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Original Articles

A Community Survey on the Prevalence of Suicidal Attempts and Deaths in a Selected Rural Area of Bangladesh

AHM FEROZ,[1] SM NURUL ISLAM,[2] SELIM REZA,[3] AKM MUJIBUR RAHMAN,[4] JAWAHARLAL SEN,[5] MOGNI MOWLA,[6] MD. RIDWANUR RAHMAN[7]

Abstract:

Background : *Suicide is a public health problem too often neglected by researchers, health policy makers and the medical profession. In the year 2000, approximately one million people died of suicide which represents a global mortality rate of 16 per 100,000. According to WHO estimates for the year 2020 and based on current trends approximately 1.53 million people will die from suicide and 10-20 times more people will attempt suicide worldwide. The aim of this study was to describe the community prevalence of suicidal attempts and deaths in rural area of Bangladesh and to find out the relationship between suicide and socio-demographic variables.*

Study Design and Setting : *A Community based survey was carried out by members of the Department of Medicine, Shaheed Suhrawardi Medical College and Hospital at Mominpur union under Sadar Upazilla of district Chuadanga. Statistical analyses were performed using SPSS 16.*

Results : *A total of 3551 households were surveyed covering 12422 individuals. A total of 35 individuals attempted suicide in last one year and of them 16 died and rest of he 19 survived. One year incidence of suicidal attempt in the study area was 281.8 per thousand population and the incidence of suicidal deaths was 128.8 per 100000 population. Median age of the people attempted or committed suicide was 30.36(range12 to 70 years). Most (42.9%) suicide was attempted by people at their twenties (20–29 years). Male to female ratio was around 1:4. Around 33.3% of the people who attempted or committed suicide studied up to secondary level, 28.6% studied up to primary level. Most (55.2%) of the people who committed or attempted suicide were housewives,10.3% were daily basis worker, 6.9% were students, another 6.9% engaged in agricultural work and 3.4% were disabled. Majority (45.7%) of the people who committed or attempted suicide was of lower class, 37.1% were of lower middle class, 14.3% were of middle class and 2.9% were of upper class. Majority (82.9%) of the person attempted suicide or died of suicide were married. Around 57% had discord in the family, around 23% had at least one relative died of suicide, around 17% of them were suffering from chronic diseases. Two of them were substance abuser. One of them had preexisting mental disorder, two (5.8%) were orphan and around seven (20%) made an attempt before the current one.*

Conclusion: *Community survey in a rural area of South-West Bangladesh revealed that suicide is a major cause of mortality, especially in young females. Although this study results were from a small population of a community, the high rate of deaths from suicide are alarming and warrants further studies in regional and national level to find out the risk factors.*

Keyword: *Community, Suicidal, Rural Area, Bangladesh*

Introduction:

Suicide means voluntary extinction of life. Suicide and Para-suicide in any community is a guide of mental health of that community. Suicide is a part of the suicidal behavior that includes suicidal thought, suicidal attempt and completed suicide.[1,2] About 5-25% of the population develops suicidal thoughts.[3] Surveys estimate that the ratio between suicidal act, suicidal attempt and suicidal thought is

1. Associate Professor, Medicine
2. Associate Physician, Medicine
3. Asstt. Professor, Forensic Medicine
4. Associate Professor, Medicine & Director of ShSMCH
5. Associate Professor, Surgery
6. Asstt. Professor, Medicine
7. Professor and Head of Medicine

Correspondence: Dr. AHM Feroz, 161/3, Shantinagor (3rd floor), Dhaka 1217, E-mail-ahmferoz5@gmail.com

1:10:100.Woridwide, suicide is one of the three leading causes of death among those aged 15-44.[4] In the year 2000, approximately one million people died of suicide. This represents a global mortality rate of 16 per 100,000 or one death every 40 seconds. According to WHO estimates for the year 2020 and based on current trends approximately 1.53 million people will die from suicide and 10-20 times more people will attempt suicide worldwide.[5] This represents on average 1 death per 20 seconds and 1 attempt every 1-2 seconds. In spite of strong family bondage, widespread community support, faith in religious teachings and strong moral support to individuals in times of physical and mental adversity, suicide rate in Bangladesh is unacceptably high. The average rate of suicide in Bangladesh has been reported to be 39.6/100000 population/year. About 10%-20% of emergency admission in the hospital in Bangladesh is attempted suicide.[7] Nation wide survey on suicide has not yet been conducted in Bangladesh. Reports from police records, media, court, hospitals and the focused study on selected population indicate that suicide is a public health problem in Bangladesh. South-west region of Bangladesh specially Chuadanga, Jenaidah, Kustia and Meherpur districts are the highest prevalent area of suicide.Mominpur is one of the unions of sadar upazilla under the district Chuadanga having average density population. It is about 22.94sqkm area with 15425 populations residing in 4125 families. They are fixed resident of this area and non-tribe. This area is about 2.5KM distant from district town with good communication. Almost all of the roads are pacca. Literacy rate is 34% with majority of the population are with below average socio-economic condition and their main earning source is agriculture.

Materials and Methods:

The study was carried out by members of the Department of Medicine, Shahid suhrawardi Medical College and Hospital at Mominpur union under Sadar Upazilla of district, Chuadanga, from 15/12/2009 to 15/03/2010. The field site has stable resident population and is about four and half hour away (by road) from the study institute with reasonably good communication. Selection of the study site was based on convenience, rural location and relatively fixed resident population suitable for making a longitudinal cohort for future follow-up based on results of the baseline survey. The available demographic data at the union parishad and upazilla health complex was utilized which with a total population of 15425 (2008) with 4125 household.

It was a Community based survey to describe the prevalence of suicidal attempts and deaths.

Sample Size

This study was a census of all people in a geographically defined rural location of Bangladesh. Using the formula for calculating sample size described by Bennet et al, an estimated total of about 240 men and women would provide acceptable precision in estimating the prevalence of suicidal attempt and deaths. However, we collected the baseline information from head of the family from the study union with 3551 household and a total population of 12422 from 15.12.2009 to 15.03. 2010.

Sampling Design and Methods

We did not stipulate that the site chosen for the survey would be typical of Bangladesh. Rather, we used a census to ensure that the study samples at the chosen site are representative of the communities in the geographical regions studied. At the chosen study site, we used the 2008 National ID data as the sampling frame. A group of non-medical personnel having at least twelve years of education and residing in the study area were appointed and they were trained on procedure of survey, definition of various terms used in the questionnaire and recording of information and methods adopted for various measurements.They have performed a door-to-door survey of the participant households. They have taken all information from head (or another adult person of that family in absence of head) of each family using a face to face interview and recording of all about socio-economic and demographic findings. All the individuals in the selected households were included in the survey. We have covered 9 wards in sequence eaching a target population of about 12422. In case of missing persons, a second visit was undertaken for the interview. A verbal informed consent was sought from each participant.

Survey Questionnaire

A multi-item structured questionnaire was developed by an expert group including physicians, psychiatrist, and epidemiologist. The questionnaires were translated into Bengali language. The questionnaire includes the demographic, socio-economic, behavioral characteristics (e.g., age, marital status, religion, education and monthly income of both the participant and his/her family members). Level of education was defined as: no institutional education, completion of primary, secondary, higher secondary, Bachelor or above. Monthly income was estimated from daily income of day laborer, business, salary from services, earnings from land. Question was asked to house hold head about the marital status of his son or daughter and was labeled as peaceful, average or quarrel as he perceived. Socioeconomic status of the respondents was generated from socioeconomic score that was calculated from the variables representing

earning capacity, housing status, possession of essential and luxury goods in the family. A composite score was generated through principal component analysis. An average person with higher score represents better socioeconomic status. Socioeconomic score was categorized in to four distinct sub group based on standardized cutoff into Low < 11, lower middle 11- 15, Middle 16 – 20 and Upper > 20. Ethical clearance was taken from the concerned institution.

Statistical methods

The data were entered into computer using SPSS 16.0 software. All statistical analyses were performed using SPSS 16.0 software. $P < 0.05$ was used as the definition of statistical significance.

Results and Observations:

A total of 3551 households were surveyed covering 12422 individuals. A total of 35 individuals attempted or committed suicide in last one year and of them 16 died and rest of the 19 survived.

Table-I

Socio demographic information of people attempted suicide

	Committed or attempted suicide		Study Population	
	Frequency	Percent	Frequency	Percent
Age				
< 20 years	07	20.0	3778	30.4
20 - 29 years	15	42.9	2607	21.0
30 - 39 years	06	17.1	2426	19.5
40 - 49 years	03	08.6	1679	13.5
> = 50 years	04	11.4	1924	15.5
Sex				
Male	09	25.7	6412	51.6
Female	26	74.3	6008	48.4
Religion				
Muslim	32	91.4	12023	96.8
Hindu	03	08.6	397	03.2
Family type				
Single	33	94.3	10575	85.1
Combined	02	05.7	1842	14.9
Family size				
< 4	10	28.6	1226	09.9
4 -5	21	60.0	10136	81.8
> 5	04	11.4	8480	08.3

Median age of the people attempted or committed suicide was 30.36 ranging from 12 to 70 years.

Most (42.9%) suicide was attempted by people at their twenties (20 – 29 years). Male to female ratio was around 1:4. Around 94% were of single family and majority of them (60%) had family size between 4 – 5 members.

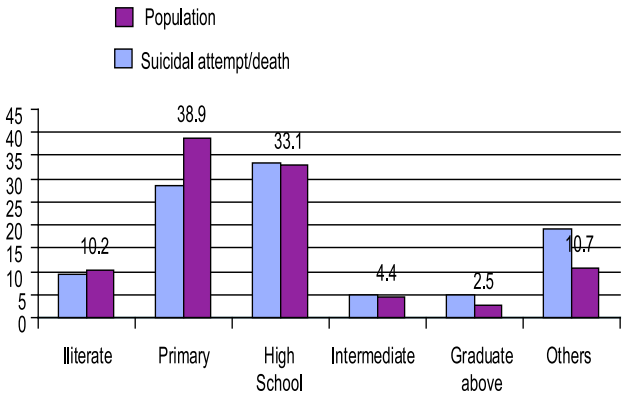

Fig.-1: *Level of education*

Around one third (33.3%) of the people attempted or committed suicide studied up to secondary level and another 28.6% studied up to primary level.

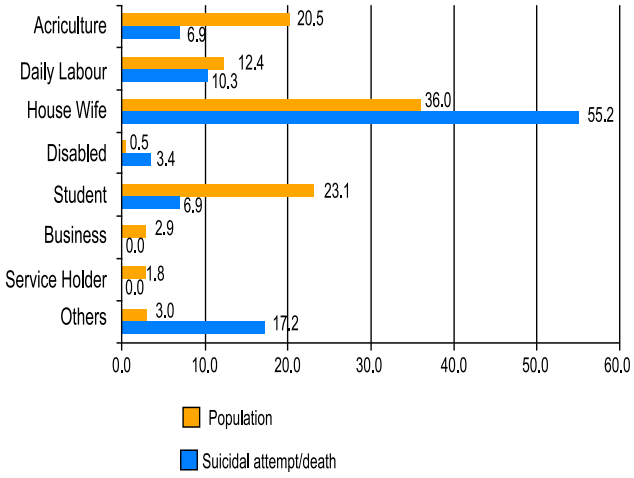

Fig.-2: *Occupation*

Most of the people committed or attempted suicide were housewives. Around 10.3% were daily basis worker 6.9% each were student or engaged in agricultural work and 3.4% were disabled.

Regarding monthly family income, 37.1% earns less than three thousand taka, around 40% earns between 3000 – 5000 taka, 20 earns between 5000 – 10000 taka. Around 31% were land less, 25.7% had less than 2 acres of land and around 43% had more than 2 acres. 60% had electricity at their houses, 28.6% had at least one television and 54.3% had mobile phone in their household.

Table-II

Socio economic status of the family of people committed or attempted suicide

	Committed or attempted suicide		Study Population	
	Frequency	Percent	Frequency	Percent
Family Income (Tk/mon)				
< 3000	13	37.1	4126	33.0
3000-5000	14	40.0	4778	38.5
5000-10000	07	20.0	2545	20.5
10000-20000	01	02.9	614	4.9
> 20000			342	3.1
Family Land property				
Land less	11	31.4	4920	39.6
< 2 acre	09	25.7	1821	14.7
2 or more acre	15	42.9	5679	45.5
Electricity				
Yes	21	60.0	8396	67.6
No	14	40.0	4010	32.3
Motor bike				
Yes	01	02.9	721	5.8
No	34	97.1	11694	94.2
Television				
Yes	10	28.6	44101	36.2
No	25	71.4	7904	63.8
Mobile phone				
No	19	54.3	4597	37.0
Yes	16	45.7	7823	63.0

Table-III

Housing status

	Committed or attempted suicide		Study Population	
	Frequency	Percent	Frequency	Percent
Number of living housing unit				
One	23	65.7	6165	49.6
> one	12	34.3	6117	50.4
Floor material of main living unit				
Raw	32	91.4	9075	78.1
Concrete	03	08.6	3345	21.9
Wall material				
Soil	13	37.1	5046	40.7
Straw	07	21.0	987	7.9
Concrete	15	42.9	6152	49.6
tin	0	0	225	1.8
Roof material				
Straw	03	8.6	502	4.0
Tin	30	85.7	8926	71.9
Concrete	02	5.7	2970	23.9
Sanitary latrine of the family				
Yes	11	31.4	5788	46.6
No	24	68.6	6624	53.4

Majority (65.7%) have only one room for living. In 91.4% cases floor was raw, 37.1% of the subjects had their wall made of soil, 21% had straw and 42.9% had pacca wall. Most of the people lived in tin shed house and 31.4% had sanitary latrine.

Table-IV

Socio economic status

Socioeconomic status	Committed or attempted suicide		Study Population	
	Frequency	Percent	Frequency	Percent
Lower class	16	45.7	4719	38.1
Lower middle class	13	37.1	3758	30.3
Middle class	05	14.3	3011	24.3
Upper class	01	02.9	899	07.3
Total	35	100.0	12387	100.0

In the survey 45.7% of the people Committed or attempted suicide was of lower class, 37.1% were of lower middle class, 14.3% were of middle class and 2.9% were of upper class.

Table-V

Prevalence of suicidal attempt and death per 1,00,000 populations

Sex	Prevalence /1,00,000 population		
	Suicidal attempt/Death	Suicide	Para-suicide
Male	140.3	77.9	62.36
(n=6414)	(64.2 -266.4)	(25.3 - 181.9)	(16.9–159.7)
Female	432.8	183.1	249.7
(n=6008)	(282.7-634.1)	(91.4-327.6)	(139.7–411.8)
Total	281.8	128.	152
(n=12422)	(196.3 - 391.9)	8 (73.6 - 209.2)	(92.1–238.9)

Figure in parenthesis denotes 95% CI

One year incidence of suicidal attempt in the study area was 281.8 (196.3-391.9) per thousand population and the incidence of suicidal death was 128.8 (73.6-209.2) per 100000 population. Both attempt and death were more among female, among them suicidal attempt was 432.8(282.7-634.1) per 100000 and death was 183.1 (91.4-327.6) per 100000. The incidence among male was 140.3 (64.2-266.4) and 77.9 (25.3-181.9) respectively.

Table-VI

Distribution of the respondents by marital status and status of conjugal life

	Frequency	Percentage
Marital status		
Unmarried	05	14.3
Married	29	82.9
Widow	01	02.9
Status of conjugal life according to family head		
Peaceful	07	23.3
Average	07	23.3
Quarrel	16	53.3

Majority (82.9%) of the person attempted sluiced or died of suicide were married. Around 53.3% had feud in their family as reported by the household head.

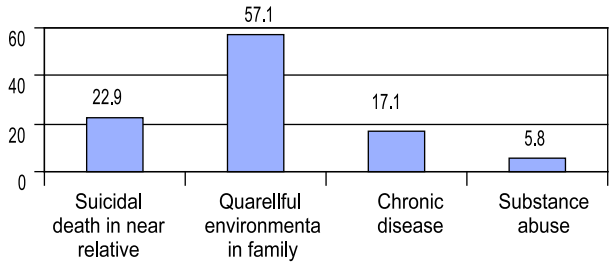

Fig.-3: *Distribution of the factor of Suicide*

Around 23% of the people committed or attempted suicide had at least one relative died of suicide; around 57% had discord in the family. Around 17% of them were suffering from chronic diseases. Two of them were substance user, One used fencidyl and another one took tari a locally brewed wine.

Table-VII

Psychological condition among the people attempted or committed suicide

	Frequency	Percent
Mental disorder		
Yes	01	02.9
No	34	97.1
Not raised by parents		
Yes	02	05.7
No	32	91.4
Previous Attempt		
Yes	07	20.0
No	28	80.0

One of them had preexisting mental disorder before the attempt, 5.7% were orphan and around 20 made an attempt before the current one.

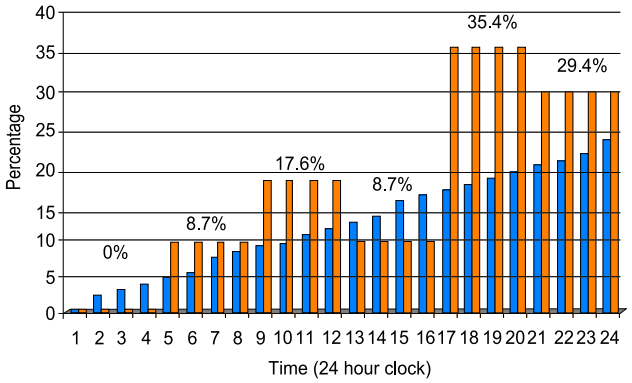

Fig.-4: *Time of suicidal attempt*

Figure illustrates the trend in time of suicide. None attempted suicide between midnight and 4 in the morning. Around 8.7% committed or attempted between 4 am and 8 among in the morning. From 8 am to 12 noon the percentage was 17.6%. The proportion was low during the afternoon (12 noon – 4 pm). Most people attempted suicide during the time between 4 pm to 8 pm and during the period after 8 am till midnight the percent age was 29.4%. Over all more people committed or attempted suicide during the second half of the day than the 1st part.

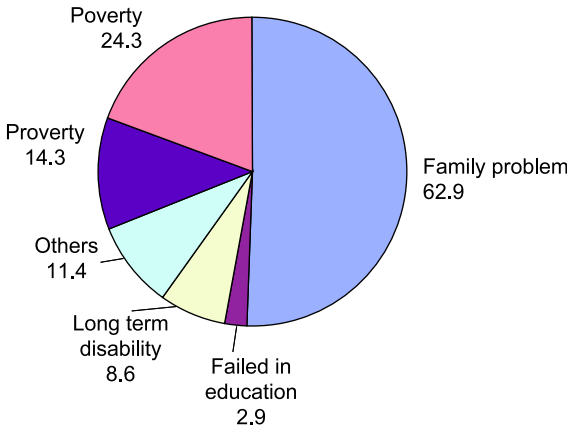

Fig.-5: *Reason of suicide according to house hold head*

The chart illustrates the reason of suicide as reported by the house hold head. In around 63% cases family problem was identified as a reason by house hold head, poverty in 24.3% cases, long term morbidity in 8.6% cases and 2.9% due to failure in the exam.

Table-VIII

Socio-demography of suicide and para-suicide:

	Suicide(n-16)	Para Suicide(n=19)
Sex		
Male	05(31.2%)	04(21.1%)
Female	11(68.8%)	15(78.9%)
Age		
< 20 years	01(06.2%)	06(31.6%)
20 - 29 years	09(56.2%)	06(31.6%)
30 - 39 years	01(06.2%)	05(26.3%)
40 - 49 years	01(06.2%)	02(10.5%)
> = 50 years	4(25.0%)	00 (0.0%)
Marital status		
Unmarried	02(12.5%)	03(15.8%)
Married	14(87.5%)	15(78.9%)
Widow	00 (0.0%)	01(05.3%)
Monthly income		
d" 3000	05(31.2%)	08(42.1%)
3000-5000	09(56.2%)	05(26.3%)
5000-10000	02(12.5%)	05(26.3%)
10000-20000	00 (0.0%)	01 (5.3%)

Outcome of suicidal attempt was compared across socioeconomic strata. Both suicide and Para suicide were equally prevalent in female however a visible age differential was observed. Suicide was more in older subjects and para suicide was more in younger subjects. Mostly married person attempted suicide than the unmarried person. No pattern was apparent with monthly family income as well.

Table-IX

Circumstance and media of suicide by type

	Suicide(n-16)	Para Suicide(n=19)
Material used		
Poison	05 (31.2%)	10 (52.6%)
Hang	10 (62.5%)	07 (36.8%)
Rail road injury	01 (6.2%)	02 (10.6%)
Marital status		
Unmarried	2 (12.5%)	3(16.7%)
Married	14(87.5%)	16(83.3%)

Both suicide and Para suicide was seen in similar percentage in married subjects and no statistically significant difference existed between material used and survival. Besides, Material or media used and type of family don't seem to be significant predictor of outcome of suicidal attempt.

Discussion:

Community based survey in a rural area of South-West Bangladesh revealed that suicide is a major cause of mortality, especially in young females. Mortality from suicide occurred at a rate of 128.8 per 100,000 populations per year. Suicide associated deaths from this study area were substantially higher that rates else where reported in Asia. The highest suicide rate upto118 per 100,000 in the world were reported from some regions of SriLanka[8]. Although, this study results were from a small population of a community, the high rate of deaths from suicide are alarming and warrants further studies in regional and national level. Like many other parts of the world young people between the ages of 20 and 30 years appear to be most vulnerable group. In a study of ICDDRB in Abhoanagar and Keshobpur, rural and sub-urban areas of Jessore district, victim tended to young; 41% were less than 20 years.[6] Studies from Pakistan show that between 50% and 82% of subjects are under the age of 30 years.[9,10] In India similar trends prevail with highest rates in age groups 20 to 30 years. Unlike in the West, rate of suicide in the elderly are low. In our survey, four times as many female as male kill themselves. This female predominance especially in young age group was also observed in ICDDRB study.[6] However, this is in contrast to SriLanka and Pakistan where male to female ratio were 3:1 and 2:1 respectively.[8,10] In India the association between suicide and gender is inconsistent. Some stydies report male preponderance while report a female majority.[11,12] In Western countries male to female ratio is consistently from 3:1 to 4:1.[8] About 71.5% of people who committed suicide had at least primary education.Suicidal deaths are more among married persons especially married women. Studies from india and Pakistan has highlighted the increased incidence of suicide in married compared to single or divorced women.[8,13] Some of the associated factors are early marriage and motherhood, infertility or absence of male offspring, lack of autonomy in choosing marital partner and economic dependency on husband, domestic violance.[14] Among young married women who engaged in suicide marital and family conflict, especially with in-laws or family members was perceived as a predisposing factors for suicide. These were also frequently reported in previous studies from Indian subcontinent. Mental illness was rarely reported as a cause of suicide. It is possible that in developing countries like our Bangladesh psychiatric diseases are underestimated and family head was unwilling to disclose it because of stigmata of mental illness.

Common methods of suicide appear to be hanging, ingestion of insecticides, burning, jumping in front of train. Insecticides are lethal when ingested and their easy availability and accessibility, probably contribute to the high fatality.

While suicide represents a major cause of deaths especially in young people in this study area, sufficient data are not available to know whether high mortality rates described in this report are representative of suicide rates elsewhere in Bangladesh, particularly within urban areas where factors linked to suicide may be dissimilar from those in rural areas or occurs with different frequency. Population based data from further health and community survey (like that in mominpur) elsewhere in Bangladesh will be helpful to ascertain impact of geographic location and population density on suicide incidence and to closely examine underlying risk factors responsible for suicide and characteristic predictive of suicidal death, and to identify opportunities for contact with a physician or mental health services before suicide is contemplated or attempted.

Conflict of Interest: None

References:

1. Vencova A. In: Issac MK& Gururaj G. Epidemiology of suicide in Bangalore. NIMHANS, Bangalore, India, Publication No: 43,2001.
2. Ahsan MN, Ahmed S, Alam FM & Begum M. Attempted Suicide: An Overview. J Bang Coll Phy Sur. 1999;17:108-119
3. Gururaj G,Ahsan MN, Issac MK, Latif MA, Abeyasinghe R & Tantipiwatanaskul P (eds) . Suicide Prevention: Emerging From Darkness. World Health Organization , Regional Office for South East Asia, 2001
4. World Health Organization: Background of SUPRE-Prevention of Suicide Behaviours- a task for all. Available at http://www.who.int/mental_health/prevention/suicide/backgroun/en/
5. Bertolote JM & Fleishmann A. A global perspective in the epidemiology of suicide. Suicidology Arg. 7, nr. 2, 2002 .
6. Mortality due to suicide in rural Bangladesh. ICDDR,B Health and science bulletin 2003; l(5)
7. Rahman HM. Socio-economic and Psycological Causes of Suicide in Jheneidah District. Department of Social Work, Rajshahi University, Bangladesh, 1986
8. Khan MM. Suicide on the Indian Subcontnent.Crisis 2002;23 (3):104-107
9. Ahmed SH, Zuberi H. Changing pattern of suicide and parasuicide in Karachi. Journal of the Pakistan medical Association 1981; 31:76-78
10. Khan MM, Reza H.The pattern of suicide in Pakistan. Crisis 2000; 20:67-70
11. Sarma GP,Sawang GD. Suicide in rural area of Warangal district. Indian Journal of Behavioral Sciences 1993; 3:79-84
12. Banerjee G, Nandi DN, Nandi S. The vulnerability of Indian women to suicide-A field study.Indian Journal of Psychiatry 1990; 32:305-398
13. Ponnudurai R, Jeyakar J. Suicide in Madrass. Indian Journal of Psychiatry 1980; 22:202-203
14. Khan MM, Reza H. Gender differences in nonfatal suicidal behavior in Pakistand: Significance of socio-cultural factors. Suicide & Life threatening Behavior 1998; 28:62-68