



ORIGINAL ARTICLE

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The socio-demographic, clinical and forensic medical investigation of suicide attempts over 18 years old presented to a training and research hospital's emergency department: Izmir example

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Abstract

Suicide and attempted suicide are among the causes of serious morbidity and mortality and are an important public health problem today. In this study, it was aimed to evaluate socio-demographic, clinical and forensic medical aspects of suicide attempters admitted to our hospital, to identify some risk factors. Thus, we emphasize the importance of suicide and drawing attention to taking measures to prevent suicides. The necessary permissions were obtained for the study. The records of 710 patients who applied to the Emergency Department of Izmir Bozyaka Training and Research Hospital between 01 January 2014 and 31 December 2015 were retrospectively reviewed. 54.9% of the patients were female and 45.1% were male. Their ages ranged from 18 to 87 years and the mean age was 32.13 ± 11.52 years. It was determined that they preferred to drink drugs most frequently ($n = 665, 93.7\%$) and then die with firearm ($n = 30, 4.2\%$). Four (0.6%) cases died after all interventions. There is much scientific research on suicide attempts. However, there is insufficient research on how to approach suicidal cases when emergency department workers encounter suicide attempts. In order to prevent suicide attempts and deaths which are a serious public health problem, we think that risk factors should be determined, and protective measures should be taken.

Keywords: Emergency medicine, suicide, suicide attempt, risk factors

Introduction

The World Health Organization (WHO) reports that nearly eight hundred thousand people in the world, which means approximately 1 suicide in every 40 seconds suicide every year [1]. According to the data of our country, it is reported that the crude suicide rate decreased from 3.94 per hundred thousand in 2017 to 3.88 per hundred thousand in 2018; and the number of suicides resulted in deaths was 3168 in 2017; 75.6% of the suicide deaths in 2018 are men and 24.4% are women [2]. Since the available data are only completed suicide data and all suicide attempts are not officially reported, it is estimated that the number and rates of suicide and suicide attempts are actually higher and in recent years the rate of suicide attempts has increased in our country [3]. Completed suicide and suicide attempts, which have an important place in the world and in our country, is a serious psychosocial problem that

requires precautions and threatens every age group and requires a multidisciplinary approach as it has economic, cultural, social and psychological aspects [4,5].

Suicidal behavior, derived from the Latin word self-killing, which is also defined as "individual's deliberate act of ending her/his life", has economic, cultural, social and legal aspects [3,6,7].

All of the actions that the person voluntarily performs to end her/his life do not result in death. An action that does not result in death is called suicide attempt [4,8]. It is stated that suicide is the basis of self-harm and completed suicides and suicide attempts indicate serious emotional and communicative problems and lead to high morbidity and mortality, especially in patients with psychiatric disease [4,9].

Suicide rate and method vary between countries. Psychological structure, gender, age and social values are effective in the choice of suicide method. Suicide by hanging, the use of firearms, drugs overdose, pesticide poisoning, jump from the high ground are widely used methods all over the world. Suicide by hanging in

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women and suicide by firearms in men are important among the suicide methods that resulted in death [5,7,10-12].

It is reported that suicide and suicide attempts have many risk factors. The most important ones have been emphasized as history of suicide attempts and severe mental illness (often major depression and alcohol addiction). In addition, some socio-demographic characteristics such as young age, female gender, low education level, unemployment, difficulty in subsistence, negative family interactions, living alone or separation and a history of physical and sexual abuse are stated to be significant [3,4,6,13-15].

When it is thought that hospital emergency services are generally the first places where suicide attempters' people are admitted and evaluated and those who do not end up in death may attempt suicide again, knowing the demographic characteristics and medical conditions of the patients who are admitted to the emergency service increases the importance of treatment and psychiatric support [16]. Besides, it is also known that all suicide cases are also evaluated as criminal cases, according to the Turkish Penal Code, reporting those criminal cases to the judicial authority after first medical care are provided is a forensic responsibility of health care providers and neglect of this responsibility is a crime [17,18].

In this study, our purpose is to determine the socio-demographic characteristics and the factors that may cause suicide attempt such as psychiatric disease and history of suicide attempt of the patients who are admitted to the emergency service of our hospital and display the clinical features of the cases. Moreover, it is also aimed to contribute to the studies in which preventive health policies are formed for the importance and prevention of suicides by conducting forensic medical evaluations.

Materials and Methods

This study was retrospectively. All patients who admitted to the emergency service of Bozyaka Training and Research Hospital between 01.01.2014 and 31.12.2015 were examined. There were 736 patients who applied for suicide attempt between these dates. Because there was no Pediatric department in the hospital where the study was conducted, 26 patients under the age of 18 were excluded from the study. Because these patients were referred to hospitals with Pediatric department after the first intervention, there was not enough data about these patients.

Demographic characteristics such as age and sex, psychiatric illness and previous suicide attempts, date of suicide attempts, time of admission to the emergency service, preferred suicide methods, consultations, hospitalization departments and causes of death in completed suicides were determined. In addition, forensic medical evaluation of the injuries in the cases was performed.

Statistical analysis

Data were analyzed with SPSS program (version 18.0). Demographic data were expressed as mean \pm standard deviation and / or percentage. Pearson chi-square test was used to analyze the data determined by frequency, percentage and count. The comparison values were calculated at a 95% confidence interval; $P < 0.05$ was considered statistically significant.

Results

710 cases were included in the study. 320 (45.1%) were male and 390 (54.9%) were female. Their ages ranged from 18 to 87 years with a mean age of 32.13 ± 11.52 years. Demographic data of the cases are presented in Table 1.

Table 1. Demographic data

Gender	n (%)
Male	320 (45,1%)
Female	390 (54,9%)
Age range of subjects	18 - 87
Mean age of subjects (year)	32,13+-11,52
Male	33,05+-12,01
Female	31,37+-11,07
Age groups (year)	
18-30	362 (51,0)
31-40	193 (27,2)
41-50	100 (14,1)
51-60	43 (6,1)
61 years and older	12 (1,6)

324 (45.6%) cases were admitted in 2014 and 386 (54.5%) cases in 2015. When the month and intraday time distribution of suicide attempts were evaluated, no significant difference was found between the months ($p > 0.05$), the highest rate was in August ($n=78$, 11.0%), May ($n=74$, 10.4%)) and December ($n=72$, 10.2%). Besides, suicide attempts were most frequently performed between 18.00-23.59 ($n=272$, 38.3%) (Table 2).

Table 2. Event date and time intervals of hospital admission of cases

Distribution by months	n (%)
January	62 (8.7)
February	40 (5.6)
March	61 (8.6)
April	44 (6.2)
May	74 (10.4)
June	66 (9.3)
July	66 (9.3)
August	78 (11.0)
September	55 (7.8)
October	47 (6.6)
November	45(6.3)
December	72 (10.2)
Distribution by hours	
00:01-06:00	157 (22.1)
06:01-12:00	102 (14.4)
12:01-18:00	179 (25.2)
18:01-24:00	272 (38.3)

532 (74.9%) of the applications were from Izmir city center and 178 (25.1%) were from out-of-town districts or other provinces. It was found that 553 (77.9%) of the cases enter to the hospital using by their own sources, 157 (22.1%) were admitted to the hospital by ambulance, and 2 ambulance cases were confirmed as an exitus.

It was determined that 92 (37.9%) of the 243 patients who had medical records about the diagnosed psychiatric illness and previous suicide attempts had a previously diagnosed psychiatric disease and 70 (28.8%) had previously attempted suicide.

When suicidal preferences were examined, it was found that overdose drugs (n=665, 93.7%) and then firearm (n=30, 4.2%) were mostly preferred for suicidal attempts (Table 3).

Table 3. Preferred forms of suicide

	(n)	(%)
Overdose drugs	665	93.7
Firearm injuries	30	4.2
Jump from the high ground	7	1.0
Sharp object injury	5	0.7
Hanging	2	0.3
Corrosive substance	1	0.1
Total	710	100.0

As a result of examinations and tests performed in the emergency department, a total of 387 consultations were requested to 304 cases from 13 different departments, most commonly Psychiatry (n=237, 61.2%), Internal Medicine (n=63, 16.2%) and Anesthesiology Reanimation (n=43, 11.1%) (Table 4).

Table 4. Distribution of consultations.

Clinics	(n)	(%)
Psychiatry	237	61.2
Internal medicine	63	16.2
Anesthesiology & Reanimation	43	11.1
Neurosurgery	13	3.4
Orthopedics & Traumatology	10	2.6
Others*	10	2.6
General surgery	6	1.6
Cardiology	5	1.3
Total	387	100.0

* Ophthalmology (2), Plastic Surgery (2), Otolaryngology (2), Urology (2), Chest Diseases (1), Neurology (1)

After the interventions in the emergency department, 85 of the cases were hospitalized in the relevant departments and the most hospitalization departments were Internal Medicine (n=35, 41.2%) and Anesthesiology Reanimation (n=27, 31.8%). The distribution of the hospitalization department is presented in Table 5.

Table 5. Distribution of clinics where patients are admitted.

Clinics	(n)	(%)
Internal medicine	35	41.2
Anesthesiology & Reanimation	27	31.8
Neurosurgery	10	11.8
Psychiatry	7	8.2
Orthopedics & Traumatology	6	7.0
Total	85	100.0

Blood alcohol concentration was requested in 111 (15.6%) patients. In the forensic medical evaluation; it has been shown that injuries of 22 (3.1%) cases endangered the lives. 668 (94.1%) cases' injuries were mild enough to be treated by simple medical intervention, whereas 20 (2.8%) cases' injuries did not endanger the lives but could not be treated by simple medical intervention.

As a result of all interventions, 706 (99.4%) cases were discharged from the hospital, totally 4 (0.6%) cases including 2 (0.3%) cases in the emergency service and 2 (0.3%) cases in the clinic department were died. It was found that firearm was preferred for suicide in all of the cases (P=0.000), and skull fracture, intracranial hemorrhage and brain damage were observed in all of these cases (Figure 1).

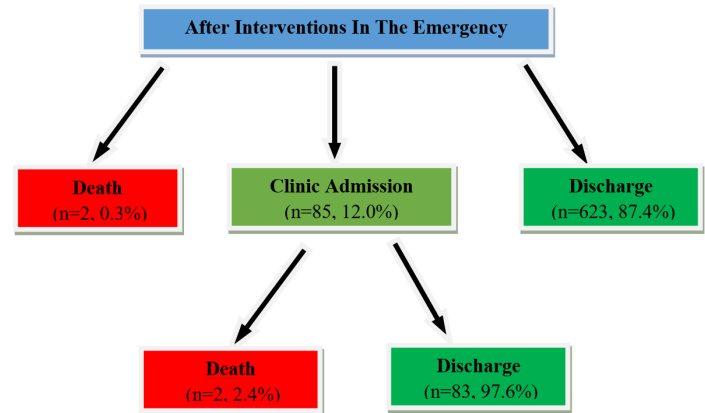


Figure 1. Situation of cases post-interventions in hospital.

When the relationship between suicidal preference with gender, age group and death was evaluated; it was determined that 22 (73.3%) of 30 patients who preferred suicide by firearms were male (p<0.005), 2 of them (p=0.000) who preferred suicide by hanging were female, and suicide by overdose drug was the most preferred method in all age groups (p<0.005). According to the results of suicide method and forensic medical evaluation; it was found that 656 (98.6%) of 665 patients who were injured as a result of overdose drug were mild enough to be treated with a simple medical intervention (p<0.001).

Discussion

Most national and international studies on suicide attempts have pointed out that suicide attempts rate is higher in women than men, this rate decreases as the increasing age and the cases are often young age at the time of attempted suicide [3,4,6,7,10,13,16,19-28]. In this study, it was determined that suicide attempts in women who admitted to the emergency service has a higher rate than men, and most of the patients aged between 18-87 years were in the 18-30 age range (51%). According to Keten [3], the reason that the cases are more young age group is whereas the coping mechanisms of this age group are not developed.

It has been reported that suicide attempts resulting in death (completed) are more common in men than in women. According to the retrospective autopsy, 79.1% of the cases evaluated by Demir [5], 70.4% of the cases evaluated by Karaarslan [11], 66.7% of the cases evaluated by Yavuz [29] and 71.4% of the cases evaluated by Demirci [30] are men. According to Harmanci [31] who reported

worldwide that woman is more suicide attempt but completed suicide attempts are more common in men, men are more decisive about to suicide attempts and they use more effective methods.

In this study, the highest rate of suicide attempts was determined in August (n=78, 11.0%), May (n=74, 10.4%) and December (n=72, 10.2%). There was no significant difference between the months. In the study of Sevik [32], in which the patients referred to the psychiatry clinic due to suicide attempts were evaluated, the most frequent attempts were in August; in the study of Kucuker [19] which the completed suicides and the suicide attempts were evaluated, the most frequent season was summer; in Gunderci's [33] study it was spring; in Karaarslan's [14] study, it was autumn; winter was the most-preferred season in Metin's [34] study and in Senol's [22] study most preferential month was July had been reported.

In our study, it was observed that hospital admissions time were more frequently between 18.00-23.59 (n=272, 38.3%) and no statistically significant difference was found. This was compatible with some other studies in our country [3,4,22,23,32]. According to Atli [4], considering that the most common cause of suicide is reported as family problems, the intensity of suicide attempts between 16.00-24.00 is an expected situation. According to Sayil [35], more suicide attempts by women between 17: 00-23: 59, which is the family members' commute time from work to home, were interpreted as calling for help and not to target death with suicide attempts.

In this study, it is seen that 74.9% of the cases were from Izmir city center and 77.9% entered to the hospital with their own means. Guloglu's [20] study in Diyarbakir University Hospital reported that the cases were mostly from the city center. This is an expected situation due to the hospitals in which the study was conducted were in the city center.

Our study had a retrospective nature and a deficiency of medical records. Therefore, data information about the time interval between suicide attempt and emergency service admission are not enough. It has been reported that the suicidal attempts cases were admitted to the emergency service within approximately three hours after identified, and depending on this, the first medical treatment is administered in the emergency service [31]. It is noted that suicide which is one of the preventable causes of death, is accepted as an important public health problem all over the world and it is very important to make the required evaluations and interventions without losing time as well as to determine the people who are at risk for suicidal behavior [10,36].

It was reported that suicide attempts were associated with depression and alcohol - substance addiction, as well as many mental illnesses, negative family interactions, lack of social solidarity, economic problems and socioeconomic factors such as migration. Further, a genetic aspect of suicide attempt behavior was shown. Lastly, it was pointed out that suicidal behavior and psychiatric disorders in families of suicide attempts were higher than the population mean. [26,37,38]. In this study, the history of psychiatric disorder and history of suicide attempt were accessed from 243 case's medical reports and 37.9% of these cases had a definite diagnosis of psychiatric disorder and 28.8% had previously attempted suicide. In many studies held in our country stated

that some of the patients who attempted suicide had a history of psychiatric disease and / or had attempted suicide before. In Avcil's [9] study, 21.4% of the cases, 20.8% in Karacaoglu's [6] study, 16.1% in Arslan's [26] study, 57.5% in Polat's [36] study and 18.7% in Demirci's [30] study had a history of psychiatric disease were reported. In addition, it was notified that 14.3% of the cases in the study of Ketten [3], 31.6% in the study of Avcil [9], 13.2% of the cases in the study of Atli [4], 22.8%, in the study of Karacaoglu [6], 13.6% of Arslan's [26] study, 10.5% of Demirci's [30] study, 16.5% of Onsuz's [16] study, 12.5% of Polat's [36] study and 32% of Yalvac's study [25] had a history of attempted suicide at least once. Although suicide attempts and deaths vary according to personal and social characteristics, it is seen that these attempts occur as a result of psychological, social and economic influences and comprise a serious public health problem in our country and all over the world. WHO has reported that effective personal and community interventions are essential to prevent suicide cases that are increasingly important all over the world and are among the leading causes of death [1].

In this study, it was found that the patients preferred to take overdose drug most frequently (n=665, 93.7%). Other studies show that the most preferred method for suicide attempt is to take overdose drug and supports the data of our study [3,4,6,13,16,20-26,32,34,36]. In addition, it was shown 4 cases that resulted in death preferred firearms to end their lives. Demir [5] and Karaarslan [11] autopsy studies reported that hanging was the most common method of death in the completed suicide attempts, followed by firearm. Dedic's [7] autopsy studies state that the most common form of death in suicide attempts was hanging; in Alves' [10] study which reviewed all suicide attempts, it was overdose drug in woman and penetran sharp injury and hanging in men; in Fisher's [12] study it was reported that most preferred method was overdose drug in woman and firearm and hanging in men. We believe that using overdose drug is the most preferred suicide attempt method among all attempts just because of easily accessible.

A total of 387 consultations were requested for 304 cases from 13 different departments in the emergency service. Psychiatry (n=237, 61.2%), Internal Medicine (n=63, 16.2%) and Anesthesiology Reanimation (n=43, 11.1%) were the most common consultation department and 12% of the cases were admitted to the relevant departments which were mostly Anesthesiology Reanimation (n=27, %31.8) followed by Internal Medicine (n=35; 41.2%) after the initial medical care in the emergency service. In our study, it is an expected situation that the most consultation department requested is psychiatry department and the most hospitalization departments are Internal Medicine and Anesthesiology Reanimation departments where toxicology cases are followed-up and treated.

In our study, it was determined that only 15.6% of the cases were requested for blood alcohol concentration. Suicide attempts are assessed as forensic cases and it is reported that it is of great importance to determine blood alcohol concentration in addition to examination findings in forensic cases in emergency service admissions and may affect both medical and forensic processes [39]. Considering that the blood alcohol level can decrease over time but in a way that does not adversely affect emergency medical support, requesting blood alcohol concentration test at the

earliest opportunity is significantly important in terms of forensic medicine.

In this study, according to the forensic medical evaluation, it was found that 94.1% of all cases were mild enough to be treated with a simple medical intervention, and also 98.6% of the patients who were injured as a result of overdose drug were mild enough to be treated with a simple medical intervention. Considering that overdose drug is the most preferred method in all age groups, the result is thought to be an expected condition.

In our study, 73.3% of the cases who preferred firearms for suicide were male, 4 of them died despite all the interventions and again, skull fracture, intracranial hemorrhage and brain damage were established in all of these cases. The fact that patients attempting suicide with a firearm targeting their own head region indicates that they are fairly decisive of suicide. In Yavuz's [29] autopsy study in which suicides were evaluated, it was reported that deaths were most frequently caused by firearms and 82.4% of these cases were male, which supports our study.

Study Limitations

The limitations of our study include the fact that the patients under the age of 18 were not included in the study because of the absent of pediatric department in Bozyaka Training and Research Hospital where the study was conducted, retrospective nature of the study and besides there was not enough data about the demographic information of the cases on the date of the event and the time between the entrance to the emergency service.

Recommendations

In our study, it was found that 92 (37.9%) of 243 patients who had a sufficient psychiatric history had a previously diagnosed psychiatric disease and 70 (28.8%) of them had attempted suicide at least once before. However, out of a total of 710 patients presenting for suicide attempts, the number of patients consulted to the psychiatry department was 237. This number constitutes 33.4% of all patients. Although suicide and suicide attempts have many risk factors, it is emphasized that previous suicide attempts and a history of psychiatric disease are the most important risk factors. In our opinion, all patients admitted to the emergency department as a result of suicide attempt should be examined by psychiatrist.

In our hospital, among the patients who applied as a result of suicide attempt, those who live alone, homeless and needy people are referred to the social services unit. This unit contributes to the socio-economic levels of the patients. We suggest that other hospitals with similar research should establish social service units.

Another data obtained from the present study is that the suicidal mode preferred by the subjects is to a large extent drinking medication (93.7%). Blood or urine levels are being examined for a limited number of drugs in our hospital. Ensuring that more drugs are studied will positively affect the morbidity and mortality of patients. The necessary health policies should be developed in order to improve the laboratory conditions of our hospital and hospitals like us.

Suicide attempts lead to serious morbidity and mortality. We believe that the training of the emergency department staff should be increased in order to approach such cases, especially high dose medication intake.

Conclusion

The present study is a retrospectively. The records of patients who were brought to the emergency department of Bozyaka Training and Research Hospital after suicide attempt were examined. The data obtained from the study were found to be consistent with the other study data. Unlike the other studies, the medicolegal evaluation of the cases was performed in this study. In our view, this type of "preventable" injuries and deaths will be reduced in case of detecting and treating existing psychiatric disorders to prevent suicide attempts and deaths, and taking a multidisciplinary approach considering the medical and sociocultural characteristics of suicide attempts..

Conflict of interests

We declare that we have no conflict of interest.

Financial Disclosure

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Ethical approval

The study was conducted in accordance with the Helsinki Declaration and ethics committee approval was provided.

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