

## Autopsy based study of cases of hanging with respect to marital status and place of hanging at tertiary care centre in Central India

PN Murkey<sup>1</sup>, Ranjan Ambedkar<sup>2</sup>, BH Tirpude<sup>3</sup>, Sharjeel Khan<sup>4</sup>, IL Khandekar<sup>5</sup>, Pravin Zopate<sup>6</sup>, Deepak Bhagwat<sup>7</sup>, Rahul Ramteke<sup>8</sup>

<sup>1,3,5</sup>Professor, <sup>2,4,7,8</sup>Assistant Professor, <sup>6</sup>PG Student, Mahatma Gandhi Institute of Medical Sciences, Sevagram, Wardha, Maharashtra

**\*Corresponding Author:**

Email: aranjana@mgims.ac.in

### Abstract

Asphyxial deaths are a common phenomenon. The stressful life with financial burden, poor socio-economic status, homicidal intentions, industrialisation, psychiatric disorders, human errors, estranged relationships, accidents etc had contributed to a tremendous increase in asphyxial deaths. Hanging is second or third most popular method of suicide. Hanging has been employed as the method of suicide since time immemorial. Usually all hanging cases are suicidal. Accidental hanging is uncommon and homicidal cases are rare. Moreover there is great diversity related to marital status of victim and place of hanging which provides a rough clue for investigating authorities. The present study is based on the autopsies conducted in the mortuary of Forensic Medicine Department, situated in central India. A total number of 1833 postmortem examination were conducted during 1st August 2011 to 31st July 2016 and amongst these 121 cases were due to asphyxial deaths.

**Keyword:** Asphyxia, Hanging, Marrietal status, Indoor, Outdoor.

### Introduction

The term asphyxia means absence of pulsation or pulselessness. Asphyxia is best described as a condition caused by interference with respiration or lack of oxygen in respired air or failure to eliminate carbon dioxide during breathing, due to which the organs and tissues are deprived of oxygen, causing unconsciousness or death. Among fatalities that are subjected to medico-legal autopsies, asphyxial deaths account for a significant number of cases. Asphyxial death is a common incidence in forensic practice, and determination of the manner of death is very much important. The manner of death can be suicidal, accidental or homicidal due to asphyxia. Asphyxia may be due to mechanical, environmental, industrial or pathological causes. Asphyxial deaths are divided into different types, like Hanging (Partial, Typical and atypical) strangulation (Manual, Ligature), suffocation (Environmental, Smothering, Choking, Mechanical, Suffocating gases), Chemical asphyxia (Carbon monoxide, Hydrogen cyanide, Hydrogen sulfide), and drowning (Dry and Wet drowning).

Though hanging, is common in both sex, it will be a great challenge for the medical officer as hanging by a female is viewed very suspiciously, more so when it is atypical or the body has been let down.

In most of the cases the females use the materials which they wear. It is noticed that a female who decides to hang herself uses a cloth as a ligature material especially a saree, which elongates and stretches when pulled by her body weight which does not result in clear cut ligature mark on the neck.

Occasionally, death in a vehicular accident is due to hanging when the victim is suspended by the steering

wheel of a car. Similarly a cyclist who collides with the rear of a lorry or car may suspend on the edge of its board. A person while descending a ladder may be suspended by one of its rungs. Death of an adult woman who when drunk fell across the sharp edge of a sofa in such a manner that the weight of her body was exerted on her neck, as she lay incompletely suspended.

The “**mark of hanging**” on the victim depends upon the height of suspension point, nature and composition of the ligature material used, weight of the body, duration of suspension, things which were intervene between the ligature material and skin of the neck and requires experts skill and care for the determination of cause and manner of death. Multiple rounds of ligature around the neck with two or more fixed knots calls a special care in interpretation to decide the cause and manner of death other injuries over the neck and bodily injuries could complicate the matter.

The level at which the loop lies is also of importance in making the distinction between Hanging and strangulation by a ligature. If the ligature lies Occasionally, death in a vehicular accident is due to hanging when the victim is suspended by the steering wheel of a car. Similarly a cyclist who collides with the rear of a lorry or car may suspend on the edge of its board. A person while descending a ladder may be suspended by one of its rungs. Death of an adult woman who when drunk fell across the sharp edge of a sofa in such a manner that the weight of her body was exerted on her neck, as she lay incompletely suspended. When hanging is affected from a low point of suspension, the mark on the neck closely resembles that of strangulation, it may take a horizontal course round the

neck at the level of the upper border of the larynx, in this case expert's skill will be required to denote the cause and manner of death.

A running noose can tighten at the time of suspension and then produce a mark which takes a horizontal course resembling that of a ligature used in strangulation. Failure to find a **platform** at a scene of hanging by complete suspension of person's body must arouse suspicion but attention to detailed search may lead its recognition. In cases of inaccessible point of suspension, a medico legal expert should take into consideration, the positive findings, and the circumstances surrounding death, the accessibility of point of suspension, presence of ligature material, presence or absence of intoxication or any drug in the body, should be taken into consideration while deciding whether the death is suicidal or homicidal.

A mark may be present on the neck of obese person, particularly of a fatty baby as a result of hypostasis. The skin in the natural fold of the neck remains pale. When neck is extended, it resembles to be produced by a ligature. Tight neck collar may also yield a "mark", which superficially resembles to be of a ligature.

The helmet or hat with strap can also produce a mark which superficially resembles that of a ligature and may mislead the diagnosis.

The use of soft ligatures (e.g. saree, scarf etc.) especially broad one and applied only for a short period of time may lead to difficulty in the Homicidal hangings are possible only when the physical disproportion is too more between the assailant and victim or the victim is comatose or intoxicated. Post-mortem hanging immediately after death also looks like ante-mortem hanging which requires special skill and knowledge and thorough investigation to come on at correct diagnosis.

After strangulation or throttling a person may be hanged as complete suspension in absence of a platform, which raises a suspicion of murder and gross injuries may be seen over the neck following strangulation by a ligature or manual (throttling). Any cases of asphyxial death must be examined with meticulous attention especially the ligature mark, the hyoid bone, thyroid gland, thyroid cartilage, cricoid cartilage, upper part of air passage and upper part of the vertebral column with spinal cord beneath the ligature mark for deciding the ante-mortem or post-mortem injuries and lungs in case of drowning. Lot of care is required to differentiate strangulation from other mechanical asphyxial deaths.

Absence of ligature mark or double ligature mark or partial hanging with feet touching the ground may mislead the investigating officer regarding the cause and manner of death.

A number of lock-up deaths have been reported in the state of Maharashtra due to hanging or partial hanging which makes it difficult to convince the

common people and relatives of the deceased or media and human rights as to the manner of death. In auto erotic asphyxia or sexual asphyxial cases a little pressure over the neck- region by ligature material increases „sexual gratification“ and pervert may die due to sexual asphyxia, decision on cause and manner of death will require great care and efficient skill.

### **Aims and Objectives**

1. To study the cases of hanging with respect to marital status of the victim.
2. To study the correlation between the marital status and place of death of victim.

### **Materials and Methods**

This study is conducted in the Department of Forensic Medicine of the Medical College situated in central India. Different postmortem examinations were conducted in the mortuary and nearby areas as spot post-mortem examination from 1st August 2011 to 31st July 2016.

Total number of asphyxial deaths and all the hanging and drowning cases which were recorded in this department of Forensic Medicine and which were occurred in and around the nearby District and brought dead cases to the attached Hospital of this medical college were studied.

All information gathered from the deceased relatives and from the police panchanamas, crime scene reports and photographs taken and received from the police and postmortem reports of this department and histopathological reports of ligature mark from the Department of Pathology and other contributory factors was studied.

Detailed postmortem examinations conducted in all the cases of asphyxia and also all external and internal findings were noted and studied. And all other associated injuries and factors like poisoning, sedation, and history of attempted suicides and evidence of signs of struggle (defence injuries), for presence of any sedatives, intoxicants and for the presence of any suicidal notes were studied.

The present study is based on the autopsies conducted in the mortuary of Forensic Medicine Department, situated in central India. A total number of 1833 postmortem examination were conducted during 1st August 2011 to 31st July 2016 and amongst these 121 cases were due to violent asphyxial deaths. Among the asphyxial deaths 46.28% (56 cases) were due to drowning and 42.14% (51 cases) were due to hanging, the statistical analysis of these cases of hangings with regard to general incidence of age, sex, marital status, and materials used for hanging, socioeconomic factors etc., were worked out, statistical analysis of drowning cases was also done with consideration of age, sex, marital status, suicide and accidental point of view etc.

**Inclusion Criteria:** All the married victims of hanging who died on the spot or brought dead to hospital or died after admission in hospital.

**Exclusion Criteria:**

1. All the victims who died of violent asphyxial deaths other than hanging.
2. All the victims of hanging who are divorcee.

**Statistical Analysis**

1. The software for graphs and calculation of statistical values is – SPSS.
2. The software used during creation or modification of some of the diagrams.
  - a. ADOBE PHOTOSHOP(R) 7.0
  - b. COREL DRAW X3
  - c. WINDOWS -10.

**Observation and Results**

**Table 1: Incidence of hanging according to marital status**

Sl. No	Marital status	Male (%)	Female (%)	Total (%)
1.	Married	29 (56.86)	11 (21.58)	40 (78.44)
2.	Unmarried	02 (3.92)	08 (15.68)	10 (19.60)
3.	Not known	01 (01.96)	00	1 (01.96)
	<b>Total</b>	<b>32 (62.74)</b>	<b>19 (37.26)</b>	<b>51 (100)</b>

In this table hanging cases was studied according to marital status. Incidence of hanging was found to be four times among the married people than the unmarried people. Marital status of one case was not known as it is unknown case.

**Table 2: Place chosen for hanging**

Sl. No	Place of hanging	Male (%)	Female (%)	Total (%)
1.	Indoor	22 (69%)	18 (95%)	40 (78.43)
2.	Out door	10 (31%)	01 (05%)	11 (21.57)
	<b>Total</b>	<b>32 (100)</b>	<b>19 (100)</b>	<b>51 (100)</b>

In this table hanging cases was studied according to place chosen for hanging. Indoor hanging was found to be four times more common than the outdoor.

**Discussion**

Table 1 shows that married people take this decision more frequently than unmarried ones that is marriage does not seem to be a protective factor particularly for the males in our study region. In present

study 78.44% (40 cases) were married, 19.60% (10 cases) were unmarried and 1.96% (1 case) was unknown among all hanging cases. Our findings are consistent with various studies with high prevalence of suicide among the married individual like Behera A. et al<sup>(1)</sup> (Married 51.56% and unmarried 47.8%), Sharija S. et al<sup>(8)</sup> (Married 55.8% and unmarried 29.8%), Mugadlimath A. et al<sup>(4)</sup> (Married 60% and unmarried 37.2%), Rastogi P. et al<sup>(7)</sup> (Married 56.95% and unmarried 24.6%) and Vijayakumari N.<sup>(9)</sup> (Married 69.2% and unmarried 20.0%).

Place chosen for hanging, Table 18: On detail study of Panchanamma and eliciting history from the police and relative of the deceased, we came to know about the fact that majority of the victim 78.43% (40 cases) were recovered from closed areas that is mostly at home or work place (indoor). Only 21.57% (11 victims) hanged themselves to the twig of a tree or a beam at open place under the sky (outdoor).

In the study of Sharija S. et al<sup>(8)</sup> at Southern part of Kerala, 28.73% victims were recovered from open places where as remaining 71.27% from enclosed area in the room.

Also Meera T. et al<sup>(3)</sup> mentioned in their study that 26.19% of hanging cases committed suicide outdoor while the remaining 73.81% were found indoor.

Bhosle SH. et al<sup>(2)</sup> also found that most common place of hanging was home in 69.88% cases of hanging.

The study of Sharija S. et al, Meera T. et al and Bhosle SH. et al are comparable to our study. But result of study done by Patel AP. et al<sup>(5,6)</sup> (indoor hanging 96.25%, 308 victims and outdoor hanging 3.75%, 12 victims) is not matching with our study.

**Conclusion**

- In present study 78.44% (40 cases) were married, 19.60% (10 cases) were unmarried and 1.96% (1 case) was unknown among all hanging cases. It concludes that the hanging is more common in married people
- The majority of the victim 78.43% (40 cases) were recovered from closed areas that is mostly at home or work place (indoor). Only 21.57% (11 victims) hanged themselves to the twig of a tree or a beam at open place under the sky (outdoor). This concludes that the majority of victims preferred indoor area as a place of hanging.
- Hanging is the commonest method of suicide. If the trend of suicide is left unchecked the loss will be invariably insurmountable both economically and socially. Suicide is a major health problem and the medical profession has to take a role in the management of this health problem.
- Males and females both are exposed to such stresses, but in this study it seem that being a male dominated society and more exposure to external environment, such cases are commonly seen in males.

- Poverty, lack of employment, family problems, defamation and alcoholism are the main reason of suicidal cases in this particular generation of people.
- Due to repeated physical and mental torture, they go beyond threshold level of self-constrain and commit suicide by easily available ligature material. This tendency was found more in young generation of people.
- A well designed and comprehensive programme is needed to identify the causative factors and preventive of suicidal behaviours.
- The probable preventive measures to tackle suicide would be adopting de-stressing programmes for the stress prone people, providing better education and increasing the economic status by creating job opportunities for the underprivileged and upholding the family bondage in the nuclear families.
- Various socio-economic factors responsible for the high incidence of suicide need a practical and early redressal on the Govt.-front, by properly and honestly framing the policies and implementing the same in such a manner that their benefits reach the needy.
- The NGOs and Social Organizations can contribute their bit by building a satisfactory interpersonal relationship between the young and the elders in the society.

- An Autopsy based Study. Journal of Indian Academy of Forensic Medicine; 2011;33(3):237-240.
9. Vijayakumary N, Suicidal hanging: A prospective study, Journal of Indian Academy of Forensic Medicine; 2011; 33(4), pp 353-355.

**Source of funding:** Self

**Conflict of Interest:** Nil.

### References

1. Behera A, Balabantray JK, Nayak SR, Review of suicidal cases: A retrospective study, Journal of Indian Academy of Forensic Medicine; 2005;27(2), pp 100-103.
2. Bhosle SH, Batra AK, Kuchewar SV, Violent asphyxial death due to hanging: A prospective study, Journal of forensic medicine, science and law, A journal of medico legal association of Maharashtra, vol-23, No. 1, Jan-June 2014.
3. Meera T, Singh MBK, Pattern of neck findings in suicidal hanging: A study in Manipur, Journal of Indian Academy of Forensic Medicine; 2011; 33(4), pp 350-352.
4. Mugadlimath A, Agarwal JP, et al, Socio-demographic and clinical profile of para-suicide cases: one year prospective study, Journal of Indian Academy of Forensic Medicine; 2012; 34(3), pp 206-209.
5. Patel AP, Bansal A, Shah JV, Shah KA, Study of hanging cases in Ahmadabad region, Journal of Indian Academy of Forensic Medicine; 2012; 34(4), pp 342-345.
6. Patel AP, Bhoot RR, Patel DJ, et al Study of violent asphyxial death, International journal of medical toxicology and forensic medicine, 2013,3(2): pp 48-57.
7. Rastogi P, Kochar SR, Suicide in youth: shifting Paradigm, Journal of Indian Academy of Forensic Medicine; 2010;32(1), pp 45-48.
8. Sharija S, Sreekumari K, Geetha O, Epidemiological Profile of suicide by hanging in southern parts of Kerala: