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The Prevalence and Determinants of Suicidal Behaviors in the Central Region of Iran

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Quantitative Study

Abstract

Background: Today, there are great concerns about the high frequency of suicidal attempts which are a major health problem. Identifying the prevalence of suicide and its predisposing elements could be helpful in preventing suicide.

Methods: This prospective study was conducted in an emergency ward of a local hospital in a small city in the central region of Iran. The study duration was one year from 8 April 2011 to 7 April 2012. We collected demographic, psychosocial, and suicide characteristics, and the time of referral of a total of 466 patients who had referred to the hospital due to suicidal attempts.

Results: The mean age of suicidal patients was 24.97 ± 10.05 years. Participants' who were between 15 and 24 years of age had the highest rate of suicide attempt regardless of age. The suicidal attempt rate during the study period was 300.1 and 153.5 per 100.000 in females and males, respectively. Most attempted suicide patients were single and undergraduated. Approximately 60.8% of male and 63.3% of female subjects had depression with different severity. We observed higher frequency of stressors in males compared to females ($p = 0.007$). Moreover, the main cause of suicide was relational problem in both genders. Suicidal thought was reported in about 41.5% of patients before attempting suicide. In 4.7%, 12.2%, and 12.9% of our study subjects a positive past history, plan for suicide, and family history of suicidal attempt were reported. Nearly 75.9% of suicidal attempts occurred between 1 pm to 12 am. The highest rate of suicidal attempts was observed in summer and the lowest rate in winter.

Conclusion: Given our findings regarding specified suicide determinants in the present study, we believe interventions need to target young age groups and focus on providing social support settings in places such as schools and referral centers with educated individuals on communication and problem solving skills.

Keywords: Suicide, Prevalence, Iran

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Introduction

Suicidal behavior is a major public health problem in all societies. Suicide is among the 10th leading causes of death in all age groups in most countries for which information is available (World Health Organization, 2009).

According to the World Health Organization (WHO), the act of suicide is defined as self-harm with the conscious intention of causing one's own death. Suicide may also be defined briefly as an act of aggression directed toward one's self (Atay, Eren, & Gundogar, 2012).

Every year, approximately 1 million people die from suicide, which is equivalent to one death every 40 seconds. Suicide attempts occur almost 20 times more frequently than a completed suicide. One of the strongest risk factors for a completed suicide is suicidal attempts.

On the one hand, a variety of factors are associated with an increased risk of attempted suicide. These include psychiatric disorders, feelings of hopelessness and impulsivity, history of previous suicide attempts, age, sex, marital status, occupation, comorbidity, adverse childhood experiences, and family history (Alberdi-Sudupe, Pita-Fernandez, Gomez-Pardinas, Iglesias-Gil-de-Bernabe, Garcia-Fernandez, Martinez-Sande, et al.). On the other hand, the effects of modernization especially in developing nations have led to changes in the socioeconomic and cultural aspects of an individual's life and are greatly adding to life tensions leading to higher rates of suicide (Vijayakumar, Vijayakumar, Nagaraj, & John, 2004.; Lester, 2008).

To our knowledge, based on official reports, the rate of suicide is lower in Iran than many western countries, but it is higher than other countries in the Middle East (Ghoreishi, & Mousavinasab, 2008).

It is very important to identify predisposing factors and determinants of suicidal attempts especially in young people (Haukka, Suominen, Partonen, & Lonnqvist, 2008).

The purpose of the current study is to determine the rate of suicide attempts in addition to demographic and psychosocial variables associated with suicidal attempts in the population admitted to an emergency unit of a general hospital in a county in the central region of Iran.

Methods

We conducted a prospective study in the emergency ward of Imam Khomeini Hospital in the city of Falavarjan, Iran. Patients who referred to the hospital due to suicidal attempts over a period of one year (from April 8th, 2011 to April 7th, 2012) were included in the study.

Falavarjan is a county with a population of 208,101 located in the central region of Iran and is part of the Isfahan province.

Imam Khomeini Hospital is the only local hospital in the city. All attempted suicide patients would be referred to this hospital first hand. To ensure no cases was referred to another nearby hospital which is located about 10 km outside of the county, we checked their admission list and found no suicidal cases from Flavarjan. We selected the data from all reported suicidal attempts of patients aged 10 years or older who were admitted to the emergency ward during the study period. Data on 466 attempted suicides was collected by trained nurses. Consecutive cases of attempted suicide were evaluated within 24 hours by the consultant psychiatrist. During the course of the study, two of the patients died and only their demographic data existed. The present study was approved by the Ethical Committee of the Behavioral Sciences Research Center, Isfahan University of Medical Sciences, Isfahan, Iran. Consent forms were signed by all participants and their families. It should be noted that the questionnaires were filled anonymously.

We recorded the following sociodemographic information on all patients: age, marital status, age at marriage, sex, place of residence (urban/rural), occupational status (whether self-employed, unemployed, housewife, student, or retired,), salary and income level (< 300.000 IRR,

300.000-500.000 IRR, or > 500.000 IRR), educational level (< 6 years, 6-12 years, or > 12 years), and time and date of attempting suicide.

We recorded past medical history of patients, including any physical and mental illnesses. Depression status was determined based on the Patient Health Questionnaire (PHQ-9). Social support score and stressful life events were measured based on the Multidimensional Scale of Perceived Social Support (MSPSS) and Stressful life events (SLE) questionnaire, respectively.

First, we collected data on suicide characteristics including suicidal thought (Yes/No), suicide plan (Yes/No), past history of suicide attempt (Yes/No), number of suicide attempts, first degree family history of suicide attempt (Yes/No), and main causes of suicide attempts. Main causes of suicide attempts were recorded according to what participants noted. Secondly, we coded suicide causes as relational, financial, and emotional causes, others, and no reason (Table 1).

Table 1: Details of suicide causes

Code	Suicide causes
Relational	Quarrels with spouse and divorce
	Conflict with parents
	Troubles with children
	Quarrels with spouse's relatives
	Troubles with boyfriend or girlfriend
Financial	Major financial problems
	Unemployment
Emotional	
Others	Death of a close family member
	Educational stressors
	Social problems
	Illnesses
	Being influenced by TV and Satellite programs
No reason	Those who had not answered or noted any reason

PHQ-9 is a self-administered tool that scores each of the 9 criteria for major depression of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). The score of each criteria range from 0 (not at all) to 3 (nearly every day). PHQ-9 scores of 5 to 9, 10 to 14, 15 to 19, and ≥ 20 represented mild, moderate, moderately severe, and severe symptoms of depression, respectively (Kroenke, Spitzer, & Williams, 2001).

The MSPSS is intended to measure an individual's perceived social support from three sources: significant others (Items 1, 2, 5, and 10), family (Items 3, 4, 8, and 11), and friends (Items 6, 7, 9, and 12). The MSPSS is a brief, easy to administer self-report questionnaire which contains 12 items rated on a 5-point Likert scale with scores ranging from 'very strongly disagree' to 'very strongly agree' (World Health Organization, 2009; Lester, 2008). A high score indicated increased levels of perceived social support (Zimet, Dahlem, Zimet, & Farley, 1988).

The SLE questionnaire is comprised of 46 stressors with 11 domains, including home life, financial problems, social relations, personal conflicts, work conflicts, educational concerns, job security, loss and separation, sexual life, daily life, and health concerns, that measure the frequency of stressors. It also measures self-perceived intensity of stressful life events by 6-point Likert scales (0 = never, 1 = very mild, 2 = mild, 3 = moderate, 4 = severe, and 5 = very sever). If participants had not experienced any stressful life events, they would answer never. If any subjects had experienced stressful life events during the previous year, the intensity score would range between 1 and 5 (Roohafza, Ramezani, Sadeghi, Shahnam, Zolfagari, & Sarafzadegan, 2011; Sali, Roohafza, Sadeghi, Andalib, Shavandi, & Sarrafzadegan, 2013).

All collected data were entered into and analyzed with SPSS for Windows (version 15; SPSS Inc., Chicago, IL, USA). Data are presented as mean ± standard deviation for continuous variables and frequencies reported with percentages for categorized variables. Age-adjusted suicide rate was computed per 100.000 population, and 95% confidence interval (CI) was computed for rates. Student's independent t-test and χ^2 were used to compare variables for males and females. A P-value of less than 0.05 was considered statistically significant for all analyses.

Results

Rate of suicide attempt

We found the rate of suicide attempt over the study period to be 300.1 and 153.5 per 100.000 in females and males, respectively. Participants aged 15-24 had the highest rate of suicide attempt in both sexes. Table 2 shows the rates and 95% CI of suicide attempt in males and females in addition to different age categories. Two deaths occurred in the study population during the study period. One was a 30 year old, self-employed, single male with low level of education who had committed suicide by poison and the second case was a 9 year old, male student, who had hanged himself.

Demographic, Psychosocial and Causes of Suicide

Of the 466 suicidal attempt cases, 166 (35.6%) were male. Mean age for all cases was 24.97 ± 10.05 years. Most cases (62.7%) lived in rural areas (291 out of 446).

Most female cases were housewives (59.7%), whereas most male cases were employed or students. Among the males, 33 (20.0%), 45 (27.3%), and 42 (25.5%) were salary-employed, self-employed, and students, respectively; however, most females (179; 59.7%) were housewives. Nearly 80% of cases of suicidal attempts were between 15 to 34 years old. Other demographic characteristics that were divided by gender are shown in table 3.

Our observation indicates that only 9 men (5.4%) and 32 women (10.4%) had past history of mental illness (p = 0.07). Mean depression score in our subjects was 9.05 ± 7.72. Mean score for social support in all cases was 39.27 ± 12.35. There were statistically significant differences in frequencies of stressors between males and females. Men with suicidal attempt reported more stressors in their life compared to females (p = 0.007).

Based on results of the SLE questionnaire, severity of perceived stressors in regards to financial problems (p = 0.001), conflicts in the work place (p ≤ 0.001), and lack of job security (p ≤ 0.001) were reported to be significantly higher in males compared to females.

Severity of sex life stressor (p = 0.009) was reported to be significantly higher in females compared to males.

Suicidal thought was reported by 193 (41.1%) subjects as shown in table 3. In addition, 60 subjects (12.9%) reported past history of attempted suicide. Frequency of past attempted suicide in our study subjects was once in 36 (7.8%), twice in 14 (3.0%), and three times in 10 (2.2%) cases. Main causes of suicidal attempt were significantly different in males and females (p < 0.001); economic issues in 33 (19.9%) males and 13 (4.3%) females, relationship conflicts in 55 (33.1%) males and 129 (43.0%) females, and emotional issues in 37 (22.3%) males and 96 (32.0%) females (Figure 1).

Chronological Pattern

In approximately 75.9% of cases the time of suicidal attempt was between 1:00 pm to 12:00 am. We observed the highest number of suicidal attempts in summer, especially in August (13.9%), and the lowest number of attempts in winter (Table 4).

Table 2: Rate of suicide attempt per 100.000 in different age groups by sex of suicide attempter

Age group	Total	Male (n = 166)	Female (n = 300)
5-14y	77.77 (76.92-78.62)	61.26 (60.32-62.19)	94.81 (93.33-96.29)
15-24y	513.92 (509.34-518.49)	323.25 (319.20-327.31)	707.98 (699.02-716.93)
25-34y	251.65 (249.45-253.84)	198.19 (195.79-200.58)	309.55 (305.65-313.44)
35-44y	130.17 (128.79-131.54)	74.78 (73.70-75.85)	195.59 (192.55-198.64)
45-54y	46.91 (46.28-47.54)	43.21 (42.43-44.00)	51.30 (50.28-52.32)
55-64y	46.36 (45.48-47.23)	74.56 (72.56-76.55)	18.45 (17.96-18.94)
≥ 65y	48.24 (47.31-49.17)	36.56 (35.59-37.53)	61.29 (59.58-63.02)

Table 3: Demographic, psychosocial, and suicide characteristics by sex of suicide attempter

Variables	Total (n = 466)	Male (n = 166)	Female (n = 300)	P-value	Range
Age (mean ± SD)	24.97 ± 10.05	26.37 ± 11.41	24.2 ± 9.14	0.03	9-80
Age at marriage	18.93 ± 3.25	19.95 ± 3.41	18.50 ± 3.09	0.002	9-34
Educational year	9.62 ± 3.39	8.81 ± 3.68	10.08 ± 3.13	0.000	0-19
Residency [n (%)]					
Urban	173 (37.3)	67 (40.4)	106 (35.6)	0.31	
Rural	291 (62.7)	99 (59.6)	192 (64.4)		
Occupation [n (%)]					
Salary-employed	38 (8.2)	33 (20.0)	5 (1.7)		
Self-employed	50 (10.8)	45 (27.3)	5 (1.7)		
Housekeeper	179 (38.4)	0 (0.0)	179 (59.7)	0.000	
Retired	10 (2.2)	9 (5.4)	1 (0.3)		
Unemployed	48 (10.3)	42 (25.5%)	6 (2.0)		
Student	140 (30.1)	36 (21.8)	104 (34.7)		
Age category [n (%)]					
5-14y	25 (5.4)	10 (6.0)	15 (5.0)		
15-24y	249 (53.4)	79 (47.6)	170 (56.7)		
25-34y	127 (27.3)	52 (31.3)	75 (25.0)		
35-44y	45 (9.7)	14 (8.4)	31 (10.3)	0.17	
45-54y	10 (2.1)	5 (3.0)	5 (1.7)		
55-64y	5 (1.1)	4 (2.4)	1 (0.3)		
≥ 65y	5 (1.1)	2 (1.2)	3 (1.0)		
Marital status [n (%)]					
Married	204 (43.8)	62 (37.3)	142 (47.3)	0.04	
Single	262 (56.2)	104 (62.7)	158 (52.7)		
Income [n (%)]					
< 3.000.000 IR	78 (16.7)	24 (14.5)	54 (18.0)		
3.000.000-5.000.000 IR	301 (64.6)	103 (62.0)	198 (66.0)	0.12	
> 5.000.000 IR	87 (18.7)	39 (23.5)	48 (16.0)		
Educational level [n (%)]					
< 6y	63 (13.5)	31 (18.7)	32 (10.7)		
6-12y	362 (77.8)	123 (74.1)	239 (79.9)	0.049	
> 12y	40 (8.6)	12 (7.2)	28 (9.4)		
Past history of physical illness [n (%)]	20 (4.3)	8 (4.8)	12 (4.0)	0.67	
Past history of mental illness [n (%)]	40 (8.6)	9 (5.4)	31 (10.4)	0.07	
Depression score (mean ± SD)	9.05 ± 7.72	8.79 ± 7.96	9.19 ± 7.59	0.59	0-27
Depression categories [n (%)]					
No depression	175 (37.6)	65 (39.2)	110 (36.7)		
Mild depression	87 (18.7)	32 (19.3)	55 (18.3)		
Moderate depression	79 (17.0)	22 (13.3)	57 (19.0)	0.64	
Moderately severe depression	69 (14.8)	26 (15.7)	43 (14.3)		
Severe depression	56 (12.0)	21 (12.7)	35 (11.7)		
Social support score (mean ± SD)					
Family	13.46 ± 4.58	13.71 ± 4.88	13.32 ± 4.42	0.37	4-20
Friend	12.23 ± 4.61	12.62 ± 4.82	12.02 ± 4.48	0.18	4-20
Other	13.58 ± 4.45	13.94 ± 4.73	13.38 ± 4.28	0.19	4-20
Total	39.27 ± 12.35	40.27 ± 12.98	38.72 ± 11.97	0.19	12-60
Frequency of stressors	13.75 ± 7.86	15.07 ± 8.52	13.02 ± 7.39	0.007	0-37

Table 3: Demographic, psychosocial, and suicide characteristics by sex of suicide attempter (Continue)

Variables	Total (n = 466)	Male (n = 166)	Female (n = 300)	P-value	Range
Domain of stressors (intensity)					
Home life	6.02 ± 6.27	5.63 ± 5.92	6.23 ± 6.45	0.320	0-35
Financial problems	8.17 ± 7.69	9.74 ± 7.54	7.31 ± 7.65	0.001	0-25
Social relations	6.90 ± 5.07	6.76 ± 4.83	6.98 ± 5.21	0.660	0-20
Personal conflicts	7.30 ± 5.86	6.89 ± 5.79	7.53 ± 5.89	0.270	0-25
Work conflicts	1.37 ± 3.36	2.50 ± 4.73	0.74 ± 2.04	> 0.001	0-20
Education concerns	2.50 ± 4.37	2.41 ± 4.44	2.56 ± 4.33	0.730	0-20
Job security	5.39 ± 6.87	8.62 ± 7.74	3.61 ± 5.60	0.000	0-25
Loss and separation	1.60 ± 2.98	1.55 ± 2.87	1.63 ± 3.05	0.79	0-20
Sexual life	0.70 ± 1.81	0.41 ± 1.14	0.86 ± 2.08	0.009	0-20
Health concerns	0.82 ± 1.68	0.97 ± 1.85	0.74 ± 1.58	0.160	0-10
Daily life	1.63 ± 2.12	1.66 ± 2.12	1.62 ± 2.13	0.840	0-10
Suicidal thought [n (%)]	193 (41.4)	64 (38.6)	129 (43.0)	0.350	
Suicide planning [n (%)]	57 (12.2)	20 (12.0)	37 (12.3)	0.930	
Past history of suicide attempt [n (%)]	60 (12.9)	21 (12.7)	39 (13.0)	0.910	
Number of suicide attempts [n (%)]					
1	36 (7.8)	11 (6.7)	25 (8.4)		
2	14 (3.0)	7 (4.2)	7 (2.3)	0.610	
3	10 (2.2)	3 (1.8)	7 (2.3)		
Family history of suicide attempt [n (%)]	22 (4.7)	10 (6.0)	12 (4.0)	0.320	

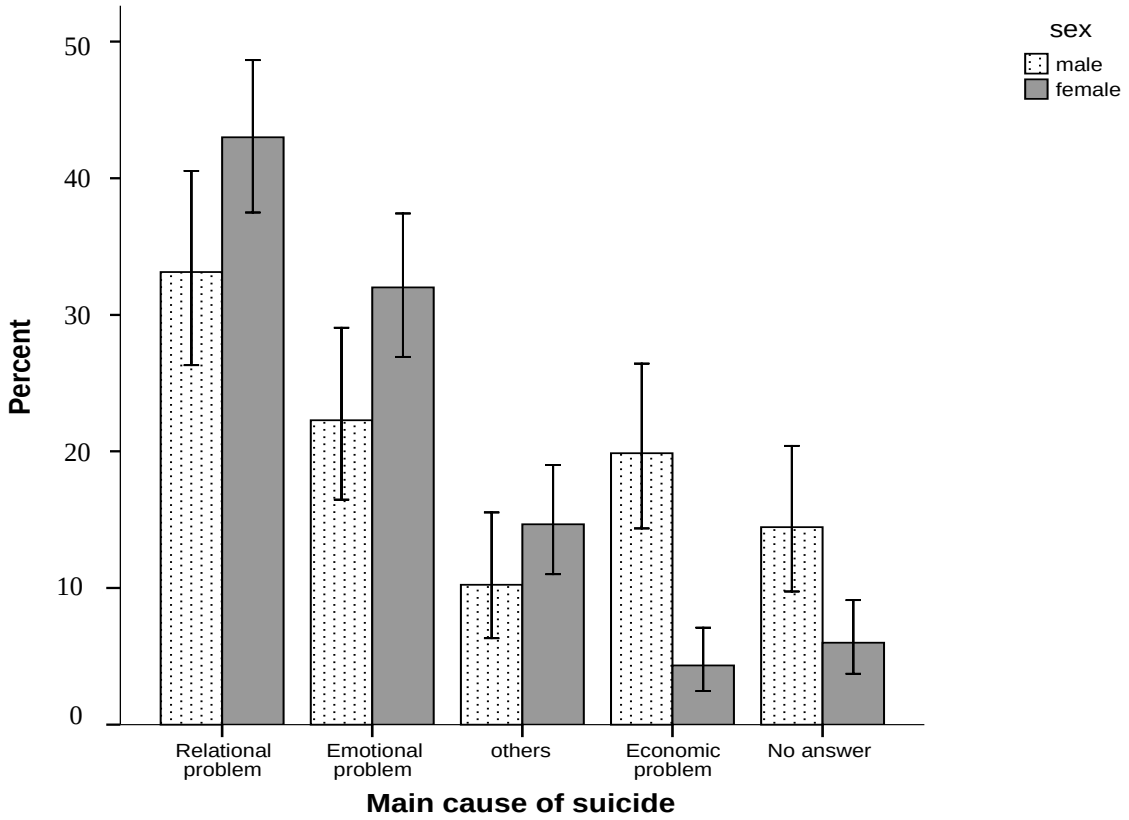

Figure 1: Main cause of suicide by sex of suicide attempter

Table 4: Time pattern by sex of suicide attempter

Variables	Total (n = 466)	Male (n = 166)	Female (n = 300)	P-value
Time of suicide [n (%)]				
01:00-06:00	36 (8.1)	18 (11.3)	18 (6.3)	
07:00-12:00	71 (16.0)	28 (17.5)	43 (15.1)	0.25
13:00-18:00	139 (31.3)	47 (29.4)	92 (32.4)	
19:00-24:00	198 (44.6)	67 (41.9)	131 (46.1)	
Month of suicide [n (%)]				
April	54 (11.6)	22 (13.3)	32 (10.7)	
May	30 (6.4)	8 (4.8)	22 (7.3)	
June	35 (7.5)	9 (5.4)	26 (8.7)	
July	26 (5.6)	6 (3.6)	20 (6.7)	
August	65 (13.9)	27 (16.3)	38 (12.7)	
September	46 (9.9)	23 (13.9)	23 (7.7)	0.16
October	39 (8.4)	14 (8.4)	25 (8.3)	
November	32 (6.9)	9 (5.4)	23 (7.7)	
December	44 (9.4)	20 (12.0)	24(8.0)	
January	34 (7.3)	9 (5.4)	25 (8.3)	
February	41 (8.8)	11 (6.6)	30 (10.0)	
March	20 (4.3)	8 (4.8)	12 (4.0)	
Season of suicide [n (%)]				
Spring	119 (25.5)	39 (23.5)	80 (26.7)	
Summer	137 (29.4)	56 (33.7)	81 (27.0)	0.28
Fall	115 (24.7)	43 (25.9)	72 (24.0)	
Winter	95 (20.4)	28 (16.9)	67 (22.3)	

Discussion

The current study was performed in the central area of Iran where we could see a culture identical to that of other regions in Iran. Hence, we could extrapolate our results to the whole country.

We investigated the prevalence of and potential main causes of suicide in a small town and further evaluated demographic and psychosocial factors' casual association with suicidal attempts.

The highest rate of suicidal attempt was observed in 15-24 and 25-34 year old individuals, respectively. Our results are similar to that of other studies conducted in the north west of Iran which demonstrated the highest rate of attempted suicide among 15-24 year old individuals (Mohebbi, & Boushehri, 2006; Moradi, Moradi, & Mostafavi 2010).

Another study in Turkey, reported the highest rate of suicidal attempt in females between 15 to 19 years of age (255.08 per 100.000) and in 20 to 24 years of age (186.44 per 100.000) (Devrimci-Ozguven, & Sayil, 2003).

As can be seen from the above studies, attempted suicides occur more often in adolescents and youth. It is evident that young adulthood is a stressful developmental period filled with major life changes in physical, emotional, and mental aspects, and etcetera. In addition, this period is defined by confusion, fear, and uncertainty about the future which have great impact on the problem solving and decision making abilities of the youth (Hosseinpour, Ghaffari, & Mehrabizadeh, 2004). In addition, family conflicts, increased expectations and individualism; and changes in adolescent transitions (particularly the importance of a youth culture that isolates young people from adults and increases peer group influence, more tension between dependence and autonomy, and more romantic relationship breakdowns) will occur in this period of life. This issue is mostly related to the culture of developing countries (Eckersley, & Dear, 2002).

We observed that females had more frequently attempted suicide. Attempted suicides in females are reported 2-3 times higher than in men in most countries (Janghorbani, & Sharifirad, 2005). Therefore, in many studies being a female is considered as an independent predictor of suicidal attempt (Janghorbani, & Sharifirad, 2005; Nojomi, Malakouti, Bolhari, & Poshtmashhadi, 2007). Sheikholeslami et al. investigated the main causes of suicidal attempts in northern Iranian females. They concluded that the high rate of suicidal attempts in females may be due to economical dependence, family insecurity, lack of self-confidence, and lack of social support systems (Sheikholeslami, Kani, & Ziaee, 2013). Cultural attitudes towards the woman's role in the family place pressure on them and result in rejection by their family, separation from their children, staying married even in abusive relationships, and etc. Consequently, any vulnerable individual may show suicidal behaviors to avoid dealing with these situations (Douki, Zineb, Nacef, & Halbreich, 2007).

It is known that suicidal behaviors in females are mostly associated with seeking help rather than the intention of dying (Atay, Eren, & Gundogar, 2012; Bhugra, & Desai, 2002).

During the study, two male subjects, who had chosen lethal and violent methods for suicide, died. A plausible explanation could be that males are more impulsive and violent, and therefore, more likely to use violent methods or lethal deliberate self-poisoning (Aghanwa, 2004).

Those who attempted suicide were more likely single and undergraduated. Similar studies have been conducted in other societies (Aghanwa, 2000). In a 13-year follow-up study in Baltimore, in the USA, after adjusting all the demographic variables, younger age groups, those in the lowest socio-economic status, and those widowed or separated/divorced were all independently associated with new suicide attempts reported at follow-up (Kuo, Gallo, & Tien, 2001).

Another important determinant of suicide is the set of psychosocial factors. We found that subjects who attempted suicide were likely to have past history of mental illness. This was more frequently observed among females than males. Mental illnesses affect a person's thought processes, perception of reality, emotions, or judgment, and could be the cause of disturbed behavior. People with mental illness may be dealing with negative life events and other difficult life circumstances as well as the symptoms of their illness. Therefore, interaction between these factors may result in suicidal behavior (Phillips, 2010). In the present study, two-thirds of participants had depression with different severity. According to an integrated analysis of suicide attempters' data, about half of the people who attempted suicide had a history of mental disorders and approximately one-third of them had been diagnosed with depression (Janghorbani, & Sharifirad, 2005; Shirazi, Hosseini, Zoladl, Malekzadeh, Momeninejad, Noorian, et al. 2012). Trends in the US emergency department visits for attempted suicide and self-inflicted injury showed that depression is the main predictor of suicidal ideation. Between 40-80% of suicide attempters meet the diagnostic criteria for depression at the time of the attempt (Ting, Sullivan, Boudreaux, Miller, & Camargo, 2012).

The frequency of negative life events in our subjects was significantly different between males and females. We found that the rate of financial problems and job-related stressors were higher in males, while the rate of relationship- and family-related issues such as sexual problems were higher in females. This result was consistent with previous studies (Mohebbi, & Boushehri, 2006; Keyvanara, & Haghshenas, 2011).

It has been shown that almost all patients who have attempted suicide had experienced stressful events prior to the attempt. This was also proven true in our subjects. Our findings support the idea that compared to women, men

feel more strongly responsible for the economic maintenance of their families. These circumstances have been well explained and discussed from a sociological viewpoint elsewhere (Zhang, McKeown, Hussey, Thompson, & Woods, 2005).

In the present study, almost half of the participants had suicidal thoughts and, in total, nearly 13% had past history of suicidal attempt. Passing from suicidal thought to suicide planning occurred in 32% of subjects and from suicide planning to suicide attempt in 72% of subjects. Previous reports showed that 24% of people who have suicidal thought will attempt suicide (van Heeringen, 2011). Some studies reported that individuals who have difficulty finding a solution to their problems impulsively attempt suicide without any actual willingness to die (Atay, Eren, & Gundogar, 2012). Some studies reported that somewhere from 24% to 40% of individuals spent less than 5 min planning to attempt suicide (Wei, Liu, Bi, Li, Hou, Chen, et al., 2013).

Self-perceived cause of attempted suicide, in our subjects, was reported to be relationship-related problems, whether relationship between friends, parents and children, couples, or relatives. This observation is consistent with other studies that reported relational conflicts and dysfunctional family condition, respectively, as the first and second most common triggers and underlying reasons of attempting suicide (Dieserud, Gerhardsen, Van den Weghe, & Corbett, 2010).

A study conducted in the south of Iran (city of Ahwaz) demonstrated that emotional-relational issues and difficulties were the most important factors for attempting suicide in Ahwazi adolescents (Hosseinpour, Ghaffari, & Mehrabizadeh, 2004). According to an integrated analysis of a study conducted in Iran from 1981-2007, the most common reasons of suicidal attempt have been family difficulties, emotional or relational issues, employment difficulties, and educational problems (Shirazi, Hosseini, Zoladl, Malekzadeh, Momeninejad, Noorian, et al., 2012). Another study conducted in Tehran, Iran, from 1997 to 2007 reported communicative disorders and family conflicts as the main reasons of attempted suicides. Communicative disorders in females were reported higher than in males (Pajoumand, Talaie, Mahdavinejad, Birang, Zarei, Mehregan, et al., 2012). This was in agreement with our study. One cause of relational problems among people is cultural conflict. Culture is a system of meanings and symbols that defines how people see the world and their place in it. Thus, individuals may understand their surrounding environment differently and this causes cultural conflict. Individuals who are in conflict with their own culture may choose to take the route of self-harm to avoid dealing with that conflict (Bhugra, & Desai, 2002)

Although attempted suicide has been observed in all ages with different demographic factors, high prevalence of suicide attempt among youth who are experiencing negative life events and having relational problems (their self-perceived cause of attempted suicide) causes us to believe that the real problem could be an identity crisis in youth. Individuals with an identity crisis cannot resolve the issue of identity versus role confusion during the teenage years (Portes, Sandhu, & Longwell-Grice, 2002).

Individuals with identity crisis are unable to solve problems and cope with negative life events. They do not have the necessary skills to communicate with friends, family, and others. These individuals will have mood instability as a result of high stress load and are susceptible to depression all of which are considered as risk factors for suicide.

Suicide attempts may be considered, labeled, or tolerated differently in different cultures. Even if a behavior is recognized as problematic, cultural factors may affect decisions about whether to seek mental health assistance. Moreover, suicide attempters may not expose all

the reasons behind their suicide attempt (Keyvanara, & Haghshenas, 2011). Cultural barriers and the presence of a strong stigma on suicide may prevent help seeking and be a barrier to accessing suicide prevention services in Iran and Middle Eastern countries (Goldston, Molock, Whitbeck, Murakami, Zayas, & Hall, 2008; Malakouti, Nojomi, Bolhari, Hakimshooshtari, Poshtmashhadi, & De, 2009).

We observed that most suicide attempts occurred in the afternoon and evening. Perhaps, the mental energy of normal and psychopathological individuals is reduced in the evening and at night (Shirazi, Hosseini, Zoladl, Malekzadeh, Momeninejad, Noorian, et al., 2012; Rezaeian, & Sharifirad, 2008). The highest number of suicidal attempts occurred in August in both males and females. This finding seems consistent with other studies (Rezaeian, & Sharifirad, 2008; Valtonen, Suominen, Partonen, Ostamo, & Lonnqvist, 2006). This may be due to increase in social communications in the summer. The socializing aspect of summer could predispose those who have a sensitive spirit and are disturbed by dealing with others to suicide attempts. Rise in temperature and increased length of day light in the summer are drastic environmental changes that could lead to changes in the human body and could also be predisposing factors in suicide.

Limitation of the study

A major limitation of the current study is that we were only able to identify hospital-treated attempted suicides. To our knowledge, no country in the world has collected official statistics on attempted suicides. Because the database we used was based on attempted suicides that were diagnosed and recorded in a hospital discharge registry, it is possible that we missed patients who had actually attempted suicide before hospitalization but whose attempt had not been recognized by healthcare personnel. The generalization of these findings may be limited because of variations in health-care practices and strategies in different countries. Without studying on subjects who have died due to a completed suicide, many important aspects of suicidal behavior cannot be addressed.

Conclusion

Attempted suicide occurs more often in younger age groups, females, and undergraduated and unmarried individuals who mostly have past history of mental illness. Most individuals who attempted suicide had experienced negative life events specially relational and/or emotional difficulties. We believe cost-effective strategies to educate people on effective ways of communication and problem solving skills could help individuals, especially those who are more susceptible, to find other solutions for their conflicts rather than suicide. Interventions that can help connect people to each other and improve an individual's self-worth can play a role in lowering potential suicidal risks. These interventions could be included in different settings in societies or even better in the school curriculums to provide a supportive social care network.

Conflict of Interests

Authors have no conflict of interests.

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References

Aghanwa, H. (2004). The determinants of attempted suicide in a general hospital setting in Fiji Islands: a gender-specific study. *Gen Hosp.Psychiatry*, *26*(1), 63-69. doi:S0163834303000987 [pii]. Retrieved from PM:14757305

Aghanwa, H. S. (2000). The characteristics of suicide attempters admitted to the main general hospital in Fiji Islands. *J Psychosom.Res*, *49*(6), 439-445. doi:S0022-3999(00)00193-8 [pii]. Retrieved from PM:11182438

Alberdi-Sudupe, J., Pita-Fernandez, S., Gomez-Pardinas, S. M., Iglesias-Gil-de-Bernabe, F., Garcia-Fernandez, J., Martinez-Sande, G. et al. (2011). Suicide attempts and related factors in patients admitted to a

general hospital: a ten-year cross-sectional study (1997-2007). *BMC.Psychiatry., 11*, 51. doi:1471-244X-11-51 [pii];10.1186/1471-244X-11-51 [doi]. Retrieved from PM:21453478

Atay, I. M., Eren, I., & Gundogar, D. (2012). The prevalence of death ideation and attempted suicide and the associated risk factors in Isparta, Turkey. *Turk.Psikiyatri.Derg., 23*(2), 89-98. doi:842 [pii]. Retrieved from PM:22648871

Bhugra, D., & Desai, M. (2002). Attempted suicide in South Asian women. *Adv Psychiatr Treat, 8*, 418-423.

Devrimci-Ozguven, H., & Sayil, I. (2003). Suicide attempts in Turkey: results of the WHO-EURO Multicentre Study on Suicidal Behaviour. *Can.J Psychiatry, 48*(5), 324-329. Retrieved from PM:12866338

Dieserud, G., Gerhardsen, R. M., Van den Weghe, H., & Corbett, K. (2010). Adolescent suicide attempts in Baerum, Norway, 1984-2006. *Crisis, 31*(5), 255-264. doi:N53704180722V433 [pii];10.1027/0227-5910/a000030 [doi]. Retrieved from PM:21134845

Douki, S., Zineb, S. B., Nacef, F., & Halbreich, U. (2007). Women's mental health in the Muslim world: cultural, religious, and social issues. *J Affect.Disord., 102*(1-3), 177-189. doi:S0165-0327(06)00428-9 [pii];10.1016/j.jad.2006.09.027 [doi]. Retrieved from PM:17291594

Eckersley, R., & Dear, K. (2002). Cultural correlates of youth suicide. *Soc Sci Med, 55*(11), 1891-1904. doi:S0277953601003197 [pii]. Retrieved from PM:12406459

Ghoreishi, S. A., & Mousavinasab, N. (2008). Systematic review of researches on suicide and suicide attempt in Iran. *Iran J Psychiatry Clin Psychol, 14*(2), 115-121.

Goldston, D. B., Molock, S. D., Whitbeck, L. B., Murakami, J. L., Zayas, L. H., & Hall, G. C. (2008). Cultural considerations in adolescent suicide prevention and psychosocial treatment. *Am Psychol, 63* (1), 14-31. doi:2007-19520-002 [pii];10.1037/0003-066X.63.1.14 [doi]. Retrieved from PM:18193978

Haukka, J., Suominen, K., Partonen, T., & Lonnqvist, J. (2008). Determinants and outcomes of serious attempted suicide: a nationwide study in Finland, 1996-2003. *Am J Epidemiol., 167*(10), 1155-1163. doi:kwn017 [pii];10.1093/aje/kwn017 [doi]. Retrieved from PM:18343881

Hosseinpour, M., Ghaffari, S. M., & Mehrabizadeh, M. (2004). A study on the incentives of suicide attempts among adolescents referred to Golestan hospital of Ahwaz in 2000-2001. *Jundishapur Sci Med J, 4*(41), 24-30.

Janghorbani, M., & Sharifirad, G. (2005). Completed and attempted suicide in ilam, iran (1995-2002): incidence and associated factors. *Arch Iran Med, 8*(2), 119-126.

Keyvanara, M., & Haghshenas, A. (2011). Sociocultural contexts of attempting suicide among Iranian youth: a qualitative study. *East.Mediterr.Health J, 17*(6), 529-535. Retrieved from PM:21796972

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *J Gen Intern.Med, 16*(9), 606-613. doi:jgi01114 [pii]. Retrieved from PM:11556941

Kuo, W. H., Gallo, J. J., & Tien, A. Y. (2001). Incidence of suicide ideation and attempts in adults: the 13-year follow-up of a community sample in Baltimore, Maryland. *Psychol Med, 31*(7), 1181-1191. Retrieved from PM:11681544

Lester, D. (2008). Suicide and culture. *World Cultural Psychiatry Research Review, 3*(2), 51-68.

Malakouti, S. K., Nojomi, M., Bolhari, J., Hakimshooshtari, M., Poshtmashhadi, M., & De, L. D. (2009). Prevalence of suicide thoughts, plans and attempts in a community sample from Karaj, Iran. *Community Ment.Health J, 45*(1), 37-41. doi:10.1007/s10597-008-9173-4 [doi]. Retrieved from PM:19051014

Mohebbi, I., & Boushehri, B. (2006). Effect of stressors on attempting suicide with chemicals: a review of 400 cases. *Urmia Med J, 219*(225).

Moradi AR, Moradi R, & Mostafavi E. (2010). A survey of the rate and effective factors on suicide in Bahar. *J Res Behav Sci, 10*(1), 50-58.

Nojomi, M., Malakouti, S. K., Bolhari, J., & Poshtmashhadi, M. (2007). A predictor model for suicide attempt: evidence from a population-based study. *Arch Iran Med, 10*(4), 452-458. doi:007 [pii];07104/AIM.007 [doi]. Retrieved from PM:17903049

Pajoumand, A., Talaie, H., Mahdavinejad, A., Birang, S., Zarei, M., Mehregan, F. F. et al. (2012). Suicide epidemiology and characteristics among young Iranians at poison ward, Loghman-Hakim Hospital (1997-2007). *Arch Iran Med, 15*(4), 210-213. doi:007 [pii];012154/AIM.007 [doi]. Retrieved from PM:22424037

Phillips, M. R. (2010). Rethinking the role of mental illness in suicide. *Am J Psychiatry, 167*(7), 731-733. doi:167/7/731 [pii];10.1176/appi.ajp.2010.10040589 [doi]. Retrieved from PM:20595422

Portes, P. R., Sandhu, D. S., & Longwell-Grice, R. (2002). Understanding adolescent suicide: a psychosocial interpretation of developmental and contextual factors. *Adolescence., 37*(148), 805-814. Retrieved from PM:12564830

Roohafza, H., Ramezani, M., Sadeghi, M., Shahnam, M., Zolfagari, B., & Sarafzadegan, N. (2011). Development and validation of the stressful life event questionnaire. *Int.J Public Health, 56*(4), 441-448. doi:10.1007/s00038-011-0232-1 [doi]. Retrieved from PM:21327856

Sali, R., Roohafza, H., Sadeghi, M., Andalib, E., Shavandi, H., & Sarrafzadegan, N. (2013). Validation of the revised stressful life event questionnaire using a hybrid model of genetic algorithm and artificial neural networks.

Comput.Math.Methods.Med, *2013*, 601640. doi: 10.1155/2013/601640 [doi]. Retrieved from PM:23476715

Sheikholeslami, H., Kani, C., & Ziaee, A. (2013). Survey of presipitating factors of suicide attempts in prsons who referred to emergency department. *J Guilan Univ Med Sci*, *17*(65), 77-87.

Shirazi, H. R., Hosseini, M., Zoladl, M., Malekzadeh, M., Momeninejad, M., Noorian, K. et al. (2012). Suicide in the Islamic Republic of Iran: an integrated analysis from 1981 to 2007. *East.Mediterr.Health J*, *18*(6), 607-613. Retrieved from PM:22888617

Ting, S. A., Sullivan, A. F., Boudreaux, E. D., Miller, I., & Camargo, C. A., Jr. (2012). Trends in US emergency department visits for attempted suicide and self-inflicted injury, 1993-2008. *Gen Hosp.Psychiatry*, *34*(5), 557-565. doi:S0163-8343(12)00103-X [pii];10.1016/j.genhosppsych.2012.03.020 [doi]. Retrieved from PM:22554432

Valtonen, H., Suominen, K., Partonen, T., Ostamo, A., & Lonnqvist, J. (2006). Time patterns of attempted suicide. *J Affect.Disord.*, *90*(2-3), 201-207. doi:S0165-0327(05)00360-5 [pii];10.1016/j.jad.2005.12.004 [doi]. Retrieved from PM:16412521

van Heeringen, K (2001). Understanding suicidal behaviour: the suicidal process approach to research, treatment and prevention. London, UK: Wiley.

Vijayakumar, L., Pirkis, J., Huong, T. T., Yip, P., Seneviratne, R. D. A., & Hendin, H. (2008). *Socio-economic, cultural and religious factors affecting suicide prevention in Asia. Suicide and Suicide Prevention in Asia*. Geneva, Switzerland: World Health Organization, 19-30.

Wei, S., Liu, L., Bi, B., Li, H., Hou, J., Chen, W. et al. (2013). Comparison of impulsive and nonimpulsive suicide attempt patients treated in the emergency departments of four general hospitals in Shenyang, China. *Gen Hosp.Psychiatry*, *35*(2), 186-191. doi:S0163-8343(12)00333-7 [pii];10.1016/j.genhosppsych.2012.10.015 [doi]. Retrieved from PM:23260336

World Health Organization. (2009). *Suicide prevention*. Geneva, Switzerland: WHO.

Zhang, J., McKeown, R. E., Hussey, J. R., Thompson, S. J., & Woods, J. R. (2005). Gender differences in risk factors for attempted suicide among young adults: findings from the Third National Health and Nutrition Examination Survey. *Ann.Epidemiol.*, *15*(2), 167-174. doi:S1047-2797(04)00245-5 [pii];10.1016/j.annepidem.2004.07.095 [doi]. Retrieved from PM:15652723

Zimet, G. D., Dahlem, N., Zimet, S. G., & Farley, G. (1988). The Multidimensional scale of perceived social support. *J Pers Assess*, *52*(1), 30-41.