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http://jept.ir
doi 10.15171/jept.2018.14

Journal of Emergency Practice and Trauma
Volume 5, Issue 2, 2019, p. 71-74

Short Communication

Demographic findings in suicidal hangings among Iranian population

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Received: 11 June 2018
Accepted: 28 September 2018
Published online: 7 October 2018

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Competing interests: None.

Funding information: None.

Citation: Ameri M, Akhgari M, Kordrostami R. Demographic findings in suicidal hangings among Iranian population. Journal of Emergency Practice and Trauma 2019; 5(2): 71-74. doi: 10.15171/jept.2018.14.

Abstract

This study aimed at describing demographic information of the deceased resulting from hanging by means of different methods of suicide. In this cross-sectional study, the file of suicide cases referred to the Central Legal Medicine Organization was investigated retrospectively. Of 1681 suicide cases, the highest suicide mode was hanging by 993 cases (57.4%) and intoxication by 674 cases (39%). The mean age of hanging was 36.22±15.76 and for other suicide methods it was 32.61±13.70 ($P=0.000$). Hanging was higher in males. Female victims used other methods like intoxication ($P=0.000$). The most common seasons for hanging were spring and winter. Toxicological analysis in cases of hanging was positive with opioid alkaloids in 95 cases (9/9%) and methamphetamine in 68 cases (7%). Intoxication with aluminum phosphide was in 35.8% of cases. Most of the cases (68.3%) were self-employed victims. A total of 534 (63%) cases were married. There was a statistically significant difference between hanging and other suicide modes concerning age, gender, occupation, marital status, and drug abuse history ($P<0.001$). The frequency of hanging was higher in males, marrieds, self-employed, unemployed and drug abusers. Students were victims of intoxication. Self-employed victims, unemployed victims and drug abusers were exposed to successful attempts more than others. Screening plans can be helpful in preventing suicide by prioritizing the people at risk.

Keywords: Hanging, Gender, Addiction, Iran

Introduction

The three main groups of manner of unnatural death are accidental death, suicide and homicide (1). Suicide represents a significant public health problem worldwide (2). Suicide is one of the main reasons of death. Assessment and treatment of people at risk is important clinically and psychologically (3). About one million people around the world commit suicide and it is estimated that this number reaches to 1.5 million by 2020 (4).

Due to the paucity of reliable statistics concerning suicide, updated cross-sectional and regional studies are the best way for being aware of the problem, identifying the individual and social factors related to this issue and planning preventive actions in order to control it. Therefore, the World Health Organization (WHO) has emphasized on investigations regarding the methods used in suicide for preventive measures. National studies on suicide indicate that suicidal behavior and, in particular, the preferred suicide methods, vary between countries. Some patterns are well known, such as the high percentage of firearm suicides in the United States. The review article by Bidel et al shows that during the past 40 years among 22 countries of the Middle East region,13 studies about suicide have been published nationally. In fact, it seems that in countries of this region, suicide is disregarded (4). The International Organization for Prevention highlights that if access to suicide methods is restricted, the level of suicide will decrease (5). Various factors such as age, gender, rural/urban residence, race, and birth month have an effect on suicide (6). Socioeconomic factors, marital status, life events, interpersonal events, psychological or physical diseases, allergy (7,8) and more importantly the history of suicide also play a pivotal role. Data related to death from suicide are scattered in most developing countries including Iran. Hanging is one of the most common modes of committing suicide worldwide which causes instant death (9). This method used in suicide is considered as a problem in Iran too (10).

This study aimed at describing demographic information and toxicology of the deceased resulting from hanging by means of different methods of suicide. By investigating the methods of suicide among the victims, we can do effective interventions in order to remove the facilitators. Also, by knowing about some individual and social factors

and toxicology analysis which result in hanging and other modes of suicide, we can give important data to health authorities so they can plan effectively to control the risky factors and prevent people from facing with these factors.

Methods

This cross-sectional study was undertaken retrospectively by investigating the entire file of suicide victims (n = 1681) referred to the dissection room in Legal Medicine Organization from 2009 to 2014. All files were inspected by getting authorization from the competent authorities. Mode of death analysis was extract from files. The information of victims included age, sex, marital status, occupation, addiction history, and seasons of suicide were compared between hanging and other methods of suicide. Variables such as level of education, income level and mental or medical diseases, suicide history or hospitalization were not recorded in any of the files accurately thus, we did not analyze them. Statistical analysis was performed using SPSS v.21. Descriptive analysis was shown as percentage, frequencies, mean ± standard deviation (SD) and also indexes in text or table. Student *t* test was used to compare the data. Values were significant at $P < 0.05$.

Results

Totally, 1681 suicide cases in which the corpse was referred to the dissection room in Legal Medicine Organization from 2009 to 2014 were investigated.

As mentioned in Table 1 among 1681 suicide cases among 1681suicide cases, the most common methods of committing suicide were hanging and intoxication by 993 cases (57.4%) and 674 cases (39%) respectively. The mean age of hanging cases was 36.22±15.76 and for other suicide methods it was 32.61±13.70. The victim's age of self-suspension method was 3.6 years more than other methods of suicide ($P = 0.000$). Hanging was higher in males and females who used other methods of suicide ($P = 0.05$).

The frequency of hanging in men was high. Most of married people, singles, and widows used hanging for suicide. Aluminum phosphide (n = 619; 35.8%) was the most poisonous toxin used. Toxicological analysis in cases of hanging was positive and results showed that 95 cases (9.9%) used opioid alkaloids and 68 cases (7%) used methamphetamine. Findings indicate that most of the dead people were not addicted but most of the addicted people used hanging (57.1%) for committing suicide. The group with the age range of 30-50 years was the highest age group.

In order to investigate the statistical relationship between the suicide modes and other variables, due to a few samples in subgroups, the suicides modes were classified into hanging, intoxication with drugs or poisons or other modes (shooting, falling, burning) and the results are shown in Table 2.

Discussion

The importance of suicide as a growing problem is so magnificent that WHO and International Association of Suicide Prevention (IASP) have named the 10th of September as an international day for suicide prevention since 2003. In fact, the aim of this naming is to make individuals and organizations vigilant for preventive actions. It is an international phenomenon which on average kills one person per 40 seconds (11).

Identifying the factors of suicide can help decrease death in society. The present study which reflects the suicide rate in Tehran, Iran indicates that the highest frequency of suicide belonged to the age group of 30-50 (62.3%) and the level of suicide decreased by increasing the age. In the study of Ghamari, the highest frequency of suicide

Table 1. Demographic differences between hanging and other suicidal modes

Variables		Mode of suicide			
		Other modes of suicide		Hanging	
		No.	%	No.	%
Age	5-10	0	0	8	100
	10-15	16	34	31	66
	15-20	109	52.7	98	47.3
	20-30	223	43.2	293	56.8
	30-50	257	40.4	379	59.6
	>5o	64	26.7	176	73.3
Gender	Male	426	34.2	819	65.8
	Female	248	58.8	174	41.2
Marital status	Married	314	37	534	63
	Single	352	44.9	432	55.1
	Widow	1	10	9	90
Occupation	Unemployed	183	43.7	236	56.3
	Self employed	151	31.7	326	68.3
	Housewives	108	47.2	121	52.8
	Worker	12	9.9	109	90.1
	Student	133	67.5	64	32.5
	Retired	32	34	62	66
	Employee	46	51.1	44	48.9
	Soldier	1	7.7	12	93.2
Addiction history	Yes	15	42.9	20	57.1
	No	657	47.1	739	52.9

Table 2. Comparing mode of death

	No.	%
Hanging	993	57.4
Intoxication	674	39
Falling	3	0.2
Burning	9	1.3
Shooting	2	0.1

was reported for the age range of 15-24 (12). Tahir et al suggested that in Asian countries, the suicide happens mostly in people under 30 years old (13). These results show that suicide is mostly committed in young people. We postulate that the population pyramid consists of young people, thus it is essential to conduct studies on the causing factors of this issue.

Sadock and Sadock suggested that in the United States, men (regardless of age and race) committed suicide 4 times more than females (14). The analysis of 54 studies undertaken by Shirazi et al in Iran in 1981-2007 show that the frequency of suicide resulting into death in males is more than that in females (15). This study also indicates that the number of deceased males from suicide is three times more than females.

Regarding the mode of suicide in this study, hanging was the most frequent (57.4%). This result is consistent with many studies in Iran including Yousefi's study (16) in which most of men (65.8%) had chosen this mode of suicide.

The study of Sohn in South Korea highlighted that hanging is mostly done by married men with less working experiences (17). The results of a 10-year study which was done retrospectively by Jones et al showed that hanging was mostly done in 80% of men with the mean age of 49±19 years old (18). Reviewing the suicide pattern in Kuwait shows that hanging is the most common mode of suicide (60%) (19).

Epidemiological studies on the seasonal distribution of suicide suggest that the highest level of suicide is in spring (20). The seasonal pattern of distribution in this study suggested that the highest level of death from suicide happens in spring (30.9%) and the lowest happens in winter (19.9%). Some experimental findings support this point of view that sunlight may play an important role in stimulating the suicide and support the potential relationship between seasonal changes and suicide. Hiltunen et al reported the relationship between increasing the frequency of death from suicide in spring and summer and prolonging the daytime (21). Ruuhela et al from Finland suggests that there is a correlation between sunlight and death from suicide (22). Marital status and occupation are the important social factors in suicide. In the present study, 63% of the deceased people were married which is consistent with the results of Sayadrezai and colleagues' study (23). However, this finding is not in line with other studies in which the level of suicide was higher among singles. By the same token, married life was considered as a factor decreasing the level of suicide and death (24). But in some studies, there was no report about the statistically significant differences between the married and single people (19).

Because addiction is a risky factor for suicide, the addicts must be investigated regarding the suicidal behavior (7). Although, the results of this study suggested that most of the dead people were not addicted. The highest level of hanging was related to the self-employers. There was a positive relationship between suicide, inflation and economic problems. We state that people are more exposed to suicide due to stressful life and socioeconomic problems.

The study conducted by Sayadrezai et al shows that morphine was the common drug in the victims died by hanging (23).

Due to easy access to opioid alkaloids and methamphetamine as well as aluminum phosphide, we see an increase in the number of deaths among Iranian population.

Conclusion

With regard to the results of this study, we can conclude that many factors such as age, gender, marital status, and occupation play an important role in suicide and in order to decrease suicide we must pay special attention to issues such as the mental health of people, job stressors as well as the education of the public specially men who are responsible for earning a living. Also, with regard to increasing hanging. Successful among men and women, doing social studies about suicide factors and the modes used and creating national registration system of suicidal behaviors for planning national preventive program seems necessary.

Ethical issues

The study was approved by the Ethics Committee of Iran University of Medical Sciences with regard to the confidentiality of data (Ethics No. 20745).

Authors' contributions

MAk and RK contributed to the design and implementation of the research and MAm contributed to the writing of the manuscript.

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