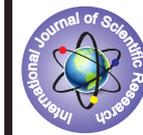


## Epidemiological study of cases of hanging in Kamrup region, Assam state, India



### Forensic Medicine

**KEYWORDS:** Hanging, incidence, urban, students, alcohol, literate.

**Arunava Borah**

Demonstrator, Department of Forensic Medicine, Gauhati Medical College, Guwahati

**Rituraj Chaliha**

Professor & Head, Department of Forensic Medicine, Gauhati Medical College, Guwahati

### ABSTRACT

Suicidal hanging still remains one of the commonest methods of committing suicide. Suicidal hanging is common whereas homicidal and accidental hangings are rare. This is an autopsy based study conducted in the Department of Forensic Medicine and Toxicology, Gauhati Medical College in the year 2014-2015 to ascertain the epidemiology of hanging. A total number of 2964 autopsies were carried out, of which 379 cases were associated with hanging. The incidence represented 12.70% of the total medico legal autopsies conducted during the study period. The male female ratio was recorded as 2.32:1. The most common age group involved in the incident of suicides was 20-29 years followed by 40-49 years group. Maximum number of cases occurred among the married 224 (59.1%) followed by unmarried 148 (39.05%). Majority of the cases (37.20%) belongs to urban locality, followed by cases belonging to semi-urban (31.13%) and rural (30.08%) population. Maximum incidences took place at indoor 271 (77.57%). Majority of the victims were daily students 70 (18.46%) which was followed by victims involved in daily business 66 (17.41%). 108 (28.50%) victims used to take alcohol as chief habit forming substance. 64 (16.89%) victims used to take tobacco as their chief habit forming substance. About 55.67% of the victims belonged to lower socioeconomic status. It was seen that 194 (51.19%) victims had unknown reasons for committing suicide followed by family problems in 60 (15.83%). Majority of the recorded victims were found literate 277 (73.09%).

### Introduction

Hanging is a form of death produced by suspending the body with a ligature around the neck, the constricting force being the weight of the body or part of the body. Suicidal hanging is common whereas homicidal and accidental hangings are rare. Accidental hanging though rare is sometimes found among children during play, among athletes and circus party or in persons with masochistic tendency. Sexual asphyxia or auto-erotic hanging is another term used when there is a predominant sexual atmosphere, suggesting sexual stimulation, in which the victim is always male. Death occurs chiefly due to asphyxia<sup>1</sup>. It was believed to be the best means for achieving a sure and certain and also painless death. As because hanging produces painless death, so it is accepted as the means of judicial execution, i.e. the judicial hanging. Suicidal hanging cannot be understood from a single viewpoint. Hanging as a method of suicide is used by both the extremes of age i.e. young and old, both the extremes of education i.e. illiterate to highly educated, both the ends of socio-economic status and used throughout the world. That is why it is said that hanging as a means of suicide is prevalent all over the world and almost in all societies.

### Material and methods

This is a cross sectional study carried out in the Department of Forensic Medicine, Gauhati Medical College within the district administrative area of Kamrup, Assam and few referral cases from the neighboring districts. The study period extended from 1st July, 2014 to the 30th June, 2015. A total number of 2964 autopsies were carried out of which 379 cases were associated with hanging. All hanging cases were included in this study irrespective of history of incident, age group, sex, degree of decomposition.

The primary data in each case is collected from different sources including the Inquest report and the dead body challan, personal interview of the investigating officer, relatives, friends and neighbors of the deceased. All these data collected from different sources were then recorded in a specially designed proforma for each case for further collective evaluation.

### Observations

Out of the 2964 cases being autopsied in mortuary, 379 (12.70%) cases were of death due to hanging.

Most of the victims were male with a total of 265 numbers of cases (69.92%) and only 114 cases (30.07%) were female. Male female ratio was found as 2.32:1.

The number of hanging cases were maximum in the age group between 20-29 years and represents 113 (29.81%) number of cases accordingly and that in the age group between 40-49 years was second, 69 (13.98%) in the line. The lowest number of cases 16 (4.22%) was reported in the age group > 69 years of age. Both the male and female cases were more in the age group 20-29 years but in the age group 40-49 years the male victims were more than the female.

Religion wise distribution of cases depicted us that majority of the victims were from Hindu community 334 cases (88.14%), followed by the Muslims community 37 cases (9.76%) were recorded. In the study, it was reflected that only 2 cases (0.53%) were from Christian community during the study period.

The victims were literate with 277 cases (73.09%) followed by illiterate with 96 cases (25.33%) and unknown with 6 cases (1.58%).

After analyzing the data it was seen that students were the most common occupation of the victims with a total of 70 cases (18.46%). This was followed by victims doing business with 66 cases (17.41%) and then housewives and unemployed with both 58 cases (15.30%) and so on.

211 (55.67%) victims belong to lower socio-economic group, 160 (42.22%) victims were from middle socio-economic group and 2(0.53%) victims were from upper socio-economic group, respectively.

It was observed that the maximum incidence occurred in urban locality with 141 cases (37.20%) followed by semi urban 118(31.13%).

171 victims were found not having any habit of taking either tobacco or alcohol or betel nut or ganja or any other habit forming substances; 108 (28.50%) victims used to take alcohol as chief habit forming substance, 26 (6.86%) took only betel nut, 64 (16.89%) victims used to take only tobacco as their chief habit forming substances. 3(0.79%) victims and 1 (0.26%) victim were having personal habits of taking drugs and bhong respectively.

Out of 379 cases, 194(51.19%) cases had unknown reasons as committing suicide. This is followed by family problems with 60 cases (15.83%), psychological problems with 58 cases (15.30%). Rest of the other reasons includes stress with 54 cases (14.25%) and chronic illness with 13 cases (3.43%).

It was also observed that places of incidence of hanging was indoor in

294 cases (77.57%) and outdoor in 85 cases (22.43%).

### Discussion

The incidence of hanging cases is increasing everyday so it is imperative that knowledge of this subject must increase rapidly both in social and practical aspects. In the present study, out of 2964 medico-legal autopsies, 379 death cases were found due to hanging, representing 12.70 % of the total autopsied cases. Similar observations were made by Authors *Azamk D (2006)*<sup>2</sup>, *Srinivasa Reddy P, Rajendra Kumar R, Rudramurthy (2012)*<sup>3</sup>, *Baishya MK (2014)*<sup>4</sup>, *Arif M (2015)*<sup>5</sup>.

Out of 379 cases of hanging, it was noticed that all the antemortem hanging cases were suicidal in nature. These findings are consistent with the findings of study conducted by *Singha MK (2000)*<sup>6</sup>, *Rautji R, Dogra TD (2005)*<sup>7</sup>, *Sharma BR et al (2005)*<sup>8</sup>, *Pathak NM (2008)*<sup>9</sup>, *Reddy P, Ali E, Maksud M, Zubyra SJ (2014)*<sup>10</sup>, *Rawat V, E. J. Rodrigues (2015)*<sup>11</sup>, *Rao D (2015)*<sup>12</sup>, *Kumar AVG (2015)*<sup>13</sup>.

As per the present study, most of the victims were male with a total of 265 numbers of cases (69.92%) and only 114 cases (30.07%) were female. Male female ratio was found as 2.32:1. These findings are consistent with the findings of study conducted by *Singha MK (2000)*<sup>6</sup>, *Fimate L, Meath TH (2001)*<sup>14</sup>, *Rautji R, Dogra TD (2005)*<sup>7</sup>, *Das NK (2008)*<sup>15</sup>, *Srinivasa Reddy P, Rajendra Kumar R, Rudramurthy (2012)*<sup>3</sup>, *Baishya MK (2014)*<sup>4</sup>, *Ali E, Arif M (2015)*<sup>5</sup>, *Kumar AVG (2015)*<sup>13</sup>.

The number of hanging cases were maximum in the age group between 20-29 years and represents 113 (29.81%) number of cases accordingly and that in the age group between 40-49 years was second, 69 (13.98%) in the line. Both the male and female cases were more in the age group 20-29 years but in the age group 40-49 years the male victims were more than the female.

These findings are consistent with the findings of study conducted by *Fimate L, Meath TH (2001)*<sup>14</sup>, *Rautji R, Dogra TD (2005)*<sup>7</sup>, *Sharma BR et al (2005)*<sup>8</sup>, *Das NK (2008)*<sup>15</sup>, *Baishya MK (2014)*<sup>4</sup>, *Ali E, Maksud M, Zubyra SJ (2014)*<sup>10</sup>, *Arif M (2015)*<sup>5</sup>, *Rawat V, E. J. Rodrigues (2015)*<sup>11</sup>, *Kumar AVG (2015)*<sup>13</sup>. In contrary, *Majumder BC (2002)*<sup>16</sup> found the maximum number of deceased were within 15-20 years age group (35.24%) followed by 25-40 years age group (24.86%).

*Azamk D (2006)*<sup>2</sup> found that 20.8% of the cases are aged between 30-38 years and average was 41.9 years.

The majority of the victims were from Hindu community 334 cases (88.13%), followed by the Muslims community 37 cases (9.76%) were recorded. These findings are consistent with the findings of study conducted by *Singha MK (2000)*<sup>6</sup>, *Fimate L, Meath TH (2001)*<sup>14</sup>, *Majumder BC (2002)*<sup>16</sup>, *Das NK (2008)*<sup>15</sup>, *Baishya MK (2014)*<sup>4</sup>.

It was found that majority of the victims were literate with 277 (73.09%) cases followed by illiterate with 96 (25.33%).

These findings are consistent with the findings of study conducted by *Singha MK (2000)*<sup>6</sup>, *Das NK (2008)*<sup>15</sup>.

In contrary, *Ali E, Maksud M, Zubyra SJ (2014)*<sup>10</sup> it was observed that more than a half 173 (51.8%) of the cases were illiterate followed by 23.1% passed primary education level, 20.1% passed S.S.C education level and 1.8% passed H.S.C education level.

*Rawat V, E. J. Rodrigues (2015)*<sup>11</sup> found that the largest group of victims constituted of illiterates.

Students were the most common group of victims with total 70 cases (18.46%) which was followed by victims involved in daily business 66 (17.41%). In contrary, *Singha MK (2000)*<sup>6</sup> observed that the majority of victims were domestic worker (28%) followed by service (20%).

*Majumder BC (2002)*<sup>16</sup> observed that 27.04% were employed in

government or private sectors. 22.95% consisting of females were housewives and 10.65% were frustrated business men.

*Das NK (2008)*<sup>15</sup> observed that majority of person belongs to daily labourer (27.58%) followed by housewife (20.68%).

*Baishya MK (2014)*<sup>4</sup> observed that majority of the victims were daily labourers 81 (25.63%) which was followed by house wives 53 (16.77%).

As per the study it was observed that 211 (55.67%) victims belong to lower socio-economic group, 160 (42.22%) victims were from middle socio economic group.

These findings are consistent with the findings of study conducted by *Singha MK (2000)*<sup>6</sup>, *Das NK (2008)*<sup>15</sup>, *Baishya MK (2014)*<sup>4</sup>.

In contrary, *Ali E, Maksud M, Zubyra SJ (2014)*<sup>10</sup> found that out of 334 cases of hanging, 261 (78.1%) deceased were from middle income group, 55 (16.5%) were from lower income group and 7 (2.1%) were from higher income group.

Maximum incidence occurred in urban locality with 141 (37.20%) cases which is followed by semi urban locality (31.13%). These findings are consistent with the findings of study conducted by *Singha MK (2000)*<sup>6</sup>, *Rawat V, E. J. Rodrigues (2015)*<sup>11</sup>.

In contrary, *Das NK (2008)*<sup>15</sup> found that the maximum numbers of victims were from rural background (41.37%).

It was observed that 171 (45.12%) victims had been found not taking any kind of habit forming substances. 108 (28.50%) victims used to take alcohol as chief habit forming substance, 26 (6.86%) took only betel nut, 64 (16.89%) victims used to take only tobacco as their chief habit forming substances. 3 (0.79%) victims and 1 (0.26%) victim were having personal habits of taking drugs and bhang respectively. These findings are consistent with the findings of study conducted by *Sharma BR et al (2005)*<sup>8</sup>, *Das NK (2008)*<sup>15</sup>, *Rawat V, E. J. Rodrigues (2015)*<sup>11</sup>, *Baishya MK (2014)*<sup>4</sup>. In these studies, majority of the cases were involved in indulgence of various habit forming substances like alcohol, tobacco, drugs etc.

Most of the victims were married i.e. 224 (59.1%) cases at the time of incident; 148 (39.05%) cases were found unmarried; 1 (0.26%) case was divorcee. These findings are consistent with the findings of study conducted by *Majumder BC (2002)*<sup>16</sup>, *Vijayakumari N (2011)*<sup>17</sup>, *Ali E, Maksud M, Zubyra SJ (2014)*<sup>10</sup>, *Rawat V, E. J. Rodrigues (2015)*<sup>11</sup>.

It was observed that of the 379 cases, 194 (51.19%) cases had unknown reasons. This is followed by family problems with 60 cases (15.83%), psychological problems with 58 cases (15.30%). Rest of the other reason includes stress with 54 cases (14.25%) and chronic illness with 13 cases (3.43%). These findings are consistent with the findings of study conducted by *Singha MK (2000)*<sup>6</sup>, *Majumder BC (2002)*<sup>16</sup>, *Sharma BR et al (2005)*<sup>8</sup>, *Das NK (2008)*<sup>15</sup>, *Rawat V, Rodrigues EJ (2015)*<sup>11</sup>.

It was observed that places of incidence of hanging were indoor in 294 cases (77.57%) and outdoor in 85 cases (22.43%). These findings are consistent with the findings of study conducted by *Sharma BR et al (2005)*<sup>8</sup>, *Vijayakumari N (2011)*<sup>17</sup>, *Rawat V, Rodrigues EJ (2015)*<sup>11</sup>, *Kumar AGV (2015)*<sup>13</sup>.

### Conclusions

Hanging has emerged as one of the commonest form of asphyxial suicidal deaths in Assam. The observations of the present study tallied in almost all respects with studies conducted by previous researchers. From the present study it is evident that hanging is one of the commonest mode of suicide among younger men belonging to the lower class section of the society. Educational stress, family

problems factors accounts for the higher incidences of suicides by the younger generation. As per the following results of this study, it has been learned that suicide by hanging has emerged as a great setback for the moral upliftment of society. So every possible measures must be taken to minimize the problem. A well planned programme and counseling centers should be established to give moral, social and to identify the causative factors and prevention of suicidal behaviors. Proper education, influencing the media in their portrayal of suicidal news, reporting method, involvement of young generations in encouraging activities may reduce the rate of suicidal death by hanging in future.

**Conflict of interest:** None declared.

**Ethical clearance:** Taken.

**Source of funding:** None declared.

**Declarations:** (1) The article is original with the author(s) and does not infringe any copyright or violate any other right of third parties; (2) The article has not been published elsewhere, and is not being considered for publication elsewhere in any form, except as provided herein; (3) All author(s) have contributed sufficiently in the article to take public responsibility for it; (4) All author(s) have reviewed the final version of the above manuscript and approve it for publication.

### References

1. Nandy A. Principles of Forensic Medicine including Toxicology. 3rd ed. Kolkata: New Central Book Agency(P) Ltd; 2012.p517
2. Azmak D. Asphyxial Deaths. A Retrospective Study and Review of the Literature. Am J Forensic Med Pathology 2006 June;27(2);p134-44.
3. Srinivasa Reddy P, Rajendra Kumar R, Rudramurthy. J Indian Acad Forensic Med. 2012 April-June;34;(2);p146.
4. BaishyaMK. An epidemiological study of hanging cases brought to the Gauhati medical College and hospital mortuary for medicolegal autopsy. MD Thesis. SrimantaSankaradeva University of Health Sciences 2014, Guwahati, Assam,.
5. Arif M. Ligature mark on the neck; How elucidative? Professional Med J 2015;22(6):p798-803.
6. Singha MK. A study of hanging cases brought for medico legal autopsies. MD Thesis. Gauhati University 2008, Guwahati, Assam, India
7. Rautji R, Dogra TD. Comprehensive Study of Suicide in South Delhi 1996-2002. Indian Medical Gazette 2005;p543-546.
8. Sharma BR, Singh VP and Harish D. Neck structure injuries in hanging – comparing retrospective and prospective studies. J Med.Sci. Law 2005; 45 (4): p321 - 330.
9. Pathak NM (2008). Study of histomorphological changes of lungs in cases of asphyxial Deaths in medico-legal autopsies. MD Thesis. Gauhati University 2008, Guwahati, Assam, India.
10. Ali E, Maksud M, Zubyra SJ, Hossain MS, Debnath PR, Alam A, Chakrabarty PK. Suicide by hanging : a study of 334 cases. Bangladesh Med J. 2014 May; 43 (2).
11. Rawat V, E. J. Rodrigues (2015) Medicolegal Study of Hanging Cases in North Goa. Int J Forensic Sci Pathol. 3(5);p110-118.
12. Rao D. An autopsy study of death due to Suicidal Hanging – 264 cases, Egypt Journal of Forensic Sciences [serial online] 2015 Feb [ cited July 9 ]. Available from : URL: <http://dx.doi.org/10.1016/j.ejfs.2015.01.004>
13. Vijay Kumar, A.G., Shivaramu, M.G., Kumar, U., 2015. Analysis of hanging cases – a retrospective post-mortem study, MedBio; 1(1):p19-22.
14. Fimate L, Meera TH. A study of suicide in Manipur. International Jour Med Toxicology Legal Med. 2001;3(2):p27-29.
15. Das NK. An Epidemiological study of ante mortem hanging cases coming to the Mortuary in GMCH. MD Thesis. Gauhati University 2008, Guwahati, Assam, India.
16. Majumdar BC. Study of violent asphyxia deaths. JIAFA 2002;24(2):p8-10.
17. Sharma BR, Harish D, Singh VP, Singh P. Ligature mark on neck- How informative?. JIAFM, 2005; 27 (1):p10-15.
18. Vijayakumari N. Suicidal Hanging: A Prospective Study. J

Indian Acad of Forensic Med. 2011 Oct-Nov;33(4):p971-973.