

Etiology and Prevalence of Suicide Attempts in Ardabil Province, Iran

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Abstract

The current study aimed to investigate the etiology and prevalence of suicide attempts in Ardabil Province, Iran. The study population included all individuals who attempted suicide referring to the hospitals during one year. Of whom, 582 subjects were selected by a convenience sampling method. This research was descriptive, epidemiologic type. The study instruments included a questionnaire to measure the prevalence of suicide attempts and related characteristics. The obtained findings indicated that the prevalence of suicide attempts was higher among females and married individuals compared to males and single subjects. The suicide rate among housewives was higher than in other populations. Families with smaller people were more prone for attempting suicide. Besides, the rate of suicide was higher in high schools compared to other educational levels. Suicide attempt was more frequent in families by individuals with mental illnesses and those encountering family disputes, with drug poisoning as the most common method of a suicide attempt. Suicide attempts more commonly occurred in cities, in summer, and at night. Thus, appropriate interventions should be made at the level of families. Besides, greater attention should be paid to high school students and all individuals in the summer.

Keywords: Suicide attempt, Family, Prevalence, Suicide method

Introduction

Suicide is an act or an instance of taking one's own life voluntarily and intentionally. Three current theoretical models that attempt to explain the relationship between suicidal ideation and suicide attempt are the interpersonal psychological theory of suicide (IPTS) (Joiner, 2005), integrated motivational-volitional model of suicide (O'Connor & Kirtley, 2018) and three step theory of suicide (Klonsky and May, 2015). One person dies by suicide every 40 seconds worldwide (Laboliri et al., 2018). Every year, more than 800,000 individuals die from suicide. For every successful suicide resulting in death, 10 to 25 individuals attempt suicide (the World Health Organization, 2017). Suicide is a serious mental health concern that requires further attention in Iran. The suicide rate is increasing in Iran, especially in the age group of 15 to 24 years. Moreover, according to prior research on this age group, they encounter the highest suicide rate per 100,000 individuals (Visani et al., 2018). However, inadequate attention is paid to this group to provide proper interventions and educational programs (Vaseq, 2018).

Based on the data above, by conducting a simple estimation in Ardabil Province, with its 1,000,000 population, if 10 out of each 100,000 people successfully commit suicide, there will be approximately 100 suicide-induced deaths per year. Accordingly, as per every suicide leading to death, 20 to 25 individuals attempt suicide; thus, we will experience a total of 2,000 to 2,500 suicide attempts in 2018. Therefore, the in-depth knowledge investigation and suicide prevention strategies seem necessary in this society, especially among students who are highly vulnerable to suicide (Rashid, Kiani, Khorramdel, Gholami, & Sanobar, 2016).

Previous research revealed that suicide could be caused by several different factors, including suicidal ideation (Large, Smith, Sharma, Nielsen, & Sean, 2011), psychopathology (Barzillai & Opter, 2014), health-related high-risk behaviors (King, Rachkin, & Schwal-Stone, 2003), poor social and family support (Evans, Houghton, Rhodham, & Dickens, 2005), neutral belonging and acquired capability for suicide (Kiani et al., 2015), feelings of failure and disability (Kiani et al., 1998), despair (Klonsky, Kotov, Baxter, Rabinowitz, & Brummett, 2012), family and its interactions and problems (Kiani et al., 1997), traumatic childhood experiences and substance abuse (Kiani & Ramezani, 2019).

A history of previous suicide is among the strongest predictors of suicide (Brann, Beck, Steer, & Grisham, 2000). Those who attempt suicide demonstrated a higher suicidal potential than the control group and those with suicidal ideation (Smith, Kokrovitz, Poindekster, Hobson, & Cohen, 2010). Exposure to more painful and distressing life events, such as impulsivity and empiricism, correlates with self-perceived capacity (Anestis, Subri, Gutierrez, Hernandez, & Junior, 2014). Those who have attempted suicide once should be identified and put under serious psychological care to prevent future suicide attempts.

Another characteristic affecting suicidal ideation is access to suicide tools. Kiani et al. (2015) argued that suicidal ideation in the presence of voluntary mediators (including impulsivity, plot execution, suicide, or self-injurious behavior among family members or friends and the acquired capability for suicide) could turn into a suicide attempt. Klonsky and May (2015) reported that impulsivity is often a key characteristic in turning suicidal ideation into suicide attempts. O'Connor et al. (2017) believed that the acquired psychological capacity to use self-harming killing tools (no fear of death and insensitivity to pain) and exposure to suicide and self-harming behaviors of friends or others are significant mediators of turning an idea into suicidal behavior.

As per the records, in Ardabil Province, more than half of all suicide cases were due to drug poisoning. Thus, individuals' access to suicide tools should be restricted, i.e., medications, and so on. Because these tools are exactly what make suicidal ideation be realized. In this regard, the country's psychiatry services system should be initially targeted—a system that prescribes medication as the first-line intervention. Antidepressants are the third most widely-used drugs among all ages and the most widely-used medicines in the age range of 18 to 44 years. However, there is no credible evidence of their benefit among patients with mild to moderate depression (Deacon & Brent, 2013). Therefore, according to the points mentioned above and the growing suicide rate in our society, the present study aimed to investigate the etiology and prevalence of suicide attempts in Ardabil Province.

Methods

This research was a descriptive study. This study's statistical population consisted of all individuals with suicide attempts referred to Imam Khomeini Hospital in Ardabil City, Iran from August 2017 to August 2018 by the Emergency Department for hospitalization. These 582 individuals were examined after regaining consciousness and receiving emergency care. Accordingly, they were given a researcher-made questionnaire and requested to complete those if they have enough awareness. The questionnaires were met by a clinical psychologist working in the suicide ward.

Additionally, before completing the study tools, the research participants were informed about the study purposes and confidentiality of the provided data. Those who, for any reason (e.g., illiteracy, old age, low level of consciousness, inability to complete the questionnaire, and unwillingness to cooperate), were unable to cooperate were excluded from the research process. The total number of inpatients referred to the suicide poisoning ward is not mentioned here due to confidentiality.

In this study, a researcher-made questionnaire was used to assess the etiology and causes of suicide among the study subjects. This questionnaire included the following dimensions: gender, age, marital status (single, married, divorced, widowed), employment status (unemployed, student, university student, freelancer, employee,

housewife, farmer, and others), the number of households, education (illiterate, elementary, high school, university), history of substance dependence, suicide, mental illnesses, physical illnesses, and criminal problems, cause of suicide (unemployment, financial issues, family disputes, death of relatives, romantic relations failure, betrayal), suicide method (self-immolation, drug use, opioid use, poisonous agents, other), and suicide attempt season (spring, summer, autumn, and winter).

Results

The study subjects' demographic information, including gender, marital status, employment status, the number of households, and educational level, are presented in Table 1.

Table 1. Demographic characteristics of research participants

Demographic variables	frequency	percentage
Gender		
Female	319	8.54
Male	263	2.45
Total	582	100
marital status		
Married	328	4.56
Single	216	1.37
Divorce	30	2.5
Dead spouse	8	4.1
occupational status		
Unemployed	51	8.8
Student	67	11.5
University student	23	4.0
Freelance worker	117	20.1
Employee	23	4.0
homemaker	228	39.2
Farmer	14	2.4
Other	59	10.1
Total	582	100
Number of households		
1 to 2 people	111	19.1
3 to 4 people	330	56.7
5 to 6 people	119	20.5
7 people and above	22	3.9
Age status		
14 to 20 years	158	1.27
21 to 30 years	207	35.5
30 to 40 years	116	19.9
Over 40 years	101	17.3

	education	
Illiterate (8.9)	52	8.9
Elementary (32.6)	190	32.6
High School (42.4)	247	42.14
University (15.9)	93	16.0

According to Table 1, the frequency and percentage of suicide attempters were as follows: 319 women (54.8%), 263 men (45.2%); 328 married (56.4%), 216 single (37.1), 30 divorced (5.2%), and 8 widowed (1.4%). Concerning the occupational status, the highest frequency belonged to housewives with 228 individuals (39.2%), followed by freelancers with 117 subjects (20.1%). In terms of the number of households, the highest frequency was related to families of 3 to 4 members with 330 individuals (56.7%). Regarding education, high school education with 247(42.4%) subjects comprised the highest frequency in this regard. Regarding age, the highest rate belonged to the age range of 21 to 30 years, which presented the highest frequency with 207(35.5%) subjects.

Table 2 lists the study subjects' history of substance dependence, criminal cases, suicide attempts, and physical and psychological disorders.

Table 2. The study participants' history of substance dependence, criminal cases, suicide attempts, as well as physical and psychological disorders

Variable		frequency	percentage
Addiction	with a history	77	13.2
	No history	505	86.8
Suicide	with a history	55	9.5
	No history	527	90.5
Mental illness	with a history	102	17.5
	No history	480	82.5
Physical illness	with a history	35	5.8
	No history	547	94.2
Criminal issues and crime	with a history	28	4.8
	No history	554	95.2

According to Table 2, the highest prevalence in terms of history included mental illnesses (n=102), followed by substance dependence (n=77), suicide (n=55), physical illnesses (n=35), and criminal issues (n=28), respectively.

Table 3 outlines the causes of suicide attempts based on 6 categories of family disputes, unemployment, financial problems, and death of loved ones, betrayal, and love failure.

Table 3. The cause of suicide in the study subjects

Cause of suicide	frequency	percentage
Family disputes	367	45.3
Unemployment	113	13.9
Financial problems	187	23.1
Death of relatives	21	2.5
Betrayal	56	6.9
Love failure	65	8.0

As Table 3 indicates, family disputes with 367(45.3%) cases were the most important reason for suicide, followed by financial problems 187(23.1%), and finally the death of loved ones with the lowest frequency, i.e., 21(2.5%) cases as the identified causes of suicide.

Table 4. The gender-wise suicide method of the study participants

Method	Gender	frequency within gender	percentage	Whole people
Self-immolation	female	1	0.3	(0.02)1
	male	0	0	
Poisoning with toxins	female	55	17.2	(15.6)91
	male	36	13.7	
Indulgence in drugs(drug poisoning)	female	245	76.8	(68.4)398
	male	153	58.2	
Drug abuse	female	15	4.7	(10.8)63
	male	48	18.3	
Other	female	3	0.9	(5.0)29
	male	26	9.9	

According to Table 4, drug usage was the most common method of suicide with a frequency of 398 subjects. Besides, using this method was more prevalent in females. Attempts with toxic agents were also the most common method (n=91) after drug consumption. Then, opioid usage was the third commonest method of suicide (n=63), with men taking a greater proportion in this regard. The most uncommon method of suicide was self-immolation, with a prevalence of one person (a woman).

Table 5 demonstrates the season-wise suicide methods by the study subjects.

Table 5. The season-wise suicide methods in the study subjects

Suicide method	spring	summer	autumn	winter	total
Self- immolation	0	1	0	0	1
Poisoning with toxins	28	41	7	15	91
Indulgence in drugs (drug poisoning)	89	131	108	68	220
Drug abuse	13	18	25	7	63
Other	10	10	4	5	29
Total	140	95	144	203	140

Table 5 reveals that the highest number of suicides occurred in summer (n=203), followed by autumn (n=144), spring (n=140), and winter (n=95). Besides, the method of drug poisoning was more common in summer (n=131), followed by autumn (n=108).

Table 6 indicates the frequency of suicide attempts based on the residence place of the study participants.

Table 6. The frequency of suicide attempts based on the residence place of the study subjects.

habitat	frequency	percentage
City	454	0.78
Village	128	0.22

The frequency of suicide attempts that occurred in cities (n=454) was significantly higher than that in villages (n=128). Besides, 78% of the explored suicide attempters were residents of cities (Table 6).

Table 7 illustrates the time of suicide attempt based on three time points; morning, evening, and night among the study subjects.

Table 7. The time of suicide attempts in the study participants

	Morning	Evening	Night
Frequency	140	116	326
Percentage	24.1	19.9	..56
Number of women	76	69	174
Number of men	64	47	152

According to Table 7, the frequency of suicide attempts at night (n=326) was significantly higher than that in the morning and evening. Moreover, females comprised the highest proportion of attempting suicide at night (n=174).

Discussion

The current study investigated the etiology and prevalence of suicide attempts in Ardabil Province, Iran. The findings signified that women were more prone to commit suicide than men. This result was consistent with those of other studies (Visani, Delpisheh, Mohammadian, and Valizadeh, 2018; Rabbani, Mohammadi-Qaraei, et al., 2012). In other words, women present a higher level of excitement worldwide. However, in Iran, due to the patriarchal and authoritarian tradition of men, women fail to have appropriate opportunities to express their emotions. Accordingly, such suppressed emotions are internalized, leading to depression and ultimately self-harm. Also, our data suggested that suicide attempts were of the highest proportion in housewives. Occupation and social activity could be protective factors against psychological risks and harms. Besides, housekeeper women might feel being useless and lack the feeling of belonging

to a community or individual. These feelings are among the most essential predictors of suicide attempts.

Based on the interpersonal theory of suicide by Vanvarnden, White, Kokrovitz et al. (2010), the extreme risk of suicide is created by the interaction of three elements: the experience of loneliness and isolation (neutral belonging), an individual's perception of being no use to others (the perception of being useless), and habituation to self-injury with the purpose of self-harm or homicide, or other hazardous behaviors. Thus, staying home might not only generate feelings of isolation and uselessness in the individual but also result in a tendency to suicidal behaviors.

According to the present research findings, suicide attempts occur in families with smaller populations and urban life; most suicide attempters were from families of 2 to 4 members and urban residents. This finding was consistent with those of Junior et al. (2009). Our lives as Iranians are moving towards urbanization, apartment residing, and depopulation. Our country has not been able to psychologically adapt to the culture of sparsely populated and urbanized; the psychological damage is more considerable in cities than villages. The reason is the small families and the existence of numerous socio-economic problems in Iran that weakened the social relations, and individuals have a low sense of belonging. Thus, such issues lead to the experience of alienation from others. Prior research indicated that the suicide rate decreases during gatherings and celebration times (Junior et al., 2009). There is a strong link between social isolation—a relatively strong manifestation of neutral belonging that includes little or no social relationships—and suicide. Neutral belonging causes detrimental effects on cognition and behavior, such as deficiencies in self-regulation and executive functions, reduced social behaviors, generating aggressive behaviors and hostile bias in social cognitive processing, unintentional self-destructive behaviors, and a state of "hollowness" (Twinge et al., 2003).

Regarding the cause of suicide, this study revealed that the major reasons reported for suicide by the study subjects were family-related and then financial issues. These results are in line with those of Kiani et al. (2018), Junior et al. (2009), as well as Rashid, Kiani, Khorramdol, and Gholami et al. (2016) on the importance of family support and family relationships, as well as the findings of Godwin et al. (2018) with respect to the importance of financial issues. Thus, parent-adolescent relationships' quality is associated with positive and negative consequences expressed in adolescence, including social competence, positive values, depression, and aggression (McKinney & Rank, 2011). Conflicting parent-child interactions manifested by characteristics, such as intense emotional contentiousness, hostility, and the lack of control, predict risky behaviors in adolescence (Lam, Solmir, & McHill, 2012). Such parents fail to communicate with their children properly and can even make them feel insecure. Problems in these relationships can cause adolescents to rebel by seeking intimacy in peer groups (Cited in Kiani et al., 2018).

Another hypothesis suggests that the family might use the child to prevent harm. A child who bears many family mistakes is the weakest and most vulnerable family member. In explaining the importance of financial issues, it should be noted that the socio-economic situation is closely related to Iranians' mental health; a source of power

and support is favorable financial conditions. Financial issues also make an individual feel valued and empowered. Subsequently, this ability can be a protective factor against the risk of self-harming behaviors: behaviors that exacerbate low self-esteem and decrease empowerment in them.

According to our study results, a history of mental illness was reported to be the most prevalent history characteristic by the study subjects. This finding was consistent with that of Bradwick (2018). Numerous suicide cases are associated with mental illnesses, and many suicide attempts require exploring the traces of mental disorders. The majority of individuals with mental disorders consume psychotropic drugs and tranquilizers. However, there is no credible evidence for the usefulness of prescribing such medication for patients with mild to moderate depression (Deacon & Brent, 2013). Moreover, most of those who take such drugs are not satisfied with their long-term adverse effects, causing fatigue and feelings of total despair. Thus, they may feel defeated, and according to O'Connor (2018), this feeling of failure is among the most critical factors in leading a person to attempt suicide. Kiani and Rashid (2019) stated that loss and disruption play the most vital roles in forming suicidal ideation and directly cause suicide. At this stage, i.e., a kind of cry for help, the focus is on the psychological processes that lead to the emergence of suicidal ideation and intention.

The assessment of failure and humiliation for which there is no escape (the sense of entrapment) is assumed to be a decisive predictor for the idea of suicide. Regarding the method of suicide, the present study results demonstrated that the most common suicide method was drug poisoning, and mostly sedatives. There rises a fundamental question here: "What is the relationship between psychotropic drugs and suicide?" The exact mechanism of action remains unrecognized, as this is a complex issue with numerous components. There may be a correlation between pharmacotherapy interventions and suicide attempts. However, it is impossible to consider a causal link between the two. Perhaps what we need to be more careful about is that psychiatrists should be more cautious in prescribing doses. Most suicide cases have occurred in the summer. There is no exact explanation in this respect; however, it can be hypothesized that day length, temperature, the intensity of sunlight, and even rain are related to the rate and odds of suicide attempts.

In summary, in this study, according to the report of the explored suicide attempters, family disputes were among essential causes of suicide. Suicide rates were highest in summer, compared to other seasons. Suicide rates in urban areas were significantly higher than that in rural regions. Besides, suicide attempts were higher in women than men. Eventually, suicide attempt rates were higher in small families, and drug poisoning was determined as the most common method of suicide.

This research had some limitations. The collected data of this research were based on self-report. Samples also only included those hospitalized due to suicide attempts and may have been biased in reporting their issues due to complications, such as shame, stigma, and social dishonor. Furthermore, most questions of the questionnaire were related to the past and answering them required recalling past issues. Thus, respondents

may have experienced difficulties in exactly remembering the past. As a result, they may not have answered the items accurately.

The current study findings suggested that the essential matter that must be improved is family and individual relationships, provide women greater freedom to express themselves so that they do not engage in self-destructive behaviors. Considering counseling and psychological interventions instead of medical and psychiatric interventions is also recommended.

Our country is still functioning according to the traditional and simple model of medicine; however, due to the high rate of injuries, this model has proven its inefficiency in reducing social harms, because if this model and medical tradition were effective, along with the increasing use of this model, we would not observe an increasing rate of substance dependence, divorce, suicide, and so on. Therefore, it is better to consider another alternative model, such as the psychological prevention and counseling model, rather than the conventional treatment model. We must try to improve mental health in society.

Like all over the world, the focus is currently switching from treatment to prevention. Families should be provided with further information concerning the type of interactions with children and the symptoms of self-harming behaviors and sensitivity to them. Professionals should pay more attention to individuals' and families' psychological, interpersonal, social factors, and even weather conditions. For instance, they should pay greater attention to suicide risks in individuals in the summer. Politicians and decision-makers at the macro level should be warned that national suicide prevention policies in Iran are not sufficient enough (Hassanian Moghadam & Zamani, 2017) and require urgent intervention, especially for the high-risk groups.

Conclusion

In conclusion, in this study, according to the report of the explored suicide attempters, family disputes were among essential causes of suicide. The suicide rate was highest in summer, compared to other seasons. The suicide rate in urban areas was significantly higher than that in rural regions. Besides, suicide attempts were higher in women than men. Eventually, the suicide attempt rate was higher in small families, and drug poisoning was determined as the most common method of suicide.

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