



# The Epidemiology of Suicide Death and Associated Factors, Ilam, Iran (2012 - 2016): A Longitudinal Study

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## Abstract

**Background:** Today there is an increased risk of suicide among young people throughout the world.

**Objectives:** Due to the high prevalence of suicide in Iran and its important psychological and social effects, the epidemiology of suicide death and its associated factors were evaluated in Ilam as a deprived area of Iran.

**Methods:** A Longitudinal study was conducted in Ilam, Iran, during a five-year period from 2012 - 2016. The basic data were recorded through the registration centers of legal medicine and governmental medical centers in Ilam, Iran. The suicide death ratio was calculated based on the number of suicide deaths per 100,000 populations each year. Data analysis was carried out with IBM SPSS for Windows version 20.0 using descriptive and inferential statistics. A P value less than 0.05 was considered as significant level.

**Results:** In total, there were 475 suicide deaths, with 41.1% being female and 58.9% male. The highest rate of suicide deaths is found in 2012 at 20 per 100,000. More than half of the suicide deaths occurred in individuals between the ages of 21 - 40. 78.9% of all suicide deaths occurred in individuals without an income and 21.1% in individuals with a personal income. A substantial number of all suicide deaths occurred in individuals without a personal income.

**Conclusions:** Most likely, individuals who are financially dependent will experience lower self-esteem and a higher risk of mental disorders. All of these factors increased the risk of suicide.

**Keywords:** Epidemiology of Suicide Death, Socioeconomic Status, Suicide Risk Factors

## 1. Background

Unfortunately, suicide is the 10th leading cause of death worldwide (1). Suicide was strongly exhibited among the US population, therefore, daily 113 causes of suicides had been done in 2013 (2). Although the rate of suicide is low in most Islamic societies and Iran's suicide rate has not deteriorated in comparison with the US, we should not forget that 13 Iranian citizens are at risk of suicide on a daily basis. Regrettably, most of these individuals are young (3). However, the leading suicide risk factors are included; depression, history of suicide attempt, stress, low quality of life, and interpersonal conflict (4). Today, there is increasing risk of suicide among young people throughout the world (5). Actually, the adolescent males are a high-risk group for suicidal deaths (6).

An Iranian study reported age, residence, job, educational level, and marital status as risk factors of suicide deaths (7).

## 2. Objectives

Generally, if we considered all critical issues such as Ilam as a starved city in a developing country, it seems to be necessary to evaluate the epidemiology of suicide death and associated factors in Ilam, Iran, during a five-year period from 2012 - 2016.

## 3. Methods

Due to the high prevalence of suicide in Iran and its important psychological and social effects, a longitudinal study was conducted in Ilam as a deprived area of Iran during a five-year period from 2012 - 2016. The census was used as a sampling method. The basic data including the frequency of suicidal death, age, occupation, marital status, suicide season, suicides cause, suicides location, residence (urban or rural), and education level were recorded through the registration centers of legal medicine and governmental medical centers in Ilam, Iran. All registered

deaths in the Ilam legal medicine organization, which have been reported as suicide death, were included and all duplicate or suicidal deaths that belonged to other provinces were excluded from the analysis.

Death due to suicide were defined as cases of suicide in which individuals died from suicide (7). The suicide death ratio was calculated based on the number of suicide deaths per 100,000 populations each year. Due to the population and housing censuses carried out in Iran every five years, there were only accurate statistics on the province's population in 2011. Hence, the province's population in subsequent years was calculated on the basis of the population growth rate (0.43%). Occupation factor was divided into two groups including with a personal income (governmental occupation and non-governmental occupation) and without a personal income (housewives, work less and students).

This study was undertaken with the approval of the Ethical Committee of the Ilam University of Medical Sciences. To enhance confidentiality, all data were collected anonymously and only required information was collected.

Data analysis was carried out with IBM SPSS for Windows version 20.0 (IBM Co., Armonk, NY, USA) using descriptive and inferential statistics. The  $\chi^2$  test was used to test the categorical variable. However, if the expected values for each cell of the table were less than five, then the Fisher's test was used. A P value less than 0.05 was considered as a significant level.

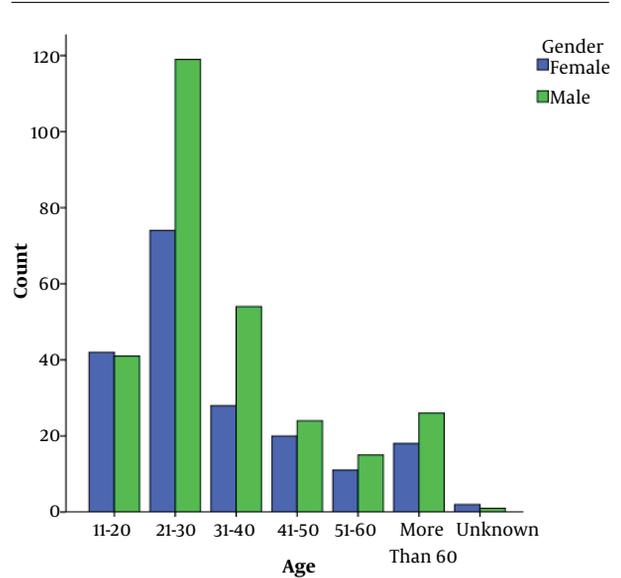
#### 4. Results

In total, there were 475 suicide deaths, including 195 (41.1%) female and 280 (58.9%) male, in Ilam, Iran during 2012 - 2016. The highest rate of suicide deaths is found in 2012 at 20 per 100,000 (Table 1).

**Table 1.** The Suicide Death Rate Based on Years in Ilam, Iran During 2012 - 2016

Years	Suicide Deaths, No. (%)	Province's Population	Rate per 100,000 of Population
2012	111 (23.4)	557599	20
2013	90 (18.9)	559996	16
2014	87 (18.3)	562403	15
2015	104 (21.9)	564821	18
2016	83 (17.5)	567249	15

More than half (57.9%) of the suicide deaths have occurred in individuals between the ages of 21 - 40. The prevalence of suicide deaths based on age group and gender is presented in Figure 1. There was no difference between the age group in regards to being male or female ( $P = 0.368$ ).



**Figure 1.** The prevalence of suicide deaths based on age group and gender in Ilam, Iran during 2012 - 2016

The results indicated that half of all suicide deaths happened in singles. The prevalence of gender among suicide deaths based on marital status and age group is presented in Table 2.

Totally, 78.9% of all suicide deaths occurred in individuals without a personal income. Also, 21.1% of all suicide deaths happened in individuals with a personal income; in addition non-governmental occupation and governmental occupation were reported in 17.5% and 3.6% of all suicide deaths, respectively. The relationship between the cause of suicide and personal income was not significant ( $P = 0.389$ ) (Table 3).

#### 5. Discussion

Nowadays, an increase in stress, psychological challenges, financial problems, and family conflicts have increased the risk of suicide in different societies (8). Socio-economic and psychological conditions have critical impacts on suicide rates (9).

In the present study, the frequency and risk factors of suicide deaths were evaluated in Ilam as a deprived area of Iran through the registration centers of legal medicine and medical centers in Ilam, Iran.

Our result showed the highest rate of suicide deaths in 2012 at 20 per 100,000. Nonetheless, this rate has declined in subsequent years; however, we must consider the fact that the Iranian rate of suicide is higher than other countries such as Mexico (10) and China (11).

**Table 2.** The Prevalence of Gender Among Suicide Deaths Based on Marital Status and Age Group in Ilam, Iran During 2012 - 2016

Marital Status/Age Group	Gender, No. (%)		
	Female	Male	Total
<b>Single</b>			
11 - 20	29 (43.9)	37 (56.1)	66 (100)
21 - 30	33 (26.2)	93 (73.8)	126 (100)
31 - 40	6 (25)	18 (75)	24 (100)
41 - 50	2 (33.3)	4 (66.7)	6 (100)
Unknown	1 (100)	0 (0)	1 (100)
Total	71 (31.8)	152 (68.2)	223 (100)
<b>Married</b>			
11 - 20	10 (76.9)	3 (23.1)	13 (100)
21 - 30	39 (60.9)	25 (39.1)	64 (100)
31 - 40	20 (37)	34 (63)	54 (100)
41 - 50	18 (47.4)	20 (52.6)	38 (100)
51 - 60	11 (42.3)	15 (57.7)	26 (100)
More than 60	14 (35.9)	25 (64.1)	39 (100)
Unknown	1 (100)	0 (0)	1 (100)
Total	113 (48.1)	122 (51.9)	235 (100)
<b>Divorced</b>			
21 - 30	1 (50.)	1 (50.)	2 (100)
31 - 40	2 (50)	2 (50)	4 (100)
Total	3 (50)	3 (50)	6 (100)
<b>Death of a spouse</b>			
More than 60	2 (66.7)	1 (33.3)	3 (100)
Total	2 (66.7)	1 (33.3)	3 (100)
<b>Unknown</b>			
11 - 20	3 (75)	1 (25)	4 (100)
21 - 30	1 (100)	0 (0)	1 (100)
More than 60	2 (100)	0 (0)	2 (100)
Unknown	0 (0)	1 (100)	1 (100)
Total	6 (75)	2 (25)	8 (100)

Our result identified individuals between the ages of 21 - 40 as the most common age groups of suicide deaths. In line with our result, another Iranian study has confirmed the high level of suicide deaths among young Iranians (7). Suicide is introduced as the second leading cause of death in adolescents (12).

Based on our result, there was no relationship between age group and gender; however, another study reported a higher prevalence of suicide among young men than women (13). Although, a large number of the population in this age group is expressed as a cause of higher prevalence

**Table 3.** The Prevalence of Suicide Cause Based on Personal Income in Ilam, Iran During 2012 - 2016

Suicide Cause	Without Personal Income (N = 375), No. (%)	With Personal Income (N = 100), No. (%)	P Value
Family problem	42 (11.2)	5 (5)	0.389
Mental health problem	86 (22.9)	23 (23)	
Education problems	2 (5)	0 (0)	
Economical problem	7 (1.9)	2 (2)	
Unknown	238 (63.5)	70 (70)	

of suicide among young individuals (1).

We found that about half of all suicide deaths occurred in individuals who were single. Previously, the relationship between marital status and suicide has been reported (14, 15).

We found that a substantial number of all suicide deaths occurred in individuals without a personal income. The relationship between financial hardship and suicide has been shown in previous studies (16, 17). Most likely, individuals who are financially dependent will experience a lower self-esteem and higher risk of mental disorders. All of these factors increased the risk of suicide.

### 5.1. Conclusions

Overall, our result showed that single young men were the most common group for suicide deaths.

The present study has several limitations.

- The 1st point: All data were extracted from the recorded database; therefore, we can't find any other data, including the amount of income or history of previous attempt of suicide.

- The 2nd point: We had to be satisfied with the recorded content into the cause of suicide.

- The 3rd point: There are no details in regards to the type of mental, educational, and economical problems.

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### Footnotes

**Authors' Contribution:** It is not declared by the authors.

**Declaration of Interest:** It is not declared by the authors.

**Ethical Approval:** This study was conducted with the approval of the Ethics Committee of the Ilam University of Medical Sciences.

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