Original Article

Predictors of Suicidal Behaviour in Young Adults: A Tertiary Care Hospital Based Cross Sectional Study

Rajnish Raj[1], Kriti Anand[2], B S Sidhu[3], K K Aggarwal[4], Prabhdeep Singh[5]

[1]Professor & Head, [2]Ex-Resident, [3]Ex-Professor & Head, [4]Ex-Professor & Head, [5]Assistant Professor,

Department of Psychiatry and Forensic Medicine, Govt. Medical College, Patiala.

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Abstract

Background: Suicide has been noted as a distressing phenomenon among the society, in one way or the other. It poses a serious public health problem and requires meticulous in depth probing with all the compassion for the victims of suicide. The aim of this study is to assess the predictors of suicidal behaviour in young adults and suggest novel suicide prevention policies.

Materials and Methods: It was a hospital based descriptive cross-sectional study conducted over 18 months amongst suicide attempters in the age range of 18 to 35 years who were brought to the Casualty and Psychiatry department of a tertiary care hospital of north India.100 consecutive suicide attempters, gave voluntary written informed consent were enrolled. Socio-demographic profile, details of past psychiatric illness, family history of psychiatric illness, previous suicidal attempt and history of substance abuse were recorded. Psychiatric morbidity was assessed using Mini International Neuropsychiatric Interview (MINI) and confirmed on International Classification of Diseases 10th edition (ICD-10).Depression, Anxiety and Stress were assessed on Depression anxiety and Stress Scale-21(DASS-21). Beck Suicide Intent Scale (BSIS) was used to measure severity of suicide intent and to find out any association between presence of past psychiatric history/family history of psychiatric illness/previous suicide attempt with suicide intent

Results: Out of 100 attempted suicidal patients, male to female ratio was 1.44:1.Past psychiatric illness, family history of psychiatric illness, previous suicidal attempt and substance abuse was observed among 23% (n=23), 19%(n=19), 23% (n=23)and 34% (n=34) patients, respectively. 59%(n=59) patients were found to be having psychiatric illness currently.Overall Mean±SD score of severe depression was 25.64±12.36, severe anxiety (19.38±9.39) and moderate stress (24.18±8.61) as assessed on Depression anxiety and Stress Scale-21 items(DASS-21).67%(n=67) patients had high suicide intent on Beck Suicide Intent Scale (BSIS).There was positive association between past psychiatric illnesses and BSIS i.e.,91.3% compared to 59.7% without psychiatric illness (χ^2=18.589, p=0.001).

Conclusion: Multifactorial indicators and psychological aspects such as depression, anxiety, stress and substance abuse reaffirm its causality with high suicide intent and a forerunner for subsequent attempts.

Key words: Psychiatric illness, Depression, Anxiety and Stress Scale (DASS-21), Beck's Suicide Intent Scale (BSIS)

Corresponding Author: Prabhdeep Singh, Assistant Professor, Department of Psychiatry, Govt. Medical College, Patiala.

E-mail: drprabhdeep@yahoo.co.in

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Introduction

Suicide is a global phenomenon and approximately, 800,000 people die due to suicide every year, which comes out to be one person every 40 seconds. This increasing upward trend of suicide is a serious mental health problem.[1] Suicide occurs throughout the lifespan and was the fourth leading cause of death among 15-29 years-old.[2] Over 77% of suicides occurred in low- and middle-income countries in 2019.[2]

Demographics of suicide in India

Suicide rates in India have been rising over the past five decades.[3] According to National Crime Records Bureau (NCRB), national average of suicides is 12 per lakh population in 2021. A total of 1,64,033 suicides were reported in the country during 2021 showing an increase of 7.2% in comparison to 2020 and the rate of suicides has increased by 6.2% during 2021 over 2020.[4] Majority of suicides were reported in Maharashtra (22,207) followed by 18,925 suicides in Tamil Nadu, 14,965 suicides in Madhya Pradesh, 13,500 suicides in West Bengal and 13,056 suicides in Karnataka accounting for 13.5%, 11.5%, 9.1%, 8.2% and 8.0% of total suicides respectively.[4]The age group of 18 to 30 years and 30 to 45 years of age were the most vulnerable groups resorting to suicides. These age groups accounted for 34.5% and 31.7% suicides respectively.[4]

Indicators of Suicidal Behavior

Clinicians have identified many risk factors associated with suicide and suicidal behavior. A fixed risk factor is one that cannot be manipulated or readily changed (e.g., a person's genetic makeup, age, race, or gender). Proximal risk factors are those situational or life events that are closely related in time to the suicide that triggers suicidal behavior. For suicide to occur, these proximal risk factors require that a person has a predisposition or vulnerability (or a distal risk factor) to being suicidal, such as a mental disorder or character trait such as impulsivity.[5,6]

Generally, at least 90% of youth committing suicide have had at least one major psychiatric disorder.[7]Studies have determined that the majority of those who have completed suicide had significant psychiatric problems, including major depressive disorder, bipolar affective disorder, adjustment disorder, substance abuse, conduct disorder, personality disorder, anxiety disorders, dysthymia and schizophrenia.[8] Attempted suicide is also associated with several psychosocial and medical conditions. Factors such as young age of 15 to 24 years, poor education, female sex, living alone, unemployment and socio-economic deprivation poses a potential risk.[9] Similarly, adverse family factors such as parental loss in childhood, family discordance psychiatric antecedents and exposure of suicide in family.[10,11] In Punjab, where majority of population belongs to the farming community where debt, low produce prices, crop failure are identified as major risk factors. However, very few studies have tried to reveal consistent findings regarding the prevalence and potency of these risk factors which may vary under various circumstances in different regions.[12] The persistently high rates of suicidal attempts is a challenge to the medical practitioners. Therefore, this study is an effort to understand the major predictors associated with suicidal behaviour among young adults in this part of the world.

Materials and Methods

This hospital based descriptive cross-sectional study was conducted between January 2018 to June 2019 amongst suicide attempters who were brought to the Casualty and Psychiatry department of Rajindra Hospital, Patiala (Punjab). A total of 100 consecutive subjects were enrolled. The study was conducted as per the declaration of Helsinki, Geneva. All the cases were initially evaluated by a trainee psychiatrist (junior resident) under the supervision of a consultant of the Department. They were evaluated for the purpose of study only when their general and mental condition was stabilized. A brief explanation about the study was given to the subjects and their care givers. Individuals aged between 18-35 years brought after attempted suicide who gave voluntary written informed consent were included in the study. Any patient having co-morbid severe medical/ surgical condition/ disorder, mental retardation and those whore fused to give written informed consent were excluded from the study.

After completing socio-demographic proforma, selected patients were subjected to Mini International

Neuropsychiatric Interview (MINI) for assessment of psychiatric illness. The diagnosis of psychiatric illness was confirmed by consultants on the basis of International classification of diseases, 10th edition (ICD-10).The subjects were then administered Depression, Anxiety and Stress Scale-21 items (DASS-21) to particularly assess depression, anxiety and stress. The Beck Suicide Intent Scale (BSIS) was applied to detect and measure the severity of suicide intent and to evaluate any association between presence of past psychiatric history/family history of psychiatric illness/previous suicide attempts with suicide intent.

Tools

1. **Proforma for Socio-Demographic Variables:** A semi-structured proforma was used to gather information about age, gender, educational status, family background, economic status occupation and residential background according to BG Prasad classification [13] and history of substance abuse, history of psychiatric illness etc.
2. **Mini International Neuropsychiatric Interview (MINI)**[14]: It is a short, structured diagnostic interview developed by an international group of psychiatrists and clinicians to diagnose psychiatric disorders. It has good validity, reliability (inter rater and test-retest), sensitivity and specificity indices.
3. **International classification of diseases, 10th edition (ICD-10)**[15]**:** The diagnosis of psychiatric illness was confirmed based onICD-10, by World Health Organization.
4. **Depression anxiety and Stress Scale-21 items (DASS-21)**[16]: This is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. It is a self-reporting questionnaire with 21 items (seven items for each category) based on a four-point rating scale. The DASS-21 subscales have good consistency with Cronbach's alpha values of 0.66, 0.29 and 0.52 for depression (DASS-D), anxiety (DASS-A) and stress (DASS-S), respectively.
5. **Beck's Suicide Intent Scale (BSIS)**[17]: The scale comprised of 20 questions concerning the circumstances of the non-fatal suicidal act (e.g., planning, preparation) and the patient's thoughts, feelings, and expectations associated with the non-fatal suicidal episode. The BSIS total score ranges from 0 to 30. Based on obtained score, the Intent is rated as: 15-19 Low Intent, 20-28 Medium Intent, 29+ High Intent. It has a very good internal consistency with Cronbach's alpha coefficient of more than 0.8.

Statistical Analysis

The observations were statistically analyzed by using software Statistica 7.0 and SPSS 20. Frequencies and percentages were calculated on demographic variables of the subjects. Further, chi-square was applied to compare the difference between male and female group based on their age, background, education, family structure, income and educational status. Difference between male and female group based on past psychiatric illness, family history of psychiatric illness, previous suicidal attempt and substance abuse was also recorded. Chi-square test was also applied to compare BSIS in patients with and without past psychiatric history, family history and past suicidal attempts. P value ≤ 0.05 was considered as significant and P value ≤ 0.001 as highly significant.

Results

A total of 100 subjects were enrolled. Demographic profile of patients showed that 59 (59%) were males and 41 (41%) females. Male: female ratio was 1.44:1. Majority 37 (62.7%) of the males were from age group 27-35 years than females i.e., 15(36.6%) while most 26(63.4%) of the females were from age group 18-26 years than 22(37.3%) which was statiscally significant. Majority i.e., 62(62%) of patients were from rural background. There was almost equal distribution of patients in terms of type of family i.e., 45(45%) from nuclear family and 55 (55%) from joint family. 79(79%) of the patients had family income of >Rs. 30,000 per annum. Primary education level was achieved by 27(27%) patients, while 30 (30%) patients achieved matriculation education level [Table-1]

Table 1: Socio-demographic details of the study sample (n=100)

Category	Variables	Total no. of males (n=59)	Total no. of females (n=41)	Total (n=100)	Chi-Square (χ^2)	p-value
Age	18-26	22(37.3%)	26(63.4%)	48(48%)	6.615	0.010*
	27-35	37(62.7%)	15(36.6%)	52(52%)		
Background	Rural	38(64.4%)	24(58.5%)	62(62%)	0.353	0.551
	Urban	21(35.6%)	17(41.5%)	38(38%)		
Type of Family	Nuclear	23(39%)	22(53.6%)	45(45%)	2.105	0.146
	Joint	36(61%)	19(46.4%)	55(55%)		
Family income	<30,000/annum	16(27.1%)	5(12.2%)	21(21%)	3.247	.071
	>30,000/annum	43(72.9%)	36(87.8%)	79(79%)		
Educational Status	Illiterate	7(11.9%)	8(19.5%)	15(15%)	2.008	.734
	Primary	15(25.5%)	12(29.3%)	27(27%)		
	Matriculation	18(30.5%)	12(29.3%)	30(30%)		
	Higher Secondary	8(13.5%)	4(9.7%)	12(12%)		
	Graduation & above	11(18.6%)	5(12.2%)	16(16%)		

Table 2 shows distribution of past psychiatric history/family history of psychiatric illness/previous suicidal attempt/substance abuse according to gender. Majority i.e., 77(77%) of patients had no past psychiatric history, 81(81%) had no family history of any psychiatric illness (81%) and 77(77%) had no history of previous suicidal attempt. 23(23%) patients had reported previous suicide attempt. History of substance abuse was present in 34(34%) patients who attempted suicide. 32(54.2%) male patients reported substance abuse as compared to only 2 (4.8%) female patients which was statistically highly significant. It was found that history of substance abuse was present in more than half i.e., 32 out of 59 (54.2%) males attempting suicide.

Table 2: Distribution of past psychiatric/family history/previous suicidal attempt/Substance abuse according to gender (n=100)

Category	Variables	Total no. of males (n=59)	Total no. of females (n=41)	Total	Chi-Square (χ^2)	p-value
Past Psychiatric History	Present	11(18.6%)	12(29.3%)	23(23%)	1.541	.214
	Absent	48(81.4%)	29(70.7%)	77(77%)		
Family History of Psychiatric Illness	Present	12(20.3%)	7(17.1%)	19(19%)	.167	.682
	Absent	47(79.7%)	34(82.9%)	81(81%)		
Previous Suicidal attempts	Present	11(18.6%)	12(29.3%)	23(23%)	1.541	.214
	Absent	48(81.4%)	29(70.7%)	77(77%)		
History of Substance Abuse	Present	32(54.2%)	2(4.8%)	34(34%)	26.263	<.00001**
	Absent	27(45.7%)	39(95%)	66(66%)		

Table 3: Age and Gender specific distribution of suicide attempters based on psychiatric diagnosis

Diagnosis	Total no. of Males (n=59)		Total no. of Females(n=41)		
	18-26yrs	27-35yrs	18-26yrs	27-35yrs	Total
Depression (Unipolar/Bipolar)	9(15.2%)	11(18.6%)	6(14.6%)	8(19.5%)	34(34%)
Adjustment disorder	3(5.08%)	1(1.6%)	4(9.7.3%)	3(7.3%)	11(11%)
Dysthymia	1(1.6%)	1(1.6%)	1(2.4%)	3(7.3%)	8(8%)
Anxiety disorder	1(1.6%)	2(3.3%)	0(0%)	1(2.4%)	4(4%)
Emotionally unstable personality disorder	0(0%)	0(0%)	2(4.8%)	0(0%)	2(2%)
No identifiable psychiatric disorder	7(11.8%)	21(35.5%)	13(31.7%)	0(0%)	41(41%)

Table 3 illustrates age and gender specific distribution of suicide attempters on basis of psychiatric diagnosis. Majority 34 (34%) of patients were found to be suffering from depression. Other diagnosis included adjustment disorder in11(11%), dysthymia in 8 (8%), anxiety disorder in 4(4%) and emotionally unstable personality disorder in 2 (2%). However, 41% patients could not be classified into any psychiatric disorder according to ICD-10.

Majority i.e., 57(57%) of the suicide attempters scored extremely severe depression scores (≥28) on DASS-21. Overall mean depression score was 25.64±12.36 indicating severe depression. Similarly, most of the patients i.e., 53(53%) of the suicide attempters had extremely severe anxiety scores (≥20). Overall mean anxiety score was 19.38±9.39 indicating severe anxiety. 29(29%) patients had severe stress score (26-33) while 22(22%) had extremely severe stress score (≥34), however, overall mean stress score was 24.18±8.61 indicating moderate stress [Table-4].

Table 4: Distribution of Depression/Anxiety/Stress score among patients on DASS- 21

Category	Variable	Frequency(n)	Percentage	Mean± SD Score
Depression Score	Normal(0-9)	15	15%	25.64±12.36
	Mild(10-13)	2	2%	
	Moderate(14-20)	21	21%	
	Severe(21-27)	5	5%	
	Extremely Severe(≥28)	57	57%	
Anxiety Score	Normal(0-7)	11	11%	19.38±9.39
	Mild(8-9)	7	7%	
	Moderate(10-14)	8	8%	
	Severe(15-19)	21	21%	
	Extremely Severe(≥20)	53	53%	
Stress Score	Normal(0-14)	16	16%	24.18±8.61
	Mild(15-18)	23	23%	
	Moderate(19-25)	10	10%	
	Severe(26-33)	29	29%	
	Extremely Severe(≥34)	22	22%	

DASS-21: Depression anxiety and Stress Scale-21 items

Table 5 shows that majority i.e., 67(67%) of suicide attempters were having high suicide intent (≥29) as assessed on BSIS. However, 31% had medium intent and only 2% had low intent. Overall, mean score was 33.41±6.571 which means high suicidal intent.

Table 5: Distribution of BSIS among patients

Category	Variables	Total no. of patients (n=100)	Percentage	Mean ± SD Score
Beck's Suicide Intent Scale (BSIS) Score	Low Intent (15-19)	2	2%	33.41±6.571
	Medium Intent (20-28)	31	31%	
	High Intent (≥29)	67	67%	

High suicidal intent was observed in 91.3% of patients having past psychiatric history as compared to 59.7% among patients without any history of psychiatric illness (χ^2=18.589, p=0.001). High suicide intent was observed in 89.5% patients having history of psychiatric illness in first degree relatives, while among patients without positive family history of psychiatric illness, only 61.7% had high suicide intent(χ^2 =5.409, p=0.04). High suicide intent was observed in 78.3% patients who had history of suicide attempts in the past, while among patients without any previous suicidal attempt, only 63.6% had high suicidal intent (χ^2=10.368, p=0.006). Hence, significant association was observed between presence of past psychiatric history/family history/previous suicide attempts and BSIS [Table 6].

Table 6: Distribution of past psychiatric history/family history/previous suicidal attempts with BSIS

Category	Variables	BSIS			Total	Chi-square (χ^2)	p-value
		Low Intent (15-19)	Medium Intent (20-28)	High Intent (>=29)			
Past Psychiatric History	Present	2(8.7%)	0(0%)	21(91.3%)	23(23%)	18.589	0.001**
	Absent	0(0%)	31(40.3%)	46(59.7%)	77(77%)		
Family History of Psychiatric Illness	Present	0(0%)	2(10.5%)	17(89.5%)	19(19%)	5.409	0.04*
	Absent	2(2.5%)	29(35.8%)	50(61.7%)	81(81%)		
Previous Suicidal Attempts	Present	2(8.7%)	3(13%)	18(78.3%)	2(23%)	10.368	0.006*
	Absent	0(0%)	28(36.4%)	49(63.6%)	77(77%)		

BSIS: Beck's Suicide Intent Scale Score

Discussion

Suicide is a preventable public health problem, and attempted suicide is one of the predictors of future suicide.[18] Attempted suicide is the most common cause of hospital admissions in young age group (15 to 35 years), and suicide, next to accidents, is the most common cause of death in this age group. [19] Thus, it is imperative to understand factors that must be identified to prevent future suicides. This study tried to assess those indicators and associated psychological factors of suicide attempt such as depression, anxiety and stress in young adults.

Socio-Demographic factors

In present study, male : female ratio was 1.44:1. Similarly findings were reported by the Indian study wherein male: female ratio ranged from 1.13:1 to 1.63:1[20] Predominance of males who attempted suicide could be due to their socio-cultural and occupational roles.[21] Moreover, oriental culture glorifies male, create expectation bias leading to stress.

Almost one third of the patients who attempted suicide were educated above matriculation level, half were graduates. The findings are consistent with

the study by Srivastava et alon socio-demographic variables of suicide attempts who also observed that patients in the more educated group were more likely to attempt suicide[22] and Latha et al who reported that 54% of suicide attempters had received high school education or higher.[23]

Most of the subjects in the present study hailed from rural areas i.e., 62%. The finding is supported by the study conducted by Krishna et al where majority of suicides belonged to rural areas.[24]This can be explained by the fact that rural population still constitutes a majority in our country; particularly in the state of Punjab. In the farming community, factors such as debt, low produce prices, crop failure, stress and strains of family responsibilities are identified as major risk factors. More than half of the patients were from joint families i.e., 55%. Similar findings have been found in a previous study by Adityanjee D R.[25] However, majority of the females in the study belonged to nuclear families (22%) which is in agreement to study by Dass PP et al whosuggested that about 45% of females from nuclear family who were unable to handle stress later on attempted self-harm.[20] It is general view that the nuclear family setups may not able to provide as much support to females leading to increase in level of stress with consequent self-harm. In present study, more than three-fourth of patients i.e., 79%were from above poverty line strata i.e., family annual income of more than 30,000 rupees per annum which corroborates a study done by Vijayakumar and Rajkumaron risk factors for suicide.[26]

Majority of the patients in our study did not have family history of psychiatric illness in first degree relatives. Only 19% had a positive family history out of which majority i.e., 12 (63.2%) were males, rest being females. The findings are similar with a hospital-based study by Rao VA who observed that about 20% of suicide attempters had a family history of suicidal attempt.[27]

Substance abuse was reported in 37 (37%) patients attempting suicide. A study by Beautrais et al found that substance use disorders was seen in 38.8% of the patients which has a striking resemblance with our study.[28] It was found that history of substance abuse was present in more than half (54.2%) of male patients attempting suicide. Only 2 (4.8%) female patient reported substance abuse which is consistent with a study done by Chandrasekaran et al[29] in which substance abuse was exclusively found in males.[29]

Psychiatric illness among suicide attempters

This study reported that 59% of patients were found to be having identifiable psychiatric illness while 41% of the patients could not be classified into any psychiatric disorder according to ICD-10. The most common diagnosis among suicide attempters was depression which was present in 34 out of 100 patients. Other diagnosis included adjustment disorder (n=11), Dysthymia (n=8), Anxiety disorder (n=4) and Emotionally unstable personality disorder (n=2). These findings are consistent with a study by Das PP et al wherein it was observed that nearly half (52%) of the patients were diagnosed to be having some psychiatric disorder[20]and a study conducted by Chandrasekaran et alwho reported that depression was present in 31% , dysthymia in 7%, anxiety disorder in 5.2%, adjustment disorder in 14.1% patients.[29]52.8% of the subjects did not suffer from any identifiable psychiatric disorder based on ICD-10.

Suicidal Intent

Present studyalso demonstrated that among 100 suicide attempters, majority i.e., 67% patients were having high Beck's Suicide Intent score and 31% had medium intent. The findings are similar to recent research done by Alvi et al where 43% reported high level of suicide intent while 33% reported medium intent.[30]There was significant positive association between past psychiatric history, family history of psychiatric illness and previous suicide attempt with suicide intent levels. This is in tune with the studies conducted by Liu BP et al, Ramanathan et al and Liu Y et al who also observed that high suicidal intent was associated with history of psychiatric illness, history of previous attempts and family history of psychiatric illness and suicidal attempts respectively. [31-33]

Suicide is a leading cause of death among the young worldwide and is responsible for a substantial number of premature deaths and societal loss. Those who face stressful life events and feel depressed may perceive themselves as lacking control over the situation and persistently feeling defeated. In

fact, their perception towards their current situation is negative and overwhelming, and they tend to be preoccupied with a sense of guilt and worthlessness. Overwhelming and excessive thoughts about the future, past behavior and competencies, and peer relationships are essential indicators in anxiety disorders and it was present in the clinically referred anxious youth of the study who possessed suicidal behavior. Suicide is the result of a complex dynamic and unique interplay between numerous contributing factors, and failure of individual efforts to predict and prevent suicide. The only way forward is to reduce these risk factors and strengthen protective factors as much as possible by providing integrated and multi-sector (primary, secondary and tertiary) prevention initiatives. Key prevention strategies can be population-based (e.g., mental health promotion, education, awareness by campaigns on mental resilience, careful media coverage, limited access to means of committing suicide) as well as targeting high-risk subgroups (e.g., specific school-based programmes, educating gatekeepers in different domains, providing crisis hotlines and online help, detecting unstable families) or even focusing on individuals identified as suicidal (e.g., improving mental health treatment, follow-up after suicide attempts and strategies for coping with stress.

Conclusion(S)

Mental disorders, previous suicide attempts, specific personality characteristics, substance abuse, family history with genetic loading and family processes in combination with triggering psychosocial stressors are key risk predictors in youth suicide. Although suicide risks are multi-factorial and complex interactions between different factors are possible, but it is unlikely to be static over time and should be assessed at repeated intervals during an individual's lifetime to prevent future attempts. Further unraveling of the complex suicide process must be accompanied by sustained and substantial efforts from scientific evaluation to formula tenovel prevention policies.

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