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Psychological Risk Factors of Suicide Attempts in Patients Admitted to Emergency Departments

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Abstract

Background: Suicide, as a leading cause of death, needs more attention to discover different aspects of its occurrence and to implement proper programs for prevention and control.
Objectives: This study aimed to assess psychological risk factors of suicidal attempts in patients referred to the hospitals.
Methods: In this cross-sectional study, demographic characteristics, environmental stressors and three questionnaires [beck scale of suicide ideation (BSSI), quality of life (SF-12), and symptom checklist 90-R (SCL-90-R)], have been collected in all of the patients who were referred to emergency departments affiliated to Babol University of Medical Sciences, during 6 months.
Results: One hundred and forty one patients had been included. Mean age of the patients was 26.7 ± 11.2 (range 11 - 75) years; 54.6% of the patients were in the age-group of 21 - 40 years; females had more suicide attempts and 58.1% of the patients had low education level. The most common method for suicide was drug ingestion (92.9% of the patients). A significant correlation had been observed between quality of life and suicidal ideation (r = - 0.48; P < 0.0001). Depression and hostility had the highest mean score among SCL-90-R subscales.
Conclusions: More frequent suicides in the second to fourth decades of life, especially in women and the persons who had lower quality of life suggests a need for proper social supports and psychiatric interventions for early detection of suicidal thoughts and necessary treatments for prevention of complete suicide.

Keywords: Suicide, Psychiatric Disorder, Quality of Life

1. Background

Suicide can be defined as a voluntary action to harm or kill oneself and can lead to death [1]. According to the world health organization, while over 800,000 people die due to suicide each year, the annual rate of suicide attempts is much higher. Suicide can be committed at any age. In 2015, suicide was reported as the second leading cause of death among the 15-29-year-olds around the world. Meanwhile, 78% of all suicides occur in low- and middle-income countries. Suicide accounted for 1.4% of all deaths worldwide, making it the 15th leading cause of death in 2012 [2]. In recent years, researchers in Iran and some other countries have evaluated the rate of suicide, suicide attempts, and related risk factors [3-16]. A review study in Iran calculated the weighted mean rate of suicide attempts as 26.5 in 100,000 people. The average rate of death by suicide was 6.7 in 100,000 population [15].

Different biological, psychological, socioeconomic, and cultural factors can affect the incidence of suicide attempts [3, 4, 17]. Ethnic difference is another important factor [6]. In a recent research in South Korea which has been conducted among nearly 5300 adult persons who had suicidal ideation, age was negatively associated with suicide attempts; educational level, daily activity limitation and drinking alcohol were reported as predictors of suicide attempts in under 50 years old group; malignancy and smoking as predictors in over 50 years old group [18]. Turecki reported that parental neglect, childhood physical, sexual or emotional abuse are risk factors for suicide attempts [19]; and Vijayakumar represented that living in rural regions was a risk factor for suicide in developing Asian countries. He showed that this association could be due to economic hardship, lack of social support, isolation and access to lethal means like pesticides, also, he reported that religion

- or the absence of religious belief - exerted an influence on the pattern of suicides [20]. A number of psychological disorders, including depression, schizophrenia, alcohol and substance abuse, and personality disorders; and physical conditions, e.g. hemodialysis, chronic obstructive pulmonary disease, malignancies, acquired immune deficiency syndrome (AIDS), quadriplegia, multiple sclerosis (MS), severe burns of the whole body, and congestive heart failure (CHF), can also lead to suicide attempts [21].

Apparently, interventional approaches are required to decrease the significant prevalence of suicide attempts [22, 23]. The development of such approaches would, in turn, depend on the identification of factors leading to suicide [24-26]. Although significant improvements have been made in the knowledge about this important public health problem, some gaps have been remained in knowledge about suicide risk factors; and analysis of epidemiologic surveys and administrative data sets can advance the understanding of its risk factors [27]; therefore, this study was conducted to assess the possible psychological risk factors of suicide. Obviously, the results can be effective in adopting an intervention strategy to improve the current situation.

2. Methods

This observational cross-sectional study was performed in 2016. Considering confidence level of 95%, prevalence of psychological risk factors - according to previous studies- 40% [28] and d = 0.08, sample size was calculated as 144; therefore, all of 141 adult patients who were admitted to emergency departments of all hospitals affiliated to Babol University of Medical Sciences (Babol, Iran) due to suicide attempts in the first half of the year 2015 were enrolled in this study by census. The patients were interviewed when they were conscious enough. Three standard self-report questionnaires, including beck scale for suicidal ideation (BSSI), the quality of life questionnaire-short form (SF-12), and symptoms checklist-90-revised (SCL-90-R), were used for data collection. The participants were also asked about their demographic and educational characteristics and recent environmental stressors such as family disputes, economic failure, and loss of a loved one.

BSSI is a 19-item scale which measures the intensity of a person's attitudes, behaviors, and suicidal ideation in the past week. It has been used in several studies [29, 30] and the psychometric properties of its Persian version have been approved in the research of Esfahani in which Cronbach's alpha coefficient of the screening part and the whole scale was reported more than 0.8 [31].

The SF-12 is a short scale for the assessment of quality of life (QOL). It comprises eight subdomains in physical and mental health. The overall QOL of the respondent is determined based on the total scores (ranging between 12 and 48). Score 12 - 24, 25 - 36, and 37 - 48 indicate poor, fair, and good QOL, respectively [32]. The validity and reliability of SF-12 have been evaluated in previous studies. Melville reported that SF-36 provides important quantitative information about the impact of diseases on health related quality of life [33] and Gandek reported that its internal consistency reliability was 0.83 to 0.93 for the eight scales and 0.94 and 0.89, respectively, for the physical and mental component summary measures [34].

The SCL-90-R is a 90-item self-report instrument designed to measure nine psychiatric symptoms including somatization, obsessive-compulsive disorder (OCD), interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Items are scored on a five-point scale (0 = not at all, 1 = a little, 2 = some, 3 = very, and 4 = severe). The validity and reliability of SCl-90-R have been examined in several studies [35, 36]. Ransom reported that the internal consistency coefficients for the 9 subscales were 0.76 - 0.90 [37]. The global severity index (GSI), representing the average severity score of all 90 items, is used to quantify the severity of psychiatric symptoms. Higher GSI values suggest more severe dysfunction, i.e. GSI values < 2 and > 2 indicate mild and severe psychiatric disturbances, respectively [38].

All analyses were performed using SPSS 21 (SPSS Inc., Chicago, IL, USA). Chi-square and Pearson's correlation coefficient were applied for data analysis. The Kolmogorov-Smirnov test was used to evaluate the normal distribution of quantitative data. Considering that data did not have normal distribution (P value less than 0.05), we used non-parametric statistical tests (spearman's correlation coefficient) to analyze the correlation between variables. Spearman's rank correlation coefficient (r) has been reported in related results. Also, we reported median and interquartile range (IQR) besides to mean and standard deviation.

3. Results

A total of 141 patients were included in this study. The mean age of the patients was 26.7 ± 11.2 years (range: 11 - 75 years). Their demographic characteristics are presented in Table 1. As seen, 54.6% of the patients aged 21 - 40 years. Suicide attempts were more prevalent among women (68.8%) and individuals with low levels of education (58.1%).

Six participants reported opium abuse.

The most common method of suicide was drug ingestion (92.9%).

Table 1. Demographic Characteristics of the Patients

Variable	Number (%)
Gender	
Male	44 (31.2)
Female	97 (68.8)
Age (years)	
< 20	50 (35.5)
21 - 40	77 (54.6)
> 40	14 (9.9)
Place of residence	
Urban areas	97 (68.8)
Rural areas	44 (31.2)
Marital Status	
Single	62 (44)
Married	79 (56)
Level of educational	
Illiterate	14 (9.9)
Below high school diploma	68 (48.2)
High school diploma	50 (35.5)
Academic education	9 (6.4)
Job	
Housewife	45 (31.9)
Self-employed	39 (27.7)
Student	32 (22.7)
Unemployed	25 (17.7)

Of the 63 patients (44.7%) who filled out BSSI, 24 individuals (38.1%) had suicidal ideation; 22 (34.9%) had plans for suicide, and 17 (27%) had a suicide attempt.

The mean total QOL score for the 50 persons (35.5%) who filled out the SF-12 was 32.5 $\pm$ 7.1 (range: 18 - 48). The participants' mean, standard deviation (SD), and range of scores in the eight subdomains of the SF-12 are presented in Table 2. As seen, 12%, 62%, and 26% of the patients had poor, fair, and good QOL, respectively.

None of the evaluated demographic variables (age, gender, place of residence, marital status, level of education, and occupation) had significant associations with suicidal ideation. However, a significant correlation was observed between QOL and suicidal ideation ($r = -0.48$; $P < 0.0001$; Table 3).

The mean scores of the 35 patients (24.8%) who completed the SCL-90-R and their correlation with suicidal ideation are presented in Table 4. As seen, among the nine subscales of the SCL-90-R, depression and hostility had the highest mean scores.

GSI values < 2 (mild psychiatric disturbance) and > 2 (severe psychiatric disturbance) were seen in 31 (88.6%) and four (11.2%) patients, respectively. Suicidal ideation had significant correlations with OCD, interpersonal sensitivity, depression, anxiety, hostility, paranoid ideation, and psychoticism subdomains of the SCL-90-R.

4. Discussion

This study evaluated patients who were admitted to emergency departments due to suicide attempt. Most patients (nearly 55%) were 21 - 40 years old. Owing to family and work life responsibilities, this period is a critical stage of life for both men and women [39, 40]. Previous studies in Iran reported similar findings [41-43]. According to ministry of health and medical education of Iran, an estimated 13 cases of suicide (with an average age of 29 years) occur in the country every day [41].

In our study, suicide was more prevalent among women. In contrast, another study in Iran reported a higher suicide rate (per 100,000 people) in males [14]. Higher frequency of suicides in women might be attributed to not only hormonal differences and higher prevalence of depressive disorders in women, but also greater psychosocial distresses in female populations of low- and middle-income countries and the adaptation mechanisms utilized by these women [44-46]. In our research, suicide attempts were more common in married individuals, those living in urban areas, and those with lower levels of education. Similarly, in Korea, Song found women, married individuals, and subjects with low education to be at higher risk of suicidal ideation and attempt [3]. Hendin reported that suicides were more frequent in rural areas of several Asian countries including India, Sri Lanka, Japan, Taiwan, and China because of relative deprivation, stigma and/or insufficient knowledge of mental health, social isolation and disconnection, difficulty in accessing medical services, and ready access to lethal means of suicide (e.g., pesticides) [47]. The higher prevalence of suicide among the residents of urban areas in our study can be related to their lifestyle and related distresses such as occupation, household income, family conflicts, traffic, environmental pollution, and related physical and mental disorders [4, 8, 48].

Although the rate of suicide is low in Muslim countries, available evidence suggests an increasing trend in its rate [15]. A previous meta-analysis in Iran reported suicide attempts to be correlated with family conflicts (30%), marital disorders (26%), economic problems (12%), and educational failures (5%). It found family conflicts to be the most common social factor in individuals with suicide attempts

Table 2. The Scores of the Quality of Life Questionnaire Short Form 12 (SF-12) Subdomains

Measure	Mean ± SD	Median (IQR)	P Value
General perception of health	2.6 ± 1.2	3.0 (2.0 - 3.0)	0.094
Physical activity	5.1 ± 1.1	6.0 (4.0 - 6.0)	< 0.001
Physical health	3.5 ± 0.9	4.0 (3.0 - 4.0)	< 0.001
Emotional problems	2.6 ± 0.9	2.0 (2.0 - 3.25)	< 0.001
Somatic pain	4.1 ± 0.9	4.0 (3.75 - 5.0)	0.004
Social functioning	3.9 ± 1.3	4.0 (3.0 - 5.0)	0.135
Vitality and energy	3.5 ± 1.3	3.0 (2.75 - 5.0)	0.001
Mental health	7.0 ± 2.4	7.0 (5.0 - 9.0)	0.453

Abbreviation: IQR, interquartile range.

Table 3. Associations of Quality of Life (QOL) and Suicidal Ideation-Based on Beck Scale for Suicidal Ideation (BSSI)

BSSI	Poor QOL, N (%)	Fair QOL, N (%)	Good QOL, N (%)	P Value
Suicidal thoughts	1 (5.3)	10 (52.6)	8 (42.1)	< 0.001
Suicidal plans	2 (12.5)	9 (56.3)	5 (31.3)	
Suicidal attempt	3 (20)	12 (80)	0	

Table 4. The Scores of the Subscales of the Symptoms Checklist-90-Revised (SCL-90-R) and their Correlation with Suicidal Ideation

SCL-90-R Subscales	Mean ± SD	Median (IQR*)	Spearman´s Correlation Coefficient (r)	P Value
Somatization	0.81 ± 0.54	0.67 (0.33 - 1.17)	0.131	0.454
Obsessive-compulsive disorder	1.01 ± 0.57	1.10 (0.50 - 1.40)	0.632	< 0.001
Interpersonal sensitivity	0.96 ± 0.80	0.73 (0.47 - 1.33)	0.488	0.003
Depression	1.35 ± 0.91	1.15 (0.62 - 2.0)	0.480	0.004
Anxiety	1.02 ± 0.77	0.89 (0.44 - 1.44)	0.462	0.005
Hostility	1.33 ± 0.96	1.0 (0.67 - 2.0)	0.620	< 0.001
Phobic anxiety	0.44 ± 0.44	0.13 (0.00 - 0.75)	0.220	0.204
Paranoid ideation	0.88 ± 0.78	0.67 (0.33 - 1.33)	0.544	< 0.001
Psychoticism	0.57 ± 0.65	0.40 (0.10 - 0.80)	0.366	0.030
Global severity index (GSI)	0.96 ± 0.61	0.84 (0.51 - 1.42)	0.520	< 0.001

Abbreviation: IQR, interquartile range.

[17]. In another study in Iran, single men, married women, medium educational level and age range of 15 - 25 years were presented as the most high-risk groups with suicide attempts who referred to emergency departments [49].

In this study, drug ingestion was the most common method of suicide. This can reflect the accessibility of drugs and impulsive behaviors of the patient. Chen concluded that the availability of different methods had a significant effect on suicide. For instance, in some Asian countries, such as China, India, Sri Lanka, South Korea and Taiwan, where pesticides are highly available, especially in rural areas, pesticide poisoning is the most common method of suicide [48]. Different methods of suicide are used in different regions. For instance, jumping from a height is the most common method of suicide in Hong Kong and Singapore. Hanging is the most common method of suicide in some countries, e.g. Western countries, Japan, Korea, and Taiwan. These different methods can be related to various factors including easy access to particular methods, cultural factors, and imitating others [48]. Family members

should have greater supervision on drug programs of patients with mental health problems. Moreover, legal limitations should be applied on the delivery of drugs to individuals who visit drugstores and ask for drugs without a prescription [50].

In this research, 4.3% of the participants reported opium abuse. Yasamy, however, reported 28% of patients with suicide attempts to be substance abusers [51]. The low prevalence of drug abuse in our study can be justified by the fact that opium abuse was assessed through self-report and no panel drug test was administered.

We found suicidal ideation, plans, and attempts in 38%, 34.9%, and 27% of our participants, respectively. This significant percentage of patients who are truly determined to commit suicide highlights the need for immediate admission of these individuals and implementation of relevant psychiatric interventions for the treatment of their underlying disorders and prevention of future suicide attempts.

Among the subscales of the SCL-90-R, our participants had the highest mean scores in depression and hostility. Menon suggested hostility scores as a predictor for suicide intention [52]. Werth found associations between clinical depression and suicidal ideation, attempts, and deaths [53]. These associations should be considered in the surveillance of patients with depressed mood or hostility trait.

We detected a significant association between QOL and suicidal ideation. Similar findings were reported by Cotrena [54] and Xiang [55]. OCD, interpersonal sensitivity, depression, anxiety, hostility, paranoid ideation, and psychoticism were identified as factors which could affect suicidal ideation and attempts. On the other hand, persons who have suicidal thoughts and plans have lower levels of perception about their physical and mental health. This can, in turn, decrease their QOL.

This research shows that clinicians should screen for the presence of the common risk factors, which are known to be associated with increased risk of suicide, included mental disorders, a previous suicide attempt, impulsivity, precipitating factors such as the break-up of a romantic relationship, conflict with family or peers, academic disappointment, legal involvements, history of physical or sexual abuse and lack of connection to psychosocial support.

4.1. Conclusion

More frequent suicides during the second to fourth decades of life, especially among women and individuals with lower QOL, underscores the need for proper social support, psychiatric interventions for early detection of suicidal thoughts, and treatments for the prevention of suicide.

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Footnotes

Authors' Contribution: Ali Asghar Manouchehri Amoli contributed in the conception of the work, conducting the study and case finding; Malihe Allahyari contributed in case finding and data collection; Sussan Moudi contributed in the conception of the work, conducting the study, revising the draft, approval of the final version of the manuscript, and agreed for all aspects of the work; Mehryar Nader Mohammadi contributed in data collection and revising the draft of the manuscript; Ali Bijani contributed in data analysis; Kolsum Khanlarzade and Shams Allah Jamaly contributed in data collection.

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