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A study on suicide attempts and psychiatric comorbidities in young adults attending tertiary care medical centre in North East India

Abstract

Background: Suicide attempts are serious public health hazard across the modern world. It ranked as the third leading cause of death among young adults aged 15-29 years. Suicidal behaviour has become a significant public health concern, especially among the young age group. So, it is necessary to understand the magnitude of the problem and multiple factors associated with it in order to initiate suicide prevention programmes. **Aims and objectives:** To evaluate the various sociodemographic variables, modes of suicidal attempt, and psychiatric comorbidities in young adults with suicide attempts. **Methodology:** It was a hospital-based cross-sectional, observational study. Samples were selected from the patients in the age group of 15-29 years, attending the Department of Psychiatry, Silchar Medical College and Hospital, Silchar, Assam, India in accordance to the fulfilment of inclusion and exclusion criteria during the period of six months. They were interviewed and assessed using semi-structured questionnaires to record the sociodemographic data, the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) to look for any psychiatric comorbidities and Beck's Suicide Intent Scale (SIS) for assessing suicide risk. Pearson's Chi-Square and Fischer's Exact tests as well as multinomial logistic regression were used for the statistical analysis. **Results:** Findings indicated that poisoning was the most common mode of suicide attempt in both males and females. Around 55% patients have psychiatric comorbidities, most common being depressive episode. **Conclusions:** The highest prevalence of suicide attempts were among the age group 15-19 years.

Keywords: Public health, poisoning, depressive episode.

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INTRODUCTION

Suicide attempts pose a major threat to public health in the modern world. According to the World Health Organization (WHO) estimates, suicide kills nearly 800,000 people annually, that is one person in every 40 seconds.[1] Additionally, there are probably more than 20 suicide attempts for every suicide act. According to data from the National Crime Records Bureau (NCRB),[2] suicide rates in India were 12.4 per lakh population. All ages are vulnerable for suicide. But the risk is high in young adults. Suicide is the third most common cause of death for young adults aged 15 to 29 years.[1] Adolescent and early adulthood are critical periods for the onset of suicidal behavior. "Youth" is defined by WHO and the United Nations Children's Fund (UNICEF) as the 15-24 years age range. According to India's 2014 "National Youth Policy," the person between the age group of 15 and 29 years are regarded as youth.[3] The size and strength of youth population of a country determines its capacity and potential for growth. Research indicates that 75% of all youth suicides occur in low- and middle-income countries (LMICs).[4] In Western countries, mental disorders, especially depression and alcoholism, are significant risk factors for suicide. But in Asian nations, impulsivity is a significant component. Although underdiagnosis may be a contributing factor in developing countries.[4]

Assam is a state in the north eastern part of India with population of 353.78 lakh according to Census of India.[2] As per the report by NCRB,[2] the incidence rate of suicide in the state is 9.4 per lakh population. Suicide is preventable. In order to initiate suicide prevention programmes, it is necessary to understand the magnitude of the problem in Assam and multiple factors associated with it, especially psychiatric comorbidities, to allocate the right kind resources for suicide prevention. So, this study is conducted in order to determine the various risk factors and psychiatric comorbidities in young adults in Assam with suicide attempt.

Aims and objectives

1. To evaluate the various sociodemographic variables in young adults with suicide attempt.

2. To assess various mode of suicide attempts.
3. To assess psychiatric comorbidities in suicide attempts.

MATERIALS AND METHODS

This study was a cross-sectional observational study, which was conducted in Silchar Medical College and Hospital (SMCH), Assam, India for a period of six months (from November 2024 to May 2025), after ethics committee clearance from the institute. A total of 60 patients with attempted suicide were included consecutively after satisfying the selection criteria. After stabilising through treatment, written informed consent was obtained from patient or legal guardian.

Case definition

Suicide attempt

"Self-injurious behaviour with a nonfatal outcome accompanied by explicit or implicit evidence that the person intended to die."[5]

Inclusion criteria

1. Any patient age group of 15-29 years coming to SMCH with recent history of suicide attempts.
2. Patient/legal guardian (in case of minor) giving informed consent for the interview and assessment.

Exclusion criteria

1. Patients with severe comorbid medical/neurological illness.
2. Patients who needs urgent medical/surgical intervention.
3. Patients with mental retardation.

Study tools

1. Semi-structured questionnaires for recording the sociodemographic information.
2. The tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) for assessment of psychiatric comorbidities.[6]
3. Beck's Suicide Intent Scale (SIS) for assessment of suicide intent.[7]

Procedure

The patients and caregivers were interviewed using semi-structured questionnaires to record the sociodemographic data. Evaluation of clinical history followed by a detailed mental status examination was done. Diagnosis was made by a psychiatry resident and further confirmed by two senior faculties as per ICD-10 criteria. Privacy during interview and client confidentiality was maintained.

Mode of suicide attempts were recorded as per history and clinical evaluation fulfilling the diagnostic criteria of suicide attempt. In this study we had not included the premorbid personality or temperament as the study age group ranged from the developmental period to the adult stage.

Statistical analysis

The data were tabulated in Microsoft Excel 2016 and analysed with Statistical Product and Service Solutions (SPSS) version 23. The continuous variables were presented with mean and standard deviation and the categorical variables were presented with frequency and percentage. Pearson's Chi-Square and Fischer's Exact tests as well as multinomial logistic regression were used for the statistical analysis and the p-value <0.05 was considered statistically significant.

RESULTS

The sociodemographic distribution of the patients is given in Table 1. The study subjects were of age group 15-29 years with the mean age of 21.42±3.91 years. Suicidal attempt was slightly more among females (51.7%) as compared to the males (48.3%). Most of the patients were Hindu (53.3%) followed by Islam (45%) and from a rural background (71.7%). Majority of them were unmarried (65%), 35% had attained secondary level education. Occupation wise most of the patients who attempted suicide were student (33.3%) followed by unemployed (20%). It was also seen that most were from lower socioeconomic status (50%) followed by lower middle class (21.7%).

Table 2 shows the various modes of attempted suicide, where we found that most of the patients had ingested an

Table 1: Distribution of sociodemographic data

Parameters	Groups	Number of individuals (n=60)	Percentage of individuals (n=100)
Age (in years)	15-19	25	41.67
	20-24	21	35
	25-29	14	23.33
Gender	Male	29	48.3
	Female	31	51.7
Educational status	Below secondary	19	31.7
	Secondary	21	35
	Higher secondary	13	21.6
	Graduate	6	11.7
Occupational status	Business	3	5
	Homemaker	8	13.3
	Professional	7	11.7
	Student	20	33.3
	Unskilled	10	16.7
	Unemployed	12	20
Socioeconomic status	Lower	30	50
	Upper lower	7	11.7
	Lower middle	13	21.7
	Upper middle	8	13.3
	Upper	2	3.3
Area	Rural	43	71.7
	Urban	17	28.3
Religion	Hinduism	32	53.3
	Islam	27	45
	Christianity	1	1.7
Marital status	Married	21	35
	Unmarried	39	65

insecticide (65%), followed by self-inflicting injury (15%), drug overdose (11.66%), hanging (five per cent), firearm injury (1.67%) and electrocution (1.67%). Majority (78.3%) had attempted suicide inside their residence and 16.7% had past history of suicide attempt. 23.33% of study population had family history of suicide attempts and 13.3% had family history of psychiatric disorder. Fifty-five per cent of them had low suicide intent score.

Table 3 is showing distribution of various psychiatric diagnoses in our study group. Among the total sample of 60 patients, 33, i.e., 55% had major psychiatric disorder according to ICD-10 criteria. Depressive episode was found as the most occurred risk factor (18.3%) among young patients followed by schizophrenia and related psychotic disorders (11.7%). We found a few patients of personality disorders, habit and impulse disorders, and conduct disorders, and grouped them together as "others" in the table for statistical convenience.

Table 2: Suicide attempt-related characteristics

Parameters	Groups	Number of individuals (n=60)	Percentage of individuals (n=100)
Mode of suicide attempt	Insecticide poisoning	39	65
	Drug overdose	7	11.66
	Self-inflicted injuries	9	15
	Hanging	3	5
	Firearms	1	1.67
	Electrocution	1	1.67
Place of suicide attempt	Inside residence	47	78.3
	Outside residence	13	21.7
Suicide intent score	Low	33	55
	Medium	11	18.33
	High	16	26.67
Past history of suicide attempt	No	50	83.3
	Yes	10	16.7
Family history of suicide attempt	No	46	76.67
	Yes	14	23.33
Family history of psychiatric disorder	No	52	86.7
	Yes	8	13.3

Table 3: Distribution of psychiatric disorders in study population

Psychiatric disorders	Number of individuals (n=60)	Percentage of individuals (n=100)
No psychopathology found	27	45
Schizophrenia and other psychotic disorders	7	11.7
Depressive episode	11	18.3
Bipolar affective disorder and other mood disorders	3	5
Anxiety disorders	3	5
Stress-related disorders	2	3.3
Substance use disorders	1	1.7
Others	6	10

The statistical association of the gender of the patients with the mode of attempting suicide and suicide intent score is shown in Table 4. Insecticide poisoning was the commonest mode of attempted suicide across both the genders [male (n)= 20 and female (n)= 19]. Each mode of suicide attempt was found to be fairly equally distributed among both genders. There was no statistically significant difference in the overall modalities of suicide attempts between the male and female gender [x^2=3.44. degree of freedom (df)=5, p=0.633]. Low suicide intent score was found to be significantly higher in females (p=0.040) than in males. Contrarily, high severity was seen much more in males. Although the difference was not statistically significant (p=0.056).

The statistical association of suicide intent score with various psychiatric comorbidities is shown in Table 5. Patients with no psychopathology was distributed much more frequently in medium (p=0.024) and low suicidal intent scores (p=0.036) than in high score group. Contrarily, patients with schizophrenia had a significantly higher distribution in the high score group than the low score group (p=0.009). Among the patients of depressive episode, subjects with high were not significantly distinguished from those with low (p=0.150) or medium (p=0.527) scores. However, these patients demonstrated a statistically significant higher frequency of medium score as compared to the low score patients (p=0.046).

Table 6 shows the presence of psychiatric disorder and suicide risk. Overall, presence or absence of psychiatric disorders is significantly associated with suicide intent score (x^2=6.562, df=2, p=0.038) and patients with psychiatric disorder were significantly associated with high suicide intent score (p=0.012).

Table 4: Suicide attempt among genders

Mode of suicide attempt	Total (n=60)	Male (n=29)	Female (n=31)	p-value
Poisoning by insecticides	39	20	19	0.533*
Drug overdose	7	3	4	1.0
Self-inflicted injuries	9	3	6	0.474
Hanging	3	2	1	0.606
Electrocution	1	0	1	1.0
Firearms	1	1	0	0.483
Suicide Intent Score	**Total (n=60)**	**Male (n=29)**	**Female (n=31)**	**p-value**
Low	33	12	21	**0.040**
Medium	11	6	5	0.648
High	16	11	5	0.056

Tests run: Pearson's Chi-square* and Fisher's Exact tests
Test run: Pearson's Chi-square

Table 5: Suicide intent score and psychiatric disorders

Psychiatric disorder	Suicide intent score				
	Low	p-value	Medium	p-value	High
No psychopathology found	17	**0.036**	7	**0.024**	3
Depressive disorder	3	0.150	4	0.527	4
Schizophrenia and other psychotic disorders	1	**0.009**	0		6
Bipolar affective disorder and other mood disorders	0		0		3
Anxiety disorders	3	0.993	0		0
Stress-related disorders	2	0.995	0		0
Substance use disorders	1	0.994	0		0
Others	6	0.994	0		0

Test run: Multinomial logistic regression (reference: high score group)

Table 6: Presence of psychiatric disorder and suicide risk

Suicide intent score	Psychiatric disorders			
	Absent	Present	Individual significance	Overall significance
Low	17	16	0.271	χ^2 (df) = 6.564 (2) p=0.038
Medium	7	4	0.162	
High	3	13	0.012	

DISCUSSION

In our study, the age group with highest suicide attempt was 15-19 years, followed by 20-24 years. The age group of 15 to 29 years old has the highest suicide rate in India.[8] Also, suicide rate is higher among late adolescents (14-18 years old)[9,10] than early adolescents which is consistent with the global data.[4] Verma *et al.*[11] observed that vulnerability to suicide among youths rises with age. Developmental changes during adolescence, the strong influence of psychological and socioenvironmental factors, impulsivity, substance abuse, and the capability to bear the pain and fear of suicide as well as the fact that they are able to execute plans of suicide are some of the factors identified as responsible for this age group's high rate of suicidality.[4,9] Our study found that women have a slightly higher suicide attempts than men. According to Mashreky *et al.*,[12] suicide rate in young females is higher in several LMICs, such as India, compared to developed countries. Additionally, Jena *et al.*[13] and Senapati *et al.*[14] found that suicide rates are higher among young females than males in India. A higher prevalence of mood disorders and other internalising problems in females, increased psychosocial stressors, and cultural elements that violate women's rights could all be contributing factors. Furthermore, women's mental health issues are stigmatised more than those of men in Indian subcontinent.[4] Suicide attempt was also found to be more common among adolescents from low socioeconomic backgrounds and in less educated families. Similar findings were observed by Bindhani[15] and Modi *et al.*[16] Adolescents in rural areas were more likely to attempt suicide than those in urban areas, concurrent with the finding by Victor *et al.*[17] According to Senapati *et al.*,[14] the high rate of suicide in rural areas may be caused by a number of factors including poverty, unemployment, illiteracy, poor health and social support, easier access to fatal weapons, and limited access to healthcare facilities. Majority of the cases chose a familiar location, such as their own home in our study, corroborating with Kumar *et al.*[18] Easy access to means might be a priority for attempters. Moreover, either guilt or fear that can come from being noticed as a result of resuscitation and thus, a desire to avoid.[14]

Poisoning was the most common method of suicide attempt in our study corroborating with the findings observed by Victor *et al.*[17] and Senapati *et al.*[14] According to WHO, 20% of suicides worldwide are from poisoning and maximum of those numbers are from LMICs.[1] Insecticide poisoning is the most frequent method of suicide attempt in our study independent of gender. According to Senapati *et al.*,[14] males are more likely to contemplate poisoning as a method of suicide than females, although burns or self-immolations are somewhat more common among females. However, each mode of suicide attempt was found to be fairly equally distributed among both genders in our study. Also, it was found that males are more likely to have higher suicide intent than females. According to Malik *et al.*[19] males tend to use more lethal methods which lead to a higher rate of completed suicides. Females are more likely to attempt suicide, but males are more likely to complete suicides. A number of factors, including financial hardship, academic pressure, and substance addiction, may be responsible for the increase in male suicide rates.[4] However, suicide attempts, particularly in young females are not adequately reported in country like India which could be a limitation of our study. Majority of studies showed that 90% of youth suicides are impulsive.[4] O'Brien *et al.*[20] found that many of them attempted suicide after having "a strong and quick confluence of thoughts and emotions" in reaction to interpersonal conflict. They frequently made so without giving it much consideration and with "readily available" means. According to Balaji *et al.*,[21] the various factors associated with suicide risk were a variety of interpersonal stressors affecting partners or family members, especially parents. This conclusion is corroborated by earlier studies on risk factors for youth suicide attempts in both Western and Asian nations, which provide evidence of the involvement of romantic relationship setbacks, troubled and broken family environments, especially conflict; severe criticism, abuse, or neglect by parents; parental death or parental divorce; and alcohol consumption or mental illness within the family.[4] Our study also revealed that

mental health issues, negative and traumatic familial factors, academic stressors, social and lifestyle factors, economic distress, relationship factors are the important risk factors for suicide attempts corroborated with the study by Senapati *et al*.[14] Additionally, parental psychopathology including suicidality increases the risk of suicidality in their children by two to six fold.[4]

Our study revealed that mental health problems significantly contributed to youth suicide. Gili *et al*.[22] found a strong association between psychiatric disorders and suicidal attempts. The use of alcohol, sedative/hypnotics, and other psychoactive substances, as well as mental disorders like depression, adjustment disorder, schizophrenia, bipolar affective disorder, attention-deficit/hyperactivity disorder, conduct disorder (high impulsivity) are all linked to a higher risk of suicide in young people, according to a review by Gupta and Basera.[4] In our study, the most occurred risk factor among young patients was depressive episode. Various studies have shown similar findings such as Senapati *et al*.,[14] Gupta and Basera,[4] Gili *et al*.,[22] Victor *et al*.,[17] and Nock *et al*.[23] A diagnosis of depressive episode was associated with a six-fold increased likelihood of suicidal ideation and attempts in a study by Nock *et al*.[23] Patients with schizophrenia in our study had a significantly higher suicide intent score. Gill *et al*.[24] observed that adolescents with psychosis have a mortality rate between 2.73% and 4.5%, and a significantly high risk of attempting suicide, which ranges from 12.4% to 72%. Additionally, conduct disorder and substance use disorders are major risk factors for youth suicide in western countries; however, in our study, they were not significant, most likely because of the sociocultural context.

Limitations

The sample size was limited and reflected a selection bias of the patient group seen at a tertiary care hospital. Suicide attempts have a tendency to be under reported due to social stigmas associated with mental disorders and suicide. Serious attempters, those who required urgent intervention and death by suicide were excluded. The sample, scales, and data were all collected by single investigator in this study who was not blinded.

Implications

Lack of restriction for access to poisons and easy, often over the counter availability may be the reason for these agents being the preferred method in attempting suicide. Early identification and prompt intervention to mitigate the attempts at various settings can prevent youth suicide to great extent.

Conclusions

Our study revealed the highest prevalence of suicide attempts were among the age group 15-19 years. Poisoning was the predominant mode of suicide attempt among both males and females. Suicidal Risk was more in those who had a diagnosed psychiatric disorder and depressive episode was the most common mental disorder.

AUTHOR CONTRIBUTIONS

MC: Definition of intellectual content, data acquisition, manuscript preparation, guarantor; **HAC**: Design, clinical studies, statistical analysis, manuscript editing, guarantor; **KN**: Concepts, data analysis, manuscript review, guarantor.

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