

Gender Differences of Suicide Attempt Among Iranian Patients with Psychiatric Disorders

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Abstract

Background: The prevalence of suicide in Iran is higher than other West Asian countries.

Objectives: The aims of the present study were to determine the prevalence of suicide attempt in psychiatric patients, and determine its associations with clinical and sociodemographic factors, and gender differences.

Methods: Participants in this descriptive-analytic study were 941 patients who were hospitalized for at least 2 days in Razi center in Tehran in 2010. Univariate and multivariate logistic regressions were used to analyze the factors related to suicide by SPSS software Version 17.

Results: Almost 23.4% of the participants had a history of suicide attempt. Of the 250 females, 42 and of the 691 males, 178 attempted suicide. Suicide attempt in divorced, separated, and widowed females was much higher than in single females ($P = 0.032$). Also, those females who were drug abusers attempted suicide more often compared to non-users ($P = 0.047$). Suicide attempt was more prevalent in young males ($P < 0.001$). In addition, bipolar disorder ($P = 0.011$), depression ($P = 0.27$), drug abuse ($P < 0.001$), and alcohol abuse ($P = 0.017$) were risk factors of suicide attempt among males. Interactions between gender and marital status ($P = 0.002$) and between gender and the type of psychiatric disorder ($P = 0.004$) were statistically significant.

Conclusions: There were significant differences in suicide attempt risk factors between males and females with psychiatric disorders; these differences could not be related to different exposures to the known risk factors in the 2 genders.

Keywords: Attempted Suicide, Gender, Risk Factors, Psychiatric Ward Attendant

1. Background

Suicide is one of the preventable public health problems, and is one of the 10 most leading causes of mortality (1). Suicide rate is increasing in both males and females (2). Based on the national survey on drug use and health (NSDUH) report, one million adults in the United States (0.5% of the U.S. adult population) make a suicide attempt annually (3). Although compared with most countries, especially Western communities, the prevalence of suicide is lower in Iran, but it is higher in Iran compared to other West Asian countries (4), and it has increased in recent years. Poorolajal et al. (2015) reported that during the 5 years of their study, 13,810 attempted suicides occurred, of which 11.33% were completed (5). Another study showed a lower rate of suicide in other Middle Eastern countries, especially Muslim-majority countries such as Bahrain and Kuwait, which have had the completed suicide rate of 3.8 and 1.8 per 100,000 populations, respectively (6).

Patients with a history of suicide attempt are likely to

try it again (7). Most of them have psychiatric disorders and these disorders have a strong relationship with attempting suicide (8). These disorders include schizophrenia, depression, bipolar disorders, and drug and alcohol abuse (9, 10). Mohammadi et al. showed that 45.3% of the participants who had attempted suicide reported at least 1 psychiatric disorder during their lifetime (11). Also, prevalence rate of psychiatric disorders in Iran is reported to be 26.5% in females and 20.8% in males (12).

The effects of psychiatric disorders differ in the 2 genders (13). Most studies have reported a significant relationship between gender, as a demographic characteristic, and suicide. These studies have reported different results about suicide attempt and suicide mortality in both genders (7, 14, 15). Also, suicide attempt differs between males and females with psychiatric disorders (14).

It is not clear whether differences in exposure to known social, cultural, or other gender-related risk factors cause behavioral differences between males and females in suicide (16). Need-based health care services require deter-

mination of differences in risk factors of suicide attempt in the 2 genders (17). Therefore, this cross-sectional study was conducted to determine the prevalence of past suicide attempt in males and females with psychiatric disorders, and determine its associations with clinical and sociodemographic factors, and gender differences in Razi center (one of the largest training, therapeutic, and psychiatric centers in Iran).

2. Methods

In this descriptive-analytic study, participants were all patients who were hospitalized for various reasons for at least 2 days in Razi training, therapeutic, and psychiatric center in Tehran. Out of 984 patients, 950 had the ability to communicate with the interviewers and were included in this study. Among them, 941 answered the suicide-related questions (response rate = 95.6%), and analyses were performed based on their information. Most of the participants were male (73.4 %) with an average (mean \pm SD) age of 45.3 ± 1.4 . The value of the questionnaires filled by patients depended on their insight. Patients in the denial phase of insight were excluded from our study. Insight was described as the ability of a patient to identify his/her illness. Stages of insight are from complete denial of illness to true emotional insight (18). A written consent was obtained from each eligible individual prior to entry to this study. Data collection was done through interviewing and asking the patients with psychiatric disorders to fill out a validated questionnaire (19). The questionnaire contained demographic characteristics, tobacco use, history and current status of the disease, current drug use status, in addition to items related to the past suicide attempt, its frequency, time, methods, etc.

The prevalence of suicide attempt was calculated for the whole study population and for each gender group. Male and female patients were compared with respect to some selected variables using independent samples t test and Chi-square test. Using multiple logistic regressions, we separately analyzed the factors related to suicide for males and females. Odds ratios with 95% confidence intervals were calculated and comparison between the categories of each independent variable with the reference group was done using the Wald method. The outcome variable was previous suicide attempt, and the independent variables were sociodemographic and clinical variables, which were significantly associated with the outcome variable in univariate logistic regressions. The variables of age, level of education, marital status, accommodation status, employment status, type of psychiatric disorder, cigarette smoking, alcohol and drug abuse were entered to the final

model (separately for males and females). Eventually, interactions between gender and other variables with a statistically significant effect in multiple logistic regressions were analyzed using a full regression model to see if it could be explained by differential males and females' exposure to risk factors. If there is no significant relationship between sex and risk factor, it means that sex could explain a different exposure to that factor and vice versa (20). A P value < 0.05 was considered significant, and analyses were done using SPSS software Version 17.

Considering at least 30 suicide attempts per 100,000 individuals (5), error level of 0.05, confidence level of 2 per 100,000 individuals, and 10% non-participation rate, a sample size of 949 individuals was required. The protocol of our study was approved by the ethics committee of Tobacco prevention and control research center of Iran.

3. Results

Most of the participants were male (73.4 %), with the average (mean \pm SD) age of 45.3 ± 1.4 . The mean age of females was 50.7 ± 14.7 . The history of suicide attempt was positive in 220 (23.4%) patients. The prevalence of suicide attempt in male and female patients was 25.8% and 16.8%, respectively. The male/female ratio for suicide attempt was 178/42. Most individuals had a history of 1 suicide attempt (46.6%) at night (30.7%), with no difference between the 2 genders. Also, the most prevalent (36.7%) method of suicide attempt was self-cutting with no significant difference between males and females. The 2 groups had statistically significant differences in almost all the selected variables. Most of the males (77.2%) and females (87.1%) had an education level of less than high school, and 69.6% and 45.8% were single, respectively. In addition, 57.3% were cigarette smokers and 23.1% drug abusers (Table 1).

The results of univariate analysis revealed that female participants who had attempted suicide tended to be more often at high school level of education, divorced, separated or widowed, live in private or rented accommodations, be unemployed, cigarette smoker, drug or alcohol abuser, and have schizophrenia and bipolar disorders less often. Also, male participants who had attempted suicide tended to be more often at university level of education, married, live in private or rented accommodations, be unemployed, cigarette smoker, and drug or alcohol abuser. Age was associated with suicide attempt in both genders (Table 2).

Multiple logistic regression revealed that after adjusting for these variables, suicide attempt was much higher in divorced, separated, and widowed females compared to single females (OR = 5.09, 95% CI; 1.15 - 22.58, P = 0.032). Moreover, females who were drug abusers were at higher risk of suicide attempt as compared to those who were not

Table 1. Gender Differences in Socio-Demographic and Clinical Characteristics of Psychiatric Patients^a

Variables ^b	Total (N = 941)	Women (N = 250)	Men (N = 691)	P Value ^c
Age mean (SD)	45.5 (1.4)	50.7 (14.7)	43.3 (12.7)	< 0.001
Level of education				0.005
Less than high school	701 (79.8)	202 (87.1)	499 (77.2)	
High school	139 (15.8)	22 (9.5)	117 (18.1)	
University	38 (4.3)	8 (3.4)	30 (4.6)	
Marital status				< 0.001
Single	596 (63.3)	114 (45.8)	482 (69.6)	
Married	144 (15.3)	32 (12.9)	112 (16.2)	
Divorced, separated, and widowed	201 (21.4)	103 (41.4)	98 (14.3)	
Accommodation status				< 0.001
Private	119 (14.8)	22 (9.5)	97 (17)	
Rented	335 (41.8)	28 (12.1)	307 (53.8)	
Father in low's or other's house	348 (43.4)	181 (78.4)	167 (29.2)	
Unemployment (Yes)	547 (58.1)	189 (82.9)	358 (52.6)	< 0.001
Type of psychiatric disorder				
Schizophrenia	462 (49.1)	149 (59.6)	313 (45.3)	< 0.001
Bipolar	176 (18.7)	64 (25.6)	112 (16.2)	
Depression	66 (7.0)	8 (3.2)	58 (8.4)	
Dementia or other	237 (25.2)	29 (11.6)	208 (30.1)	
Cigarette smoking (Yes)	570 (70.2)	59 (36.2)	511 (78.7)	< 0.001
Drug abuse (Yes)	292 (31.0)	17 (6.7)	275 (39.6)	< 0.001
Alcohol abuse (Yes)	131 (13.9)	5 (2)	126 (18.1)	< 0.001
Suicide attempt (Yes)	220 (23.4)	42 (16.8)	178 (25.8)	0.004
Methods of attempted suicide				0.922
Drug	74 (33.9)	16 (38.1)	58 (33.0)	
Poison	21 (9.6)	4 (9.5)	17 (9.7)	
Hanging	23 (10.6)	3 (7.1)	20 (11.4)	
Jumping from height	18 (8.3)	3 (7.1)	15 (8.5)	
Self-cutting	82 (37.6)	16 (38.1)	66 (37.5)	

^aData were missing for some participants.^bPresented as number (percent) unless otherwise specified.^cP values of Chi-square test with age as an exception, for which t-test was used.

(OR = 7.28, 95% CI; 1.02 - 51.61, P = 0.047). Among males, bipolar disorders (OR = 2.35, 95% CI; 1.22 - 4.54, P = 0.011), depression (OR = 2.22, 95% CI; 1.09 - 4.50, P = 0.27), drug abuse (OR = 2.38, 95% CI; 1.47 - 3.86, P < 0.001), and alcohol abuse (OR = 1.87, 95% CI; 1.11 - 3.15, P = 0.017) were risk factors for the suicide attempt, and suicide attempt decreased in the older males (P < 0.001) (Table 3). The last column in Table 3 shows P values obtained from the interactions between the genders, as the main effect, and the other variables in the re-

gression model. Interactions between gender and the marital status (P = 0.002) and between gender and type of psychiatric disorder (P = 0.004) were statistically significant.

4. Discussion

Findings of this study revealed that suicide attempt risk factors differed in the 2 genders. While marital status was associated with suicide attempt in females, suffering

Table 2. Factors Related to Suicide Attempt in Males and Females Using Univariate Logistic Regression

Variable	Univariate Analysis for Women, OR (95% CI)	P Value	Univariate Analysis for Men, OR (95% CI)	P Value
Age	0.95 (0.93 - 0.98)	0.001	0.94 (0.93 - 0.96)	< 0.001
Level of education				
Less than high school	Reference		Reference	
High school	2.83 (1.06 - 7.56)	0.038	1.39 (0.89 - 2.18)	0.143
University	3.64 (0.82 - 16.01)	0.088	2.25 (1.04 - 4.85)	0.038
Marital status				
Single	Reference		Reference	
Married	1.92 (0.66 - 5.57)	0.229	1.58 (1.01 - 2.48)	0.045
Divorced, separated, and widowed	2.26 (1.08 - 4.76)	0.030	1.30 (0.80 - 2.11)	0.287
Accommodation status				
Private	4.82 (2.18 - 10.67)	< 0.001	4.43 (2.54 - 7.71)	< 0.001
Rented	8.36 (1.93 - 36.22)	0.004	5.88 (3.05 - 11.32)	< 0.001
Father in low's or other's house	Reference		Reference	
Unemployment				
Yes	5.43 (2.51 - 11.82)	< 0.001	1.46 (1.03 - 2.06)	0.033
No	Reference		Reference	
Type of psychiatric disorder				
Schizophrenia	0.25 (0.10 - 0.62)	0.003	1.00 (0.65 - 1.55)	0.971
Bipolar	0.28 (0.10 - 0.79)	0.016	1.64 (0.97 - 2.77)	0.061
Depression	0 (0 - 0)	0.999	1.10 (0.64 - 1.88)	0.715
Dementia or other	Reference		Reference	
Cigarette smoking				
Yes	2.24 (1.05 - 4.80)	0.037	2.09 (1.29 - 3.41)	0.003
No	Reference		Reference	
Drug abuse				
Yes	57.22 (12.40 - 263.99)	< 0.001	4.82 (3.34 - 6.95)	< 0.001
No	Reference		Reference	
Alcohol abuse				
Yes	21.78 (2.37 - 200.31)	0.006	3.91 (2.61 - 5.86)	< 0.001
No	Reference		Reference	

from bipolar disorder, depression, and alcohol abuse were risk factors for suicide in males. Drug abuse was a risk factor for attempting suicide in both genders.

Because females employ less rough methods to attempt suicide, they are accounted as "suicide survivors" (21). In this study, males and females did not differ in methods of attempting suicide. Perhaps the reason is that participants of our study were hospitalized because of psychiatric problems, whereas studies which compare suicide methods in the 2 genders usually consider completed sui-

cides (22).

Our findings about the effect of drug abuse on suicide attempt in the 2 genders agree with those of most studies (20,23). Besides drug abuse, age and alcohol abuse also correlated with suicide attempt in males after adjusting for the effect of other variables in the regression model, while no such correlation was found in females. Males are more sensitive to social and economic changes as compared to females. Our findings are in agreement with the results of most studies (20, 24).

Table 3. Factors Related to Suicide Attempt in Males and Females Using Multivariate Logistic Regression

Variable	Multivariate Analysis for Women ^a , OR (95% CI)	P Value	Multivariate Analysis for Men ^a , OR (95% CI)	P Value	P Value, (Interaction with Sex) ^b
Age	0.94 (0.87 - 1.01)	0.097	0.95 (0.93 - 0.97)	< 0.001	0.216
Marital status					
Single	Reference		Reference		
Married	0 (0 - 0)	0.999	1.68 (0.90 - 3.12)	0.098	0.002
Divorced, separated, and widowed	5.09 (1.15 - 22.58)	0.032	1.36 (0.75 - 2.46)	0.307	
Type of psychiatric disorder					
Schizophrenia	1.75 (0.26 - 11.80)	0.562	1.40 (0.80 - 2.47)	0.233	0.004
Bipolar	0.30 (0.01 - 5.43)	0.417	2.35 (1.22 - 4.54)	0.011	
Depression	0 (0 - 0)	0.999	2.22 (1.09 - 4.50)	0.027	
Dementia or other	Reference		Reference		
Drug abuse					
Yes	7.28 (1.02 - 51.61)	0.047	2.38 (1.47 - 3.86)	< 0.001	0.427
No	Reference		Reference		
Alcohol abuse					
Yes	0.74 (0.01 - 33.74)	0.880	1.87 (1.11 - 3.15)	0.017	0.192
No	Reference		Reference		

^aVariables of age, level of education, marital status, housing status, employment status, type of psychiatric disorder, cigarette smoking, alcohol and drug abuse were entered to the final model in both analyses (for males and females).

^bRegression analysis including sex as a main variable.

Marriage is a protective factor against suicide (25). In this study, divorced, separated, and widowed females attempted suicide more than singles. Moradi et al. found that the probability of attempting suicide was higher among students with family conflicts and rupture (26). Based on our study, it seems that this effect is greater in females.

In this study, the prevalence of suicide attempt was higher in males as compared to females. Also, males with depression and bipolar disorders attempted suicide more than others. Among individuals who attempt suicide, the prevalence of psychiatric disorders is higher in males as compared to females (17). Although the prevalence of depression is higher in females, suicide attempt is observed more in depressed males. The reasons may be more severe signs of the disease, being more ashamed of the disease, or various reactions of males to psychiatric disorders than females (27).

Risk factors were more closely related to sex rather than different exposures in the 2 genders, which can explain the reason for the difference in the prevalence of suicide attempt between males and females with psychiatric disorders. This finding is consistent with Qin et al. study that indicated that adjustment for risk factors does not

eliminate gender differences in suicide risk (24). In the United States, Zhang et al. found that the nature of suicide differed in the 2 genders. More research is needed to study the neurologic and genetic risk factors of suicide. In fact, differences between the 2 genders with respect to the majority of the effective factors and their differences in the suicide risk factors revealed biologic diversities and interactions of biologic and non-biologic differences of males and females (20).

Although completed suicide rates seem to be lower in Muslim countries, the rates of attempted suicide do not appear to be lower than other countries (28). There is a general agreement among researchers that to date statistics have underestimated the extent of suicide attempt in developing countries such as Iran as the result of ineffective civil registration systems and disparities in coroners' practices. Moreover, in Muslim countries attempted suicide is considered a sinful act that is strongly banned by Islamic religion, so family and friends may try to hide the cause of death due to social stigma, religious sanctions, and legal issues associated with suicide (29, 30).

One of the limitations of our study was that some patients were excluded due to their low level of insight. Despite the fact that researchers had to exclude these pa-

tients for ethical reasons, the prevalence of suicide attempt might be even higher in these patients. Moreover, our study had a cross-sectional design, and therefore could not evaluate the effect of changes in variables on the incidence of suicide attempt over time.

Improvement of psychiatric health requires the employment of preventive interventional measures and facilities. Mental health needs should not be considered as second-hand needs after physical health needs. Integration of mental health and public health, despite being useful, does not seem enough (31). The findings of our study suggest that mental health care will be more effective if performed by taking into account the person's gender (17).

In conclusion, the suicide attempt risk factors between males and females with psychiatric disorders differed significantly, and it was not likely to be related in different experiences of the 2 genders. The results showed the importance of considering gender issues in psychiatric patients who attempt suicide in Iran.

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Footnote

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