

ORIGINAL RESEARCH

Predictive Factors of Suicide Attempt and Non-Suicidal Self-Harm in Emergency Department

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Abstract

Introduction: Suicide is the third cause of mortality in America, second leading cause of death in developed countries, and one of the major health problems. Self-harm is self-inflicted damage to one's self with or without suicidal intent. In the present study, the predictive factors of suicide attempt and non-suicidal self-harm were evaluated in patients referred to emergency department (ED) with these problem. **Methods:** The total number of 45 patients with suicide attempt or self-harm admitted to ED were included. Clinical symptoms, thoughts and behaviors of suicidal, and non-suicidal self-harm in these patients were evaluated at baseline. Suicidality, suicidal intent and ideation, non-suicidal self-injury, social withdrawal, disruptive behavior, and poor family functions were evaluated at admission time. Brief clinical visits were scheduled for the twelfth weeks. In the twelfth week, patients returned for their final visit to determine their maintenance treatment. Finally, data were analyzed using chi-squared and multiple logistic regression. **Results:** Forty-five patients were included in the study (56.1% female). The mean age of patients was 23.3±10.2 years (range: 15-75; 33.3% married). Significant association of suicide and self-injury was presented at the baseline and in the month before attempting (p=0.001). The most important predictive factors of suicide and self-harm based on univariate analysis were depression (suicidal and non-suicidal items of Hamilton depression rating scale), anxiety, hopelessness, younger age, history of non-suicidal self-harm and female gender (p<0.05). The participants' quality of life analysis showed a significant higher quality in physical component summary (p=0.002), mental component summary (p=0.001), and general health (p=0.001) at follow up period. **Conclusion:** At the time of admission in ED, suicide attempt and non-suicidal self-harm are subsequent clinical markers for the patient attempting suicide again. The most independent predictive factors of suicide attempt and self-harm were poor family function, hopelessness, non-suicidality items of Hamilton depression rating scale, history of non-suicidal self-harm, and anxiety disorders.

Key words: Suicide, attempted; self-injurious behavior; emergency services, psychiatric; mental disorders; predictive value

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Introduction:

Suicide is the third cause of mortality in America, second leading cause of death in developed countries, and one of the major health problems globally (1-4). Suicidality in adults have been remarkably recognized as a factorial analysis of family perceptions, childhood abuse, social integration or neglect, and other social factors that can be a reason for the suicide attempt (5, 6). Anxiety disorders and depression increase

the jeopardy for suicide and suicidal intent, ideation and behavior. It maybe increases the risk even more, if the depression, anxiety, and hopelessness left untreated (7, 8). The relationship between suicide attempts and other psychiatric disorders such as eating, anxiety, conduct, and substance use disorders is very common. Non-suicidal self-harm (NSSH) is "self-inflicted damage to one's self that lack evidence of suicidal intent" (9). On the other hand, self-harm can be defined as "attempt of harming one's self with or without suicidal intent" (10, 11). Based on above-mentioned, the aim of the present study was to evaluate predictive factors of suicide attempt and non-suicidal self-harm in patients referring

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to emergency department (ED).

Methods:

This prospective cohort study was conducted in ED of Lady Educational hospital, Post Graduate Medical Institute Peshawar, Pakistan, during May to October 2012. The study protocol was approved by local ethic committee and in accordance with Helsinki declaration. All respondents completed informed consent. The subjects were followed twelfth weeks after admission.

Forty-five patients with suicidal attempt or self-harm, referred to the study protocol by their primary care provider immediately at the time of admission, were consequently entered to the study. The exclusion criteria were as follow: Subjects who were received antidepressant-antipsychotic (alone or in combination during the preceding six months), co-morbid mania or bipolar disorder, psychotic symptoms, and substance use disorder or dependence.

Suicidality, suicidal intent and ideation, non-suicidal self-injury during the before month, social withdrawal, disruptive behavior, family functions, and quality of life were evaluated and submitted in data gathering files at the time of admission. McMaster Family Assessment Device 12-item was used to check the patient's family and social condition (12). Hamilton Depression Rating Scale was applied to assess the depression in the participants (13). For checking the physical health of patients, General Functioning Scale was used (14).

A clinical visit was scheduled for the twelfth weeks to regular psychiatric follow-ups. The clinical progress were evaluated during face-to-face encounter. In this context, suicide/self-harm attempt and quality of life (the SF-36 questionnaire) (15) during follow ups period were asked from subjects.

Patients were divided to two groups included suicide or

self-harm and those who lack of them during the follow up period. Demographic variables and other baseline values were compared between both groups. The t-test was performed for continuous data and chi-squared analysis conducted for categorical or dichotomous data. Potential differences were reported in terms of statistical significance (p-value) as well as odds ratio (OR) whenever applicable. Statistical significant differences were defined as a p-value less than 0.05. SPSS version 20.0 was used for data analysis.

Results:

Forty-five patients were included in the study (56.1% female). The mean and standard deviation of patients' age was 23.3 ± 10.2 years (range: 15-75, 33.3% married). [Table 1](#) summarizes the baseline demographics data of patients. Eight (17%) cases attempted suicide in the before month and 15 (33%) ones during the follow-up period. Significant association of suicide and self-harm was presented at the baseline and in the month before attempting ($p=0.001$). In addition, there was a remarkable relationship between suicidal intent and attempt at the time of admission and the last month ($p=0.01$). Social problems was significantly associated with self-harm which consequently prop up the patient to attempt suicide (odds ratio=1.8, $p=0.055$). The most important predictive factors of suicide and self-harm based on univariate analysis were depression (suicidal and non-suicidal items of Hamilton depression rating scale), anxiety, hopelessness, younger age, history of non-suicidal self-harm and female gender ($p<0.05$). [Table 2](#) and [3](#) show the results of multivariate logistic regression analysis of independent predictive factors of suicide and self-harm, respectively. As it can be seen only family function ($p=0.0001$), hopelessness ($p=0.02$) and higher levels of non-suicidality items of Hamilton scale ($p=0.03$) were independent predictors of suicidal attempt in follow up period. As well, independent predictors of self-harms in fallow up period were history of non-suicidal self-harm ($p<0.003$), higher levels of non-suicidality items of Hamilton scale ($p=0.023$), hopelessness ($p=0.001$), and anxiety ($p=0.011$). [Table 4](#) shows the quality of life at baseline and follow up. The participants' quality of life analysis showed a significant higher quality in physical component summary ($p=0.002$), mental component summary ($p=0.001$), and general health parameters ($p=0.001$) at follow up period.

Discussion:

The present study was based on evaluating the reasons of suicide attempt and non-suicidal self-harm. Based on the main findings of the present study the most important predictive factors of suicide attempt and self-harm were as follow: family function, hopelessness, and non-suicidality items of Hamilton scale, history of non-suicidal self-harm, and anxiety. This investigation revealed that hopelessness plays an important role in

Table 1: Baseline demographic characteristics of participants. [↑](#)

Demographic parameters	Number (%)
Age (years)	23.3 (SD=10.2)
Gender	
Female	25 (56.1)
Male	20 (43.9)
Marital status	
Married	15 (33.3)
Single	30 (66.7)
Educational level	
Graduate	10 (22.7)
Under graduate	15 (33.0)
Under diploma	20 (44.3)
Occupational status	
Employed	6 (13.3)
Unemployed	39 (86.7)



Table 2: Independent predictors of suicide attempt based on multivariate logistic regression analysis. [↑](#)

Variable	Odds Ratio	95% Confidence interval	P
Suicidality item of Hamilton scale	3.20	0.82-5.25	0.51
History of non-suicidal self-harm	3.43	0.20-8.43	0.23
Non-suicidality items of Hamilton scale	2.53	1.55-2.90	0.03
Hopelessness	2.44	1.29-3.80	0.02
Family functioning	4.11	1.53-5.19	<0.001
Age	0.50	0.38-1.13	0.32
Female	1.34	0.34-1.66	0.41

Table 3: Independent predictors of suicidal self-harm during follow-up based on multivariate logistic regression analysis [↑](#)

Variable	Odds Ratio	95% Confidence interval	P
Suicidality items of Hamilton scale	0.60	0.55-1.49	0.55
History of non-suicidal self-harm	23.2	5.87-60.1	0.003
Non-suicidality items of Hamilton scale	1.80	1.37-2.23	0.02
Hopelessness	2.94	1.49-8.71	0.001
Family functioning	1.15	0.42-1.68	0.34
Anxiety disorder	3.77	1.38-10.65	0.01

Table 4: Quality of life scores of the Patients at baseline and follow up period of the study [↑](#)

Items	Baseline Mean (SD)	follow up Mean (SD)	P
Mental component summary	41.3 (8.60)	68.3 (9.10)	0.001
Physical Functioning	38.1 (35.9)	39.0 (28.5)	0.56
Vitality	57.3 (23.9)	56.2 (21.2)	0.87
Physical role	51.2 (25.1)	51.0 (19.3)	>0.99
Body Pains	47.9 (26.9)	64.5 (13.3)	0.003
Physical component summary	34.4 (4.10)	46.7 (5.70)	0.002
General Health	38.8 (29.9)	54.8 (25.5)	0.001
Social Functioning	53.2 (21.7)	69.8 (18.0)	0.77
Emotional role	57.0 (23.2)	52.4 (21.8)	0.86
Mental Health	65.6 (17.0)	78.3 (10.8)	0.001

future suicides. Another important finding of this study was that depression did not clearly indicate if they would commit suicide again or not. Hopelessness and self-harm were two independent variables. The quality of life of the patient was lower at baseline. Furthermore, it indicated that the patient's mental and physical conditions encouraged the subject to attempt suicide or at least injure, because of catch the attention or due to hopelessness. Quality of life scores were lower but for hopelessness greater at baseline. Self-harm was highly reflected the abyss of social mishaps and a greater level of complexity among the young adolescents as well as adults (1, 9, 10). Hopelessness and anxiety disorders were correlated with self-injury but it was not apparent that the patient attempted suicide as well (16). One study revealed that depressed patients, who were hospitalized, were not prone to suicide. But the ratio of self-harm among the depressed adolescents was more

than the healthy young participants (17, 18). The potential risks of suicide at baseline and follow-up caused the patient to attempt subsequent suicide. The reason of the attempt(s) were severity of depression, anxiety, hopelessness, loss of a friend, unwanted sex, unwilling separation from a friend or partner, drug abuse, rape, parental problems, and problems with siblings (3, 18). Non-suicidal self-injury is a common practice among adolescents, thus the results cannot be only generalized to this fact that one or more attempt may not lead to the suicide. For further validation of the results, they should be checked on a larger population.

Limitation

During the course of study, several variables left "untreated" including data collection for substance abuse, drug or alcohol addiction as well as prescriptive drug addiction, personality disorders, suicidal intent in the previous life history, and previous mental illnesses that



lead to self-harm and suicide.

Conclusion:

At the time of admission in ED, suicide attempt and non-suicidal self-harm are subsequent clinical markers for the patient attempting suicide again. The most independent predictive factors of suicide attempt and self-harm were family function, hopelessness, non-suicidality items of Hamilton depression rating scale, history of non-suicidal self-harm, and anxiety disorders.

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Authors' contributions:

The first two authors helped in idea inception, designing of the study and data interpretation. Third, fourth and fifth author participated in drafting the article and revised it critically, helped in data collection, analysis of the data and gave final approval of the version to be submitted. Sixth author helped in statistical analysis, acquisition and interpretation of data.

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