Suicidal pattern of cases brought to mortuary of a tertiary care centre

Niraj Kumar[1,*], Arun Kumar Singh[2]

[1]Assistant Professor, Department of Forensic Medicine, VCSGGMS & RI Srinagar, Pauri Garhwal 246174
[2]Professor and Head, Department of Forensic Medicine and Toxicology, Patna medical College and Hospital, Patna 800004

***Corresponding Author:**
E-mail: K_niraj77@yahoo.co.in, supernova171@hotmail.com

ABSTRACT

Background: *Suicide is preventable but it's often on a low priority for governments and policy-makers. Patna has seen magnificent past but degrading social circumstances led to decrease in public health and disease burden.*
Objective: *To evaluate the pattern of different suicidal factors for understanding burden of problem & preventive measures*
Methods: *this prospective study was conducted during one year duration from 1st January 2010 to 31st December 2010 on 149 autopsies in Patna.*
Results: *81.21 % of all cases fall in age range of 15 to 59 years, maximum death occurred between 15 to 29 years (34%). Men outnumbered women. Illness, family disturbances, depression and mental trauma after violence accounted for more than half of the cases. Unemployment and stressful private jobs have shown positive correlation with development of suicidal tendency. 73% were married. Educational status had inverse relation with falling victim to suicidal intent. Drowning, self immolation, Hanging and poisoning accounted for majority (52%) of suicidal methods.*
Conclusion: *Young age victims constituted dominant group which also is the most productive group. Causes of suicidal intention are multifactorial which is preventable. Most suicides are associated with lower literacy level. Choice of how to die depended on the most available and most convenient means at hand.*

Keywords: *Suicide, Self-harm, Patna*

Access this article online	
Quick Response Code:	**Website:** www.innovativepublication.com
	DOI: 10.5958/2394-6776.2015.00005.3

INTRODUCTION

"Suicide is an act that is contrary to what is perhaps the strongest of human instincts—survival." (1) Suicide is among the top three causes of death among youth worldwide. According to WHO report on Preventing suicide, an estimated 804000 suicide deaths occurred worldwide in 2012, representing an annual global age-standardized suicide rate of 11.4 per 100 000 population (15.0 for males and 8.0 for females). Social, psychological, cultural and other factors can interact to lead a person to suicidal behaviour, but the stigma attached to mental disorders and suicide means that many people feel unable to seek help. Despite the evidence that many deaths are preventable, suicide is too often a low priority for governments and policy-makers. (2)

Patna is the capital and largest city of the state of Bihar in India. Patna has a glorious past like none other city in the Indian History. But after freedom this town has met with decline in various spheres of public life began to be visible. Degradation of politics and political morality, corruption in public life, social unrest and insurgency and persistence of poverty became rather obvious which become apparent in degrading public health and disease burden. Patna is the second largest city in eastern India after Kolkata. It had an estimated population of 1.68 million in 2011, making it the 19th largest city in India. With over 2 million people, its urban agglomeration is the 18th largest in India. (3) Suicide is clearly an important and growing public health problem in Patna. Very little research to date has been done on this topic in Patna and our findings will provide a framework with which to implement future interventions and outcome research.

OBJECTIVE

1. To Study the pattern of different demographical variables viz. age, sex, marital status, occupation, education, causes of death and method related to suicidal death in Patna region.
2. Analysis of observed results to understand burden of problem & its medico-legal aspects in Patna region and possible preventive measures.

MATERIAL AND METHODS

The present prospective study was conducted in the department of Forensic Medicine Patna medical College and Hospital, Patna during one year duration from 1st January 2010 to 31st December 2010. A total of 149 cases were studied.

All the cases brought to the department for medico legal autopsy with alleged history of suicidal

death cases ware studied irrespective of race, religion and caste. Ethical clearance was obtained. Information regarding the name, age, occupation, education, socio-economic status, marital status, history of death and detailed information regarding the circumstances of suicidal act was sought from the police, victim's relatives and friends, visits to the scene of occurrence or deduced by the photographs of the scene of occurrence. Post mortem examination of the case was carried out as per the standards. Information like cause of death taken from the autopsy reports and final cause of death formed from the reports of samples and viscera, subjected to chemical analysis, histopathological examination and other investigations.

The cases which later registered as suicidal cases were included in study and cases subjected for autopsy with alleged history of suicide but which were later registered as other means of death on the autopsy findings, circumstantial evidence and investigation by the police were excluded.

All collected data were put into master chart, which was prepared and fed into laptop in database system. Analysis was done and tables prepared with the help of Microsoft excel. Chi squared tests were used where necessary to assess whether the difference in proportions between categories were statistically significant.

OBSERVATION & RESULTS

Table 1 shows that majority of victims fall in the age group of 15 to 59 years which is most active and productive period of life accounts for 81.21 % of all cases. Maximum death occurred between 15 to 29 years in both male and female category. Whereas it was found that Males (n=95) outnumbered females (n=54) and also mean age was significantly higher for males (38.32) than females (34.43). Male to female ratio is 1.75:1. Figure 1 shows two peaks in age groups of 15 to 29 years and 45 to 59 years among females and hence in total suicidal cases.

Table 1: Age and sex distribution of Suicidal cases

SN	Age distribution	Male	Female	Total	Percent(%) of total suicides
1.	Below 15 years	7	4	11	7.38
2.	15 years to 29 years	26	24	50	33.56
3.	30 years to 44 years	26	7	33	22.15
4.	45 years to 59 years	22	16	38	25.50
5.	More than 59 years	14	3	17	11.41
	Total	95	54	149	100
	Mean ± SD	38.32 ± 15.64	34.43 ± 15.35	36.91 ± 15.65	

Figure 1: Age and sex distribution of Suicidal cases

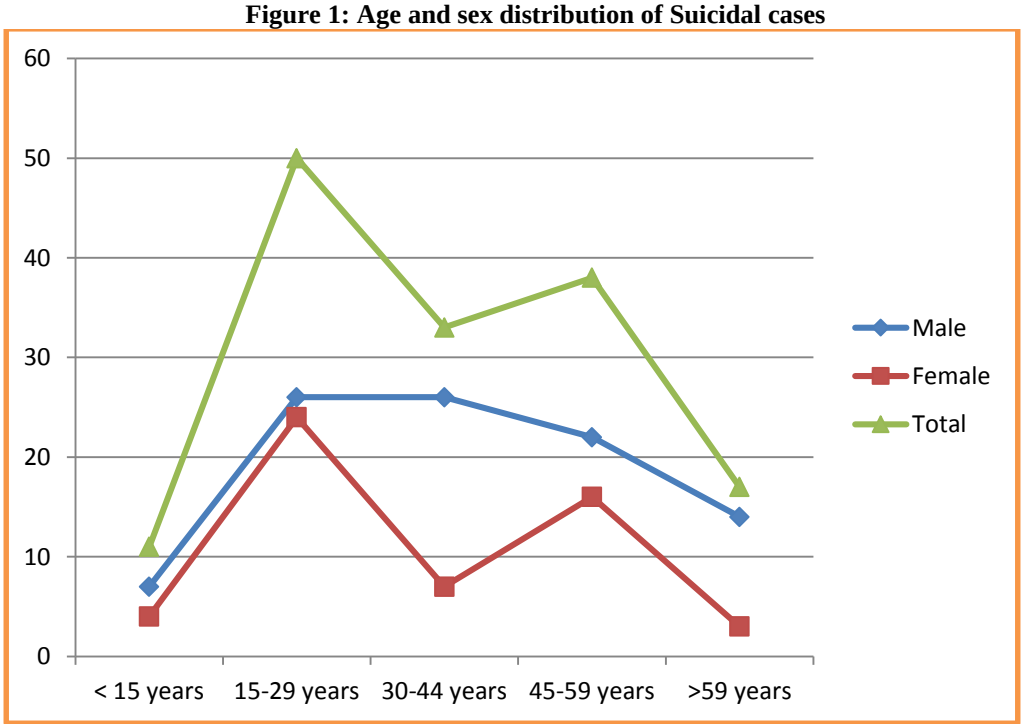

Table 2: Shows intent as to cause of suicidal act is varied and multifactorial but majority of suicides (about 48 %) occurred due to family disturbances, depression and mental trauma after being victimized in domestic violence, rape, assault, etc. In some cases investigation was not completed or uncertain as to find exact causes of suicide are categorized into not known.

Table 2: Distribution of cases according to Cause of suicidal intention

Sl. No.	Cause	Male	Female	Total	Percent(%) of total suicides
1	Chronic/terminal illness	10	2	12	8.05
2	Drug abuse/Alcoholic	3	2	5	3.36
3	Failure in Exams	2	1	3	2.01
4	Family dispute/divorce /separation/breakup	16	10	26	17.45
5	Loss of a job, house or money	3	0	3	2.01
6	Psychiatric problem	1	1	2	1.34
7	Love affairs	3	2	5	3.36
8	Depressive disorder	17	9	26	17.45
9	Being victimized (domestic violence, rape, assault, etc)	12	7	19	12.75
10	loved one being victimized	2	1	3	2.01
11	Losing custody of children	0	2	2	1.34
12	Not known	10	8	18	12.08
13	Other causes	16	9	25	16.78
	Total	95	54	149	100.00

In Table 3, majority of cases were either unemployed, doing some private job or self employed at small scale job. In female category most were housewives or doing some small household activity as job. Others category include cases whom profession were uncertain or hopping from one to another job frequently or neither fit into any of category mentioned.

Table 3: Distribution according to profession of deceased

SN	Profession	Male	Female	Total	Percent(%) of total suicides
1	Student	8	3	11	7.38
2	Unemployed	23	3	26	17.45
3	Govt. service	6	0	6	4.03
4	Private job	15	4	19	12.75
5	Businessman	7	0	7	4.70
6	Farmer/agriculture work	1	0	1	0.67
7	Self employed	8	7	15	10.07
8	Public sector undertaking	1	1	2	1.34
9	House wife	0	17	17	11.41
10	Others	26	19	45	30.20
	Total	95	54	149	100.00

Table 4 shows suicidal tendency most frequently attacked married persons (73 %) either male or female which outnumbered unmarried category (21 %). Sex difference was statistically not significant ($P = 0.829$) for marital status of a person.

Table 4: Distribution according to Marital status

SN	Marital status	Male	Female	Total	Percent(%) of total suicides
1	Unmarried	21	11	32	21.48
2	Married	68	41	109	73.15
3	Widow/widower	5	2	7	4.70
4	Divorcee	1	0	1	0.67
5	Separated	0	0	0	0.00
	Total	95	54	149	100.00
	Chi-square	0.884			
	P value	0.829			

Table 5, indicates less educated persons most commonly felled victim to suicidal intention. Data shows there is increased tendency of suicide with decreasing level of literacy. 72% of deceased had not completed their middle school education. Data shows that difference between males and females was statistically insignificant (P = 0.131) as regards the Educational status of suicides.

Table 5: Distribution according to Educational status

SN	Education level	Male	Female	Total	Percent(%) of total suicides
1	Illiterate	23	26	49	32.89
2	Primary school	21	10	31	20.81
3	Middle school	20	7	27	18.12
4	Matriculation	15	5	20	13.42
5	Intermediate	11	5	16	10.74
6	Graduate	4	1	5	3.36
7	Postgraduate and above	1	0	1	0.67
	Total	95	54	149	100.00
	Chi-square	9.86			
	P value	0.131			

According to table 6 Hanging was most preferred method among males (n=17) whereas self immolation by fire was most common among females (n=20). Hanging, Drowning, self immolation and poisoning accounted for majority (52%) of suicidal methods.

Table 6: Distribution according to method of suicide

SN	Method of suicide	Male	Female	Total	Percent(%) of total suicides
1	Hanging	17	5	22	14.77
2	Drowning	9	6	15	10.07
3	Self immolation/fire	4	20	24	16.11
4	Fire arm	2	0	2	1.34
5	Poisoning	7	9	16	10.74
6	Self inflicted wound	3	0	3	2.01
7	Over consumption of alcohol	5	0	5	3.36
8	Jumping from height	4	4	8	5.37
9	Self electrocution	7	1	8	5.37
10	Fall under running train/vehicle	2	2	4	2.68
11	Other means	35	7	42	28.19
	Total	95	54	149	100.00

DISCUSSION

Suicide is a global phenomenon in all regions of the world. 75% of global suicide occurred in low and middle income countries in 2012. Suicide accounted for 1.4% of all deaths worldwide, making it the 15th leading cause of death in 2012. (4) In India more than one lakh persons (1,34,599) in the country lost their lives by committing suicide during the year 2010 which indicates an increase of 5.9% over the previous year's figure as per NCRB. The rate of suicides has shown an increasing trend from 10.5 to 11.4 during year 2006 to 2010. Data from Bihar shows significant increase of 16.7% Suicides in year 2010 over 2009. But rate of suicide was significantly low (1.3) against national average (11.4), and in state wise ranking Bihar stands only at second last (34^{th}) position among 35 states. When compared with national and state averages Patna shows much increased percent variation (136.5%) from year 2009 to 2010 which is greatest among cities list, still rate of suicide in Patna (8.7) is far below the national average (11.4). (5)

The present study carried out at Patna Medical College, Patna in Bihar state, India revealed that during one year study period total 149 cases of Suicidal death case were recorded. Analysis of our collected data showed Males (n=95) outnumbered females (n=54). Male to female ratio was 1.75:1. Global Statistics too indicate that males die by suicide more frequently than do females however; reported suicide attempts and suicidal ideation are more common among females. This gap is known as the "gender paradox of suicidal behavior". (6) (7) The cause of this paradox is multifactorial but in general term it can be explained by fact that females are more likely to maintain social and familial

connections whereas at the same time men chose more violent method are more intent on dying (8) and more likely to be impulsive than women. (9) (10)

Most productive age group of 15 to 59 years showed majority of suicides (81.21 %). Maximum death occurred between 15 to 29 years in both male and female category. That is in agreement with global data that suicide rates are highest in the 15-29 age groups. (11) Data among female category also shows there are two peaks in age groups of increased tendency of suicide 15 to 29 years and 45 to 59 years.

In the present study cause of suicidal act is varied but majority of suicides (about 48 %) occurred due to family disturbances, depression and mental trauma after being victimized in domestic violence, rape, assault, etc. It seems that most cases pass through a common pathway of untreated mental depression before death. According to Kelvin Over 90 percent of people who die by suicide have a mental illness at the time of their death. Several negative life experiences may push a person "over the edge". (6) Our finding shows most of the affected individuals by profession were either unemployed, doing some private job or self employed at small scale job. One fifth of world suicides linked to unemployment, causes 45,000 suicides a year worldwide. (12) In a commentary on the paper in the journal, Roger Webb and Navneet Kapur, from the University of Manchester in the UK, warned that suicide cases attributable to the global recession are likely to be only “the tip of the iceberg” of a wider range of social and psychological problems. (13)

In the present study incidence of suicide among married persons (73 %) either male or female outnumbered unmarried category (21 %). But Smith, Mercy & Conn found in their study that married persons have the lowest suicide rates and young widowed males have exceptionally high rates. (14) This study indicated that there is increased tendency of suicide with decreasing level of literacy. 72% of deceased had not completed their middle school education. Our findings are against Maruai’s theory when we compare literacy and suicide rate of Bihar versus Patna. According to Maruai's theory, the higher any given country's literacy rate and the lower that country's GNP, the more likely the country is to have a high suicide rate. The theory can be convincingly applied to the countries with the highest suicide rates in Europe, namely the three Baltic States, Hungary and Slovenia, where literacy is at almost 100 percent (15) which is in agreement with Peter’s book- “Suicide and Society in India”. (16) Also, in south India, where literacy rates and incomes are highest in the country, suicide rates are 10 times higher than in northern states, according to a study published in The Lancet medical journal in 2012. (17)

This study indicates that in Patna region hanging, self immolation, Drowning and poisoning accounted for majority (52%) of suicidal methods. Hanging was most preferred method among males whereas self immolation by fire was most common among females. According to Bulletin of the World Health Organization on methods of suicides three methods – hanging, pesticide suicide and firearm suicide dominate country-specific suicide patterns. Hanging and Pesticide suicide are more prevalent in developing Asian countries whereas firearm suicide predominates in several countries in the Americas and also in some European countries. (18) In our study high frequency of self immolation among female may be explained by easy availability of kerosene oil combined with traditional habit of wearing Sari in Patna. This finding was in agreement with study by Poeschla B. Et al that, in higher-income countries self-immolation tends to be rare and the majority of self-immolation patients are male. In lower-income countries, the incidence of self-immolation is much higher, and the majority of patients are female. (19) Remarkable rate of drowning cases in Patna may be attributed to close proximity of Ganga River and Gandhi Setu Bridge to central place of human settlements in the town.

Suicide is an important, largely preventable public health problem. Early detection and adequate treatment of a primary psychiatric disorder is of paramount importance. Since the greatest predictor of completed suicide is the presence of a previous suicide attempt, interventions aimed at suicide attempters may be the most effective in reducing suicide rates. Given the strong link between negative life-events early in childhood and suicide risk, it is important to identify populations that have been exposed to traumatic childhood experiences, such as sexual/physical abuse and parental domestic violence. The identification of such individuals requires a multidisciplinary approach with active participation from teachers and school authorities, health professionals and the legal system.

CONCLUSION

Our study revealed that in Patna there is significant increase in suicide incidence in year 2010 compared with previous year, still it is far below national average of suicidal rate. Men are more susceptible to complete suicide after appearance of suicidal intent than female. Highest rate are found among young of 15-29 year old. Cause of suicide is found to be multifactorial but ultimately untreated mental depression accounts for majority of suicides which is preventable. Unemployment & illiteracy appear to be major factor related to self harm. Study also showed that there is high rate of drowning & self immolation in suicides of Patna.

Source of support

The authors are thankful to college administration and concerned police departments for providing support for completion of this work.

Ethical approval

Necessary ethical clearance was obtained from the institute ethics committee.

REFERENCES

1. The Lancet. [Online].; 2012 [cited 2015 August 2. Available from: http://www.thelancet.com/series/suicide.
2. Saxena S, Krug E. Preventing suicide: a global imperative. Report. Luxemburg: World Heath Organization, Department of Mental Health and Substance Abuse; 2014. Report No.: ISBN 9789241564779.
3. Provisional Population Totals, Census of India 2011; Urban Agglomerations/Cities having population 1 lac and above. Report. General & Census Commissioner, India, Office of the Registrar; 2012.
4. World Health Organization. [Online].; September 2014 [cited 2015 August 2. Available from: http://www.who.int/mediacentre/factsheets/fs398/en/.
5. Kumar A, Singh RB, Chetal M, Uday Shankar KP, editors. ACCIDENTAL DEATHS AND SUICIDES IN INDIA 2010. 2010th ed. New Delhi: National Crime Records Bureau, Ministry of Home Affairs, Government of India ; 2011.
6. Caruso K. Suicide Prevention Awareness and Support. [Online].; 2005 [cited 2015 August 2. Available from: http://suicide.org/about-suicide-org.html.
7. Crosby AE, Han B, Ortega LAG, Parks SE, Gfroerer J. Suicidal Thoughts and Behaviors Among Adults Aged ≥18 Years --- United States, 2008-2009. Morbidity and Mortality Weekly Report (MMWR). 2011 October 21.
8. Harriss L, Hawton K, Zahl D. Value of measuring suicidal intent in the assessment of people attending hospital following self-poisoning or self-injury. BJPsych. 2005 January; 186(1).
9. Cross CP, Copping LT, Campbell A. Sex differences in impulsivity: A meta-analysis. APA PsychNET. 2011 january; 137(1).
10. Freeman D, Freeman J. theguardian. [Online].; 2015 [cited 2015 August 2. Available from: http://www.theguardian.com/science/2015/jan/21/suicide-gender-men-women-mental-health-nick-clegg.
11. Patel V, Ramasundarahettige C, Vijaykumar L, JS T, Gajalakshmi V, Gururaj G, et al. Suicide mortality in India: a nationally representative survey. THE LANCET. 2012 23 June; 379(9834).
12. Mason B. World Socialist Web Site. [Online].; 2015 [cited 2015 August 2. Available from: https://www.wsws.org/en/articles/2015/02/24/suic-f24.html.
13. Boseley S. theguardian. [Online].; 2015 [cited 2015 August 2. Available from: http://www.theguardian.com/society/2015/feb/11/unemployment-causes-45000-suicides-a-year-worldwide-finds-study.
14. Smith JC, Mercy JA, Conn JM. Marital status and the risk of suicide. NCBI. 1988 january; 78(1).
15. Jacobs A. THE AMERICAN SCENE. [Online].; 2009 [cited 2015 August 2. Available from: http://theamericanscene.com/2009/03/20/literacy-and-suicide.
16. Mayer P. Suicide and Society in India. 1st ed. Bradley C, Steen D, Ziaian T, editors. New York: Routledge; 2011.
17. MacAskill A. Reuters. [Online].; 2014 [cited 2015 August 2. Available from: http://in.reuters.com/article/2014/12/11/india-suicide-idINKBN0JO2A420141211.
18. Ajdacic-Gross V, Weiss MG, Ring M, Bopp M, Gutzwiller F, Rössler W. Methods of suicide: international suicide patterns derived from the WHO mortality database. Bulletin of the World Health Organization. 2008 September; 86.
19. B P, H C, S L, S R, MB K. Self-immolation: socioeconomic, cultural and psychiatric patterns. NCBI. 2011 September; 37(6).