Predictors of Suicide Attempt Among those with Depression in an Indian Sample: A Brief Report

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Abstract

Background: Cultural variation may influence the impact of different risk factors of suicide. Indian data about risk factors for suicidal attempt among those with major depressive disorder is lacking.

Method: Seventy-five consecutive consenting patients with major depressive disorder of severe intensity according to ICD-10 diagnostic criteria for research participated in this study. They were evaluated by the Hamilton Depressive Rating Scale and the Suicidal Ideation Scale.

Results: Patients who attempted suicide had significantly more past suicidal attempts, suicidal ideation, early insomnia, middle insomnia, and total Hamilton Depressive Rating Scale score. Multivariate logistic regression analysis showed severity of suicidal ideation as the most significant predictor of suicidal attempts. Early insomnia and lack of insight to illness approached significance.

Conclusion: Presence of severe suicidal ideation, lack of insight and difficulty in falling asleep are important factors to consider for understanding suicidal attempts among those with depression.

INTRODUCTION

Few studies have investigated risk factors for suicidal attempts among representative samples of psychiatric patients with major depressive disorder ([1]). There are few firm data to guide the clinician in identifying individual depressed patients who may be at high risk for completing suicide. In particular, there have been few prospective studies of well-characterized depressed patients to determine indicators of such future events ([2]).

While much of the research on prediction of suicidal behavior has concentrated on demographic factors, little is known about the psychological variables that precede the suicidal act ([3]). Further, many studies have produced contradictory results. For example, Kessler et al ([4]) found lower education to be related to suicidal attempts, but Malone et al ([5]) found no such relationship. Self-reproach, diurnal changes, poor appetite, and hypomanic symptoms were associated with suicidal thoughts in major depressive disorders in one study ([6]), but not found to be true in another study ([7]). In a study on depressed adolescents Csorba et al ([8])

found 'very few dissimilarities' between suicidal and non-suicidal individuals.

Some of the research findings in suicidal attempters in the Indian population contrasts markedly from their western counterparts. In India, male suicides tend to predominate; typically none of these individuals are living alone, separated, or deserted by their partner ([9]). Some suicide attempters continue to live with their extended family ([9]). There is virtually no alcohol consumption by female suicide attempters ([9]). The most common agents used for suicidal attempt are organophosphates and other household poisons ([9], [10]). There is a need for more information regarding suicide in the countries of the Indian subcontinent. In particular, studies must address culture-specific risk factors associated with suicide in these countries ([11]).

Indians have a higher risk for suicide compared to Bangladeshis, Pakistanis, and Sri Lankans ([12]). When compared with European women, Indian females have higher suicidal rates ([13]), particularly in married women ([11],[13]). While Bhugra ([13]) commented about a reversed gender

ratio in suicide attempters in India, Mayers et al. ([14]) found suicide rates to be nearly equal for young women and men in India, which contrasts with the pattern of suicide sex ratios in eight developed countries. Traditionally, the Hindu religion (the predominant religion in India) has given sanction to certain altruistic suicides ([10]). Also, a disproportionately higher number of immigrant Hindus committed suicide in countries to where they had immigrated ([15]).

In such a scenario, risk factors of suicide found in studies from the west may have an altogether different impact in the Indian population in view of the cultural variation in suicidal attempts ([9]). However, Indian data identifying risk factors of suicide attempt in a particular Indian depressed patient is lacking. In a recent Indian study, authors found unmarried men, married women, presence of agitation and paranoid symptoms, and severe suicidal ideation to be harbingers of suicidal attempt in major depressive disorder ([16]). However, in absence of any regression analysis, any predictive value of these factors was uncertain. The aim of this study is to identify possible factors which may predict an imminent suicidal attempt among those with depressive disorders in an Indian sample.

METHOD

Participants for the study were selected from the patients attending the outpatient departments of two tertiary psychiatric institutes of India. Patients suffering from major depressive episode, severe intensity, according to ICD-10 diagnostic criteria for research were recruited. Patients were fully explained about the objectives and methods of the study and were included after they provided informed consent. We examined total 75 patients who formed the study sample size. No patients refused consent to be examined for the purpose of the study. The study procedures were in accordance with the ethical standards of the Declaration of Helsinki.

Sociodemographic information was noted according to a semi-structured form developed by us. We then rated all participants by the Hamilton Depression Rating Scale ([17]) and the Scale for Suicidal Ideation (SSI) ([18]). The Hamilton Depression Rating Scale ([17]) contains 21 items where higher scores indicate more severe intensity of the particular symptom. The Cronbach alpha is 0.79 ([19]). There are three similar sounding items in this scale named early insomnia, middle insomnia, and late insomnia. These respective terms denote a difficulty in falling asleep, a difficulty in sleep

maintenance with repeated arousal, and a sleep problem characterized by getting up very early. The SSI ([18]) is a 21 item scale and is rated on a 3-point scale ranging from 0 to 2. These ratings are then summed to yield a total score, which ranges from 0 to 38. Higher score indicates more severe suicidal ideation. The Cronbach alpha is 0.95 ([20]).

STATISTICAL ANALYSES

As appropriate, the independent samples t-test and chi-square test were used to examine the difference between patients who attempted suicide and who did not. Factors significantly different between the two groups were entered as independent variables in an univariate binary logistic regression model, with absence or presence of suicidal attempt as the dependent variable. All the significant variables from this univariate logistic regression model were entered in a multivariate logistic regression model. The blocked entry method was used for all the logistic regression analyses. SPSS version 10 was used.

RESULTS

In total, 75 patients participated in the study (mean age: 34.25 ± 12.46 years; mean HDRS score 30.47 ± 7.82). Of these participants, 19 (25.3%) attempted suicide in the present episode (Tables 1 & 2). The mean suicide intent score in suicidal attempters was 18.38 ($\pm$ 5.11).

Patients who attempted suicide had significantly more past suicidal attempts, suicidal ideation, early insomnia (i.e., difficulty in falling asleep), middle insomnia, lack of insight, total HDRS score (suggesting more severe depression), and total SSI score (Table 1). They also had a trend of having more early awakening (late insomnia), difficulties in work (i.e., work & activities), and being of male sex (Tables 1 & 2). There were no differences in any other sociodemographic or clinical variables.

Figure 1

Table 1: Difference in continuous variables between the groups; independent samples t test

Variable	Suicidal attempt (n = 19)	No suicidal attempt (n = 56)	t	p-value	95% Confidence interval	
	Mean ± S.D.	Mean ± S.D.			lower	upper
Age	32.63 ± 11.97	34.80 ± 12.69	-0.65	0.51	-8.79	4.45
Education (years)	8.10 ± 5.42	8.32 ± 5.79	-0.14	0.88	-3.24	2.804
Past episodes	2.11 ± 4.01	1.70 ± 2.78	0.47	0.63	-1.28	2.09
Past suicidal attempts	2.68 ± 2.88	0.00 ± 0.00	4.84	<0.001	1.05	2.52
Episode duration (days)	248.84 ± 400.02	283.70 ± 426.15	-0.31	0.75	-257.54	187.81
Depressed mood	3.31 ± 0.94	2.98 ± 1.01	1.25	0.21	-0.08	1.15
Feeling of guilt	1.36 ± 1.38	0.96 ± 1.09	1.29	0.19	-0.26	1.04
Suicidal ideation	3.57 ± 0.60	1.51 ± 1.27	6.74	<0.001	1.18	2.60
Early insomnia	1.84 ± 0.50	1.23 ± 0.78	3.16	0.002	0.03	0.86
Middle insomnia	1.47 ± 0.69	0.94 ± 0.84	2.46	0.01	-0.10	0.82
Late insomnia	1.15 ± 0.95	0.76 ± 0.83	1.70	0.09	-0.35	0.70
Work & activities	3.73 ± 0.56	3.39 ± 0.80	1.72	0.08	-0.17	0.71
Retardation	0.89 ± 0.87	1.03 ± 0.97	-0.56	0.57	-0.46	0.62
Agitation	1.31 ± 1.76	0.85 ± 1.27	1.22	0.22	-0.24	1.11
Anxiety psychic	3.00 ± 1.00	2.51 ± 1.12	1.65	0.10	-0.07	1.22
Anxiety somatic	1.63 ± 1.49	1.85 ± 1.25	-0.64	0.52	-0.74	0.52
G.I.T. symptoms	1.10 ± 0.56	1.12 ± 0.57	0.13	0.89	-0.25	0.22
General symptoms	1.52 ± 0.61	1.53 ± 0.53	-0.06	0.95	-0.17	0.51
Genital symptoms	1.10 ± 0.73	0.85 ± 0.79	1.19	0.23	-0.27	0.59
Hypochondriasis	1.05 ± 1.39	1.39 ± 1.33	-0.95	0.34	-0.98	0.47
Loss of weight	1.05 ± 0.77	1.17 ± 0.78	-0.60	0.54	-0.53	0.29
Lack of insight	1.78 ± 0.41	1.00 ± 0.80	4.06	<0.001	0.19	0.99
Diurnal variation	1.26 ± 1.24	1.26 ± 1.13	-0.01	0.98	-0.60	0.41
Depersonalization	0.57 ± 1.21	0.42 ± 0.78	0.62	0.53	-0.23	0.76
Paranoid symptoms	1.68 ± 1.45	1.87 ± 1.53	-0.47	0.63	-1.52	0.45
OC symptoms	0.21 ± 0.53	0.27 ± 0.55	-0.42	0.67	-0.36	0.26
Total HDRS score	34.68 ± 8.73	29.01 ± 6.99	2.85	.006	1.12	9.25
Total SSI score	20.63 ± 9.42	3.85 ± 7.81	7.66	.0001	10.35	19.33

Note: GIT = Gastro-Intestinal Tract, OC = Obsessive-Compulsive, HDRS = Hamilton Depression Rating Scale, SSI = Scale for Suicidal Ideation

Figure 2

Table 2: Discrete sociodemographic variables; Chi-square test for group differences

Variable		Suicidal attempt (n = 19)	No suicidal attempt (n = 56)	p-value
Sex [#]	Male	15 (78.9%)	29 (51.8 %)	0.058
	Female	4 (21.1%)	27 (48.2%)	
Residence [$]	Rural	9 (50.0%)	31 (55.4%)	0.78
	Urban	9 (50.0 %)	25 (44.6%)	
Marriage [#]	Married	15 (78.9%)	45 (80.4%)	1.00
	Unmarried	4 (21.1%)	11 (19.6%)	
SES [#]	Low	9 (47.4%)	29 (51.8%)	0.79
	High	10 (52.6%)	17 (48.2 %)	

Note: % calculated within history of suicidal attempt, SES = Socioeconomic status, [$]= Chi-square used, [#] = Fisher's exact test used

We first did separate univariate binary logistic regression analyses with all the significant or approaching significance variables (past suicidal attempts, suicidal ideation, early insomnia, middle insomnia, late insomnia, work & activities, lack of insight, total HDRS score, and total SSI score) as independent variables and absence or presence of suicidal attempt as the dependent variable. Table 3 shows the significant variables in the univariate analyses and this included suicidal ideation, early insomnia, middle insomnia, lack of insight, total SSI score, and total HDRS score.

Figure 3

Table 3: Univariate binary logistic regression analyses

Variable	B	S.E.	Wald	df	p-value.	OR	95% CI	
							Lower	Upper
Past attempts	9.490	26.627	0.127	1	0.722	13223.284	.0001	6.1E+26
Suicidal ideation	2.381	0.624	14.572	1	<0.001	10.813	3.185	36.71
Early insomnia	1.580	0.599	6.954	1	0.008	4.855	1.500	15.712
Middle insomnia	0.846	0.367	5.320	1	0.021	2.330	1.136	4.780
Late insomnia	0.517	0.311	2.770	1	0.096	1.677	0.912	3.084
Work & activities	0.821	0.497	2.730	1	0.098	2.273	0.858	6.023
Lack of Insight	1.775	0.549	10.445	1	0.001	5.902	2.011	17.319
Total SSI score	0.162	0.037	19.401	1	<0.001	1.176	1.094	1.263
Total HDRS score	0.095	0.036	6.769	1	0.009	1.099	1.024	1.181

Note: S.E = standard error, df = degrees of freedom, OR = odds ratio, CI= confidence interval, Wald = Wald statistic

These significant variables were now simultaneously included in a multivariate binary logistic regression model. Although suicidal ideation also was a significant variable in the univariate analysis, it was not included in the multivariate model as total SSI score is a better measurement of the same variable. Absence and presence of suicidal attempt was entered as the dependent variable. Suicidal ideation as measured by the total SSI scale score was the most significant predictor of suicidal attempt in depressed patients. Lack of insight and early insomnia only approached significance. Total HDRS score and middle insomnia did not have any predictive value (Table 4).

Figure 4

Table 4: Multivariate binary logistic regression analysis for presence or absence of suicide attempt

Variable	B	S.E.	Wald	df	p-value	OR	95% CI	
							Lower	Upper
Early insomnia	1.765	1.038	2.891	1	0.089	5.839	0.764	44.631
Middle insomnia	0.732	0.784	.871	1	0.351	2.079	0.447	9.660
Lack of Insight	1.456	0.779	3.493	1	0.062	4.289	0.932	19.750
Total SSI score	0.217	0.075	8.413	1	0.004	1.243	1.073	1.439
Total HDRS score	0.141	0.111	1.616	1	0.204	0.868	0.699	1.079

Note: S.E = standard error, df = degrees of freedom, OR = odds ratio, CI= confidence interval, Wald = Wald statistic

DISCUSSION

This study shows that contrary to a plethora of clinical indicators identified in different studies, severe suicidal ideation is the most important predictor of suicidal attempt. It appears that the Scale for Suicidal Ideation ([18]) is a valuable tool to identify the potential suicide attempters in patients with depression. Routine use of this scale in persons with severe depression may help prevent suicide.

Lack of insight into the nature of illness may aggravate suicide risk. Insight into the nature of illness may reassure the patient about the episodic nature of illness (which in turn assures the ultimate remission of symptoms) and the biological basis of symptoms. This in turn may reduce the feeling of hopelessness which is traditionally associated with suicide. If this hypothesis is true, then psychoeducation about illness may be an important and effective measure to prevent suicide in depression.

Similarly early insomnia (i.e., difficulty in falling asleep) appeared to have a significant role in predicting suicide. Although the predictive power failed short of significance level in our study, a growing body of research emphasizes the role of sleep disturbances in suicidal behaviors ([21]). According to Liu ([22]), sleep intervention may have a potential role in the prevention of suicide in depression.

Interestingly, this study did not find any role of several other factors that are often claimed as risk factors of suicidal attempts. We did not find any predictive power of past history of suicide attempts, although they were significantly more common in suicide attempters in the index episode.

Similarly, severity of depression as measured by the total HDRS score also failed to predict suicidal attempt. This raises a possibility that severity of suicidal ideation per se may be independent from severity of depression.

Single status which is often considered a risk factor was not found to have any role in predicting a suicidal attempt. Other Indian studies also have made similar observations ([9], [11]). Interestingly, an increased suicide rate in married women in India has been noted which has been attributed to family conflict ([13]). On the other hand, the traditional Indian joint family might have a role in reducing suicide risk in unmarried persons by providing emotional and social support.

We did not find low socioeconomic status to be associated with more suicidal attempts. Data about the role of poverty in suicide is in fact confounding and contradictory ([13]). Generally, rural Indian people are content with life; traditional folklores and religious teaching glorify plain living. Perhaps for this reason, poverty did not predict suicidal attempt among those with a depressive episode. The main limitation of the study is the small sample size.

In conclusion, severity of suicidal ideation significantly predicted suicidal attempts in patients with major depressive disorders. There was also a suggestion that difficulty in falling asleep and lack of insight predicted suicidal attempts in patients with major depressive disorders.

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