

Factors associated with the choice of suicide method in Kermanshah Province, Iran

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BACKGROUND: Identification of factors in the choice of suicide methods is important in understanding the phenomenon.

OBJECTIVES: We aimed to quantify the effect of gender, age, living area, education level and marital status on the choice of suicide method among residents of Kermanshah province in the west of Iran.

DESIGN: A cross-sectional study of all completed suicides from March 2006 to September 2013.

SETTING: Kermanshah Province, Iran

METHODS: Data were extracted from suicide forms in the electronic files of the Forensic Medicine Organization. A total of 1901 (1138 men), suicide cases were identified. After preliminary analysis, a multinomial logistic model was fitted to the data to test and quantify the impact of each influential factor on the choice of suicide method. The relative risk of each suicide method over hanging as the reference method was estimated by calculating relative-risk ratios from the multinomial logistic model.

MAIN OUTCOME MEASURES: Relative risk of suicide by self-immolation, drug and toxic poisoning and firearms.

RESULTS: We found that women are at a higher relative risk than men for suicide by self-immolation, intentional drug poisoning and toxic poisoning. The relative risk of suicide by self-immolation and intentional drug poisoning was higher for urban residents and young individuals. On the other hand, men and rural residents were at higher relative risk of suicide by firearm.

CONCLUSION: In Kermanshah province, the impact of rapid social changes on women and the availability of firearms in rural areas and drugs in urban households require more attention in any suicide prevention planning.

LIMITATIONS: The lack of data prevented analysis of factors that may be more influential in choosing suicide.

Suicide, a complex and multifaceted public health problem, is one of the leading causes of death worldwide.^{1,2} The Global Burden of Disease studies predict that death by self-inflicted injury will move from 17th (2002) to 14th place (2030) in ranking of global mortality.³ Suicide, one of the major causes of disability-adjusted life years (DALYs) in Iran, showed an increasing trend between 1990 and 2010.^{4,5} In addition, substantial heterogeneities have been reported in the distribution of suicide rate and method of suicide across the provinces in Iran with suicide more prevalent in the western provinces.^{6,7} For example, Kermanshah

province, the most populated western province of Iran with 13.74 per 100000 population, has the second highest suicide mortality rate in the country.⁶

Although hanging is the predominant method of suicide in most countries, preferred suicide methods vary across the globe at national and subnational levels due to cultural, economic and social differences.^{2,8,9} For instance, available or culturally favorable suicide methods in Asian countries show a different pattern than those in the Western countries.¹⁰ In general, availability, accessibility, popularity, socio-acceptability^{2,11} and mental health problems¹²⁻¹⁴ seem to be the major

determinants in the choice of suicide method. Also, studies show that demographic variables such as gender, age group and education level can significantly influence the choice of suicide method.¹⁵⁻¹⁷ One of the opportunities in suicide prevention is identification of effective factors in the choice of suicide method in each area.^{9,11,13} In fact, improved knowledge about risk and protective factors on the choice of suicide method can guide prevention planning and decision-making.

The main aim in this study was to investigate how gender, age, living area, education level and marital status influence the choice of suicide method among residents of Kermanshah province during March 2006 to September 2013. We are particularly interested in identifying significant risk and protective factors in the choice of each suicide method to raise community awareness and guide prevention planning and decision-making.

METHODS

Study population

Kermanshah province, located in the west of Iran, is among the provinces with low socioeconomic status,⁶ with an estimated unemployment rate of 10.5%, and contribution to the country's gross domestic product

of 1.7% in 2013.¹⁸ It has an area of 24998 square kilometers, with 14 counties, 31 cities and towns and 86 rural districts.¹⁹ Based on the 2011 Census of Population and Housing (conducted every 10 years by Statistical Center of Iran), the population of the province was 1 945 227 residents (about 2.6% of Iranian population) with mainly a Kurdish ethnic background and an urbanization rate of approximately 70%.¹⁹ Younger people are the largest group in the population (over 55% of the population are under the age of 30) (**Figure 1**). The province still suffers from post Iran-Iraq war trauma and social dislocation and is undergoing rapid urbanization and social transformation.

Study design

This was a cross-sectional study of all completed suicides in Kermanshah province, during the 90-month study period from March 2006 through September 2013. The anonymized and de-identified completed suicide data for this study were extracted from the electronic file of the provincial Forensic Medicine Organization (FMO) suicide forms that were encoded according to the International Classification of Diseases (tenth revision) (ICD-10). According to Iranian law, all reported or suspected suicide cases need to be examined and certificated by a forensic

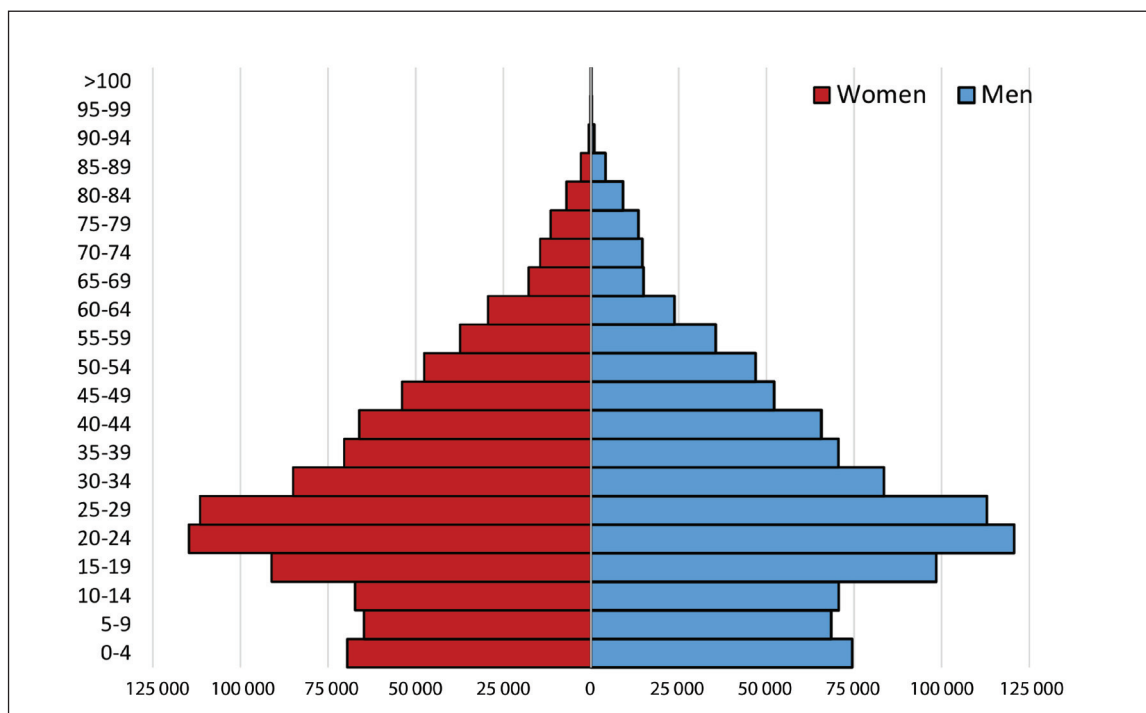


Figure 1. Population pyramid of Kermanshah province according to the 2011 Census of Population and Housing.

pathologist, and all certificates must be registered in the FMO.²⁰ Thus, the quality of registered suicide data is considered reliable. To be included in the study, we identified all cases who were born and resided in Kermanshah province and excluded the cases who did not reside in the province or the autopsy tests or forensic pathologist indicated the cause of death other than suicide.

Measures

For each case, the birth certificate and ID book was the source for demographic variables reported in the FMO suicide registration forms: gender (male or female), age group (10–19, 20–29, 30–39 or ≥40 years), living area (rural or urban), marital status (never married, married or others) and education level (illiterate, primary/middle school, high school/diploma or university degree). A 'significant other' (parent, partner, relative, or friend) who knew the subject well was the source of recoding in FMO-completed suicide forms. The others category of marital status included cases that were widowed, divorced or separated or had unspecified marital status. Because of the age structure of the population and the fact that the majority of Iranian suicide victims are under the age of 30 years,²¹ age was categorized into 10–19, 20–29, 30–39 or ≥40 years. Data on the occupational status of the cases were inaccurate with a large number of missing values. For this reason, although occupational status is an important factor, we did not include it in the set of demographic factors. For the purpose of this study, the suicide methods were categorized as 1) hanging, 2) intoxication with poisoning (toxic poisoning), 3) intentional drug-poisoning, 4) self-immolation, 5) firearms, and 6) other methods. The other methods category included relatively uncommon suicide methods, such as suicide by wrist-cutting, jumping from a height, drowning, gassing, and other unspecified means. Thus, the "other methods" category contains less violent and less lethal methods. Missing data for the demographic factors of the cases were negligible (less than 10 records); thus, all analyses were performed with available data.

The burial permit and name and surname of the deceased were removed from the dataset before analysis to comply with ethical concerns over anonymity. Informed consent was unnecessary as no private information of the deceased was used in the analysis.

Statistical analysis

We considered the choice of suicide method as the response (dependent) variable, which can possibly be influenced by the demographic factors of gender, living

area, age group, marital status and education level. To begin with, we used the likelihood-ratio chi-square test of independence to examine the pairwise association between the response variable and each of the demographic factors.¹² Then we constructed a suitable statistical model to explore the relationship between the response variable and each of the influential factors. The relative-risk ratio of choosing self-immolation over hanging based on gender (females relative to males) is

$$RRR_{gender} = \frac{\frac{\Pr(\text{method} = \text{self-immolation} | \text{gender} = \text{female})}{\Pr(\text{method} = \text{hanging} | \text{gender} = \text{female})}}{\frac{\Pr(\text{method} = \text{self-immolation} | \text{gender} = \text{male})}{\Pr(\text{method} = \text{hanging} | \text{gender} = \text{male})}}$$

and based on living area urban residents relative to rural residents is

$$RRR_{living\ area} = \frac{\frac{\Pr(\text{method} = \text{self-immolation} | \text{region} = \text{urban})}{\Pr(\text{method} = \text{hanging} | \text{region} = \text{urban})}}{\frac{\Pr(\text{method} = \text{self-immolation} | \text{region} = \text{rural})}{\Pr(\text{method} = \text{hanging} | \text{region} = \text{rural})}}$$

Since the response variable (choice of suicide method) was categorical and unordered, we used a multinomial logistic regression (also known as polytomous logistic regression) model to examine the effect of each influential factor on the choice of suicide method, while adjusting for other influential factors.²² Hanging, as the most favored method of suicide chosen by both genders, was chosen to be the baseline (reference) category for the response variable in the multinomial model. Based on the fitted multinomial logistic regression model, the relative-risk ratio (RRR) of each demographic factor for the choice of any of suicide methods over hanging was estimated. Moreover, the 95% confidence intervals of the relative-risk ratios and the *P* values of the null hypothesis were obtained.²³ All analyses in this study were conducted using Stata SE version 12 (Stata Corp, College Station, TX, USA, 2011) with the significant level *P* value < .05.

RESULTS

A total of 1901 (1138 men and 763 women) cases were identified over the 7.5-year study period with a 1:1.5 male-to-female ratio and age range from 10 to 96 years old (**Table 1**). The study period of 2006 to 2013 was chosen because confirmed suicide data were available to the authors only for these years at the time of conducting the study. The most common suicide method for both men and women was hanging (41.7%), followed by self-immolation (25.9%) and intentional drug poisoning (12.5%). Hanging and firearms (military rifles in the majority of cases) were more frequent among men and self-immolation and hanging were more frequent among women (**Figure 2**). The age group 20–29 years was the peak age range for all suicide methods, except the other methods category

Table 1. Distribution (number and percentage) of completed suicide cases in Kermanshah province by suicide method and demographic factors.

	Hanging (n=793) n (%)	Self-immolation (n=493) n (%)	Drug-poisoning (n=237) n (%)	Firearms (n=210) n (%)	Toxic-poisoning (n=123) n (%)	Others (n=45) n (%)
Gender						
Male	605 (76.3)	87 (17.6)	156 (65.8)	177 (84.3)	77 (62.6)	36 (80.0)
Female	188 (23.7)	406 (82.4)	81 (34.2)	33 (15.7)	46 (37.4)	9 (20.0)
Living area						
Rural	131 (16.5)	72 (14.6)	11 (4.6)	52 (24.8)	13 (10.6)	8 (17.8)
Urban	662 (83.5)	421 (85.4)	226 (95.4)	158 (75.2)	110 (89.4)	37 (82.2)
Age group (year)						
10-19	98 (12.4)	90 (18.3)	36 (15.2)	34 (16.3)	14 (11.6)	2 (4.4)
20-29	271 (34.4)	226 (45.9)	133 (56.4)	103 (49.3)	47 (38.8)	10 (22.2)
30-39	189 (23.9)	91 (18.5)	38 (16.1)	30 (14.3)	20 (16.5)	17 (37.8)
≥40	231 (29.3)	85 (17.3)	29 (12.3)	42 (20.1)	40 (33.1)	16 (35.6)
Education level						
Illiterate	163 (20.7)	133 (27.1)	21 (8.9)	24 (11.5)	33 (27.3)	3 (6.7)
Primary/Middle school	379 (48.2)	248 (50.5)	132 (55.9)	95 (45.4)	53 (43.8)	21 (46.7)
High school/Diploma	220 (28.0)	98 (20.0)	68 (28.8)	79 (37.8)	30 (24.8)	15 (33.3)
University degree	24 (3.1)	12 (2.4)	15 (6.4)	11 (5.3)	5 (4.1)	6 (13.3)
Marital status						
Never married	384 (48.6)	196 (39.9)	144 (61.0)	128 (61.2)	53 (43.8)	23 (51.1)
Married	350 (44.3)	276 (56.2)	83 (35.2)	71 (34.0)	54 (44.6)	18 (40.0)
Others*	56 (7.1)	19 (3.9)	9 (3.8)	10 (4.8)	14 (11.6)	4 (8.9)

*The others category of marital status includes cases with widowed, divorced or separated and unspecified marital status.

(Figure 3), which reflects the depth of the youth suicide issue in the province.^{21,24}

The likelihood-ratio chi-square test of independence confirmed the associations between the choice of suicide method and gender, living area, age group, education level and marital status, which was statistically significant (Figure 4). Consequently, the probabilities of choosing suicide methods were different between men and women, between residents of urban and rural regions, among different age groups, educational levels and marital status.

The relative-risk ratios of demographic factors for the choice of any of suicide methods over hanging, their corresponding 95% confidence intervals and *P* values are reported in Table 2. The estimated relative-risk ratios in Table 2 present the risks of a one-level change in each factor on the probability of choosing any of the

other five suicide methods relative to the probability of suicide by hanging. The relative risk of choosing self-immolation over hanging for women was 13.32 times higher than men and for urban residents was 1.58 times higher than rural residents. Similarly, we can see that the relative risk of choosing self-immolation over hanging was 1.55 for married relative to never married, and 0.44 for the education level of high school/diploma relative to illiteracy, which means that the relative risk of choosing self-immolation over hanging for married individuals was 1.55 times higher than never married individuals and for illiterates was $1/0.44=2.27$ times more than high school/diploma graduates. Also, the relative risk of choosing self-immolation over hanging was 0.6 for the 30-39 age group and 0.35 for the ≥40 age group relative to the 10-19 age group. This means that being in the 30-39 and ≥40 year age groups, respec-

tively, reduces the relative risk of choosing self-immolation over hanging by 1.67 and 2.86 times than being in the 10-19 year age group. These relative-risk ratios are significantly (P value $<.05$) different from 1, and hence the risk of choosing self-immolation over hanging was higher for women than men, for urban residents than rural residents, for married individuals than never married individuals, for illiterates than high school/diploma graduates and for young (<30) than older adults (≥ 30). But, the relative-risk ratio of self-immolation over hanging for the 20-29 year age group (P value=.952) and the education level of primary/middle school (P value=.062) were not significantly different from 1, which implies that the relative risk of choosing self-immolation over hanging was the same for the 10-19 and 20-29 year age groups and for illiterates and primary/middle school graduates.

Following the same argument, the relative risk of choosing toxic poisoning over hanging for women was 1.83 times higher than men. The relative risk of choosing intentional drug poisoning over hanging was 1.74 times higher for women than men, 3.98 times higher for urban residents than rural residents, $1/0.46=2.17$ times lower for the ≥ 40 year age group than the 10-19 year age group and 2.76 times higher for university graduates than illiterates. The relative risk of choosing firearms over hanging was $1/0.56=1.79$ times higher for men than women, $1/0.56=1.8$ times higher for rural residents than urban residents, $1/0.47=2.13$ times lower for the 30-39 age group than the 10-19 age group and 1.79 times higher for the high school/diploma graduates than illiterates. Finally, the relative risk of choosing other suicide methods over hanging increases significantly with increasing age and education (see **Table 2**).

The overall relative-risk ratios of any of the demographic factors associated with the choice of suicide methods are shown in **Table 3**. Based on these results we conclude that four specific factors are significantly associated with the choice of self-immolation over hanging during the study period: gender (RRR=13.55; 95% CI: 10.07-18.23) and living area (RRR=1.57; 95% CI: 1.09-2.26) are risk factors while age group (RRR=0.72; 95% CI: 0.61-0.85) and education (RRR=0.85; 95% CI: 0.77-0.94) are protective factors. For the choice of drug poisoning over hanging, gender (RRR=1.67; 95% CI: 1.20-2.34) and living area (RRR=4.07; 95% CI: 2.15-7.71) are significant risk factors while age group (RRR=0.69; 95% CI: 0.57-0.84) is a significant protective factor. For the choice of firearms over hanging, education (RRR=1.16; 95% CI: 1.03-1.30) is a significant risk factor while age group (RRR=0.77; 95% CI: 0.63-0.93), gender (RRR=0.57; 95% CI: 0.37-0.87) and living area

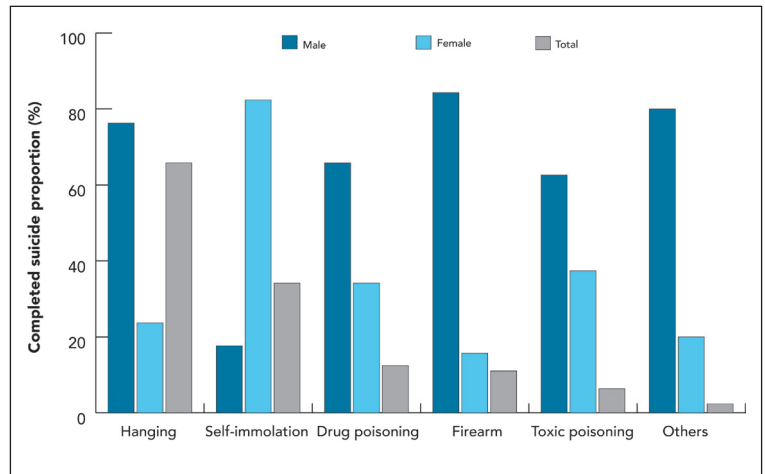


Figure 2. Proportions of suicide methods between males and females.

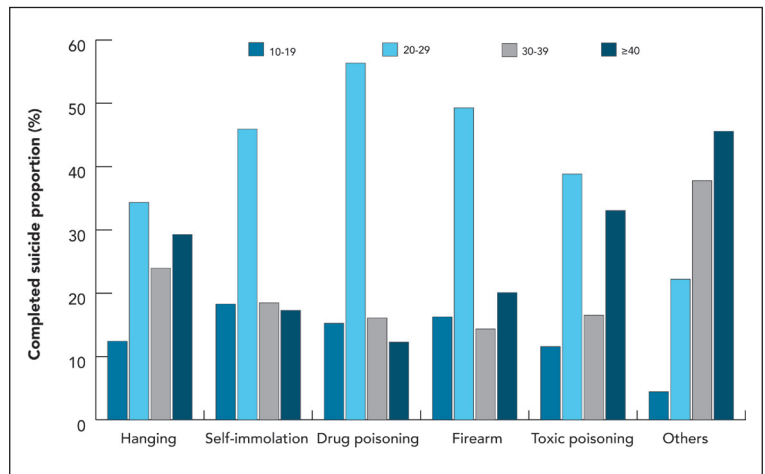


Figure 3. Proportions of suicide methods among different age groups.

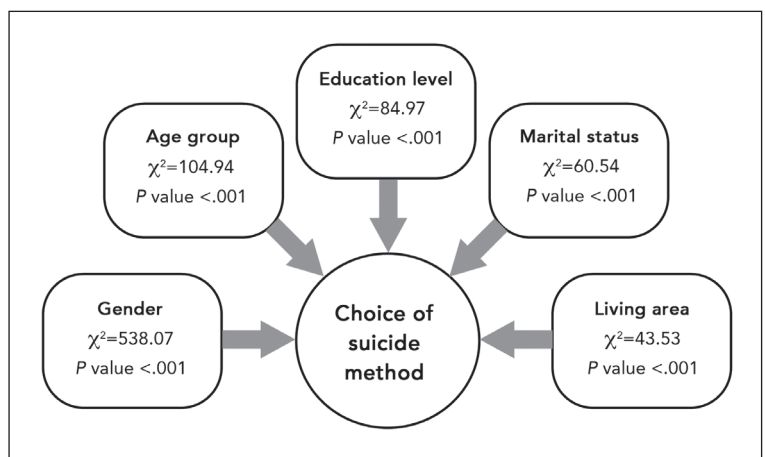


Figure 4. Statistics and P values of the likelihood-ratio chi-square tests of independence for association of each factor with the choice of suicide method.

Table 2. Estimated relative-risk ratios (RRR), 95% confidence intervals and *P* values versus the null hypothesis based on the fitted multinomial logistic regression model.

Factors	Levels	RRR	95% CI		P value
Toxic poisoning					
Gender	Male		1.0 (reference)		
	Female	1.83	1.20	2.81	.005
Living area	Rural		1.0 (reference)		
	Urban	1.79	0.97	3.30	.063
Age group	10-19		1.0 (reference)		
	20-29	1.22	0.63	2.36	.558
	30-39	0.73	0.33	1.62	.445
	≥ 40	1.01	0.44	2.29	.986
Education level	Illiterate		1.0 (reference)		
	Primary/Middle school	0.78	0.45	1.36	.384
	High school/ Diploma	0.74	0.39	1.41	.363
	University degree	1.15	0.38	3.42	.804
Marital status	Never married		1.0 (reference)		
	Married	1.11	0.68	1.82	.670
	Others	1.57	0.75	3.31	.232
Drug poisoning					
Gender	Male		1.0 (reference)		
	Female	1.74	1.24	2.45	.001
Living area	Rural		1.0 (reference)		
	Urban	3.98	2.10	7.56	<.001
Age group	10-19		1.0 (reference)		
	20-29	1.35	0.86	2.13	.193
	30-39	0.60	0.34	1.07	.083
	≥ 40	0.46	0.11	1.14	.020
Education level	Illiterate		1.0 (reference)		
	Primary/Middle school	1.70	0.97	2.96	.062
	High school/ Diploma	1.33	0.73	2.42	.352
	University degree	2.76	1.19	6.42	.018

Null hypothesis is RRR=1.0. Hanging is the baseline (reference) method. Statistically significant results ($P < .05$) are bolded. Detailed model parameters available online at: <http://docs.google.com/document/d/1eeQJFV5tGTy7ydnXgnxrv4KHKLv9yKtDSaHXW-RYg/pub>

Table 2. (cont.) Estimated relative-risk ratios (RRR), 95% confidence intervals and *P* values versus the null hypothesis based on the fitted multinomial logistic regression model.

Factors	Levels	RRR	95% CI		P value
Marital status	Never married		1.0 (reference)		
	Married	0.97	0.67	1.41	.877
	Others	0.71	0.32	1.56	.395
Self-immolation					
Gender	Male		1.0 (reference)		
	Female	13.32	9.86	17.99	.001
Living area	Rural		1.0 (reference)		
	Urban	1.58	1.09	2.29	.015
Age group	10-19		1.0 (reference)		
	20-29	1.01	0.68	1.51	.952
	30-39	0.60	0.36	0.97	.038
	≥ 40	0.35	0.20	0.61	<.001
Education level	Illiterate		1.0 (reference)		
	Primary/Middle school	0.69	0.47	1.02	.062
	High school/ Diploma	0.44	0.28	0.69	<.001
	University degree	0.62	0.26	1.44	.262
Marital status	Never married		1.0 (reference)		
	Married	1.55	1.13	2.14	.007
	Others	0.59	0.36	1.03	.054
Firearms					
Gender	Male		1.0 (reference)		
	Female	0.56	0.37	0.86	.008
Living area	Rural		1.0 (reference)		
	Urban	0.56	0.38	0.82	.003
Age group	10-19		1.0 (reference)		
	20-29	1.09	0.68	1.74	.732
	30-39	0.47	0.26	0.85	.013
	≥ 40	0.62	0.33	1.19	.155
Education level	Illiterate		1.0 (reference)		
	Primary/Middle school	1.35	0.78	2.34	.283
	High school/ Diploma	1.79	1.00	3.19	.049
	University degree	2.32	0.95	5.65	.065

Null hypothesis is RRR=1.0. Hanging is the baseline (reference) method. Statistically significant results (*P*<.05) are bolded. Detailed model parameters available online at: <http://docs.google.com/document/d/1eeQJFV5tGTy7ydnXgnxrVy4KHKLv2yKitDSaHXW-RYg/pub>

Table 2. (cont.) Estimated relative-risk ratios (RRR), 95% confidence intervals and *P* values versus the null hypothesis based on the fitted multinomial logistic regression model.

Factors	Levels	RRR	95% CI		P value
Marital status	Never married		1.0 (reference)		
	Married	0.97	0.64	1.45	.873
	Others	1.00	0.47	2.14	.994
Others					
Gender	Male		1.0 (reference)		
	Female	1.24	0.56	2.73	.592
Living area	Rural		1.0 (reference)		
	Urban	0.77	0.34	1.72	.524
Age group	10-19		1.0 (reference)		
	20-29	1.92	0.41	9.10	.410
	30-39	6.36	1.36	29.74	.019
	≥40	9.50	1.87	48.28	.007
Education level	Illiterate		1.0 (reference)		
	Primary/Middle school	5.26	1.44	19.30	.012
	High school/ Diploma	7.69	1.99	29.72	.003
	University degree	24.91	5.27	117.70	<.001
Marital status	Never married		1.0 (reference)		
	Married	0.52	0.24	1.01	.082
	Others	1.07	0.32	3.55	.910

Null hypothesis is RRR=1.0. Hanging is the baseline (reference) method. Statistically significant results ($P < .05$) are bolded. Detailed model parameters available online at: <http://docs.google.com/document/d/1eeQJFV5tGly7ydnXgnxrvy4KHKLy9yKtDSaHXW-RYg/pub>

(RRR=0.56; 95% CI: 0.39-0.82) are significant protective factors. For the choice of toxic poisoning over hanging, only gender (RRR=1.89; 95% CI: 1.24-2.88) is a significant risk factor. Finally, for the choice of others suicide methods over hanging, older age group (RRR=1.99; 95% CI: 1.34-2.95) and increasing education (RRR=1.55; 95% CI: 1.25-1.93) are significant risk factors.

DISCUSSION

Discussion of the notable causes of completed suicide is beyond the scope of this paper. A nationwide study in Iranian population covering the period 2006-2010 reported that gender, age, and education level are associated with suicide method.¹⁷ This study aimed to quantify the effect of gender, age, living area, education level and marital status on the choice of suicide method in the Kermanshah province population during the study period.

Hanging is often considered to be an easily avail-

able and more acceptable suicide method that is less likely to be misclassified as accidental or an undetermined death.²⁵ In general, the prevention of suicide by hanging is extremely difficult. Thus, in this study we used hanging as the baseline suicide method and estimated the relative-risk ratios of choosing other suicide methods over hanging based on gender, age, education, living area and marital status. Our findings show that women were more likely than men to choose intentional drug poisoning and toxic poisoning over hanging. For suicide by intentional drug poisoning, living in urban areas had a higher relative risk than living in rural areas. This can be attributed to the fact that drugs are more available in urban households than in rural households and easy access to means of suicide influences choice.¹¹ On the other hand, age was a protective factor for suicide by drug poisoning, which means that the risk of suicide by drug poisoning was higher for young individuals than for older individuals. Unlike in most devel-

Table 3. The overall relative-risk ratios (RRR), their 95% confidence intervals and the *P* values of the null hypothesis of the demographic factors associated with the choice of suicide methods based on the fitted multinomial logistic regression model.

		Self-immolation		Drug poisoning		Firearms		Toxic poisoning		Others	
Gender	RRR	13.55		1.67		0.57		1.89		1.15	
	<i>P</i> value	<.001		.003		.009		.003		.730	
	95% CI	10.07	18.23	1.20	2.34	0.37	0.87	1.24	2.88	0.53	2.50
Living area	RRR	1.57		4.07		0.56		1.8		0.80	
	<i>P</i> value	.015		<.001		.003		.061		.583	
	95% CI	1.09	2.26	2.15	7.71	0.39	0.82	0.97	3.31	0.36	1.78
Age group	RRR	0.72		0.69		0.77		0.95		1.99	
	<i>P</i> value	<.001		<.001		.008		.695		.001	
	95% CI	0.61	0.85	0.57	0.84	0.63	0.93	0.75	1.21	1.34	2.95
Marital status	RRR	1.01		0.87		0.95		1.22		0.74	
	<i>P</i> value	.912		.380		.774		.282		.353	
	95% CI	0.79	1.3	0.64	1.18	0.69	1.31	0.85	1.77	0.39	1.40
Education level	RRR	0.85		1.06		1.16		0.95		1.55	
	<i>P</i> value	.002		.282		.017		.488		<.001	
	95% CI	0.77	0.94	0.95	1.19	1.03	1.30	0.82	1.10	1.25	1.93

Null hypothesis is RRR=1.0. Hanging is the baseline (reference) method. Statistically significant results ($P<.05$) are bolded.

oped countries, in which the suicide is more prevalent among older people, the average age of the suicide victims in Iran was estimated to be 29 years.²⁶

In line with past research findings,²⁷ firearm was ranked as the fourth most used method of suicide, which was about two times more common in men than women. We also found that in rural areas, the relative risk of choosing suicide by firearm over hanging was about 1.8 times higher than urban areas. This can be explained by the availability of and need for firearms in rural areas. Restricting access could be advantageous.

Self-immolation in women living in developing countries is more prevalent than in developed countries.²⁸ Women in Iran are more affected by social changes and the conflict between traditional and modern values.^{29,30} Previous studies mentioned that self-immolation is a common method of suicide among young Iranian women, particularly in the west of the country.^{24,28,31-34} This was confirmed with our findings that the relative risk of choosing self-immolation over hanging was around 13 times higher for women than men, and that advancing age and increasing education acted as preventive factors. According to our findings, the relative risk of self-immolation for urban residents was higher than rural residents. This observation could be a consequence of increasing urbanization in the province, as a result

of rapid migration of rural population to urban areas. Such changes in the living environment usually have not been adequately coupled with concomitant cultural adaptation.

The results also show that the relative risk of self-immolation is higher for married individuals than never-married individuals. Unlike the universal perspective that marriage is a protective factor against behavioral disorders,²⁶ in Iran, being married may be one of the underlying motivating factors for suicidal behaviors among young people. One of the potential causes of this problem is unemployment among young people, which results in economic constraints and low socio-economic status.³⁵ Unemployment can be one of the predisposing factors to family conflicts among married couples. Another issue is the social stigma of divorce in Iranian society. Insistence on continuation of marital life among maladjusted young couples exposes them to marital problems and family conflicts. These two factors are the well-known risk factors for suicide in Iran.³⁹ It is noteworthy that major depression is similar in Iran in that it is more prevalent among married compared to unmarried individuals.³⁶

Because of lack of data, more influential factors such as mental health problems (major depressive disorders, schizophrenia, bipolar disorders, mood and anxiety dis-

orders and substance abuse), economic status and quality of life were not included in this study. To gain a better understanding, further research is needed to evaluate the effect of psychosocial factors on the choice of suicide method in Kermanshah province.

Competing interests

The authors declare that they have no competing interests for this work.

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