Original Research Article

A study on development of theoretical intervention model for suicide attempters with psychiatric disorders

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Abstract

Background: Suicide attempters are those people who survive an attempt to commit suicide. There are no intervention models that address issues in suicide attempters in the population.
Aim of the study: This study was done to develop a theoretical model for intervention for suicide attempters with psychiatric disorders.
Materials and methods: The research work was conducted in the Department of Psychiatry, Shri Sathya Sai Medical College and Research Institute in the year 2018. The study was done in two phases; the first phase consisted of a literature study to develop a four-factor model that included; Intent, Lethality, Life Stressors and Psychiatric disorders. The second phase consisted of validation of the model through a case-control study; Standardised tools were used namely: Mini International Neuropsychiatric Interview Plus (Mini Plus) Scale for Suicidal Ideation, Risk Rescue Rating Scale, Presumptive Stressful Life Events Scale and a Structured Questionnaire for Socio-demographic Characteristics.
Results: There was a high statistical difference between the cases and control in suicidal intent. The results showed the high lethality of the suicide attempts made by patients with Axis -1 disorder and have significant life event stressors both as total mean score and number of events ($p<0.005$). Using the Chi-square test, the cases had more life stresses compared to controls. There was significant variation between groups using ANOVA.
Conclusion: Any model of intervention for suicide attempters with Axis 1 disorders must definitely address life stresses. The direction of the relation between Axis 1 disorders and life stresses must be

identified and addressed systematically. An intervention strategy based on the data obtained in the study can be designed, implemented and evaluated for its effectiveness.

Key words

Screening for and assessment of Axis I disorders, Life stresses, Post vention of suicide, Socioeconomic status.

Introduction

Suicide is a major public health threat and the World Health Organization estimates that annually about 800000 people worldwide completed suicide [1]. There are researchers focusing on suicide and related issues. In the face of the considerable research on suicide and suicidal behavior and its correlates, there have been a small number of efforts to fit the established data into a coherent overarching theory and available literature in the field [2]. Suicidal behaviors are not isolated acts but a spectrum of activities related to a variety of risk factors. Suicide is defined as an act of intentionally terminating one's own life. However, this definition does not do justice to the complexity of the concept and the numerous usages of terms across studies [3]. Thus the nomenclature for suicidal ideation and behavior has been the subject of considerable international attention and debate. The nomenclature of suicide behaviors without fatal outcome varies as well. Sometimes they are referred to as "suicidality" while others term these as "suicide-related behaviors" or "suicidal behavior. Suicidal behavior may include acts of self-harm with a fatal (suicide) or a nonfatal (attempted suicide) outcome, Suicidal behavior is defined as a set of non-continuous and heterogeneous spectra of behavior which includes, suicidal ideation, threats, gestures, self-cutting, low lethal suicide attempts, interrupted suicidal attempt, near-fatal suicide attempt and actual suicide [4]. Suicide (sometimes referred to as "completed suicide") defined as "death arising from an act inflicted upon oneself with the intent to kill oneself. Although that definition might seem quite straightforward, its implementation requires that two judgments be made: (a) that the death was self-inflicted and not caused by someone or something else; and (b) that the deceased person intended his or her actions to result in death. It is that second judgment that poses the greatest difficulties for researchers, coroners, and medical examiners [5]. Parasuicide is a widely used term in Europe, where it is often preferred over "suicide attempt." Parasuicide typically refers to the full range of nonfatal suicidal behaviors, regardless of the level of suicidal intent or the extent of medical injury [6]. Suicidality refers to all suicide-related behaviors and thoughts including completing or attempting suicide, suicidal ideation or communications. The spectrum of Suicidality: It ranges from suicidal ideation to suicidal behavior, with passive thoughts of death and completed suicide representing extreme ends of the risk spectrum [7]. Self-mutilation is another related class of self-destructive behaviors, considered by some to fall within the Parasuicide domain but probably best conceptualized as a distinct phenomenon [8]. In self-mutilation, there is self-destructive behavior performed on one's own body. In rare instances among psychotic patients, self-mutilation can be very severe (e.g., cutting off of a limb). A stereotypic form of repetitive self-injury is associated with mental retardation and autistic disorders. This study was done to develop a theoretical model for intervention for suicide attempters with psychiatric disorders [9, 10].

Materials and methods

The research work was conducted in the Department of Psychiatry, Shri Sathya Sai Medical College and Research Institute in the year 2018. Totally 60 patients were included in the study. The study was done in two phases; the first phase consisted of a systematic review of literature from September 2006 to March 2008;

a) to understand qualitatively the various factors associated with suicide attempters b) to find out the relationship between psychiatric disorders and suicide attempters. The factors which did not have sufficient literature were excluded from the study and a theoretical model was developed based on the findings. A four-factor model was developed that included; Intent, Lethality, Life Stressors and Psychiatric disorders. The second phase consisted of validation of the model through a case-control study; Between April 2008 and September 2008, 30 consecutive patients admitted for attempted suicide fulfilling the inclusion criteria for cases and 30 patients admitted for attempted suicide fulfilling the inclusion criteria for controls were selected from the Medicine and Surgical wards of a tertiary care center. The inclusion criteria were age > 18 years and patients who attempted suicide and fulfilling the ICD 10 criteria for Axis I diagnosis for cases and patients who attempted suicide, without Axis I disorders individually matched for each case in respective age (+ or – 2 years) and sex as controls. Out of 200 patients, eight patients refused psychiatric evaluation and 67 patients were below 18 years of age, hence excluded from the study. Then Mini Plus was administered to the remaining 125 patients. Forty-three patients had a Psychiatric diagnosis, of whom eight patients had a diagnosis of personality disorder (Axis II Disorder) and five patients did not give consent for the study. Therefore 30 patients who fulfilled the inclusion criteria were taken as cases. Of the remaining 82 patients who did not have an Axis diagnosis, 30 age and sex-matched patients were taken as controls. Standardized tools were used namely:

- Mini International Neuropsychiatric Interview Plus (Mini Plus) Scale for Suicidal Ideation, Risk Rescue Rating Scale, Presumptive Stressful Life Events Scale and a Structured Questionnaire for Socio-demographic Characteristics.

Statistical analysis

The data obtained for depth was tabulated and analyzed statistically to find Mean, Standard deviation (SD) and Range in both the sexes and both the sides. The results were analyzed statistically, by chi-square test. P-value of < 0.05 was considered for Statistical significance. Statistical analysis was done using SPSS (Statistical Package for the Social Sciences) version 19 and Microsoft Excel 2007.

Results

The mean of risk score, rescue score, risk – rescue ratio were found out and the difference of their mean among Suicide attempters with and without Axis 1 disorders was obtained using student 't' test. This showed the 'p' value of 0.0001 which was highly significant. The results showed the high lethality of the suicide attempts made by patients with Axis -1 disorder and have significant life event stressors both as total mean score and number of events ($p<0.005$). Using the Chi-square test, the cases had more life stresses compared to controls (**Table – 1 to 5**).

Discussion

Neuroendocrine challenges have also been used to understand the role of serotonin in suicide. Fenfluramine, the most commonly used serotonin challenge agent, causes the release of serotonin from pre-synaptic storage granules, inhibits its reuptake, and may also stimulate post-synaptic serotonin receptors [11]. Serotonergic activation leads to a dose-dependent increase in prolactin [12]. Decreased prolactin responses are believed to reflect reduced serotonergic activity. Blunted prolactin responses to fenfluramine challenge have been observed in patients with major depression and a history of suicidal behavior [13]. Oquendo M. A., et al., found significantly lower prolactin responses to fenfluramine challenge in a psychiatric patient with a history of attempted suicide compared with healthy controls and patients without such a history, and propose that the blunted serotonergic response may represent a marker for suicidality specifically, rather than depression [14]. Nielsen, et al. found depression (59.74%), substance abuse and psychosis each (9.74%), neurotic disorder (7.14%) and bipolar disorders (9.09%) among the suicide ideators [15].

Table – 1: Socio-demographic features of the participants of the study.

Age (Year)	**Group**				**Chi-square test**
	Case		**Control**		
	n	**%**	**n**	**%**	
< 20	9	30.0	9	30.0	$\chi^2 = 0$
20 – 30	16	53.4	16	53.4	p = 1
30 – 40	4	13.4	4	13.4	
> 40	1	3.3	1	3.3	
Sex					
Male	8	26.7	8	26.7	$\chi^2 = 0$
Female	22	73.3	22	73.3	p = 0.29
Religion					
Hinduism	26	86.7	26	86.7	$\chi^2 = 0.533$
Islam	2	6.7	1	3.3	p = 0.765
Christianity	2	6.7	3	10.0	Df = 2
Marital Status					
Married	19	63.3	18	60.0	$\chi^2 = 0.070$, p = 0.79
Unmarried	11	36.7	12	40.0	Df = 1, Not significant
Education					
Illiterates	2	6.6	4	13.4	$\chi^2 = 4.65$
Upto 8th Std	5	16.7	8	26.7	p = 0.19
9th-12th Std	18	60.0	17	56.6	Df = 3
Higher Studies	5	16.7	1	3.3	Not significant
Occupation					
Employed	13	43.3	10	33.4	$\chi^2 = 2.627$, p = 0.268
Unemployed	9	30.0	6	20.0	Df = 2
House Wife	8	26.7	14	46.6	Not significant
Family System					
Nuclear	25	83.3	27	90.0	$\chi^2 = 0.576$, p = 0.447
Joint	5	16.7	3	10.0	Df = 1, Not significant
Socio-economic status (Income/Month)					
<Rs.3000	10	33.3	11	36.7	$\chi^2 = 0.0733$, p = 0.786
>Rs.3000	20	66.7	19	63.3	Df = 1, Not significant
Domicile					
Urban	25	83.3	19	63.3	$\chi^2 = 3.4848$, p = 0.175
Sub Urban	5	16.7	10	33.4	Df = 2
Rural	0	0	1	3.3	Not significant
Type Of Dwelling					
Rental	25	83.3	19	63.3	$\chi^2 = 1.269$, p = 0.259
Own	5	16.7	11	36.7	Df = 1, Not significant

Allebeck P, et al. reported that in 65% of the patients, the suicide attempts were acts of impulsive behavior and usually made in another person's presence or in a situation where another person's intervention was highly probable [16]. The study revealed a theoretical model of suicide attempters among axis 1 psychiatric disorders. The case-control study proved that the intent,

lethality and life stresses vary significantly between the patients with Axis 1 disorders and those who do not have. The suicidal intent is high in Suicide attempters with Axis I Disorders. The lethality is high in Suicidal attempters with Axis I Disorders. Stress factors play a major role in Suicide attempters with Axis I disorders. Suicidal Intent positively correlates with the lethality of attempt inpatient with Axis I Disorders [17].

Table – 2: Diagnosis of the axis 1 psychiatric disorders of the cases.

S. No	AXIS 1 DIAGNOSIS	Cases	
		N	%
1	Major Depressive Disorder	16	53.4
2	Substance Use Disorder	6	20.0
3	Schizophrenia and Psychotic Disorders	2	6.6
4	Adjustment Disorder	4	13.4
5	Mixed Anxiety & Depression	2	6.6

Table - 3: Comparison of scores.

	INTENT SCORE	GROUP				SIGNIFICANCE
		CASES		CONTROL		
		N	%	N	%	
1	LOW	13	43.3	30	100	$\chi 2$=23.720, Df=2
2	MODERATE	9	30.0	0	0	p=0.0001
3	HIGH	8	26.7	0	0	Highly significant
RISK – RESCUE FACTORS – LETHALITY OF ATTEMPT						
1	RISK SCORE	2.7667	0.7739	1.9333	0.7397	t = 3.7343, p=0.0004
2	RESCUE SCORE	4.1667	0.6989	4.7333	0.4498	t = 4.2637, p = 0.0001
3	RISK – RESCUE RATIO	39.66	9.1941	28.27	7.9066	t = 5.1426, p = 0.0001 Highly significant
STRESSFUL LIFE EVENTS - SCORES AND NUMBER OF EVENTS.						
1	PSLE Score	118.13	45.024	52.33	30.069	t= 6.6566, p=0.0001
2	Number of stressful life Events	2.100	0.8030	1.00	0.5872	t= 6.0564, p=0.0001 Highly significant.
SIGNIFICANCE OF PSLE- SCORE AND NUMBER OF EVENTS.						
1	PSLE Score 1 Significant (>110)	18	60	1	3.3	$\chi 2$= 22.2593, p=0.0001
	2 Not Significant(<110)	12	40	29	96.7	
2	Number of events 1 Significant (>2)	11	36.7	0	0	$\chi 2$= 13.4694, p=0.0002 Highly significant
	2 Not Significant (< 2)	19	63.3	30	100	

Table - 4: Correlations between suicide intent and lethality among study group.

S. No	GROUP				Risk Rescue Ratio
1	Cases	Intent Score (IS)	Pearson Correlation		.688(**)
			Sig. (2-tailed)		.000
			N		30
2	Controls	Intent Score (IS)	Pearson Correlation	1	-.330
			Sig. (2-tailed)	.	.075
			N	30	30

** Correlation was significant at the 0.01 level (2-tailed).

Table - 5: One way ANOVA.

ANOVA Test Results		Sum of Squares	df	Mean Square	F	Sig.
Risk Rescue Ratio	Between Groups	1944.387	1	1944.387	26.446	.000
	Within Groups	4264.320	58	73.523		
	Total	6208.707	59			
PSLES	Between Groups	64944.600	1	64944.600	44.310	.000
	Within Groups	85010.133	58	1465.692		
	Total	149954.733	59			
Intent Score (IS)	Between Groups	2306.400	1	2306.400	57.236	.000
	Within Groups	2337.200	58	40.297		
	Total	4643.600	59			

One common factor linking other factors was life stresses. Life stress influences intent, lethality, and suicide. Also, stress and psychiatric disorders are positively correlated. Considering the connection of the factors with life stress, it is noticed that stress plays a pivotal role in suicide among patients with psychiatric disorders [18]. Power K. G., et al. concluded that most suicide attempts in schizophrenia were of moderate to severe lethality, with significant suicidal intent found a paradoxical relationship between impulsivity and lethality of suicide attempts. They found an inverse association between these two. Further impulsivity of the attempter was not a good predictor of impulsivity of the index attempt. Also, impulsive attempts were associated with low lethality and lack of depression [19]. Lecrubier Y, et al. reported that self-mutilators perceived their suicide attempts as less lethal, with a greater likelihood of rescue and with less certainty of death. In addition, they had significantly higher levels of depression, hopelessness, aggression, anxiety, impulsivity and suicide ideation. They exhibited more behaviors consistent with Borderline Personality Disorder and were more likely to have a history of childhood abuse [20]. Harkavy-Friedman J. M., et al. found stressful life events in the last six months as important risk factors among attempted suicide persons than controls; he noted low prevalence (11.6%) of psychiatric disorders in cases. By applying presumptive stressful life event scale it was found stress in 34.3% of cases and 11.75% of controls [21]. Baca-Garcia, et al. found that when compared with controls depressives who attempt suicide manifested four-fold greater evidence of previous stressful life events [22]. Kumar C.S., et al. in his study states that accumulation of loss of an interpersonal relationship that too in the preceding six weeks of attempts has emerged as an important predictor of suicide among alcohol dependents [23].

Conclusion

Any model of intervention for suicide attempters with Axis 1 disorders must definitely address life stresses. The direction of the relation between Axis 1 disorders and life stresses must be identified and addressed systematically. The

current study shows a significant association between Axis I Disorder and suicide. The findings stress the importance of assessment for Axis I Disorder especially depression in all parasuicides. This may help in the identification of the at-risk population and would serve as a model of tertiary prevention of suicide. The study is clinically relevant as it identifies the key variables and various factors associated with suicide attempts in patients with Axis I Disorders. The at-risk can be extended further by evaluating the impact of identification and intervention of suicide behavior in patients with psychiatric illness. An intervention strategy based on the data obtained in the study can be designed, implemented and evaluated for its effectiveness.

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