



## Research Paper

# Suicide and Repeated Suicide Attempt in Intoxicated Patients: An Epidemiological Survey in a Tertiary Center



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## ABSTRACT

**Background:** Suicide is one of the most important psychological emergencies and it is necessary to deal with it. The goal of this study was to evaluate the frequency of suicide attempts, suicide re-attempt, and guesstimated risk factors in suicidal patients in the poisoning ward of Loghman Hakim Hospital.

**Methods:** This study was performed on suicidal patients in Loghman Hakim hospital in 2021 (January to August). The suicide attempt and the type of mental disorder were confirmed by a psychiatrist and the data sheets were completed. The sample size was 500 cases based on previous similar studies.

**Results:** Three hundred fifteen cases attempted suicide for the first time and 185 had a history of suicide. In both groups, the numbers of women were significantly more than men. In addition, 196 cases of the first group and 121 cases of the second group were under 30 years old and 65.1% of cases with first-time suicides and 62.2% of cases with suicide re-attempts were unemployed. In both groups, the most common drug for suicide was benzodiazepines (30.5% and 21.6%). Unfortunately, two patients died. Also, 67.6% in the first-time suicide attempt group and 57.3% in the suicide re-attempt group had adjustment disorder. No significant differences were observed between both groups in terms of gender, age, marital status, education, chronic disease, drug and habit history, employment status, diagnosed mental disorder, and type of drug used for the current suicide.

**Conclusion:** Young age, unemployment, mental disorders (especially adjustment disorder), and female gender are the most important risk factors for a suicide attempt and re-attempt.

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## 1. Introduction

**E**dwin Shneidman, an American clinical psychologist, suicidologist, and thanatologist, considers suicide to be the conscious destruction of an individual by himself, which in the best sense can be considered for multidimensional distress in a person in need who considers suicide to be the best solution to the problem s/he confronts. Suicide is not an accidental and meaningless act but it is a way to get rid of a problem or crisis that undoubtedly hurts the person [1, 2].

Various studies have shown that suicide is one of the main causes of death in all countries in the world. Self-harm and suicidal behaviors are one of the major public health problems in all developed and developing countries [3]. In most studies, age has been identified as a risk factor in the suicide process. During the last half century, suicide attempts have been increasing among young people and are the most common cause of death in cases aged 15-24 years and also the cause of 12% of deaths in adolescence [4, 5].

Recurrence of suicide is one of the most important and common problems in patients with drug and chemical poisoning. Suicide re-attempt can be affected by different variables. More than 45% of individuals with suicidal attempts have at least one history of attempting suicide. A history of suicide-related behaviors and mental disorders are two strong risk factors for a successful suicide. Having previous psychological symptoms is associated with the repetition of suicidal behaviors [6, 7].

Several studies conducted in the last two decades in Iran have shown that suicide-related deaths and attempted suicide are increasing in most provinces of the country [8, 9]. The most common methods of suicide in Iran are drug use and self-immolation [8].

Mental disorders are one of the most important risk factors for suicidal behaviors [10, 11]. Severe depression is one of the mental disorders that has been reported in almost all investigations on suicide [12, 13]. At least 3%-15% of patients with schizophrenia die from suicide. Suicidal behaviors are more common in people with bipolar disorder than in cases with other mental disorders [14].

Substance abuse has also been studied as one of the topics related to mental disorders in suicide re-attempts and one of the suicide methods in the literature [15-17]. The pattern of suicidal behaviors is very complex

and is largely influenced by epidemiological factors, time, and place [18].

Identifying risk factors in a suicide attempt and re-attempt is very important. As a result, the purpose of this research was to investigate the frequency of suicide attempts, suicide re-attempt, and guesstimated risk factors in suicidal patients in the poisoning ward of Loghman Hakim Hospital. The results can provide a good data platform for health planners, to properly direct activities related to suicide prevention programs.

## 2. Materials and Methods

This study was performed on suicidal patients in Loghman Hakim hospital from January 2021 to August 2021. Based on other studies [4] conducted in this field, the sample size was 500 cases. The sampling method in this study was convenience sampling.

Data were collected using data collection forms through interviews with patients and their companions. Patients were interviewed when their level of consciousness was normal. The suicide attempt and the type of mental disorder were confirmed by a psychiatrist and the dossiers were completed. Patients with substance abuse were confirmed by urine tests.

Age, sex, educational status, marital status, employment status (having a job), previous medical history, history of medication use, history of habit (addiction, alcohol consumption, smoking, and drugs), number of suicide attempts, and methods used in the past were collected through interviews with the patients or their companion. Duration of hospitalization and admission to the ICU were observed directly. If the patient had a history of hospitalization in Loghman Hospital, previous suicide information was extracted from the files.

### Statistical analysis

The obtained data were analyzed by IBM SPSS software version 22 (IBM Corp, Armonk, New York, USA). First, the normal distribution of data was determined by the Kolmogorov-Smirnov test and in the next step, central and descriptive indices were calculated and expressed. Depending on the distribution of samples in the statistical population, parametric tests, such as independent t-test or Chi-square parametric bread tests were used. The Kendall correlation test was used to assess the relationship between variables. The significance level was considered  $P < 0.05$  for all variables.

### 3. Results

In this study, 500 suicidal patients were examined, of whom 315 people attempted suicide for the first time and 185 had a history of suicide. A summary of the patient information is given in Table 1. The first-time patients were 200 women and 115 men, and the suicide re-attempt patients were 117 women and 68 men. The gender ratio was significantly different between the two groups. The mean age in the first-time suicide group was  $30.3 \pm 12.3$  years and in the suicide re-attempt group was  $29.1 \pm 10.97$  years. There was a significant difference in age distribution between the two groups. Also, 196 cases of the first group and 121 cases of the second group were under 30 years old.

Overall, 68.2% had a diploma and undergraduate degree, 24% had postgraduate and bachelor's degrees, 4% had a master's degree and above, and 3.8% were illiterate. In both groups, the number of cases with a diploma and undergraduate degree was higher. Also, 65.1% of the first-time suicide group and 62.2% of the suicide re-attempt group were unemployed. In the suicide re-attempt group, the number of single cases was significantly ( $P < 0.05$ ) more than married people.

The results showed that more than 90% of the subjects in both groups had no history of chronic disease. Diabetes (61.5%), epilepsy (15/4%), and cancer (15/4%) were the most common chronic diseases mentioned in the first-time suicide group, and in the suicide re-attempt group, diabetes (55.5%) and epilepsy (22.2%) were the most chronic diseases. Also, more than 50% of people in both first-time and suicide re-attempt groups did not have a history of addiction, substance abuse, smoking, or alcohol use (67.3% and 57.8%). In the first-time group, opium consumption was 1.9% and amphetamine use was 0.3% and in the suicide re-attempt group, these cases were 3.2% and 1.6%, respectively.

Examination of medical history showed that more than 70% of people in both groups had no previous medication use. The most used drugs were clonazepam (19.5%), alprazolam (14.3%), and metformin (9.1%) in the first-time group. In the suicide re-attempt group, the most commonly used drugs were alprazolam (19.2%) and clonazepam (11.5%).

Psychiatric counseling of patients showed that significantly ( $P < 0.05$ ) most people in both groups had the adjustment disorder (67.6% in the first-time group and 57.3% in the suicide re-attempt group). Other mental disorders included Major Depressive Disorder (MDD),

bipolar disorder, schizophrenia, and anxiety disorders in both groups, respectively (Table 2).

The results showed that in both groups, the most commonly used drug for current suicide was benzodiazepines (30.48% and 21.62%) (Figure 1).

Drugs and chemicals used in previous suicides of re-suicidal patients are shown in Figure 2. Most used drugs were benzodiazepines, acetaminophen, and antipsychotics (31.3%, 15.7%, and 14.5%). Repeated suicide rate with the same medications and chemicals, which were used in the previous suicide was as follows: benzodiazepines: 38.46%, acetaminophen: 15.38%, and rodenticides: 33.33%. This rate for methadone, toxic alcohols, Selective Serotonin Reuptake Inhibitor (SSRIs), organophosphates and insecticides, and stimulants was 50% each.

Among patients with suicide re-attempt, 44.9% did not have a history of hospitalization in Loghman Hakim Hospital. Also, 3.2% of the first-time group and 1.6% of the suicide re-attempt group were admitted to the ICU. The median duration of hospital stay was one day for both groups. No significant differences were observed between both groups in terms of gender, age, marital status, education, chronic disease, drug and habit history, employment status, diagnosed mental disorder, type of drug used for the current suicide, and duration of hospital stay. The number of people who were released with personal consent was significantly ( $P < 0.05$ ) higher in the suicide re-attempt group (69.2% vs. 30.8%).

Two deaths were observed and both of them were female, Iranian, married, unemployed, with a history of diabetes and MDD, and between the ages of 60-75 years. The first case was 71 years old when she committed suicide by organophosphate toxin and had a previous suicide history. The second case was 60 years old and committed suicide with benzodiazepines (50 tablets of clonazepam [2mg]) and had no previous suicide. Eventually, the patient died following Deep Vein Thrombosis (DVT) of the right lower limb, coronary artery disease, and pneumosepsis.

### 4. Discussion

The results of our study showed that in both groups, the female gender, the age under 30 years, unemployment, having a mental disorder, especially adjustment disorder had the highest frequency. The percentage of suicide re-attempt in our cases was 37%. One possible reason for the high rate of re-attempt frequency might

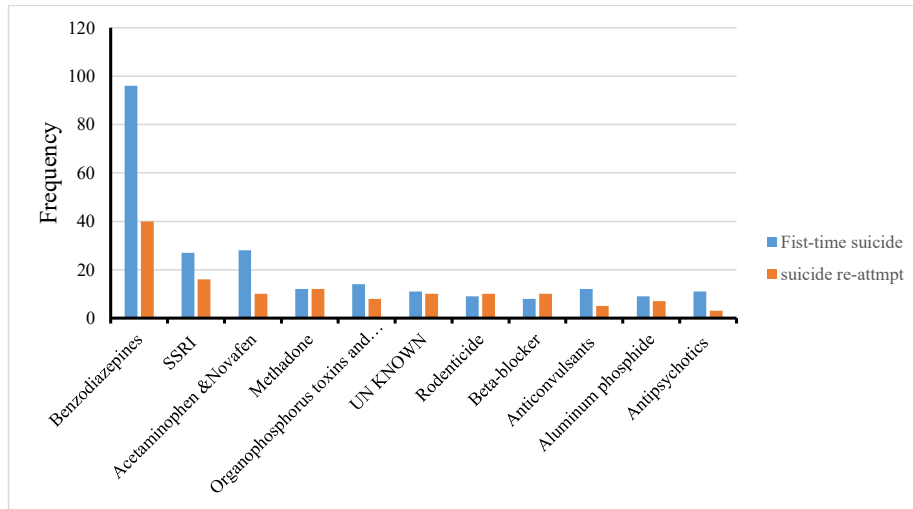


Figure 1. The most common drugs and chemicals used for current suicide.

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be untreated or ignored mental disorders, according to the history of chronic illnesses, medication intake, and psychological disorders.

No significant differences were observed between the first-time suicide group and the suicide re-attempt group in terms of gender, age, marital status, education, chronic disease, drug history and habit history, employment status, diagnosed mental disorder, and type of drug used for the current suicide.

Overall, the burden of suicide behavior is higher in women because they are more likely than men to report suicide, attempt suicide, and be hospitalized. Women are more vulnerable to suicidal behaviors, probably because

of their vulnerability to psychological trauma and psychosocial stress [19]. Various studies have shown that women are more likely to attempt suicide [20-23]. The results of our study also showed that in both groups, first-time suicide and suicide re-attempt, women were more than men. Women are more likely to use the poisoning to commit suicide [19, 24, 25]. Our study was conducted at a universal poisoning treatment center, and the results showed that most suicides with drugs and chemicals were committed by women.

The health status of the unemployed people is worse than employed. They are less confident, seem to be affected by their problems, and report significantly with psychological disorders. These disorders, such as de-

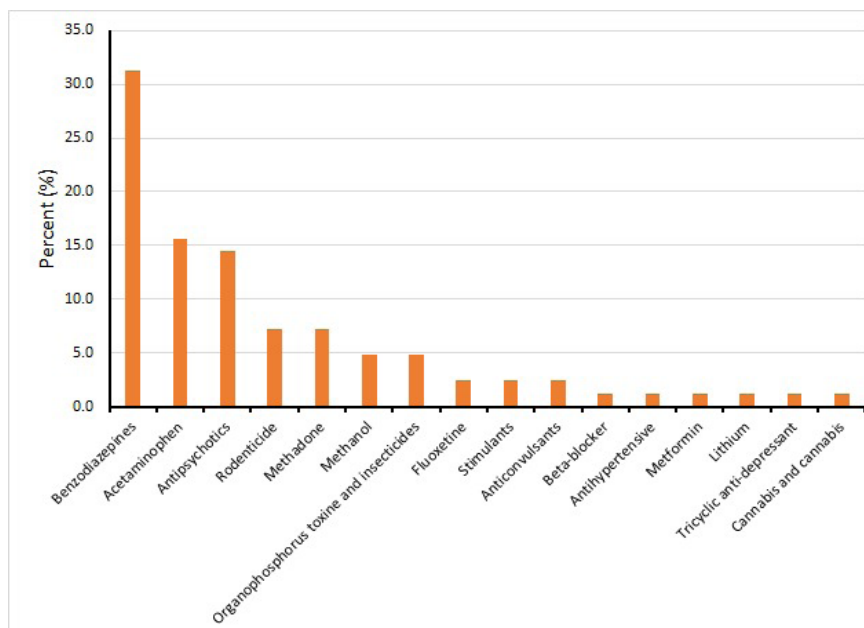


Figure 2. The most common drugs and chemicals used for previous suicide.

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**Table 1.** The patients' information

Patients' Information	No. (%) / Mean±SD			P#
	Total	First-Time Suicide	Suicide Re-Attempt	
Gender (Female)	317 (63.4)	200 (63.49)	117 (63.24)	0.956
Non-Iranian	25(5.0)	21(6.67)	4(2.16)*	0.026
Age (year)	29.9±11.8	30.3±12.3	29.1±10.97	0.258
Under 30 years old	317(63.4)	196(62.22)	121(65.40)	0.505
Employed	180(36.0)	110(34.92)	70(37.84)	0.583
Married	211(42.2)	142(45.08)	69(37.30)	0.097
Single	247(49.4)	144(45.71)	103(55.67) <sup>a</sup>	
Smoking	114(22.8)	68(21.59)	46(24.86)	0.114
Alcohol consumption	16(3.2)	11(3.49)	5(2.70)	
Substances abuse	16(3.2)	7(2.22)	9(4.86)	0.366
Having a history of chronic disease	35(7)	26(8.25)	9(4.87)	
Have a history of taking medication	129(2.8)	77(24.44)	52(28.19)	0.260
Hospitalization in the ICU	13(2.6)	10(3.17)	3(1.62)	0.389
Duration of hospitalization (day) (median)	1	1	1	0.599
Death	2(0.4)	1(0.32)	1(0.54)	0.703

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\*P<0.05; #the mentioned P-value is related to the comparison of the two groups (first-time suicide and suicide re-attempt); <sup>a</sup> In the suicide re-attempt group, the single cases were significantly more than married people (P<0.05).

pression or chronic anxiety can be the result of unemployment, but can also be due to job loss or inability to find a job [26]. Unemployment is related to changes in mental health, including suicidal behavior and ideation. Various studies have shown the relationship between unemployment and suicide [27-30]. The results of our

study showed that unemployed people in both groups were more than employed ones, and unemployment was an important risk factor for suicide.

Adjustment disorder is a mental disorder caused by psychosocial stressors. Adjustment disorders play an

**Table 2.** Diagnosed psychological disorders in studied patients

Psychological Disorders	No. (%)		
	First-Time Suicide	Suicide Re-Attempt	Total
Adjustment disorder	213(67.6)	106(57.3)	319(63.8)
Major depressive disorder	56(17.8)	45(24.3)	101(20.2)
Bipolar	29(9.2)	24(13.0)	53(10.6)
Schizophrenia	12(3.8)	9(4.9)	21(4.2)
Anxiety disorder	3(0.9)	1(0.5)	4(0.8)
Other diagnoses	2(0.6)	0	2(0.4)

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important role in the causes of suicide [31, 32]. In the study by Pelkonen et al. on 89 outpatients, 25% of patients were diagnosed with adjustment disorder, suicide attempt, or suicidal ideation [33]. Adjustment disorder was the most common disorder in our cases. Psychiatric counseling of patients in our study showed that the prevalence of adjustment disorder was 67.62% in the first-time suicide group and 57.30% in the suicide re-attempt group.

The diagnosis of adjustment disorder is less clear when patients are chronically exposed to stressors, as this type of exposure is associated with MDD and Generalized Anxiety Disorder (GAD) [34]. Therefore, one of the reasons for the low incidence of adjustment disorder in other studies could be its classification as other disorders.

Mostafazadeh et al. in their study on the factors affecting suicide re-attempt declared that a history of mental illness has an important role in suicide re-attempt [4]. In this study, the number of women was less than men, which contradicted our results.

## 5. Conclusion

Young age, unemployment, mental disorders (especially adjustment disorder), and female gender (without any special order) are the most important risk factors for suicide attempts and re-attempt. Considering the presence of mental disorders in all subjects, it seems that treatment and prevention of these disorders, especially in young people, can reduce the risk of suicide. However, increasing job opportunities may also reduce the number of cases.

### Limitation

Because people from different regions and cities refer to Loghman Hakim Hospital, unfortunately, we could not obtain accurate information about the previous suicides and patients' former medical centers. In addition, due to the unawareness of the patient and their companions about possible mental disorders, no history of mental disorders was obtained. The consequences of the COVID-19 issues and the income level were not investigated in this study.

## Ethical Considerations

### Compliance with ethical guidelines

This study was approved by the institutional ethics board of Shahid Beheshti University of Medical Sci-

ences (No: IR.SBMU.RETECH.REC.1399.1263) and participants signed informed written consent forms.

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### Authors' contributions

All authors equally contributed to preparing this article.

### Conflict of interest

The authors declared no conflict of interest.

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