a result of suicide in the world. It was reported that suicide rate all over the world was 16 per 100 000, and a person died each 40 seconds due to committing suicide.¹⁴ It was reported that suicide rates were below 6.5 per 100 000 in Latin America countries and Middle East countries and 30 per 100 000 in countries such as Finland, Latvia, and Russia.⁵ The suicide rate was reported as 9.7 in Australia.¹⁵ According to an analysis of Turkish Statistical Institute, the approximate rate of suicide was 3.9 per 100 000 between 2007 and 2011 in Turkey 16. It was reported that suicide rates were far less in countries where mainly Muslims live when compared to Northern European countries.^{10,17,18} Although researches into Islamic countries are inadequate, but the Islamic faith is considered to reduce the rate of suicide.^{7,8}

Eskisehir is located in western Anatolia. There are 2 universities in Eskisehir, and its population is mainly

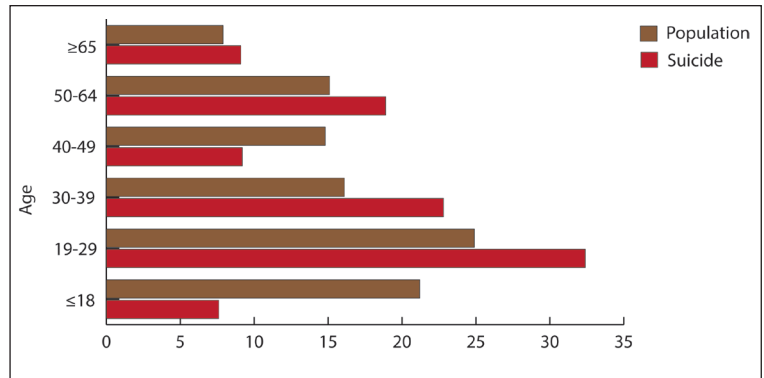


Figure 2. Distribution of cases to the age groups of population.

Table 1. Distribution of active work life to gender.

Working actively ^a	Male		Female		Total	
	n	%	n	%	n	%
Unemployed	166	47.0	90	72.6	256	53.7
Working	187	53.0	34	27.4	221	46.3
Total	353	100.0	124	100.0	477	100.0

^aExcept students (477 cases). $\chi^2=2198, P=.001$.

Table 2. Distribution of suicide method to the age groups.

Method	18 and below (year)		19-64 ages (year)		65 and over (year)		Total	
	n	%	n	%	n	%	n	%
Hanging	26	61.9	282	61.2	29	58.0	337	60.9
Firearm	7	16.7	79	17.1	2	4.0	88	15.9
Other methods	9	21.4	100	21.7	19	38.0	128	23.2
Total	42	100.0	461	100.0	50	100.0	553	100.0

$\chi^2=10\ 230, P=.03$.

Table 3. Distribution of suicide methods to gender.

Method	Male		Female		Total	
	n	%	n	%	n	%
Hanging	236	59.7	101	63.9	337	60.9
Using a firearm	77	19.5	11	7.0	88	15.9
Other methods	82	20.8	46	29.1	128	23.1
Total	395	100.0	158	100.0	553	100.0

$\chi^2 = 14.86; P=.001$

Table 4. Distribution of risk factors to gender.

Risk factor	Male	Female	Total	
	n	n	n	%
History of alcohol addiction	85	1	86	15.6
History of re-attempting	80	18	98	17.7
Economical difficulties	180	4	184	33.3
Physical illness	20	10	30	5.4
Losing a close person	39	27	66	11.9
Final diagnosis of psychiatric disorder	78	59	137	24.8
Diagnosis of possible psychiatric disorder	77	21	98	17.7
Love problems	61	34	95	17.2
Loneliness	82	44	126	22.8
Unemployment ^a	166	90	256	53.7

^aExcept students (477 cases).

consisted of Muslims and young people. The majority of the population is consisted of young people between the ages of 19 and 29.¹⁶ In this study, it was determined that the suicide rate in the period of 15 years is about 5.1 per 100 000 in our city that was lower than the average rate in the world but higher than the average rate in Turkey.

In the USA, suicide is the second most common reason of death in the age group of 25 to 34 years and the third most common reason of death in the age group of 15-24 years.¹⁹ According to the data of Turkish Statistical Institute, suicides most commonly occur in the age group of 15 to 24 (25.6 %) years and secondly in the age group of 25 to 34 (19.2 %) years. In this study, the cases were most commonly between the ages of 19 and 29 (32.4 %, n=179) years. The age group of 19 to 29 years constitutes 24.9% (n=195 279) of the population.²⁰ The suicide rate in Eskisehir was higher than the average rate in our country, and this might be related with the younger population.

In studies on the suicide subject, it was reported that suicide was more common in men.^{4,21-23} In a study that was performed in the thrace region, it was reported that 78.1% of the suicide cases were men.¹³ As per the published reports, we also determined that 71.4% of the cases (n=359) were men and 28.6% (n=158) were women, and the male/female rate was 2.5 in our study.

In the studies that were conducted in our country, it was emphasized that the most common suicide method was hanging and the second one was using firearms.^{13,22,24-26} As per the published reports, most of the

cases committed suicide by hanging themselves (60.9 % n=337) followed by firearms (15.9 % n=88). This may be attributed to the ease of finding material for hanging in contrast to firearms or poisons. We determined that women and geriatric age group were using firearms less than other groups (Tables 2 and 3). In this study, it was ascertained that 58% (n=29) of geriatric age group committed suicide by hanging, 30% (n=15) of by jumping from height. In a study, it was reported that in Spain 63.6% of geriatric age group committed suicide by jumping from height.²⁷ While psychological disorders, death of a close relative, and infertility were more risk factors in women group, history of alcohol abuse, history of reattempt, unemployment, and financial difficulties were more common in men group.

According to the forensic investigation, the most common risk factors were financial difficulties, psychological disorders, death of a close relative, infertility, and unemployment. The final diagnosis was made in 137 of the cases (24.8 %), and the possibility of mental disorder was detected in 98 of the cases (17.7 %). It was determined in similar studies that 90% to 95 % of the cases had at least a mental disorder; however, only 33% to -50% of these cases with mental disorder were diagnosed prior to suicide.^{28,29} These factors should not be understood as causes of suicide. These were risk factors that were revealed from the expressions in the forensic investigation files. At the same time, it is also known that a lot of people who experience the same risk factors in the society do not commit suicide. In studies related to this issue, risk factors are reported as depression, alcoholism, personality disorder, organic mental disorders, mental disorders such as schizophrenia, marriage problems, unemployment, low socioeconomic level, loneliness, migration, physical illnesses, losses, and re-attempting to commit suicide.^{28,29} Especially, the first 6 months after the suicide attempt is the most important period in terms of reattempting the suicide. It is necessary for the person to get psychological support during this period.³⁰ In this study, the history of attempting suicide was detected in 98 (17.7 %) of the cases.

In the studies, financial difficulties and unemployment were reported as risk factors for suicide.³¹⁻³³ In this study, the most significant risk factor was unemployment (53.7%). It was determined that 53.7 % of the cases (256/477) were unemployed. Including university graduates 45.6% (n=47) of these cases were unemployed. It was determined that unemployment is an important problem in all the levels of education. The women who were unemployed, economically dependent, and suffered from violence were prone to commit suicide. In this study, an important statistical relation-

ship was detected in terms of men's and women's unemployment ($P < .05$): 47.0% ($n=166$) of the men and 72.6% ($n=90$) of the women were unemployed.

Data obtained during the study such as suicide methods, demographic features of people who committed suicide, and risk factors for suicide were generally parallel with the published reports. The rate higher than the country average may be related with the young population dominating the sociocultural structure.

In our study, it was ascertained that not being involved in active work life was the most common risk factor. Therefore, it is thought that decreasing unem-

ployment will highly decrease the rate of suicide. It is especially considered that the suicide rate in women will decrease after increasing the woman employment.

In conclusion, it is mentioned in many published reports that the follow-up should be provided for people with the history of attempting to commit suicide or having tendency to commit suicide due to a psychological disorder. A close follow-up cannot be accomplished for these patients because of inadequate number of beds in psychiatry services. For this reason, psychiatry services, number of physicians, assistants, and infrastructure services should be enhanced.

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