

# A Psychological and Social Perspective on Completed Suicides in Western Anatolia, Turkey: a Case-Control Psychological Autopsy Study

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## ABSTRACT

A psychological and social perspective on completed suicides in Western Anatolia, Turkey: a case-control psychological autopsy study

**Objective:** Aim of this study was an evaluation of the completed suicide rate as well as exploring what associated psychological and social factors might have increased the risk of death from suicide.

**Method:** The study examines all adult suicide cases in the Province of Denizli that occurred between January 2009 and December 2010. In addition to examining the judicial files, interviews were conducted with the suicide victims' relatives to elaborate the cases and evaluate the risk factors for suicide. For 19 of 53 suicide victims (35.9%), no interviews were conducted; telephone interviews were carried out with relatives of 27 of the victims (50.9%), and face-to-face interviews were held with relatives of 7 of the subjects (13.2%). Healthy controls were randomly chosen from the registers of 14 Denizli primary healthcare centers. The 31 control individuals were from a similar geographic area and social backgrounds as the case group.

**Results:** Of the cases, 13.2% (n=7) were female, while 86.8% (n=46) were male. The mean age was 41.57±15.33 years. The total mean age of the control group was 42.84±16.98 years (p=0.725). The results of this study showed that a history of psychiatric disorder, prior suicide attempts, a history of alcohol abuse, stressful life events, and lack of social support/interaction were associated with suicide.

**Conclusion:** Clinical and psychosocial factors such as a history of psychiatric disorder, unemployment, and financial or relationship problems increase the risk of suicide.

**Keywords:** Autopsy, psychology, suicide

## ÖZ

Türkiye Batı Anadolu'daki tamamlanmış intiharların psikolojik ve sosyal görünümü: Bir vaka kontrol psikolojik otopsi çalışması

**Amaç:** Bu çalışmanın amacı tamamlanmış intihar oranlarını incelemek ve tamamlanmış intihar riskini artırabilecek ilişkili psikolojik ve sosyal faktörleri araştırmaktır.

**Yöntem:** Ocak 2009 - Kasım 2010 tarihleri arasında Denizli'deki tüm erişkin intihar vakaları incelendi. Vakaların yakınları ile adli dosya incelemesi sonrasında vakayı detaylandırmak ve intiharla ilişkili risk faktörlerini değerlendirmek amaçlı görüşme planlandı. Elli üç vakanın %35.9'unun (n=19) yakınları ile görüşme yapılmadı, %50.9'unun (n=27) yakınları ile telefonla görüşüldü, %13.2'sinin (n=7) yakınları ile ise yüz yüze görüşüldü. Sağlıklı kontroller Denizli'deki 14 birinci basamak sağlık merkezi kayıtlarından rasgele seçildi. Otuz bir kontrol grubu bireyi vaka grubu ile benzer çevre ve sosyal kökendi.

**Bulgular:** Vakaların %13.2'si (n=7) kadın, %86.8'i (n=46) erkekti. Ortalama yaş 41.57±15.33 yıl olarak bulundu. Kontrol grubunda ortalama yaş ise 42.84±16.98 yıl olarak tespit edildi (p=0.725). Bu çalışmanın sonuçları psikiyatrik hastalık öyküsü, önceki intihar girişimleri, alkol kullanım öyküsü, stresli yaşam olayları, sosyal destek/iletişim yokluğunun intihar ile ilişkili olduğunu gösterdi.

**Sonuç:** Klinik ve psikososyal faktörler; psikiyatrik hastalık öyküsü, işsizlik, finansal ve ilişki problemleri intihar riskini artırmaktadır.

**Anahtar kelimeler:** Otopsi, psikoloji, intihar



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## INTRODUCTION

Suicide is an important public health problem, significant for individuals and families, that is receiving increasing attention worldwide. Major risk factors for suicide include substance abuse, being unmarried, low education, anxiety, mental and personality disorders, and experiencing major life stressors (1).

Suicidal behavior is defined by the act of making an attempt on one's own life with purpose, and acts of suicide which result in death are called 'completed suicides.' The psychological autopsy (PA) method is a systematic method that provides contextual conditions and evaluates suicides psychologically through retrospective examination. The PA method's main purpose is to determine what mental health issues and/or life events may have led to committing suicide. Robins et al. (2) performed the first PA studies, and Shneidman (3) developed the current method still used successfully in many populations.

The PA method requires one or more information sources: judicial records, psychiatric records, other medical information about the suicide victim, and interviews (recommended face-to-face) with relatives of the victim (4,5).

In Turkey, written records concerning completed suicidal events have been kept since 1962 and are published every year by the Turkish Statistical Institute in its 'Suicide Statistics Forms.' In these reports, the number of suicides per 1000 persons in a population each year is defined as the 'crude suicide rate (CSR).' The CSR values for the years 2009 and 2010 in Denizli, Turkey, a city located in the Aegean Region, were 6.72 and 4.31, respectively (6). The CSR for the Aegean Region (5.35 and 4.77, resp., for the years 2009 and 2010) was higher in comparison to countrywide rates (the CSR for Turkey was 4.02 in both years), and it is noteworthy that the rates of suicide in Denizli were higher than the countrywide rates in both 2009 and 2010.

Two studies using the psychological autopsy method in Turkey were previously performed where individual cases were examined separately and individually (7,8). These two studies had similar results, both demonstrating a determination to die, as

could be understood from the chosen method, as well as a lack of support for the young population. A case-control study conducted in Eastern Anatolia found that recent life events, family breakup, and mental illness increased the disposition towards suicide among young women (9). The present study was conducted as a 'case controlled PA' study based upon suicidal incidents that recently had been seen to increase in the Aegean Region of Turkey (Denizli) (6). Our aim was to evaluate the completed suicide rate as well explore what associated psychological and social factors might have increased the risk of death from suicide.

## METHODS

The current study examined all suicide cases ( $n=53$ ) that had occurred between January 2009 and December 2010 and whose autopsies were performed jointly by the Denizli Council of Forensic Medicine and the Department of Forensic Medicine, Pamukkale University. Judicial records of each completed suicide case were examined on-site (Denizli Court of Justice) with official permission. The victim's identity, sociodemographic information, and photos of the area where the victim had died, crime scene investigation reports, eyewitness statements, reports from the victim's relatives, hospital records, court documents, and suicide notes (if found) were all integral parts of the data collection.

In addition to examining the contents of these files, interviews were conducted with the suicide victims' first-degree relatives or very close friends who could be reached through the records and who consented to participate in the study. A questionnaire was formulated as well in order to evaluate the interpretation of risk factors. The form inquired about traumatic life events such as bereavement/loss, suicide history (psychological symptoms and behavioral changes in the recent past), socio-economic and physical health status, lack of social support, marital and job status, and social relations during the victim's last week using some of the PERI Life Event Scale parameters (10).

Healthy controls were randomly chosen from the

registers of 14 Denizli primary healthcare centers. The 31 individuals in the control group were from a similar geographical area and social backgrounds as the case group. Controls were contacted by telephone, and interviewers received information from a close family member or friend after approval.

A psychiatrist from the research team made psychiatric diagnoses according to the files and the interviews conducted. A blinded psychiatrist not involved in the data collection process carried out a diagnosis evaluation for the cases and controls based on the questionnaires and interview records. Two doctors discussed the matching and non-matching (2 cases) diagnoses. Upon consultation, the diagnoses were agreed according to the DSM-IV Axis I and were accepted as the final psychiatric diagnoses.

Ethics approval for our study was granted by deliberation number 6 dated 12/10/ 2010 from the Ethics Committee of Pamukkale University Faculty of Medicine.

## Statistical Analysis

All statistical analyses were executed using the Statistical Package for Social Sciences (SPSS) for Windows (version 16.0). Kolmogorov-Smirnov test, Pearson's Chi Square test, and Fisher's Exact test were used, and the effect of independent variables was evaluated by Binary Logistic Regression analysis. T-test analysis was used to determine the significance of the difference between mean values in the independent groups. The results were evaluated utilizing a 95% confidence interval, and statistical significance was accepted at  $p < 0.05$ .

## RESULTS

### Interviews with Relatives

For 19 of 53 suicide victims (35.9%), no interviews were conducted; telephone interviews were carried out with relatives of 27 of the victims (50.9%), and

**Table 1: Socio-demographic and clinical variables of the suicide victims and the controls**

	Case		Control		p
	Mean	SD	Mean	SD	
<b>Age</b>					
Female	49.86	26.98	46.62	26.10	
Male	40.30	12.74	41.52	13.02	
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
<b>Gender</b>					
Female	7	13.2	8	25.8	0.146*
Male	46	86.8	23	74.2	
<b>Marital status</b>					
Single	11	20.8	8	25.8	0.374*
Married	33	62.3	21	67.7	
Divorced/Widowed/ Separated	9	17.0	2	6.4	
<b>Educational background</b>					
Primary and Secondary School	22	61.1	18	58.0	0.949*
High School	7	19.4	7	22.6	
Higher Education	7	19.4	6	19.4	
<b>History of psychiatric disorder</b>	19	35.8	3	9.7	0.008*
<b>History of physical illness</b>	10	18.9	10	32.3	0.164*
<b>History of suicide attempts</b>	18	43.9	0	0.0	<0.001*
<b>History of alcohol abuse</b>	18	45.0	3	9.7	0.001*
<b>History of substance abuse</b>	4	8.5	0	0.0	0.147**
<b>History of suicide in family</b>	2	6.5	3	9.7	1.000**
<b>History of psychiatric disorder in family</b>	8	24.2	6	19.4	0.636*

\*Pearson's chi-square test, \*\*Fisher's Exact test, SD: Standard deviation

face-to-face interviews were held with relatives of 7 of the subjects (13.2%). Telephone interviews were made with relatives of every member of the control group.

**Sociodemographic Factors**

Of the cases, 13.2% (n=7) were female and 86.8% (n=46) were male. The mean age was 49.86±26.98 (18-82) years in the female group and 40.30±12.74 (22-76) years in the male group (total 41.57±15.33). Sociodemographic characteristics were not different between the case and control groups (p>0.05) (Table 1).

**Clinical Factors (Mental, Physical, and Family History)**

Psychiatric disorders, a history of alcohol abuse, and previous suicide attempts were significantly higher among the completed suicide cases than in the control group (Table 1).

**Life Events**

In the suicide cases, the rate of relationship problems was determined to be 35.8% (n=19), the rate of unemployment and financial problems was determined was 43.4% (n=23), and the rate of physical

illness and severe pain was determined to be 7.5% (n=4). In the control group, these rates were determined to be 6.5% (n=2), 38.7% (n=12), and 12.9% (n=4), respectively. The distribution of stressful life events in the week before the suicides is shown in Table 2.

The rate of stressful life events leading up to suicide differed significantly from the rate in the control group. Additionally, regarding relationships with family and friends, combined under the heading social support, responses indicating a perceived non-availability of social support were significantly more common among the cases than among the controls (Table 2).

**Psychiatric Diagnoses**

DSM-IV diagnoses were found to be significantly lower in the control group in comparison to the cases [9.7% (n=3) and 62.8% (n=28), respectively; p=0.002]. The distribution of diagnoses among suicide victims was: 22.6% (n=12) depressive disorder, 13.2% (n=7) alcohol abuse disorder, 11.3% (n=6) psychotic disorder, and 5.7% (n=3) alcohol abuse disorder + depressive disorder (Table 2). Twelve subjects (26.7%) had consumed alcohol on the day of the suicidal event, and 11 subjects (20.8%) had consulted a doctor prior to the completed suicide.

**Table 2: Stressful life events, social support and psychiatric diagnoses of the suicide victims and the controls**

	Case		Control		p
	n	%	n	%	
<b>Stressful Life Events</b>					
None	7	13.2	13	41.9	0.003*
Relationship problems	19	35.8	2	6.5	
Unemployment and financial problems	23	43.4	12	38.7	
Physical illness and severe pain	4	7.5	4	12.9	
<b>Social Support Problems</b>					
No	43	81.1	31	100.0	0.011**
Yes	10	18.9	0	0.0	
<b>Axis I diagnoses</b>					
None	25	47.2	28	90.3	0.002*
Depressive disorder	12	22.6	3	9.7	
Psychotic disorder	6	11.3	0	0.0	
Alcohol abuse disorder	7	13.2	0	0.0	
Alcohol abuse disorder + depressive disorder	3	5.7	0	0.0	

\*Pearson's chi-square test \*\* Fisher's Exact test

**Table 3: Logistic regression model of suicide risk factors**

	Case		Control		Odd's ratio (95% CI)	p*
	n	%	n	%		
<b>Male gender</b>	46	86.8	23	74.2	2.255 (0.429-11.854)	0.337
<b>Marital status</b>						
Single	11	20.8	8	25.8	0.842 (0.147-4.825)	0.847
Divorced/Widowed/Separated	9	17.0	2	6.4	0.558 (0.064-4.837)	0.597
<b>Life events</b>						
Relationship problems	19	35.8	2	6.5	10.801 (1.123-103.836)	0.039
Unemployment and financial problems	23	43.4	12	38.7	5.293 (1.043-26.863)	0.044
Physical illness and severe pain	4	7.5	4	12.9	5.114 (0.564-46.365)	0.147
<b>History of alcohol abuse</b>	18	45.0	3	9.7	4.529 (0.938-21.867)	0.060
<b>History of psychiatric disorder</b>	19	35.8	3	9.7	8.826 (1.373-56.739)	0.022

\*Logistic regression analysis (-2 Log likelihood 71.482, overall percentage 76.1%,  $\chi^2=25.801$ ,  $p=0.001$ )

### Suicide Characteristics

For both male (45.7%) and female (71.4%) subjects, hanging was the most frequently used suicide method. For males, firearm use was the second most common suicide method (32.6%), whereas the second most common method for females was jumping from a height (28.6%). Among all suicide victims, male and female, 26 (49.1%) used hanging, 15 (28.3%) firearms, 7 (13.2%) poisoning, 3 (5.7%) jumped from a height, 1 used a sharp tool, and 1 died by drowning.

Twenty-two subjects (41.5%) left a suicide note. The contents mostly comprised apologies, expostulations and anger, curses and endearments toward living relatives, descriptions of life as unbearable, and information about what to do after their death. Most of the suicide victims committed suicide at home or nearby ( $n=32$ ). Seven subjects committed suicide in their workplaces and 2 in their cars. Eleven persons committed suicide in an area distant from their houses (forest, water channel, construction site, hospital garden, etc.).

### Binary Logistic Regression Analysis

According to the model, the odds ratios for relationship problems, unemployment and financial problems, and a history of psychiatric disorder were 10.801, 5.293, and 8.826, respectively (Table 3).

### DISCUSSION

The results of this study using data from 53 suicide victims and 31 controls with a mean age of all persons around 45 years showed that a history of psychiatric disorder, previous suicide attempts, a history of alcohol abuse, stressful life events, and a lack of social support/interaction were associated with suicide. This is a psychological autopsy study, and a recall bias on the part of relatives of victims is to some extent inevitable. Telephone or face-to-face interviews were conducted with relatives of most of the victims. However, relatives may underreport major personal events experienced by suicide victims because they were not aware of them, or they may overreport events because of their personal psychological reaction to the suicide (11). Furthermore, relatives who refused the interview request for further information (35.9%) stated that they were disturbed by speaking about the subject again. In Japanese society, families do not want to accept their relatives' death by suicide (12), which is a similar point of view as the one held in Turkish society. Suicide is generally not welcomed or accepted by a majority Muslim society. 'Never commit suicide' is an imperative in the Quran (13), and the belief that 'paradise is ill-gotten for ones who commit suicide' is expressed for Muslims in the hadiths, both of which contribute to a negative view on suicide. One of the limitations of this study is that some relatives declined to be interviewed.

This study has shown that death by suicide was more common in adult men around the age of 45 (86.8%). Taktak et al. (14) showed an increase in suicides among subjects between the ages of 30 and 40 who were male and lived in the metropolitan city of Istanbul. Studies were conducted in different parts of the world, showing that the ratio of completed suicides was much higher among men and elderly people, who are more serious about killing themselves than young people and women (15-19). In contrast, a study conducted in the Southeastern Anatolian Region showed that death by suicide was more common in young females around the age of 20 (9). This gender and age difference may partially reflect the interregional social and cultural differences of Turkey, especially in the Southeastern Anatolian Region. There, a woman's life is limited to the home, and women do not have career opportunities. Traditional and social pressures may drive them to despair of their future at the beginning of their lives, and these pressures may also decrease their coping abilities. It has also been reported that the suicide rate among young women in rural environments is higher than it is among men in China (20). However, a rapid decrease of suicide rates in young women has been reported in recent years. According to some authors, the cultural change brought about by fast economic growth may have created an improved social position for rural young women (19,21).

Individual and familial factors – for example, being alone, unemployed, or lacking social contacts – have been assumed to be the most common reasons for suicide. In the present study, a lack of social interaction and a perceived lack of social support due to isolation were a little higher among the suicide cases than in the control group. This is found to be especially pertinent for people who are alone due to a spouse's death, divorce, or separation. The perceived absence of close and supportive relationships likely reduced the coping skills among the subject group. It has also been reported that family and social support can reduce the risk of suicide (22-24). However, Khan et al. (25) found that more than half of suicide victims lived with family members. The family has been deemed a protective

factor, but it is important to evaluate in detail the significance of important life events (such as domestic trigger situations, relationship problems etc.).

An economic crisis peaked in Turkey in 2009, and the most negative effect emanating from the crisis was a nearly twofold increase of unemployment rates (26). Unemployment due to the economic crisis also increased in the western city of Denizli, which has fertile agricultural plains and an advanced textile trade (27). According to statistics on causes of death in Turkey in 2009-2010, the crude suicide rate in Denizli was greater than in Turkey as a whole (6,28). The restructuring challenges such as unemployment, concern over work prospects, and changes in living standards could also be associated with suicide. In different countries, major increases in unemployment rates during the crisis were associated with an increase in suicides (29-31). A number of psychosocial factors such as living separately, being unmarried, or breaking off a continuing relationship, employment problems, changes in religious practice, or a perceived lack of social support were important determinants for suicide (14,32-34). In the present study, the risk of suicide increased 10.801 times in the presence of relationship problems and 5.293 times with unemployment and financial problems as stressful life events.

For completed suicides, one of the strongest predictors is a history of suicide attempts (35). In the present study, previous suicide attempts were significantly higher among cases than in the control group. A psychiatric disorder was diagnosed in 62.8% of victims. The diagnosis distribution was as follows: depressive disorders, alcohol abuse, psychotic disorders, and alcohol abuse + depressive disorder. Twelve subjects had consumed alcohol on the day of the suicidal event. As reported in previous studies, mood disorders, substance-related disorders, personality disorders, and psychotic disorders were the most common diagnoses in suicide cases (9,34,36-38). These conditions might aggravate the symptoms gradually if combined with unemployment and/or loneliness. The risk of death by suicide increases due to these mental disorders (39,40). In our study, the risk of suicide increased 8.826 times when a history of

psychiatric disorder was present as a stressful life event. A familial history of psychiatric disorder was found in 24.2% of cases. These figures are similar to the results of Cheng et al. (11). A tendency to psychopathologies in first-degree relatives, a history of suicide attempts, and the psychopathology of the victim may form a biological predisposition to suicide for this small group.

In our study, hanging was the most common suicide method for both the male and female subjects. This was followed by firearm use among males and jumping from a height among females. The methods of suicide showed the same ranking in many studies (9,14,40-42). The methods chosen by these cases – hanging, firearm use, jumping from a height – generally show the seriousness of these individuals' intentions and the final determination to die.

Suicide notes were found in 41.5% of cases. Other studies reported rates of leaving a suicide note of between 3.0% and 42.0% (43,44). In the study by Taktak et al. (14), most of these notes were left to penalize the victims' relatives. It has been shown that notes written by young people tend to be longer and emotionally richer, while notes written by older subjects were shorter and less emotional (45). In our study, male and middle-aged victims mostly left short notes that were not emotionally rich. Their themes were generally among the following: expostulations/anger/curses to living family and friends, apologies, requests for blessing, endearments, descriptions of the meaninglessness of their lives, instructions, and their reasons for suicide. With positive and negative feelings, they tried to explain to their relatives why they were driven to suicide. It is important to understand the meaning of written texts and the language of suicide; however, it is complicated to interpret the feelings in the texts due to different psychological points of view (46).

The main limitations identified in this study were the small number of cases as well as inadequate interviews with victims' relatives. The immeasurability of despair, religious beliefs, and personality characteristics that facilitate suicide were another

restriction in the present study. The study does not appear to have collected all the relevant data around risk factors and also protective factors, which is a particular limitation.

In conclusion, the psychological autopsy study identified risks leading to completed suicide. Clinical and psychosocial factors; a history of psychiatric disorder, previous suicide attempts, a history of alcohol abuse, stressful life events, and lack of social support all increase the risk of suicide. A history of psychiatric disorder, unemployment, and financial and relationship problems are the most serious risk factors for suicide. Suicide prevention strategies should be developed by increasing coping skills in the arena of social problems and stressful life events, such as unemployment and relationship problems.

Contribution Categories		Author Initials
Category 1	Concept/Design	N.K.O.
	Data acquisition	T.T.U.
	Data analysis/Interpretation	T.T.U., F.A., K.A.
Category 2	Drafting manuscript	N.K.O., T.T.U., K.A.
	Critical revision of manuscript	T.T.U., N.K.O., F.A.
Category 3	Final approval and accountability	N.K.O., T.T.U., F.A., K.A.
Other	Technical or material support	N/A
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## REFERENCES

1. Hawton K, van Heeringen K. Suicide. *Lancet* 2009; 373:1372-1381. **[CrossRef]**
2. Robins E, Murphy GE, Wilkinson RH, Gassner S, Kayes J. Some clinical considerations in the prevention of suicide based on a study of 134 successful suicides. *Am J Public Health Nations Health* 1959; 49:888-899. **[CrossRef]**
3. Shneidman ES. The psychological autopsy. *Suicide Life Threat Behav* 1981; 11:5.
4. Conner KR, Beautrais AL, Brent DA, Conwell Y, Phillips MR, Schneider B. The next generation of psychological autopsy studies. Part I. Interview content. *Suicide Life Threat Behav* 2011; 41:594-613. **[CrossRef]**
5. Conner KR, Beautrais AL, Brent DA, Conwell Y, Phillips MR, Schneider B. The next generation of psychological autopsy studies: part 2. Interview procedures. *Suicide Life Threat Behav* 2012; 42:86-103. **[CrossRef]**
6. Turkish Statistical Institute. Turkey's Statistical Yearbook 2010. Ankara, 2011 [http://istmat.info/files/uploads/47801/turkeys\\_statistical\\_yearbook\\_2010.pdf](http://istmat.info/files/uploads/47801/turkeys_statistical_yearbook_2010.pdf). Accessed on October 26, 2018.
7. Dilsiz A. A psychological autopsy trial. *Kriz Dergisi* 1994; 2:218-222. (Turkish) **[CrossRef]**
8. Sayil I, Canat S, Tugcu H. A study on psychological autopsy an evaluation of sixteen suicides, cases. *Kriz Dergisi* 2003; 11:1-6. (Turkish)
9. Altindag A, Ozkan M, Oto R. Suicide in Batman, Southeastern Turkey. *Suicide Life Threat Behav* 2005; 35:478-482. **[CrossRef]**
10. Dohrenwend BS, Krasnoff L, Askenasy AR, Dohrenwend BP. Exemplification of a method for scaling life events: the Peri Life Events Scale. *J Health Soc Behav* 1978; 19:205-229. **[CrossRef]**
11. Cheng AT, Chen TH, Chen CC, Jenkins R. Psychosocial and psychiatric risk factors for suicide. Case-control psychological autopsy study. *Br J Psychiatry* 2000; 177:360-365. **[CrossRef]**
12. Yoshimasu K, Kiyohara C, Miyashita K; Stress Research Group of the Japanese Society for Hygiene. Suicidal risk factors and completed suicide: meta-analyses based on psychological autopsy studies. *Environ Health Prev Med* 2008; 13:243-256. **[CrossRef]**
13. Imalili-Yazir H. Surah The Women, verse 4.29. The Holy Qur'an and colored explanation of words. Istanbul: Ozel M. Sistem Press, 2007; 88. (Turkish)
14. Taktak S, Uzun I, Balcioglu I. Gender differences in completed suicides in Istanbul, Turkey. *J Affect Disord* 2013; 145:394-399. **[CrossRef]**
15. Poorolajal J, Rostami M, Mahjub H, Esmailnasab N. Completed suicide and associated risk factors: a six-year population based survey. *Arch Iran Med* 2015; 18:39-43.
16. Amiri B, Pourreza A, Rahimi Froushani A, Hosseini SM, Poorolajal J. Suicide and associated risk factors in Hamadan province, west of Iran, in 2008 and 2009. *J Res Health Sci* 2012; 12:88-92.
17. Ngamini Nguai A, Apparicio P, Moltchanova E, Vasiliadis HM. Spatial analysis of suicide mortality in Quebec: spatial clustering and area factor correlates. *Psychiatry Res* 2014; 220:20-30. **[CrossRef]**
18. Kunst AE, van Hooijdonk C, Droomers M, Mackenbach JP. Community social capital and suicide mortality in the Netherlands: a cross-sectional registry-based study. *BMC Public Health* 2013; 13:969. **[CrossRef]**
19. Wang CW, Chan CL, Yip PS. Suicide rates in China from 2002 to 2011: an update. *Soc Psychiatry Psychiatr Epidemiol* 2014; 49:929-941. **[CrossRef]**
20. Phillips MR, Li X, Zhang Y. Suicide rates in China, 1995-99. *Lancet* 2002; 359:835-840. **[CrossRef]**
21. Zhang J, Sun L, Liu Y, Zhang J. The change in suicide rates between 2002 and 2011 in China. *Suicide Life Threat Behav* 2014; 44:560-568. **[CrossRef]**
22. Cavanagh JT, Owens DG, Johnstone EC. Suicide and undetermined death in south east Scotland. A case-control study using the psychological autopsy method. *Psychol Med* 1999; 29:1141-1149. **[CrossRef]**
23. Foster T, Gillespie K, McClelland R, Patterson C. Risk factors for suicide independent of DSM-III-R Axis I disorder. Case-control psychological autopsy study in Northern Ireland. *Br J Psychiatry* 1999; 175:175-179. **[CrossRef]**
24. Zhang J, Conwell Y, Zhou L, Jiang C. Culture, risk factors and suicide in rural China: a psychological autopsy case control study. *Acta Psychiatr Scand* 2004; 110:430-437. **[CrossRef]**
25. Khan MM, Mahmud S, Karim MS, Zaman M, Prince M. Case-control study of suicide in Karachi, Pakistan. *Br J Psychiatry* 2008; 193:402-405. **[CrossRef]**
26. Karabicak M. The reasons of global crisis and the Turkish dimension of the global crises. Suleyman Demirel University Faculty of Economics and Administrative Sciences Journal 2010; 15:251-270.
27. Aktug E. Guney Ege Bolgesi Sosyal Durum Raporu (2013) - Southern Aegean Development Agency [http://geka.gov.tr/Dosyalar/o\\_19v5e8f11tvr131k7vjh51chb8.pdf](http://geka.gov.tr/Dosyalar/o_19v5e8f11tvr131k7vjh51chb8.pdf). Accessed on October 26, 2018. (Turkish)



28. Cause of Death Statistics (2010). Turkish Statistical Institute <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=15847>. Accessed on August 9, 2014. (Turkish)
29. Vanderoost F, van der Wielen S, van Nunen K, Van Hal G. Employment loss during economic crisis and suicidal thoughts in Belgium: a survey in general practice. *Br J Gen Pract* 2013; 63:e691-697. **[CrossRef]**
30. Laanani M, Ghosn W, Jouglu E, Rey G. Impact of unemployment variations on suicide mortality in Western European countries (2000-2010): authors' reply. *J Epidemiol Community Health* 2015; 69:819-820. **[CrossRef]**
31. Córdoba-Do-a JA, San Sebastián M, Escolar-Pujolar A, Martínez-Faure JE, Gustafsson PE. Economic crisis and suicidal behaviour: the role of unemployment, sex and age in Andalusia, southern Spain. *Int J Equity Health* 2014; 13:55. **[CrossRef]**
32. Zhang J, Lamis DA, Yuanyuan K. Measuring Chinese psychological traits and social support with Western developed instruments in psychological autopsy studies. *J Clin Psychol* 2012; 68:1313-1321. **[CrossRef]**
33. Almasi K, Belso N, Kapur N, Webb R, Cooper J, Hadley S, Kerfoot M, Dunn G, Sotonyi P, Rihmer Z, Appleby L. Risk factors for suicide in Hungary: a case control study. *BMC Psychiatry* 2009; 9:45. **[CrossRef]**
34. Manoranjitham SD, Rajkumar AP, Thangadurai P, Prasad J, Jayakaran R, Jacob KS. Risk factors for suicide in rural South India. *Br J Psychiatry* 2010; 196:26-30. **[CrossRef]**
35. Beghi M, Rosenbaum JF, Cerri C, Cornaggia CM. Risk factors for fatal and nonfatal repetition of suicide attempts: a literature review. *Neuropsychiatr Dis Treat* 2013; 9:1725-1736.
36. Arsenaull-Lapierre G, Kim C, Turecki G. Psychiatric diagnoses in 3275 suicides: a meta-analysis. *BMC Psychiatry* 2004; 4:37. **[CrossRef]**
37. Thacore VR, Varma SL. A study of suicides in Ballarat, Victoria, Australia. *Crisis* 2000; 21:26-30. **[CrossRef]**
38. Jia CX, Zhang J. Global functioning and suicide among Chinese rural population aged 15–34 years: a psychological autopsy case-control study. *J Forensic Sci* 2012; 57:391-397. **[CrossRef]**
39. Randall JR, Walld R, Finlayson G, Sareen J, Martens PJ, Bolton JM. Acute risk of suicide and suicide attempts associated with recent diagnosis of mental disorders: a population-based, propensity score-matched analysis. *Can J Psychiatry* 2014; 59:531-538. **[CrossRef]**
40. Chavan BS, Singh GP, Kaur J, Kochar R. Psychological autopsy of 101 suicide cases from northwest region of India. *Indian J Psychiatry* 2008; 50:34-38. **[CrossRef]**
41. Kanchan T, Menon A, Menezes RG. Methods of choice in completed suicides: gender differences and review of literature. *J Forensic Sci* 2009; 54:938-942. **[CrossRef]**
42. Mushtaq I, Mushtaq SA. Psychological autopsy study of suicide in Karachi. *Br J Psychiatry* 2009; 194:377. **[CrossRef]**
43. Paraschakis A, Michopoulos I, Douzenis A, Christodoulou C, Koutsaftis F, Lykouras L. Differences between suicide victims who leave notes and those who do not: a 2-year study in Greece. *Crisis* 2012; 33:344-349. **[CrossRef]**
44. Demirel B, Akar T, Sayin A, Candansayar S, Leenaars AA. Farewell to the world: suicide notes from Turkey. *Suicide Life Threat Behav* 2008; 38:122-127. **[CrossRef]**
45. Ho TP, Yip PS, Chiu CW, Halliday P. Suicide notes: what do they tell us? *Acta Psychiatr Scand* 1998; 98:467-473. **[CrossRef]**
46. Pestian JP, Matykiewicz P, Linn-Gust M. What's in a note: construction of a suicide note corpus. *Biomed Inform Insights* 2012; 5:1-6. **[CrossRef]**