PSYCHOSOCIAL FACTORS ASSOCIATED WITH ADOLESCENT SUICIDE ATTEMPTS- A CASE CONTROL STUDY

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ABSTRACT

BACKGROUND

We aimed to study the psychosocial factors associated with adolescent suicide attempts and to identify the risk factors associated with adolescent suicide attempt with reference to socio-demographic characteristics, stressful life events and psychiatric morbidity.

METHODS

From October 2005 to February 2006, we conducted a case control study in Tertiary Care Center in Tamilnadu, India. Fifty consecutive cases of adolescent suicide attempters and fifty age and sex matched controls were selected for study. ICD 10, Suicide Intent Scale, Presumptive Stressful Life Event Scale, Hopelessness Scale and Montgomery-Asberg Depression Rating Scale were used. Statistical analysis was done using computerized software(SPSS 16).Descriptive statistics like frequencies, percentages, means and standard deviations was computed. Chi square tests for independence and correlation tests was done for different variables and parameters.

RESULTS

Majority (n=32, 64%) of the suicide attempters were 18 years old. Majority 94% (n=47) used self-poisoning as the method to commit suicide, while 6% (n=3) used hanging to commit suicide. The mean suicide intent score (among cases) was 13.04 with a standard deviation of 6.124. The mean MADRS score (Among cases) was 13.16 with a standard deviation of 11.54. Statistically significant difference was observed in Psychiatric morbidity, Life events number and score for preceding one year and Hopelessness Score between cases and controls. PSLES score, PSLES number, Hopelessness score and MADRS score positively correlate with suicide intent score of suicide attempters.

CONCLUSION

Psychiatric morbidity and cumulative stressful life events emerged as predominant risk factors. Hopelessness appeared to be a dominant target for treatment.

KEYWORDS

Adolescent Suicide Attempts, Life Events, Psychiatry Morbidity, Suicide Intent, India.

HOW TO CITE THIS ARTICLE: Ramalingam SJ, James AGDW, Annamalai AK. Psychosocial factors associated with adolescent suicide attempts- a case control study. J. Evolution Med. Dent. Sci. 2016;5(13):534-539, DOI: 10.14260/jemds/2016/123

INTRODUCTION

More than one million lives are lost every year to suicide in India. In the last two decades, the suicide rate has increased from 7.9 to 10.3per 100,000. Research shows that suicidal behaviour increases markedly during the period of adolescence and the causes are more social and interpersonal conflicts (Shaffer and Fisher, 1981.[1]; Brooksbank, 1985.[2] and Hawton et al. 1982.[3]) Adolescent suicide attempters also report more life events preceding the attempt than the general population (Paykel et al. 1974.[4]). According to McClure (1994).[5] the suicidal behaviour in adolescence is very different from the adult behaviour. Potential risk factors for suicide attempts in adolescents include female gender, psychopathology, especially a major depressive disorder, previous suicide attempts, hopelessness, recent stressful life events, suicide attempt by family members or friends, family chronic physical illness, family violence and dysfunction and lower academic achievement (Lewinsohn et al. 1994.[6]).

Compared with the general population, people with attempted suicide, experience four times as many stressful life problems in the six months before the act, with more of these events considered to be undesirable than in the control groups (Paykel et al. 1974.[4]). Recent life event are significant in adolescent attempters as in adults (Cohen et al. 1982.[7]). Marttunen MJ et al. (1993).[8] reported that precipitant stressors were common in adolescent suicides. In 70% of cases stressors were reported in preceding one month. Interpersonal separation and conflicts were the most common one. Adolescents who attempted suicide were seven times more likely to have mood disorder (Pfeffer CR, et al. 1993).[9] Marttunen et al. in 1991 reported strong relatedness between adolescent suicide, depression, antisocial behaviour and alcohol abuse.[10] Suicide among adolescents who had a history of psychiatric hospitalization occurs approximately nine times more often than among adolescents in the community (Kuperman et al. 1998.[11]) Garrison et al. in 1991 reported that major depressive disorder imparted an almost 10 times greater risk of suicide attempt.[12]

Financial or Other, Competing Interest: None.
Submission 29-12-2015, Peer Review 25-01-2016,
Acceptance 30-01-2016, Published 12-02-2016.
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DOI:10.14260/jemds/2016/123

Self-poisoning is reported to be the most frequent method of attempting suicide accounting for 70% to 90% of all attempts as observed by Pablo and Lamarre (1986).[13] Attempted suicide has acquired the popular image of a 'cry for help' (Stengel and Cook, 1958).[14] They also suggested that the adolescents took over-dosage in order to get back at other people or to change their behaviour. Most common motive for an adolescent to make a suicide attempt is a desire to escape from a deadlock life situation. Suicidal intent has been closely associated with hopelessness (Beck et al. 1975).[15] as the concept of death develops only around 12 years of age, it is difficult to determine the motivation of self-harm in young children. Minkoff et al. (1973) found that hopelessness was a more sensitive indicator of suicidal intent than depression.[16]

We aimed to study the psychosocial factors associated with adolescent suicide attempts and to identify the risk factors associated with adolescent suicide attempt with reference to socio-demographic characteristics, stressful life events and psychiatric morbidity.

METHODS

From October 2005 to February 2006, we conducted a case control study in Tertiary Care Centre in Tamilnadu, India. Fifty consecutive cases of adolescent suicide attempters and fifty age and sex matched controls were selected for study. Cases were recruited from medical and surgical wards, who were adolescent suicide attempters (from 13 to 18 years) and whose physical condition was stable and could undergo detailed examination. An equal number of controls "who had never made a suicide attempt," individually matched for each case with respect to age and sex were recruited from relatives and friends of other patients admitted for other illnesses during the same period in tertiary care centre. Patients with disorientation and confusion interfering with administration of rating scales and those patients without reliable informant were excluded. All patients were assessed within two days of admission. The study was approved by the ethics committee of the Institution.

MEASURES

Semi Structured Proforma

The proforma contained socio-demographic details, family history, medical and psychiatric history, details of the present attempt and previous attempts if any.

ICD-10: Classification of Mental and Behavioural Disorders (WHO, 1992).[17] Clinical descriptions and diagnostic guidelines

Based on clinical assessment, diagnosis was made according to ICD-10 and confirmed by consultant.

Suicide Intent Scale (Beck et al. 1979).[18]

This scale has 15 questions and has two parts. The first one covers the circumstances, action, etc. and the second half a self-report about the belief of the patient regarding his actions. Suicidal intent is being taken as the measure of seriousness of the patient regarding his actions.

Presumptive Stressful Life Events Scale (PSLES) (Gurmeet Singh et al. 1983).[19]

Presumptive Stressful Life Events Scale (PSLES) is a scale of stressful life events designed for use in Indian population with 51 items. Each event is given a mean stress score that varies from 20 to 95. The scale was administered for events of previous one year.

Hopelessness Scale (HS) (Beck et al. 1974).[20]

Two sources were utilized in selecting items for this twenty-item, true/false, hopelessness scale. Nine items were selected from a test of attitudes about the future and remaining eleven items were drawn from a pool of pessimistic statements made by psychiatric patients who were adjudged by clinicians to appear hopeless.

Montgomery Asberg Depression Rating Scale (MADRS) (Montgomery and Asberg, 1979).[21]

A widely used scale in which the most important symptoms of depressive disorder are included with a high face validity. This scale was administered to cases and not controls, as depression was rated in suicide attempters so as to correlate it with suicide intent and to find among hopelessness and depression, which correlated significantly with suicidal intent.

Socio-Economic Status Scale (SES) for urban population (S. E. Gupta and B.P. Sethi, 1978).[22]

Socio-economic Status scale consists of scores on 3 variables (education, occupation and income). The three variables are clearly defined and appropriate scores mentioned. The scale consists of 10 categories of socio-economic status ranging from the highest to the lowest, which is got by adding up the scores of the three variables.

STATISTICAL METHODS

Statistical analysis was done using computerized software (SPSS 16). Descriptive statistics like frequencies, percentages, means and standard deviations was computed. Chi square tests for independence and correlation tests were done for different variables and parameters.

RESULTS

Characteristics of the sample majority (n=32, 64%) of the suicide attempters were 18 years old. Majority of the attempters were females (n=35, 70%). Among the 35 females who attempted suicide, 31 (88.6%) were 16 years and above, while 13 (86.7%) out of 15 male suicide attempters were 16 years and above. Table 1 shows the sample characteristics and the comparison of cases and controls. Table 2 shows the statistical comparison of the characteristics of the participants.

Majority 94% (n=47) used self-poisoning as the method to commit suicide, while 6% (n=3) used hanging to commit suicide. Tablet overdose was used by 23.4% (n=11) of attempters, rat killer poison by 19.1% (n=9) and oleander seeds by 12.7% (n=6) (Table 3). Among cases, moderate depressive episode was present in 14%, mild depressive episode in 10%, 4% had adjustment disorder and alcohol abuse in 4% each, while 2% had conduct disorder, dysthymia and severe depressive episode. Among controls, 4% had mild depressive episode (Table 4). Among female suicide attempters, 9 of the 35 had psychiatric morbidity, while 10 among 15 male suicide attempters had psychiatric morbidity.

The difference between the two groups was statistically significant (Table 5). The mean suicide intent score (Among cases) was 13.04 with a standard deviation of 6.124. The mean MADRS score (Among cases) was 13.16 with a standard deviation of 11.54.

Variable	Study Group (N=50)	Control Group (N=50)	
Sex Female Male	 35 (70%) 15 (30%)	 35 (70%) 15 (30%)	
Domicile Rural Urban	 6 (12%) 44 (88%)	 9 (18%) 41 (82%)	X^2=0.76 P=0.577
Education Primary Middle High School Degree	 6 (12%) 10 (20%) 33 (66%) 1 (2%)	 2 (4%) 14 (28%) 27 (54%) 7 (14%)	X^2=7.76 P=0.051
Occupation Student Unskilled worker Semiskilled worker Skilled worker Professional Unemployed	 20 (40%) 18 (36%) 5 (10%) 0 (0%) 4 (8%) 3 (6%)	 17 (34%) 20 (40%) 5 (10%) 4 (8%) 2 (4%) 2 (4%)	X^2=5.215 P=0.390
SES Very low Lower middle Middle	 3 (6%) 44 (88%) 3 (6%)	 7 (14%) 35 (70%) 8 (16%)	X^2=0.76 P=0.577
Marital Status Single Married	 40 (80%) 10 (20%)	 43 (86%) 7 (14%)	X^2= 0.638 P=0.577
Family type Alone Joint family Nuclear family	 1 (2%) 13 (26%) 36 (72%)	 0 (0%) 16 (32%) 34 (68%)	X^2=1.367 P=0.577

Table 1: Socio-Demographic Characteristics of the Study Participants

Variable	Study Group (N=50)	Control Group (N=50)	
Previous history of Mental illness Absent Present	48 (96%) 2 (4%)	50 (100%) 0 (0%)	X^2=2.041 P=0.495
History of Medical Illness Absent Present	44 (88%) 6 (12%)	48 (96%) 2 (4%)	X^2=2.174 P=0.269
History of substance abuse Absent Present	48 (96%) 2 (4%)	49 (98%) 1 (2%)	X^2=0.344 P=0.962
Family history of Mental Illness Absent Present	46 (92%) 4 (8%)	47 (94%) 3 (6%)	X^2=0.154 P=0.1
Family history of Substance Abuse Absent Present	29 (58%) 21 (42%)	33 (66%) 17 (34%)	X^2=0.679 P=0.537
Family history of Attempted suicide Absent Present	42 (84%) 8 (16%)	47 (94%) 3 (6%)	X^2=2.554 P=0. 2
Family history of suicide Absent Present	50 (100%) 0 (0%)	46 (92%) 4 (8%)	X^2=4.167 P=0.117

Table 2: Statistical Comparison of Characteristics of the Cases and Control

P<0.05 is significant

Substance Used	Cases (N=47)
Tablet overdose	11 (23.4%)
Rat killer poisoning	9 (19.1%)
Oleander poisoning	6 (12.7%)
Organ phosphorous poisoning	4 (8.5%)
Ala liquid	3 (6.5%)
Insecticides	3 (6.5%)
Glass pieces	2 (4.25%)
Hit spray	2 (4.25%)
Kerosene	2 (4.25%)
Painting liquid	2 (4.25%)
Phenol	1 (2.13%)
Oduvanthalai	1 (2.13%)
Cockroach killer poison	1 (2.13%)

Table 3: Substance used by Self-Poisoners Among Suicide Attempters

Psychiatric Diagnosis	Type			
	Cases (n=50)		Control (n=50)	
No psychiatric diagnosis	31	(62%)	48	(96%)
Adjustment disorder	2	(4%)		
Alcohol abuse	2	(4%)		
Conduct disorder	1	(2%)		
Dysthymia	1	(2%)		
Severe depressive episode	1	(2%)		
Mild depressive episode	5	(10%)	2	(4%)
Moderate depressive episode	7	(14%)	.	

Table 4: Comparison of Psychiatric Diagnosis between Cases and Controls

Psychiatric Morbidity	Sex	
	Female n=35	Male n=15
No	26 (83.9%)	5 (16.1%)
Yes	9 (47.4 %)	10 (52.6%)

Table 5: Sex wise Distribution of Psychiatric Morbidity Among Suicide Attempters

X^2 = 7.474 df=l p Value < .001 (Significant)

The mean PSLES score for preceding one year among cases was 191.52 with a standard deviation of 59.78. The mean PSLES score for preceding one year among controls was 47.30 with a standard deviation of 50.03. When 't' test was applied, the difference between the two groups was found to be

statistically significant. The mean PSLES number for preceding one year among cases was 4.00 with a standard deviation of 1.26. The mean PSLES number for preceding one year among controls was 1.00 with a standard deviation of 1.03. When 't' test was applied, the difference between the two groups was found to be statistically significant.

The mean Hopelessness score among cases was 10.22 with a standard deviation of 4.63. The mean Hopelessness score among controls was 0.56 with a standard deviation of 1.01. When 't' test was applied, the difference between the two groups was found to be statistically significant. Statistically significant difference was observed in Psychiatric morbidity, Life events number and score for preceding one year and Hopelessness Score between cases and controls (Table 6). PSLES score, PSLES number, Hopelessness score and MADRS score positively correlate with suicide intent score of suicide attempters (Table 7). When MADRS score was controlled, hopelessness score correlated significantly with suicide intent score (Table 8). When hopelessness score was controlled, there was no significant correlation between MADRS score and suicide intent score. P=0.25 (Not significant) [Table 9].

	Type						
			Controls				
Scale Scores	**Cases (n = 50)**		**(n -50)**		**t**	**df**	**P**
	Mean	**SD**	**Mean**	**SD**			
PSLES Score	191.52	59.78	47.30	50.03	13.08	98	< 0.001
PSLES Number	4.00	1.26	1.00	1.03	13.02	98	< 0.001
Hopelessness	10.22	4.63	0.56	1.01	14.41-	98	< 0.001

Table 6: Comparison of Scores between Cases and Controls

PSLES- Presumptive stressful life event scale, SD - Standard Deviation

Scale Scores		**Suicide Intent Score**
PSLES NUMBER	Pearson's correlation P n	0.613** <0.01 50
Presumptive stressful life event scale score	Pearson's correlation P n	0.620** <0.01 50
Hopelessness score	Pearson's correlation P n	0.860** <0.01 50
Montgomery-Asberg Depression Rating scale score	Pearson's correlation P N	0.791** <0.01 50

Table 7: Pearson's Correlation Coefficient was Calculated between Suicide Intent Score and other Scores of Suicide Attempters

**** Correlation is highly significant at 0.01 level (2-tailed).**

Control Variable	**Variable**	**Correlation Coefficient**	**P**
Montgomery Asberg Depression Rating scale	Suicide intent score	0.58	< 0.001
	Hopelessness score		

Table 8: Intra Group Analysis Done Among Suicide Attempters-Partial Correlation Coefficient was Calculated Between Suicide Intent Score and Hopelessness Score by Controlling MADRS Scores

Control Variable	**Variable**	**Correlation Coefficient**	**P**
Hopelessness score	Suicide intent score	0.18	0.25
	Montgomery-Asberg Depression Rating scale		

Table 9: Intra Group Analysis done among Suicide Attempters- Partial Correlation Coefficient was Calculated between Suicide Intent Score and MADRS Scores by Controlling Hopelessness Score

DISCUSSION

In our study, out of the 50 cases of adolescent suicide attempters 44 (88%) of adolescent were 16 years or above. Attempters below 16 years were 6 (12%). The age 15 to 18 years seem to be the period, during which suicidal behaviour becomes evident and these findings are in accordance with findings of Kotila et al. (1987).[23] Girls outnumbered boys in suicide attempt. This finding was similar to studies by White (1974).[24] Garfinkel et al. (1982).[25] and Otto (1972).[26] There seems to be two likely explanation for the greater number of

adolescent girls, the first is that girls may mature and face problems of adulthood, such as sexual relationships earlier than boys and second boys may have alternative outlets for expressing distress, such as aggressive behaviour. Majority of cases and controls were from urban background as this study was done in tertiary care centre in a city. Self-poisoning is seen as the commonest mode among the Indian population. Oral poisoning with insecticides and pesticides is the commonest mode adopted due to their easy availability. Also Schaffer (1974).[27] noted over dosage of drugs among 80-90% of adolescent suicide attempters.

Psychiatric morbidity among cases was 38%, out of which moderate depressive episode was commonest which was present in 7 (14%). Among controls 2 (4%) had mild depressive disorder. The results are in concordance with studies done by Kovacs M et al. (1993).[28], Dori GA et al. (1999).[29] Pfeffer et al. (1993).[9] which showed significant presence of mood disorder in suicidal adolescents. Alcohol abuse also was more in suicidal adolescents than controls. Results are in concordance with studies done by Marttunen et al. (1991).[10] Wu P et al. (2004).[30] and Robbins DR et al. (1985).[31] Above findings are in contrary to Hawton et al. (1982).[32] and White (1974).[24] as they reported that psychiatric diagnosis was very uncommon among adolescent self-poisoners and they suggested that psychiatric intervention is rarely required. The mean suicide intent score was 13.04 with standard deviation of 6.124. These findings are in concordance with studies done by Sudhirkumar et al. (2000).[33] who reported high suicidal intent in adolescent attempters. Males had more psychiatric morbidity compared to females and it was statistically significant. These findings are contrary to findings of Olfson et al. (2005).[34] and Hawton et al. (1982).[32]

Presumptive stressful life events and scores correlated significantly with suicide intent. There was a significant association between psychiatric morbidity and suicide intent. When Pearson's correlation coefficient was calculated between total life events score and suicidal intent score there was a significant positive correlation. These findings are in concordance with findings of Adams et al. (1994).[35] and Paykel et al. (1974).[4] who reported 4 times stressful life events in preceding 6 months in attempters. This point to the need for early intervention following major life changes in adolescents. Depression was rated among cases so as to find its correlation with suicide intent. There was a significant positive correlation with suicide intent. When depression scores were controlled hopelessness was found to correlate significantly with suicide intent. These findings are similar to findings of Dyer et al. (1984).[36]

CONCLUSIONS

The implication of these findings for therapy of suicidal individuals is important. Psychiatric morbidity should be taken into consideration when assessing and also in the management of adolescent suicide attempters. Persons experiencing higher rates of cumulative stressful life events will be the target population for separate monitoring to identify suicidal behaviour. The cognitive and attitudinal phenomena of hopelessness are important target symptoms in treating suicidal individuals. The clinician is more likely to "get a hold" of the situation by targeting on the patient's hopelessness rather than by dealing with his overt self-destructive acts. By focusing on reduction of a patient's hopelessness, the professional may also be able to alleviate suicidal crises more effectively.

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