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Research article

VALUE OF STUDYING THE TIME OF OCCURRENCE OF SUICIDE ATTEMPT IN PEOPLE ATTENDING HOSPITAL FOLLOWING SUICIDE ATTEMPT

*Srinivasagopalan[1], Nappinnai[2], Solayappan[3]

[1]Assoicate Professor, [2] Clinical Psychologist, [3]Formerly Professor of Psychiatry, Department of Psychiatry, Meenakshi Medical College & R.I., Enathur, Kanchipuram, Tamilnadu, India

* Corresponding Author email: drsrinivasagopalan1950@gmail.com

ABSTRACT

Background It is unclear whether any particular time of the day is Vulnerable for suicide attempts. Suicide attempt is a known risk factor for future completed suicide. **Aim** To investigate the relationship between the time of suicide attempt and the sociodemograpic and illness characteristics of suicide attempters. **Method** Time of attempt, clinical and demographic data and illness variables of 74 patients presenting to hospital following suicide attempt were analyzed. **Results** Our results showed 8.a.m. to 11.59 a.m. is the most preferred time of attempt and it is statistically significant. Suicide attempt is significantly more in the day time (between 8 a.m. to 11.59 a.m.). The above time period is significantly associated with place of attempt of the suicide attempters. This is the time period where more young males (20 – 29 years) from rural back ground, married, illiterates and unemployed (significant no. of house wives also) attempt suicide during this time. Depression is the common psychiatric illness and pesticide is the common mode of attempt. More number of cases attempt during the months of August, September and October. Majority of them have experienced more than 5 life events before the attempt. Therefore we conclude that forenoon (8 a.m. to 11.59 a.m.) is the most vulnerable period for attempting suicide. **Conclusion** The assessment of patients with history of suicide attempt in relation to the time of attempt is beneficial in formulating suicide prevention strategies.

Keywords: Attempted suicide; Time of attempt, methods pesticides.

INTRODUCTION

There is an increase in the number of attempted suicide worldwide. It is a matter of global concern. [1,2] A number of studies from India [3,4,5] focusing on various factors related to attempted suicide also report high prevalence rate of suicide attempts.

The studies pertaining to psychological, social and demographic factors along with modes, causes and time of attempt are helpful in formulating suicide prevention strategies. Attempted suicide were less during nights and early morning.[6] Nearly half of the successful suicides were committed during the night when there were little interruption, and genuineness of the day time attempts were doubtful.[7]

A Bangalore study shows a definite time preference as noted in the sense that midnight has least preferred and the early morning and proximity to noon were the periods most preferred.[8] In another study there was an equal distribution for each of the four hour periods from 8 a.m to 12 midnight, while the lowest figure is evidenced for attempts that were made between 12 midnight and 8 a.m., while suicidal activity is higher during the other periods and is evenly distributed.[3]

In a similar study 35.44% of patients attempted suicide between 12 noon and 6 p.m. and another 34.6% attempted between 6.01 p.m. and 12 a.m.[9]

Similar findings have been reported by some of the Indian studies.[10,11]

That day time attempts do not necessarily favour survival may be seen from the observation that more than half of the fatal ones succumbed to the attempts made between 8 a.m. and 8 p.m. The objective of the study is to investigate various factors associated with the time of occurrence of suicide attempt in people attending hospital following suicide attempt.

MATERIALS AND METHODS

The study is a hospital based analysis of suicide attempts. We recruited74 consecutive patients with H/o. attempted suicide who were admitted in the Emergency Medical Ward of Meenakshi Medical College & Research Institute and subsequently referred for evaluation in the Psychiatry OPD during Oct. 2009 to Sep. 2010. The study was approved by the local ethical committee. Informed consent was obtained from all the patients. The time of suicide attempt was recorded based on the Accident Register copy (AR copy) and also the same was cross verified with patients and their relatives. **Exclusion criteria**: Patients with chronic medical illness like Diabetus Mellitus / Hypertension and cardiac problems, bronchial asthma, were excluded.

All relevant clinical and demographic data were collected in a semi-structured proforma. The following instruments were used.

1. ICD 10 Criteria [12] used to ascertain the Psychiatri Diagnosis.
2. Hamilton rating scale for Depression[13] : The Hamilton Rating scle for depression (HRSD) is for assesing depression at the time of interview. By using HRSD any room for bias in the subjects presentation in his or her self report is eliminated.
3. Presumptive Stressful Life event Scale by Gurmeet Singh et al.[14] (PSLES): The PSLES is formulated by Singh et al 1984 is to evaluate the life events that occurred within 1 year prior to the suicide attempt.
4. Beck's Suicide Intent scale : [15] Beck's Suicide Intent scale is a 15 item questionnaire each item score 0 to 2 giving a total score range of 0–30. The questionnaire is divided into 'Circumstances section' and self report section.

Suicide attempt in the present study refers to "A non-fatal act whether physical injury, drug over dose or poisoning, carried out in the knowledge that was potentially harmful.

Statistical analysis Software: Graph pad prism version 5.

RESULTS

Table 1: Socio demographic and other data

Time item	Frequency	%
00 to 07.59 AM	11	14.90%
08.00 to 11.59 AM	25	33.87%
12.00 to 3.59 PM	11	14.90%
04.00 to 07.59 PM	10	13.50%
08.00 to 11.59 PM	17	23.00%
BELOW 20	7	9.5%
20-29	43	58.10%
30-39	11	14.90%
40-49	5	6.80%
50& above	8	10.7%
Sex		
Female	30	40.5%
Male	44	59.5%
Rural, Urban		
Rural	59	79.7%
Urban	15	20.3%
Marital Status		
Divorced	1	1.40%
Married	43	58.10%
Separated	1	1.40%
Unmarried	28	37.70%
Widow	1	1.40%
Educational Status		
College	16	21.60%
Hr. Sec.	8	10.80%
Illiterate	22	29.70%
School	28	37.80%
Occupational Group		
Unskilled	13	17.60%
Skilled	13	17.60%
Student	12	16.20%
House wife	17	23.00%
Professional	2	2.70%
Business	4	5.40%
Unemployed	13	17.60%

Day of attempt: Test of Chisquare used to find out the days of preference if any the χ^2 value arrived is 3.35 and $P < 0.05$, not significant when compared with table value 12.59, The distribution of events registered by different days can be concluded equal or same. Hence there is no significant difference for the days of the events.

Table 2: Month, Day and Place of suicide attempt

Months of Attempt		
January	2	2.7%
February	7	9.5%
March	3	4.0%
April	1	1.4%
May	2	2.7%
June	8	10.8%
July	4	5.4%
August	10	13.5%
September	11	14.9%
October	13	17.6%
November	7	9.5%
December	6	8.9%
Day of Attempt		
Mon	10	13.50%
Tues	15	20.30%
Wed	12	16.20%
Thurs	10	13.50%
Fri	11	14.90%
Saturday	8	10.80%
Sun	8	10.80%
Place of Attempt		
College & Hostel	4	5.40%
Farmland	8	10.8%
Hospital	1	1.30%
House	50	67.60%
Not known	11	14.90%

During August, September and October the events registered are more when compared to other months. The data is converted to a moving average for 3 months to avoid of overlaps. It is seen that the attempt registered are more in August, September and October months. During the time period of 8.00 a.m. to 11.59 a.m. 40% (10) of persons attempt during the month of August, September and October which found to be comparatively more.

Table 3: Time distribution

Time item	Frequency	Expected	d	d2
00 to 07.59 AM	11	24.6	13.6	185.0
8.00 to 11.59 AM	25	12.3	12.7	161.3
12.00 to 3.59 PM	11	12.3	1.3	1.69
04.00 to 07.59 PM	10	12.3	2.3	5.29
08.00 to 11.59 PM	17	12.3	4.7	22.14

Preferred time 8.00 to 11.59 A.M. their time at attempt, now $\chi^2 = \Sigma \frac{d2}{E}$

Table 4: Mode of attempt and diseases

Mode of Attempt			%
Analgesics and Antipyretics	x60	4	5.4%
Sedatives, Hypnotics	x61	10	13.5%
Drugs on Autonomic System	x63	1	1.4%
Other unspecified drugs & Biological substances	x64	5	6.8%
Organic solvents	x66	1	1.4%
Pesticide	x68	29	39.2%
Other Unspecified Chemicals	x69	5	6.8%
hanging, strangulation	x70	16	21.6%
Fire & Smoke	x76	1	1.4%
Unknown means	x84	2	2.7%
Diseases			
Adjustment Disorder		4	5.4%
Alcohol Dependence		6	8.1%
Alcohal with Depression		4	5.4%
Depression		21	27.0%
No Diagnosis		36	48.6%
OCD		1	1.4%
Paranoid Schizophrenia		1	1.4%
Schizophrenia		1	1.4%
Shizoid Personillity		1	1.4%

The frequency of the events reported with time of attempt was analysed χ^2 test applied to verify the similarities. χ^2 = 40.6 and It is significant when compared the $\chi^2_{(0.05)} = 9.49$. Hence we conclude that the preference of time of attempt by the cases are not same. Further it is seen that attempts during 8 A.M. to 11.59 A.M. is higher and statistically significant difference with other cases in different times.

Table 5: AGE, Sex, Place of living, Status of living, educational status, Occupation

Age Group	TIME RANGE					TOTAL	%
	00 to 7.59am	8.00 to 11.59am	12.00 to 3.59 pm	4:00 to 7:59pm	8.00 to 11.59pm		
<20	2	3	1	0	1	7	9.4
20-29	5	14	7	10	7	43	58.1
30-39	1	1	3	0	6	11	14.8
40-49	1	2	0	0	2	5	6.8
50 & above	2	5	0	0	1	8	10.8
Total	11	25	11	10	17	74	
Sex							
Female	4	9	6	3	8	30	40.5
Male	7	16	5	7	9	44	59.5
Place of living,							
Rural	10	21	7	7	14	59	79.7
Urban	1	4	4	3	3	15	20.3
Status of living							
Divorce	0	0	0	0	1	1	-
Married	4	14	7	6	12	43	
Separated	1	0	0	0	0	1	
Unmarried	6	10	4	4	4	28	
Widow	0	1	0	0	0	1	
Educational							
College	2	3	5	2	4	16	
Hr. Sec.	2	3	1	0	2	8	
Illiterate	3	10	3	3	4	23	
School	4	9	2	5	7	27	
Occupation							
Unskilled	1	4	0	3	5	13	
Skilled	3	3	2	1	4	13	
Student	2	5	3	1	1	12	
House wife	3	5	4	1	4	17	
Professional	0	0	1	0	1	2	
Business	0	2	0	2	0	4	
Unemployed	2	6	1	2	2	13	
Place of attempt							
College/ Hostel	1	1	1	0	1	4	
Farm land	1	4	0	1	2	8	
Hospital	0	0	1	0	0	1	
House	7	17	7	9	10	50	
Not Known	2	3	2	0	4	11	

The distribution of cases by age and time of attempt is given in table 5. in which it is seen that 58.1% (43). were in the age group of 20-29. It is the largest group 32.5% (14) in this age group prefer their time of attempt between 8 a.m. to 11.59 a.m. Out of 74 attempters, it was recorded as 40.5% were females and 59.5% were males. There is no gender difference in the peak time (8 a.m. to 11.59 a.m.) cases. (Statistically no evidence as P> 0.05 (P = 0.6)).

Living place: Out of 74 cases, 59 (79.7%) belonged to rural and 15 (20.37%) belonged to Urban. The χ^2 = 0.47, & P > 0.47. Though the cases registered for rural (21) is more when compared to for Urban (4), it is not statistically significant (P > 0.05), but, Majority of rural cases 35.6% (21) has been attempted during

8.00 a.m. 11.59 a.m. 58.1 % (43) of married people and 37.8% (28) were unmarried. Among them 32.5% (14) married and 35.7% (10) of unmarried preferred 8 a.m. to 11.59 a.m. as their time of attempt. It is not statistically significant.

Educational: The distribution of cases by educational status is as follows: illiterate 29.7%, School 37.8%, Hr. Sec. : 10.8%, College 21.6%. χ^2 test was conducted to see if any association between education and time of attempt. As χ^2 value is 7.969 for 12 df, P = 0.788 and P > 0.05, there is no association established between educational level and time of preference for attempt and it is inferred that except college going, all other lesser level of education preferred 8 a.m. to 11.59 a.m. out of which illiterates are higher than the educated.

Occupation: [df = 4, χ^2 = 9.49 at (P = 0.05)] The distribution of cases by occupation is given in table : 5 The time of attempt and occupation have been tested for its association through χ^2 test. It is found that p = 0.587 and hence not significant.

Place of attempt: [Chi-squre = 9.49 at P = 0.05 with 4 df] Calculated Chi-square value 107.75 > 9.49 (table value). Hence the distribution of events according to the place of attempt differs from each other. Therefore we concluded that the attempts at house are significantly higher than other places.

Table 6: Time wise distribution of Mode of attempt

		TIME RANGE					
		00 TO 07.59 AM	08.00 TO 11.59 AM	12.00 TO 3.59 PM	0.400 TO 07.59 PM	08.00 TO 11.59 PM	Total
Analgesics and Antipyretics	x60	0	1	1	1	1	4
Sedatives, Hypnotics	x61	2	2	2	1	3	10
Drugs on Autonomic System	x63	0	0	0	1	0	1
Other Unspecified drugs and biological substances	x64	1	2	0	2	0	5
Organic solvents	x66	0	0	1	0	0	1
Pesticide	x68	4	11	3	3	8	29
Other Unspecified Chemicals	x69	1	2	0	0	2	5
hanging	x70	3	6	3	2	2	16
Fire & Smoke	x76	0	0	0	0	1	1
Unknown means	x84	0	1	1	0	0	2

29/74 = 39.2%, Hanging = 16/74 = 21.6%, Sedative and other drugs = 10/74 = 13.5% During the peak time 37.9%(11), 37.5%(6) and 20%(2) of persons with mode of pesticides hanging and tablets respectively preferred 8 a.m. to 11.59 a.m.

Table 7a :Time range, Suicide Intent Score,

TIME RANGE						
Suicide Intent						
Score	00 TO 07.59 AM	08.00 TO 11.59 AM	12.00 TO 3.59 PM	0.400 TO 07.59 PM	08.00 TO 11.59 PM	Total
0	0	2	0	0	1	3
1	0	0	0	0	1	1
4	0	0	2	1	1	4
5	3	2	1	0	2	8
6	1	1	0	0	2	4
7	3	3	0	1	1	8
8	1	2	1	5	0	9
9	0	2	0	1	3	6
10	0	0	1	0	1	2

Table 7b: No. of Stressful Life Events

No. of Stressful Life Events						
Score	00 TO 07.59 AM	08.00 TO 11.59 AM	12.00 TO 3.59 PM	0.400 TO 07.59 PM	08.00 TO 11.59 PM	Total
1	0	1	1	0	1	3
2	1	1	0	1	1	4
3	2	2	0	2	0	6
4	0	3	2	1	2	8
5	2	2	1	3	2	10
6	1	2	1	0	2	6
7	1	0	0	0	2	3
8	1	0	0	0	1	2
9	0	0	0	1	0	1
10	0	0	0	0	1	1
13	0	1	0	0	0	1

The mean intent score was 6.29 as observed from 45 cases. The confidence interval is CI = (5.534 – 7.56). But score 5 falls outside this range, which implies that cases suffered with burden and stress. It is noted that 26.6% of person preferred 8.00 a.m to 11.59 a.m. and 8.00 p.m. to 11.59 p.m. equally.

The mode is 10 and the model event is 5. On an average the cases had 5 events for leading to suicide attempt.

ICD Psychiatric diagnosis: Only in 38 persons psychiatric diagnosis is made out. Among them 33.8% (25) were depressives. Of all the categories. 37.3% (9) of depressive patients attempt suicide between 8 a.m. to 11.59 a.m. No psychaitric diagnosis is made out for 48.6% (36) of persons.

DISCUSSION

The time of attempt most preferred in our study is between 8 a.m. to 11.59 a.m. (38.8% (25)). It is statistically significant. One who has seen a thousand cases of attempted suicide found that attempts were relatively rare in the early morning.[6] The lowest number of attempts in our study also between midnight to 8 a.m. period. In a study done at Madurai there is an equal distribution of number of attempts in the five times period.[3] In our study except for the time periods of 8 a.m. to 11.59 a.m. and 8 p.m. to 11.59 p.m. all other periods were almost equally distributed. In Bangalore study like in our study a definite time preference was noted in the sense that midnight was least preferred and the early morning and proximity to noon were the periods most preferred.[8] In another study 12 noon is the preferred time of attempt as in our study.[9] High prevalence in the day time attempts may be due to interpersonal conflicts and impulsive acts which can occur in the day time more often than in other times.

Epidemiological studies point out throughout the world, percentage of cases attempting suicide under the age of 30 years ranges from 30% to 70%.[1] Most of the Indian studies. [10,16,17] showed that the age group most vulnerable to suicide attempt is between 16 to 30 years.58% (43) of our sample who attempt were 20 – 29 age group. It is the largest group of attempters in our study. Among this group 32.56% (14) attempt during the 8 a.m. to 11.59 a.m. time period. When these time period and against all other time periods were compared with age group there was no significance. In a different study in India peak age is between 21 and 30 years.[18] In a study done at Himachal Pradesh it is between 15 and 24 years.[19]

More youngsters use attempt as a threat, to manipulate, to change the situation, and to make others to comply with their demands may be the reason for the day time attempts, and also interpersonal conflicts and impulsive acts occur in the day time more often than in other times. Our study shows that 40.5% (30) of females and 59.5% (44) of males attempt suicide. Among them 64% (16) of males and 36%(9) of females were choosing 8 a.m. to 11.59 a.m. as their preferred time of attempt. It is not statistically significant. In other studies [20] also males prefer day time attempts. Male preponderance is in line with our Indian studies unlike in western studies where female attempters more higher in numbers.[21,22] Culturally glorifying position of males in Indian society puts them more stress and expectations.Males in Indian society faces responsibilities in regard to the economic, financial and the prestige aspects of the family. [23] He is compelled to take a self destructive

decision. This view is close agreement with that of Schneider.

In our sample 79.7% (59) belonged to rural area, 20.3% (15) from urban area. Among the rural cases 35.6%(21) and urban 26.7%(4) has been registered during 8 a.m. and 11.59 a.m. period which is not statistically significant and it also implies that both locality have no influence in selecting specified time of attempt. In the Himachal Pradesh study also rural cases were high. [19]

In our sample overall 58.1% (43) married people and 37.8%(28) unmarried people attempt suicide. Among them 32.5 %(14) of married and 35.7%(10) of unmarried people prefer 8 a.m. to 11.59 a.m. as their time of attempt. Married people face more domestic and interpersonal conflicts and hence in them impulsive acts occur more often in day time. Similar results were shared by a multinational study,[24] in which subjects from Indian centre who attempted suicide or Indulged in self harm were more frequently married than single individuals. In India marriage is a social obligation and is performed by elders irrespective of the individual's preparedness for it.[25] Divorce being socially frowned upon.

There was no association established between educational level and time of preference of attempt and it was inferred that except college going all other lesser level of education preferred 8 a.m. to 11.59 a.m. out of which illiterates were higher than the educated. More housewives attempt suicide in the time period of 8.00 a.m. to 11.59 a.m. Unemployed people were also the highest number who attempt at the above time period. The same findings were noted in other studies also.[19,22]

In contrast to other studies where more no. of suicide attempt had occurred in the month of Feb. 11.2%(90) and March. 10.16%(83), in our study during Aug. 13.5%(10), Sep. 14.9%(11) & Oct. 17.6%(13) the events registered were more.[9] In some other studies suicidal activity 10-20 times more common in spring (peak in may) than in winter or summer.[26] There is a small peak in October. Since it is the monsoon season (August, September, October) and majority of patients from rural background, hectic agricultural activities and increase number of festivals were more in these months may be the reason for high suicidal activity due to interpersonal conflicts.

Tuesday 20.3%(15) and Wednesday 16.2%(12) were the days preferred in our study. In a study of thousand cases of suicide attempts it was found that attempts were relatively rare in the middle of the week and most frequent near the week end, especially on Sundays and Mondays. We presume for adolescents and young adults, week days are more stressful than weekends. That may be the reason for the findings in our study.

As far as the place of attempt 67.60% (50) prefer the house as the place of attempt. Among them 68 %(17) of people attempt in their house during the time period of 8 a.m. to 11.59 a.m. and it is significantly higher than all other places and it is also statistically significant. In contrast to this, in Ponnuduari[27] et al (1997) study 33.71% of males and 3.64% of females of completed suicide patients chosen the venues other than their houses and most of them were suffering from mental illness. The distribution of events according to the place of attempt differs from each other. Therefore we conclude that the attempts at home are significantly higher than other places.

Pesticides (39.2% (29)) were found to be the commonest mode of attempt which is in conformity with the observations made by most of the authors from India. [28,29,22,5] During 8 a.m. to 11.59 a.m. period 37.9% of persons took pesticides and 37.5% preferred hanging as their mode of attempt. In another study 25% preferred hanging as their mode of attempt.[22]

An interesting observation in our study as in the study of P.N.Sureshkumar[30] (1998) was that among males the common mode of attempt was insecticide poison whereas in females it was drug overdose. In India agricultural workers, as pointed out by the same author[30] were mainly males and have an easy accessibility to these compounds. The incidence of physical ailments in females which may lead to the easy availability of prescription drugs.

When all the other time periods as a group compared with 8 a.m. to 11.59 a.m. time period, it was not statistically significant. Methods used in suicide attempts were mostly non - violent. In a multi centre study 64% of males and 80% of females used self poisoning as their mode of attempt.[2]

Studies from India and abroad have consistently reported a high incidence of Psychiatric illness in suicide attempters. Several reports have indicated depression as the most common diagnosis in 35% to 80% of the attempted suicide cases.[1,4] In Jain[22] et al (1999) study depression was 37.5%. 27% (21) of our

patients suffer from depressive illness. Alcohol dependence is the next largest group. According to Barraclough[31] et al (1979), Gupta & Singh[29] et al (1981). With reasonable estimate depression accounting for 75%, alcohol 15%, rest was other miscellaneous psychiatric conditions. In a different study 45% who attempt suicide, self-ham themselves do not have a diagnosable psychiatric illnesses.[28] In our study also 48.6% (36) persons have no diagnosable psychiatric illness. In a study conducted during 1994 over 26.82% of young suicide attempters gave interpersonal conflicts as reasons for their suicide attempts. [33] This means attempted suicide can occur in normal persons as a coping mechanism under stress, and to communicate their needs and distress. 37.5 %(9) depressives attempt suicide between 8 a.m. to 11.59 p.m. which is the highest number but it is not statistically significant. When combined the time period between 4 p.m. to 7.59 p.m. and 8 p.m. to 11.59 p.m., about 49.9% depressives attempt within this period.

Out of 74 cases only intent score obtained for 45 persons. Among them 26.6% prefer 8 a.m. to 11.59 a.m. and 8 p.m. to 11.59 p.m. equally. It is evident that the individual's intent score falls between 5.534 to 7.046. The score 5 falls out of the interval. Hence it can be conclusded that if the intent score is above 5, then there is a chance for future attempt. Older adults had higher suicidal intent than younger individuals, the reason being older adults have more psychiatric morbidity than younger ones.[34] Since majority of our sample are younger adults the intent scores are uniformly low. Some studies showed that high suicidal intent scores at the time of attempt were associated with an elevated risk of eventual suicide.[35,36]

Life events are rapid detectable changes in the individual's environment which produces stress. Especially negative events are likely led to depression and eventually suicide attempt. Out of 74 cases life events score obtained only for 45 cases. Among 8.00 a.m. to 11.59 a.m. category 5 (41%) people were having more than 5 life events (highest no.) within one year period. On an average the cases had 5 events for leading to suicide attempt. Generally those who attempt suicide experiences substantially more events than the general population with the type of events reported most often being interpersonal and relational issues as in our study.

CONCLUSION

Our results showed 8 A.M. to 11.59 A.M. is the most preferred time of attempt and it is statistically significant. This is the time period were more young (20-29) males, from rural background, married and illiterates, unemployed (also housewives) and who has a current psychaitic diagnosis of mostly depression attempt suicide. House is significantly associated with attempt. Insecticide poisoning was the most preferred mode of attempt. Majority of them have experienced more than 5 life events before the attempt. Tuesdays & Wednesdays were their preferred time of attempt. August, September and October were the preferred months of attempt. Hence forenoon is the most vulnerable period because as pointed by other authors also majority of interpersonal conflicts and relational issues occur in the day time. This knowledge may be useful for the effective planning of suicide prevention strategies.

Limitations: The absence of any association between times of attempt with most of the variables may be due to smaller sample size and different inclusion criteria. It is pointed out that hospital based group is somewhat selective and it is not entirely representative of the whole class of patients who attempt suicide especially because of the absence of patients who used rapidly fatal means.

Future directions: Further in depth investigation into the time of attempt of suicide could increase our understanding of the reasons which will help the ways for effective prevention of suicide. Crisis management for primary care physicians problem solving skills, social skill training, will be of help to prevent day time attempt of suicide in youngsters who are also more impulsive, less psychiatrically inclined.

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