



## Original Research



### Prevalence of Depression in Patients with Drug, Medication, and Chemical Poisoning

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#### ABSTRACT

Acute poisoning, a common cause of emergency visits, can be intentional or unintentional. In Iran, most deliberate poisoning occurs in young adults, often linked to depression. Depression increases suicide risk through drug or chemical use. This study aims to assess the frequency of depression in patients with narcotic, medication, and chemical poisoning. In this cross-sectional study, 130 patients poisoned by narcotics medications and chemicals who visited the emergency room of Payambar Azam Hospital in Kerman in 2022 were examined. Variables such as age, sex, marital status, education level, previous history, and type of poisoning were recorded. The Beck Depression Questionnaire was used to assess depression. Data analysis was conducted using descriptive statistics and SPSS version 20. The study included 80.8% women and 19.2% men, with an average age of 25.71 years. Among the participants, 40% were students, and 51.5% had not completed high school. A total of 20.8% had a history of previous poisoning, and 60.8% had used chemical substances. Seventy-seven patients were diagnosed with depression. Depression scores were higher in individuals with a history of poisoning and those using chemical substances, while other demographic factors showed no significant differences. To prevent drug poisoning, it is recommended to conduct public education initiatives to increase awareness through mass media.

**Keywords:** Chemical medicine, Drugs, Depression, Poisoning.

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## INTRODUCTION

Acute poisoning, one of the most common reasons for visiting emergency centers worldwide, is defined as exposure to a toxic substance suddenly or over a short period of time, which can be intentional or unintentional (1) (2).

Toxins are substances that cause death, injury, or damage to organs, usually by chemical reactions or other activities at the molecular level, when an organism is exposed to a sufficient amount. From a biological perspective, any substance can be toxic and cause death if present in high enough quantities (3).

While unintentional poisoning often occurs in children, intentional poisoning, which constitutes the majority of poisonings referred to hospitals, often occurs in adults (2) (4). Deliberate poisonings in Iran mainly occur in the age range of 21 to 30 years, and the most important factors leading to death are opioid drugs and insecticides (5).

The ways of poisoning, in order of frequency, include food poisoning (79.2%), skin poisoning (6.3%), eye poisoning (5.3%), respiratory poisoning (5.1%), bites and stings, and injectable substances (1/3%). Intentional drug poisonings have been seen mainly in people suffering from psychiatric disorders, particularly depression.

The etiology and demographic aspects of drug poisonings are related to individual disorders (physical, mental) as well as the social and economic status of the population.

The pattern of poisoning in a country depends on various factors, including access to different poisons, and the social, economic, cultural, and religious beliefs of society (6).

Depression is a mood disorder with multiple causes, including genetics, neurotransmitter

dysregulation, immune system and endocrine gland dysfunction, low self-esteem, conflicts and losses in interpersonal relationships, and increased stress based on family interaction patterns (7). It affects about 6.7% of adults, and 16.6% of people will experience depression in their lifetimes (8).

One way to help diagnose depression is using the DSM-IV criteria, which are mostly based on symptoms (9). Symptoms of depression include depressed mood, apathy, increased or decreased sleep, feelings of guilt, difficulty concentrating, fatigue, loss of appetite, insomnia, and a sense of exhaustion (10).

Additionally, depression can increase the risk of suicide (11). In fact, about 15% of people with depression are at risk of suicide (12).

The main method of committing suicide among depressed individuals is the consumption of large amounts of drugs or chemicals, and most cases involve the consumption of large amounts of drugs that are readily available.

Among these drugs, nerve medications, which are widely used in Iran, are significant. Therefore, conducting studies on poisoning with these drugs can help find suitable ways to prevent such poisonings in our current society.

Given the importance of this issue and the fact that every year a large number of people in vulnerable groups suffer from various problems due to different types of poisoning, ranging from mild illness to hospitalization in the intensive care unit, the best way to address this problem is through preventive measures.

Therefore, we decided to conduct a study on the prevalence of depression in patients with drug, medication, and chemical poisoning referred to the emergency department of Prophet Azam Hospital in Kerman in 2022.



## MATERIAL AND METHODS

### *Research setting, population, and sample size*

This descriptive cross-sectional study was conducted on patients who were poisoned by opioids, drugs, or chemicals and visited the Payambar Azam Hospital in Kerman in 2022.

### *Inclusion and exclusion criteria*

The inclusion criteria for the study were patients with opioids, drugs or chemical poisoning who consented to participate in the study. The exclusion criteria were unwillingness to continue cooperation and unwillingness to participate in the study.

### *The method and tools of data collection*

The data collection tool used in the current study was the Beck depression inventory II (BDI-II),

**Table 1**

*Demographic variables of participants with poisoning*

Demographic factors		Number of patients	percentage
Sex	Men	25	19.2
	Women	105	80.8
Marital status	Single	76	58.5
	married	54	41.5
Occupation	Employed	38	29.2
	Unemployed	9	6.9
	Student	52	40
Education	Housewife	31	23.8
	Undergraduate	67	51.5
	Diploma	43	33.1
	Higher than a diploma	20	15.4
History of poisoning	Yes	27	20.8
	No	103	79.2
Substance kind	Chemical drugs	79	60.8
	Opioids	41	31.5
	Alcohol	4	3.1
	Pesticides	6	4.6

which consists of 21 questions that determine the degree of depression from mild to very severe, with scores ranging from 0 to 63.

### *Data analysis tools and methods*

An Independent T-test was used to analyze the data. Additionally, all analyses were performed using SPSS software version 20.

## RESULTS

The total number of participants in the current study was 130, with an average age of 25.71. The majority of patients were women (105) and undergraduates (67). While only 27 participants had a history of poisoning, 79 patients used chemical drugs. (Table 1.3)

77 (59.2%) of participants had different degrees of depression. The average depression score of

these patients was 23.51, which falls within the moderate range (the moderate range is from 20



to 28). The average depression score was higher in men (24) than in women (23.4), and higher in married individuals (24.14) than in unmarried individuals (23.06). Regarding education and occupation, the highest level of depression was found in people with an education higher than a diploma (26) and employed people (26.56). The average depression score in patients with a

history of poisoning (31.81) was higher than in patients without a history of poisoning (21.33). While there was no significant relation between age ( $P.V.<0.614$ ), sex, marital status, occupation, or level of education and depression, there was a significant connection between the poisoning history or drug kind and depression (Table 2.3).

**Table 2**

*Average depression scores by demographic variable in poisoning patients*

Demographic variables		Average	Standard Deviation	P.V.
Sex	men	24	2.22	0.85
	women	23.4	1.45	
Marital status	Married	23.06	1.46	0.67
	Unmarried	24.14	2.2	
Occupation	employed	26.56	1.88	0.29
	unemployed	19.77	5.38	
	student	21.34	1.75	
	housewife	24.54	3.29	
Education	undergraduate	22.31	1.72	0.553
	diploma	24.23	2	
	Higher than a diploma	26	3.8	
Poisoning history	yes	31.81	3.03	0.001
	no	21.33	1.28	
Substance kind	Chemical drugs	28.1	1.57	0.001
	Opioid	14.6	1.69	
	Alcohol	23.25	1.6	
	pesticides	24.16	6.39	

## DISCUSSION

In this study, the age of most poisoning patients was between 20 and 30 years (mean 25.71). This result is similar to the study of Mohammad Hosseini et al., who mentioned the age of the poisoned patients in their study was between 21 and 30 years (13). Also, in another study conducted by Turkashund et al., the average age was mentioned as  $15.16 \pm 23.1$ , with most patients between the ages of 11 and 30 years

(14). However, in a study by Xiang et al., the age of poisoned patients was reported as between 40 and 45, which contrasts with the findings of this study (15). Tussov et al.'s study also reported different results, with an age range between 35 and 64 (16).

In the current study, most of the poisoning patients were unmarried and students, consistent with many other studies. For instance, Turkashund et al. (14), Aghakhani et al. (17), and



Rafiei et al. (18). Also, we found a higher frequency of unmarried individuals compared to married people. Aghakhani et al., reported that most of the people had an education level up to middle school (17) and in other studies, most of the patients were students, which was consistent with the results of this study (19) (20). The results of this study showed that the number of women with poisoning was higher than that of men. Aghakhani et al.'s study had similar findings (17). However, in the studies by Xiang et al. Yoon et al., and Tussov et al., the number of men was higher (15) (21) (16). In the current study, 20.8% of patients had a history of poisoning, which is similar to the study by Aghakhani et al., which reported a rate of 34.4% (17).

In this study, the reason behind most poisonings was the use of chemical drugs. It should be noted that drug poisoning is reported as the most common cause of poisoning (22), and in the study of Mohammadi et al., the most common cause of death in poisonings was drug poisoning (23).

In this study, 59.2% (77 people) of the poisoned patients had various degrees of depression. The mean depression score was 23.51, falling within the moderate range (between 20 and 28). Other studies also reported high percentages of depression among poisoned individuals, which is almost consistent with this study. In the study by Agakhani et al., 97.8% of the poisoned patients had depression (17).

## CONCLUSION

The results of this study indicate that although the frequency of depression in poisoned individuals is high and depression can lead to re-poisoning, unintentional poisonings also account for a significant portion of cases. This finding underscores the need for further

research. To cover the letter, public education should be conducted to raise awareness.

## Problems and limitations

During the implementation of this project, various issues were encountered, including the mental state and physical conditions of the samples, the non-matching of samples in terms of intervening factors such as body mass index, nutrition, and existing diseases. Additionally, the provision of accurate information and the environmental conditions of the inpatient department posed challenges. Efforts were made to minimize these issues by fully explaining the study to participants in favorable and relatively stable mental conditions and conducting sampling during the hospital's quiet hours.

## Ethical Considerations

Participant information was kept strictly confidential, and only credible and reliable sources were utilized. The latest research methodologies were employed, ensuring that ethical considerations in the use of resources and research articles were strictly adhered to.

*This study was reviewed and approved by the Ethics Committee of the Kerman Azad University of Medicine, Iran, under the registration number IR. IAU. KERMEN. REC.1401.007.*

## Transparency declaration

There is no conflict of interest.

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