Depressive disorder rate and related factors in suicide attempters using drugs or toxins

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Abstract

Background: Suicide is a complicated phenomenon which is influenced by the interaction of psychological and environmental factors. The aim of the present study was to investigate the rate of depressive disorder in suicide attempters using drugs or toxins.

Methods: In the present cross-sectional descriptive study, Beck Depression standardized questionnaire and demographic/socioeconomic information form were filled by 248 admitted suicide attempters.

Results: Based on EAT-26 scores, 153 (24.7%) students had eating attitude disorders. There was no relationship between abnormal eating attitudes and both individual and socioeconomic factors ($P>0.05$). Logistic regression analysis demonstrated that eating attitude disorders were significantly associated with depression [OR=1.8 (1.2-2.8), $P=0.007$], anxiety [OR=1.6 (1.1-2.4), $P=0.04$], and perception of body shape as overweight [OR=2.7 (1.7-4.3), $P<0.001$]. In the present study, from among 248 cases hospitalized due to suicide attempt with drugs or toxins, 87.2% were diagnosed with depressive disorders. Chi^2 analysis revealed statistically significant associations between depression disorders and marital status (p=0.001), housewife ($P=0.002$), family monthly income below 10000000 Rials ($P=0.005$), and substance use ($P=0.001$). In full model multiple logistic regression analysis, significant associations were found between depressive disorder and gender, woman ($P=0.03$, OR=6.2, 95%CI=1.33-3.44), age 25-15 years ($P=0.002$, OR=22.7, 95%CI=3.16-154.9), marital status ($P=0.007$, OR=10.2, 95% CI=1.87-55.5), worker ($P=0.02$, OR=15.66, 95%CI=1.41-172.25), self-employment ($P=0.02$, OR=14.97, 95%CI=1.32-162.5), and family monthly income below 10000000 Rails ($P<0.001$, OR=11.30, 95%CI=3.16-40.8. Also, family monthly income below 10000000 Rials ($P<0.001$, OR=5.34, 95%CI=2.05-13.91), marital status and divorced or widowed ($P<0.001$, OR=3.93, 95%CI=11.5-33.74), ($P=0.01$, OR=3.27, 95%CI=16.57-83.71), and age ranges 15-25 and 26-35 ($P=0.02$, OR=9.15, 95%CI=2.32-36.08), ($P=0.01$, OR=5.34, 95%CI=1.36-21.03) were observed to be predictor factors to suicide attempt in depressive disorder.

Conclusion: Future planning should focus on solving risk factors associated with depressive disorder to prevent suicide.

Introduction

Suicide is an important public health problem in the world that results from an interaction between demographic, social, economic, and cultural factors (1). Every 40 seconds, one person dies because of committing suicide and every 1-2 seconds, one attempt is reported somewhere in the world. Overall, suicide is among the 10 leading causes of death for all ages in most of the countries for which information is available. The suicide rate varies by sex, race, and ethnicity. More than 800'000 people take their own life every year (2-4). The World Health Organization (WHO) estimates that about 1.53 million people will die by suicide in 2020. It will be 2.4% of the burden of diseases (5-6).

The previous studies have found connections between suicide and mental disorders (2). Major depression disorder is a main risk factor for suicide. However, not all patients with major depression commit suicide (4). Overall 75% of global suicides occur in low- and middle-income countries (3). The highest suicide rates for both men and women are found in Europe, more particularly in Eastern Europe. This is while, according to the WHO regional distribution, the lowest rates as a whole are found in the Eastern Mediterranean Region (5-8). Suicide is considered the 5th cause of death in Iran with the frequency rates of 5.3 in both sexes, 3.6 in females, and 7.0 in males per 100'000 people (8-10). Many studies indicated that there is an association between socioeconomic status and depression disorder in cases admitted due to suicide attempt in hospital (11-12). Persons in the lowest socioeconomic group have twice the likelihood of depression compared with those in the highest socioeconomic group (13-15). Among socio-demographic factors, gender, marital status, and migration are those more strongly associated with suicide in patients with major depressive disorder (16-17). In addition, a positive history of suicide attempts seems to be a powerful predictor identified by some studies (18-20).

The current evidence shows that about 90% of suicide victims suffer from at least one major mental disorder, with major depression being the most common (21-23). According to a previous study, 95.7% of suicide attempters in Iran had at least one psychiatric diagnosis, with mood disorders as the most prevalent (24).

Statistical estimates for the frequency of different types of depressive disorders in Iran is different. Thus, the present study was conducted to determine depressive disorder frequency rate and related factors in patients hospitalized due to suicide attempt with drug or toxins.

Methods

The current descriptive cross-sectional study was conducted on 248 cases admitted due to suicide attempts during the year 2015 in Baharloo Hospital, Tehran, Iran. Convenience sampling technique was used to select patients from the total cases hospitalized in poisoning ward due to suicide attempts with drug or toxins. After clinical stability, the Beck Depression Inventory-Fast Screen (BDI-FS) was given to the participants and required explanations were provided on how to fill out the questionnaire. The BDI-FS is a 21-item self-report instrument intended to assess the existence and severity of symptoms of depression disorder in youths and adults. The 21 items, each corresponding to a symptom of depression, were summed to obtain a single score for the BDI. The total score of 0-13 is considered as minimal range, 14-19 mild, 20-28 moderate, and 29-63 severe. Reliability of BDI has been reported to be high in Persian Language (*Cronbach's alpha = 0.9)* (80). The validity of this questionnaire has been confirmed using Explanatory Factor Analysis (26). The cooperation of those admitted in the survey was completely voluntary and there was no compulsion. When the participants, and in some cases the researcher (due to low literacy), filled out the questionnaire, they were divided into four groups of without,

mild, moderate, and severe depression disorder. Furthermore, they were asked some questions about their sociodemographic and economic status, including educational level, employment, income, and health status in terms of smoking, alcohol consumption or other substance use (27). We investigated the association between depressive disorder and sociodemographic and economic status using chi-square and fisher's exact test in IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp. Also, full model (by total variables entry) and final model (Forward Likelihood Ratio) multiple logistic regression analysis was used to predict depressive disorder in suicide attempters. In full model, all variables were entered while in the final model (forward LR), only significant variables were entered into the model Odds ratios (ORs). The 95% confidence intervals (CIs) were obtained and the level of significance was set at $P<0.05$.

Results

A total of 248 suicide attempters comprised the pool of the study. All the participants filled out Beck Depression Questionnaire. Also, their socioeconomic and demographic information was collected during the year 1394 in Baharloo Hospital. From among these 248 participants, 216 (87.2%) cases were suffering from mild to severe depression disorder. The mean age of suicide attempters was 26.8±8.3 years and the mean of family monthly income was 14516129 Rials. The total descriptive results of demographic and economic information are reported in Table 1. In χ^2 analysis, statistical associations were found between marital status (P=0.001), job status (P=0.02), income (P=0.005), and substances use (P=0.001) and present depression disorders (Table 2). Also, in full model multiple logistic regression analysis, we found statistical significant associations between gender, female/male (P=0.03, OR=6.2, 95%CI=1.33-34.4), age groups 15-25/36 and over (P=0.002, OR= 22.7, 95%CI=3.16-54.9) 26-35/36 and over (P=0.01, OR=14.7, 95%CI=1.91-23.8), marital status, married/single (P=0.007, OR=10.2, 95%CI=1.88-55.5), divorced and widowed/single (P=0.004, OR=10.2, 95% CI=1.88-55.5), job status, self-employed/unemployed (p=0.02, OR= 14.97, 95%CI:1.32-62.5), worker/unemployed (P=0.02, OR=15.66, 95%CI=1.41-72.25), and family monthly income below 10 million Rails/10 million Rails and over (P<0.001, OR=1.3, 95%CI=3.16-40.8) and depression disorders at the time of the study (Table 3). Moreover, final model (Forward likelihood Ratio) of multiple regression logistic analysis predict having depression disorders in suicide cases through significant association between family monthly income (P<0.001, OR=5.343, 95%CI=2.05-13.91), marital status married/single (P<0.001, OR= 11.5, 95%CI=3.92-33.7), divorced and widowed/single (P=0.01, OR=16.57, 95%CI=3.27-83.71), age groups 15-25/36 and over (P=0.02, OR= 9.15, 95%CI=2.32-36.08), and 26-35/36 and over (P=0.01, OR= 5.34, 95%CI=1.36-21.03) and having depression disorder (Table 4).

Table 1. Frequency of variables studied in suicide attempters with drug or toxins

Variables		N (%)
Age	15-25	124 (50)
	26-35	83 (33.5)
	36-45	32 (12.9)
	46 ≤	9 (3.6)
Gender	Female	176 (71)
Marital status	Married	104 (33.9)
	Single	96 (45.1)
	Divorced/Widowed	48 (20)
Education	<Diploma	124 (50)
	≥Diploma	124 (50)
Job	Unemployed	38 (15.3)
	Housewife	93 (37.5)
	Self-employed	37 (14.9)
	Employee/Worker	80 (32.3)
Cigarette consumer	Yes	70 (28.2)
Alcohol consumer	Yes	32 (12.9)
Other substances use		28 (11.3)
Psychiatric disorders history		112 (45.2)
Previous suicide attempts		39 (15.7)
Drug used in suicide	Benzodiazepines	70 (28.2)
	Tramadol and Narcotics	49 (19.8)
	Antidepressant and Anticonvulsants	47 (19)
	Acetaminophen	28 (11.3)
	Multidrug	21 (8.5)
	Other	33 (13.2)
Suffering from depression disorder at suicide time		216 (87.1)
Groups of depression disorder	Mild	24 (12)
	Moderate	112 (51)
	Severe	80 (37)

Table 2. Results of χ^2 analysis for association between depressive disorder and sociodemographic/economic status in suicide attempters with drug or toxins

Variables		Affected by depressive disorder in suicide attempters N (%)		P
		Yes 216 (87.1%)	No 32 (12.9%)	
Age	15-25	112 (51.9%)	12 (37.5)	0.11
	26-35	72 (33.3%)	11 (34.4)	
	36-45	24 (11%)	8 (25%)	
	≥ 46	8 (3.8%)	1 (3.1%)	
Gender	Female	152 (70.4%)	24 (75%)	0.52
	Male	64 (29.6%)	8 (25%)	
Marital status	Single	64 (29.6%)	20 (62.5%)	0.001[*]
	Married	104 (48.1%)[*]	8 (25%)	
	Divorced/Widowed	48 (22.3%)	4 (12.5%)	
Job status	Housewife	88 (40.7%)	5 (15.5%)	0.02[*]
	Worker	48 (22.2%)[*]	10 (31.4%)	
	Self-employed	32 (15%)[*]	5 (15.5%)	
	Other jobs	17 (7.4%)	6 (18.8%)	
	Unemployed	31 (14.7%)	6 (18.8%)	
Education	<Diploma	112 (51.9%)	12 (37.5%)	
	Diploma	76 (35.1%)	12 (37.5%)	
	Academic	28 (13%)	8 (25%)	
Monthly family income	≥10 million Rials	112 (51.9%)[*]	8 (25%)	0.005[*]
	<10 million Rials (reference)	104 (48.1%)	24 (75%)	
Cigarette consumer	Yes	58 (26.9%)	158 (73.1%)	0.26
	No	12 (37.5%)	20 (62.5%)	
Alcohol consumer	Yes	26 (12%)	6 (18.8%)	0.21
	No	190 (88%)	26 (81.3%)	
Substances use	Yes	18 (8.3%)	10 (31.3%)	0.001[*]
	No	198 (91.7%)[*]	22 (68.7%)	
Suicide history	Yes	37 (17.1%)	2 (6.3%)	0.13
	No	179 (82.9%)	30 (93.8%)	
Drug used in suicide	Benzodiazepines	63 (29.2%)	7 (21.9%)	0.22
	Tramadol and Narcotics	44 (20.4%)	5 (15.6%)	
	Antidepressant and Anticonvulsants	42 (19.4%)	5 (15.6%)	
	Acetaminophen	33 (10.6%)	5 (15.6%)	
	Multidrug	15 (7 %)	6 (18.8%)	
	Other	29 (13.4%)	4 (12.5%)	

Statistical significance is shown with[*]

Table 3. Results of full model (enter total variables) multiple logistic regression analysis for depressive disorder in suicide attempters with drug or toxins

Variables		OR (95%CI)	*P*
Gender	Male (reference)	6.2 (1.33-34.4)	0.03
Age			0.008
	15-25	22.1 (3.16-54.9)	0.002
	26-35	14.7 (1.91-23.8)	0.01
	≥ 36 (reference)		
Marital status			0.005
	Married	10.2 (1.87-55.5)	0.007
	Divorced/Widowed	14.3 (3.31-40.3)	0.004
	Single (reference)		
Education			0.59
	<Diploma	2.77 (0.37-32.5)	0.31
	Diploma	2.14 (0.38-14.3)	0.39
	Academic (reference)		
Job status			0.03
	Housewife	2.18 (0.24-19.5)	0.4
	Worker	15.66 (1.41-72.25)	0.02
	Self-employed	14.97 (1.32-62.5)	0.02
	Unemployed (reference)		
Monthly family income			
	< 10 million Rials		<0.001
		11.3 (3.16-40.8)	
	≥10 million Rials (reference)		
Cigarette consumer			
	Yes	1.41 (0.27-7.21)	0.68
	No (reference)		
Alcohol consumer			
	Yes	0.62 (0.06-6.2)	0.68
	No (reference)		
Substances use			
	Yes	0.2 (0.02-0.1)	0.71
	No (reference)		
Psychiatric disorders history			
	Yes	0.03 (0.01-1)	0.91
	No (reference)		
Suicide history			
	Yes	0.39 (0.08-1.83)	0.23
	No (reference)		
Drug used in suicide			0.3
	Benzodiazepines	5.72 (0.31-10.3)	0.5
	Tramadol and Narcotics	2.63 (0.83-6.33)	0.05
	Antidepressant and Anticonvulsants	8.71 (0.68-13.21)	0.09
	Acetaminophen	6.62 (0.33-7.84)	0.1
	Multidrug	2.23 (0.27-3.41)	0.3
	Other (reference)		

Table 4. Results of final model (Forward LR), multiple logistic regression analysis to predict suicide attempt in depressive disorder.

Variables		OR (95% CI)	P
Monthly family income			
	< 10 million Rials	5.34 (2.05-13.91)	<0.001
	≥10 million Rials (reference)		
Marital status			<0.001
	Married	11.50 (3.92-33.74)	<0.001
	Divorced/Widowed	16.57 (3.27-83.71)	0.01
	Single (reference)		
Age			0.007
	15-25	9.15 (2.32-36.08)	0.02
	26-35	5.34 (1.36-21.03)	0.01
	≥ 36 (reference)		

Discussion

In the present study, from among 248 suicide attempters with drug or toxins admitted in poisoning ward of Baharloo Hospital, Tehran, Iran, 87.1% were diagnosed with depressive disorder, ranging from mild to severe. In one study by Sawicka J in Poland conducted on registered cases of suicide after taking the drugs, it was shown that mood disorders, particularly depression disorder is the major risk factor to suicide (28). In another study carried out by Wang Lj in Taiwan, it is indicated that from among 197 cases of suicide attempts among drug users, 17.3% were affected by psychotic disorders, 16.8% mood disorders, and 14.2% had a history of suicide attempt (29). In one Iranian study by Abolhasan Shakeri in 2011, the most common cause of suicide was reported to be psychological disorders (31.3 percent) (30).

In the current survey, 71% of the participants were female, but in chi^2 analysis, no statistically significant association was observed between gender and depression disorder. On the other hand, a significant association was found between gender and depression disorder in suicide cases in full model of multiple logistic regression analysis (P=0.03, OR=6.2, 95%CI=1.33-34.4). In other words, comparison of the diagnosis of depression disorder between sexes showed that the prevalence was 6.2 times more in females

hospitalized due to suicide attempts than in males. The mean age of participants was 26.8 with the age range of 15-47 years). Also, 50% suicide attempters were at the range of 25-15 years. So, there was a significant association between age and depression disorder in full and final model multiple logistic regression. More precisely, those in the range of 15-25 years were diagnosed with depression disorder 22 times more than those in the age range of 36 years and above. Further, we could predict that in this range of age, suicide attempters would be 9.15 times more vulnerable to depression disorder (P=0.002, OR 22.1, 95%CI=3.16-54.9), (P=0.02, OR= 9.15, 95%CI=2.32-36.08). One Canadian study indicated that the age group 18-40 is a predictable factor to suicide attempt (4). Also, another study in America showed that although suicide rate is higher in younger age groups, the rate of depressive disorders increases with age in suicide attempters (31).

In the current study, a statistically significant association was observed between marital status and depression disorder among suicide attempters in both chi-square and logistic regression analyses. The ratios of being married to single (P=0.007, OR=10.2, 95%CI=1.88-55.5) and being divorced or widow to single (P=0.004, OR=10.2, 95%CI=1.88-55.5) were related factors for depressive disorder

in suicide attempters. Due to the huge number of married suicide attempters who were below 23 years, it may be concluded early marriage and exposure to the problems of married life is one factor related to depression disorder and suicide attempt. In a study by Luoma JB, in America, it was indicated that, compared with their female counterparts, young white widowed men between the ages of 17-34 years, had been suffering from depression and finally suicide 17 times (32). In addition, Habib Khazaie in another study in Iran reported that the highest rate of suicide was in single persons (33).

In the present study, no significant association was observed between depression disorders in suicide attempters and their educational level; however, 50% of suicide attempters had educational level below diploma. Also, there was a statistically significant association between family income and depression disorders in suicide attempters. Likewise, in one study conducted by Agerbo in Denmark, a significant association was found between suicide and low education level, low income, unemployment, divorce, mental illness, and family history of depression disorder (34). Moreover, in another study carried out by Qin P. in Denmark, it is reported that a significant association exists between depression and suicide attempts and single marital status, unemployment, low-income levels, retirement, disability, and absence of social activities (35). In the current study, we found a significant association between psychiatric history and depression disorders in suicide attempters using logistic regression analysis (P=0.2). However, findings of the study by Qin p. showed that there was statistical significance between past suicide history and depression disorder during the current suicide attempt (35). Although in the present survey, the drug most used in suicide attempts was benzodiazepines, there was no significant relationship between the type of drug used in suicide and depression disorder. Wang Lj in 2012

reported that most cases of suicide were after taking antidepressant and antipsychotic drugs (29). In the present study, we could not find any association between cigarette and alcohol consumption and depression disorders in suicide attempters; however, Rossow indicated that psychiatric disorders and alcohol consumption were risk factors for suicide (36). In the present study, because both Beck depression questionnaire and demographic information forms were filled by suicide attempters, recall bias might have occurred. Also, some cases did not participate in the survey; thus, selection bias could be unavoidable.

Conclusion

The results of the current study revealed the relationship between socioeconomic status and depressive disorder in suicide attempters. So, it is necessary that more attention be paid to solving family and community problems which can lead to suicide attempts.

Conflict of Interest

The authors declare no conflict of interests.

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