



Pattern of deliberate self-harm seen at a tertiary teaching hospital in Meghalaya, India

Abstract

Background: The purpose of the study was to explore the deliberate self-harm (DSH) in the North-Eastern part of India and to understand the pattern of occurrence to help improve early intervention strategies. **Methods:** This is a cross-sectional study conducted at a tertiary care hospital in Shillong, Meghalaya, India. After informed consent, 50 individuals admitted in the emergency department with DSH were assessed for psychological profile by a trained psychiatrist and pattern of DSH was recorded using a semi-structured proforma. **Results:** Nearly 65% of the individuals were in the age group of 15-25 years and females were predominant compared to males (0.6 males/female). The maximum DSH attempts took place from 6:00 PM-6:00 AM. Chemical ingestion (44%) and medication overdose (24%) were the two most common modes of DSH. Nearly 20% of the individuals were intoxicated during the DSH attempt. **Conclusion:** The results inform the pattern of DSH in the North-Eastern part of India and further research is needed to explore the pattern in detail for designing effective intervention strategies.

Keywords: Mental Disorders. Stressors. North-Eastern India.

**Arvind Nongpiur¹, Sonali Shinde Tesia²,
Vijaya Raghavan³**

¹Assistant Professor, Department of Psychiatry, North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGRIHMS), Shillong, Meghalaya, India, ²Consultant Psychiatrist and Ex. Senior Resident, Department of Psychiatry, North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGRIHMS), Shillong, Meghalaya, India, ³Schizophrenia Research Foundation, R/7A, North Main Road, Anna Nagar West Extension, Chennai, Tamil Nadu, India

Correspondence: Arvind Nongpiur, Department of Psychiatry, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences (NEIGRIHMS), Mawdiangdiang, Shillong-793018, Meghalaya, India. arvindnongpiur@gmail.com

Received: 15 April 2017

Revised: 23 July 2017

Accepted: 24 July 2017

Epub: 28 July 2017

Introduction

“Suicide” or “completed suicide” is defined as “a death from injury, poisoning, or suffocation where there is evidence (either explicit or implicit) that the injury was self-inflicted and that the decedent intended to kill himself or herself” while “suicide attempt” is defined as “a potentially self-injurious behavior with a nonfatal outcome, for which there is evidence (either explicit or implicit) that the person intended at some (nonzero) level to kill himself/herself.[1] According to these definitions, a suicide attempt is a potentially self-injurious behaviour with a nonfatal outcome. An identifiable injury does not need to occur for a behaviour to be classified as a suicide attempt.

Suicide is major public health issue worldwide. Per the World Health Organization (WHO) report, 800,000 die by suicide every year around the world.[2] Suicide accounts for 1.4% of total deaths worldwide making it the 15th leading cause of death.[3] Nearly 75% of the suicide deaths occur in the low- and middle- income countries.[4] Even though suicide occurs in all age groups, it is the second most common cause of death among 15-29 years group globally.[5] The economic

and human cost of suicidal behaviour to individuals, families, communities, and society is high.[6]

The suicide rate in India is 10.6/100,000 population.[7] The suicide rate differs among various states such as Maharashtra with suicide rate of 43.2/100,000 and Lakshadweep with 1.3/100,000.[8] Various risk factors such as mental illness, family history of psychopathology, and recent life events have been identified as important risk factors for suicide. In India, social and economic reasons are the major causes for suicidal death in men while emotional and personal problems are the causes in women.[9] It was also observed that hanging is the most common method of suicide in both men and women followed by insecticide poisoning. In one study conducted in North-East India, depression and gender were found to be significant determinants of suicide attempt in the study population.[10]

The exact rate of deliberate self-harm (DSH) is not available in India. It is estimated that for each one suicidal death there are 25 attempted suicides in the youth population while this number comes down to 1:4 in the elderly.[11] It is also observed that females attempt suicide three times more

common than males.[12] The important factors that have been implicated for attempted suicide are previous self-harm, personality disorder, psychiatric illness, alcohol abuse/drug dependence, and living alone.[13,14]

Studying the magnitude of DSH and its associated demographic and life stressors would help in understanding the problem at hand and develop specific measures to prevent further suicidal attempts and deaths. Very few studies have explored the pattern and factors associated with attempted suicide in North Eastern part of India. The aim of the present study was to identify the pattern of DSH seen in a tertiary care centre in Meghalaya and to explore the socio-demographic factors and stressors associated with DSH.

Materials and methods

The study was conducted at North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGRIHMS) in Shillong, Meghalaya, India. It was designed as a hospital-based cross-sectional study with consecutive sampling. Institutional Ethics Committee approval was obtained before the start of the study. The study was conducted from February 2012 to August 2013.

Individuals who presented to the hospital with a history of DSH were recruited into study after obtaining informed written consent. The subjects were recruited from casualty, outpatient departments and inpatient wards. Individuals who were critically ill after the suicide attempt requiring intensive care and who did not give consent were excluded from the study.

At the point of contact, detailed history and mental state examination was done and subjects were diagnosed according to WHO ICD-10 by a psychiatrist (AN, SST).[15] A semi-structured questionnaire specially designed for the current study was used to collect information about the patients' socio-demographic details, stressors, and information regarding DSH. Subjects were treated accordingly based on the diagnosis and further follow-up of the subjects were advised.

The measures were a socio-demographic proforma and a clinical datasheet. The Suicide Intent Scale which is a 15 questions questionnaire that are marked as zero, one, or two.[16] Items one to eight assess the objective circumstances (e.g. isolation, precautions against discovery, suicide note) and items nine to 15 assess the subjective intention and expectations regarding the attempt given as less than ten signifying 'low-intent', ten to 15 'intermediate-intent', and a score of >15 points signifies 'high-intent' suicide attempt.

Results

A total of 50 individuals with the diagnosis of DSH and fulfilling the inclusion and exclusion criteria were taken up for the study. Table 1 depicts the socio-demographic profile of the study population. Nearly 65% of the study population was in the age group of 15-25 years while 25% of the study population was in the age group of 26-44 years. Females were predominant when compared to the males (0.6 males/female). While 24% of the study population was from the rural background, the majority (76%) were from urban setup.

Table 1: Socio-demographic profile of the study population

Variables	n (%)
Age (years)	
<15	2 (4)
15-25	32 (64)
26-44	13 (26)
45-59	3 (6)
Gender	
Male	19 (38)
Female	31 (62)
Marital status	
Single	26 (52)
Married	21 (42)
Separated	1 (2)
Widowed	2 (4)
Employment	
Employed	18 (36)
Unemployed	4 (8)
Student	14 (28)
Housewife	14 (28)
Habitation	
Urban	38 (76)
Rural	12 (24)
Education (years)	
<10	36 (72)
>10	14 (28)

Home was the most common place of DSH with maximum attempts happening during the 6:00 PM-6:00 AM period (48%). Medication overdose (24%) and chemical ingestion (44%) were the two most common methods of DSH while hanging (eight per cent) and jumping from heights (six per cent) were the least common methods. Alcohol ingestion was present along DSH attempt in 20% of the study population. Suicide note was not written by any of the study population before attempting DSH (Table 2).

In our sample 38% (n=19) attempters had family history of suicide and 42% (n=21) had a past history of psychiatric illness. Ninety two per cent (n=46) of suicide attempters had a life stressor in last one month of the attempt of which, family and relationship issues were the most common stressors in 68% (n=34) (Table 3).

Discussion

DSH is an important public health issue and it has huge impact on the individual, families and the society at large. Understanding the regional epidemiology of DSH pattern is an important component for initiating measures to address and prevent further DSH in the community. Similar to previous studies from other parts of India and world, we found that the most common age group to attempt DSH is the 15-25 years followed by 26-44 years.[17-19] Data released from WHO also concurs with our results that

Table 2: Characteristics of deliberate self-harm (DSH) episodes

Variables	n (%)
Day of attempt	
Weekday	32 (64)
Weekend	18 (36)
Place of attempt	
Indoors	41 (82)
Outdoors	9 (18)
Timing of attempt	
Morning	16 (32)
Day	10 (20)
Night	24 (48)
Mode of attempt	
Medication overdose	12 (24)
Chemicals	22 (44)
Sharp objects	9 (18)
Hanging	4 (8)
Jumping	3 (6)
Fatality	
Death unlikely	17 (34)
Equivocal	29 (58)
Death likely	4 (8)
Intervention	
Possible	40 (80)
Not likely	10 (20)
Alcohol use	
Absent	40 (80)
Some	3 (6)
Suicide note	
Intoxicated	7 (4)
None	50 (100)

the leading cause of death in the 15-34 years' age group is suicide.[20] Mortality through DSH in this economically active age group would have direct and indirect effects on the dependent population.

Females attempted more DSH (62%) when compared with the males and this distribution is consistent with other studies.[12,21,22]

The major mode of DSH was poisoning either by prescription medications or pesticides. Similar pattern is also seen in other parts of India and other developing countries.[23-27] This is in contrast with the developed countries where firearms are the major mode of self-harm. Many studies have shown that restricting the pesticides in a safe commonplace, reviewing the pesticide regulatory policies, and community interventions have reduced the incidence of DSH by pesticides. Here prescription overdose has significant proportion of the total poisoning and this trend is alarming. While hanging is the second most common form of DSH in other studies, we found that cutting

Table 3: Psychological profile of individuals presented with deliberate self-harm (DSH)

Variables	n (%)
Family history of suicide	
Yes	19 (38)
No	31 (62)
Past psychiatric history	
Yes	21 (42)
No	29 (58)
Stressors	
Family conflict	26 (52)
Relationship issues	8 (16)
Academic	2 (4)
Others	6 (12)
None	8 (16)
Number of previous DSH	
One	37 (74)
Two	9 (18)

with sharp objects were more common than hanging in our study population.

In our study, we found that more DSH were attempted during the weekdays than the weekends. Similar pattern is observed in other recent studies.[28] We also noted a diurnal variation in the DSH pattern. While most of the DSH were attempted in the night between 6:00 PM and 6:00 AM, there was lesser DSH in the noon to 6:00 PM when compared to 6:00 AM to noon. This is in contrast with other studies which have shown a steady increase in the DSH attempts as the day progressed from morning to night.[26,29] But, another study has shown that the maximum attempts happen in the early morning and hits the nadir at night.[30] The exact reason for this diurnal variation in DSH is not known. It has been suggested that increased adrenergic activity and lowered serotonergic activity could possibly play a role.[31]

To our knowledge, this is the first study that has looked into the pattern of DSH from the North-Eastern part of India. The present study shows the major pattern of DSH from this part of the country and it would be helpful in planning preventive strategies in the North-Eastern part of India. The major limitation of the present study is that this was a cross-sectional hospital-based study. Another major limitation of the study is the lack of follow-up of the subjects after their discharge from the hospital.

Future studies should be prospective in nature and with built-in mechanisms for follow-up of the patients with DSH to know about the long-term outcome in these patients. Various factors leading to DSH should be studied and patterns to be identified. The understanding from these studies should translate into meaningful interventions for the prevention of DSH. The intervention strategies could include pharmacological interventions such as antidepressants, electroconvulsive therapy (ECT) and psychological interventions such as cognitive behaviour therapy (CBT),

dialectical behavioural therapy (DBT), and mentalisation-based therapy (MBT).

In conclusion, DSH has an increasing trend and it affects the young productive age group. The major means of DSH is poisoning by pesticides and prescription medications. In contrast to other studies, we have seen an increased frequency of DSH in the weekdays when compared to the weekend. Further community-based studies should be done to determine the prevalence and pattern of DSH in the community.

Acknowledgement

Post-Doctoral support to AN and VR is by the Fogarty International Training Program in Chronic Non-Communicable Diseases and Disorders at the University of Florida, Grant #1D43TW009120 (Cottler PI).

References

- O'Carroll PW, Berman AL, Maris RW, Moscicki EK, Tanney BL, Silverman MM. Beyond the Tower of Babel: a nomenclature for suicidology. *Suicide Life Threat Behav.* 1996;26:237-52.
- World Health Organization, Mental and Behavioural Disorders Team. Figures and facts about suicide. Geneva: World Health Organization; 1999.
- Diekstra RF. Suicide and the attempted suicide: an international perspective. *Acta Psychiatr Scand Suppl.* 1989;354:1-24.
- Vijayakumar L, Phillips M. Suicide prevention in low-and middle-income countries. In: O'Connor RC, Pirkis J. editors. *The international handbook of suicide prevention.* 2nd ed. Wiley-Blackwell; 2016:507-23.
- McKinnon B, Gariépy G, Sentenac M, Elgar FJ. Adolescent suicidal behaviours in 32 low- and middle-income countries. *Bull World Health Organ.* 2016;94:340-350F.
- Wilkins N, Thigpen S, Lockman J, Mackin J, Madden M, Perkins T, *et al.* Putting program evaluation to work: a framework for creating actionable knowledge for suicide prevention practice. *Transl Behav Med.* 2013;3:149-61.
- Aggarwal S. Suicide in India. *Br Med Bull.* 2015;114:127-34.
- Radhakrishnan R, Andrade C. Suicide: an Indian perspective. *Indian J Psychiatry.* 2012;54:304-19.
- Gururaj G, Isaac MK, Subbakrishna DK, Ranjani R. Risk factors for completed suicides: a case-control study from Bangalore, India. *Inj Control Saf Promot.* 2004;11:183-91.
- Singh PK, Singh RK, Biswas A, Rao VR. High rate of suicide attempt and associated psychological traits in an isolated tribal population of North-East India. *J Affect Disord.* 2013;151:673-8.
- Rich CL, Young D, Fowler RC. San Diego suicide study. I. Young vs old subjects. *Arch Gen Psychiatry.* 1986;43:577-82.
- Hawton K. Sex and suicide. Gender differences in suicidal behaviour. *Br J Psychiatry.* 2000;177:484-5.
- Beautrais AL. Risk factors for suicide and attempted suicide among young people. *Aust N Z J Psychiatry.* 2000;34:420-36.
- Conwell Y, Duberstein PR, Caine ED. Risk factors for suicide in later life. *Biol Psychiatry.* 2002;52:193-204.
- World Health Organization. *The ICD-10 classification of mental and behavioural disorders: diagnostic criteria for research.* Geneva: World Health Organization; 1993.
- Beck RW, Morris JB, Beck AT. Cross-validation of the Suicidal Intent Scale. *Psychol Rep.* 1974;34:445-6.
- Krishnam V, Aravind VK, Vimala AR. Deliberate self-harm seen in a government licensed private psychiatric hospital and institute. *Indian J Psychol Med.* 2016;38:137-41.
- Muehlenkamp JJ, Claes L, Havertape L, Plener PL. International prevalence of adolescent non-suicidal self-injury and deliberate self-harm. *Child Adolesc Psychiatry Ment Health.* 2012;6:10.
- Perry IJ, Corcoran P, Fitzgerald AP, Keeley HS, Reulbach U, Arensman E. The incidence and repetition of hospital-treated deliberate self harm: findings from the world's first national registry. *PLoS One.* 2012;7:e31663.
- World Health Organization. Mortality, morbidity and disability in adolescence: what we can learn from mortality data? [Internet]. [cited 2017 Jul 21]. Available from: <http://apps.who.int/adolescent/second-decade/section3/page2/mortality.html>
- Hawton K, Fagg J. Suicide, and other causes of death, following attempted suicide. *Br J Psychiatry.* 1988;152:359-66.
- Schmidtke A, Bille-Brahe U, DeLeo D, Kerkhof A, Bjerke T, Crepet P, *et al.* Attempted suicide in Europe: rates, trends and sociodemographic characteristics of suicide attempters during the period 1989-1992. Results of the WHO/EURO Multicentre Study on Parasuicide. *Acta Psychiatr Scand.* 1996;93:327-38.
- Chowdhury AN, Brahma A, Banerjee S, Biswas MK. Pattern of domestic violence amongst non-fatal deliberate self-harm attempters: a study from primary care of West Bengal. *Indian J Psychiatry.* 2009;51:96-100.
- Dhanya SP, Dhanva TH, Nair BL, Hema CG. A retrospective analysis of the pattern of poisoning in patients admitted to Medical College hospital. *Calicut Medical Journal.* 2009;7(2):e3.
- Parkar SR, Dawani V, Weiss MG. Gender, suicide, and the sociocultural context of deliberate self-harm in an urban general hospital in Mumbai, India. *Cult Med Psychiatry.* 2008;32:492-515.
- Subba SH, Binu VS, Menezes RG, Kanchan T, Arun M, Patil R, *et al.* Pattern and trend of deliberate self-harm in western Nepal. *J Forensic Sci.* 2009;54:704-7.
- Syed EU, Khan MM. Pattern of deliberate self-harm in young people in Karachi, Pakistan. *Crisis.* 2008;29:159-63.
- Miller TR, Furr-Holden CD, Lawrence BA, Weiss HB. Suicide deaths and nonfatal hospital admissions for deliberate self-harm in the United States. Temporality by day of week and month of year. *Crisis.* 2012;33:169-77.
- Doganay Z, Sunter AT, Guz H, Ozkan A, Altintop L, Kati C, *et al.* Climatic and diurnal variation in suicide attempts in the ED. *Am J Emerg Med.* 2003;21:271-5.
- Preti A, Miotto P. Diurnal variations in suicide by age and gender in Italy. *J Affect Disord.* 2001;65:253-61.
- Manfredini R, Gallerani M, Caracciolo S, Tomelli A, Calò G, Fersini C. Circadian variation in attempted suicide by deliberate self poisoning. *BMJ.* 1994;309:774-5.

Nongpiur A, Tesia SS, Raghavan V. Pattern of deliberate self-harm seen at a tertiary teaching hospital in Meghalaya, India. *Open J Psychiatry Allied Sci.* 2017 Jul 28. [Epub ahead of print]

Source of support: Nil. Declaration of interest: None.