A Epidemiological Study of Hanging Cases at Bhavnagar Region

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Abstracts: Background: : Violent asphyxial deaths are one of the important causes of death now a days. For reasons not known to others, victims end their life by committing suicide. Hanging is one of the preferred mode of committing suicide, as it supposedly produces painless death as compared to others modes of suicide, and also because it produces instantaneous death. Methodology: The study was conducted at the mortuary of Sir T. General Hospital & Government Medical College, Bhavnagar. The study includes retrospective evaluation of 102 deaths occurred due to hanging out of the total number of autopsies(1270 cases) that were conducted during the period of 1 year from January 2013 to December 2013.Results**:** Incidence of death due to hanging is 8.03% of total autopsies. All the cases of hanging were suicidal. Young adults, of the age group 21 to 30 years accounted for the maximum cases & males are most common victims with a male: female ratio of 2.2:1. Conclusion: Among the hanging cases, 90% of the victims preferred closed room & 66.67% of victims were used soft and broad ligature material for hanging. In the present study not a single case had a finding of fracture of hyoid bone. [Love B et al NJIRM 2015; 6(3):40-43]

Key Words: Asphyxial Death , Autopsy , Hanging , Suicide.

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Introduction: Asphyxia is a condition caused by interference with respiration , or due to lack of oxygen in inspired air , due to which organs and tissue are deprived of oxygen (together with failure to eliminate CO2), causing unconsciousness or death. The term asphyxia indicates a mode of dying, rather than a cause of death. [1]

Hanging results from constriction of the neck as a result of suspension of the body by ligature , where the constricting force is the weight of the body or a part of the body . Hanging should always raise the presumption of suicide, while strangulation must always be considered homicidal, unless proved otherwise. [2]

Any substance available at hand may used as ligature. Articles commonly used as ligature are soft materials like 'dhothie', 'Saree', 'Bed sheet', 'Sacred thread', 'handkerchief', 'neck tie', or it may be the hard and pliable material like 'Electric cord', 'Belt', 'wire' or 'Leather strap'. In short, the material can be anything handy and available near the place of occurrence as the suicide is an impulse mediated act. [3]

Due to population explosion, poverty and increasing stress and strain in our daily life, we frequently come across cases of suicides, homicides and accidents. Males and females are both exposed to such stresses but it seem that ours being a male dominated society and more exposure to external environment, such cases are commonly seen in males. [4]

Material and Methods: The study was conducted at the Department of Forensic Medicine, Government Medical college and Sir T. General Hospital, Bhavnagar. The Study was done in retrospective manner for a period of one year, from January 2013 to December 2013.

The data was collected from post-mortem reports of all the cases where cause of death is due to hanging. A total of 102 cases were studied and the collected data were analysed in relation to age, sex, type of deaths.

All cases were studied with reference to:-

1. Post mortem findings with special reference to cause of death, time since death and manner of death.
2. History obtained by police and relatives.
3. Hospital case records in admitted cases.
4. Visit to the scene of crime if needed and study of photographs of scene of crime.

Results & Discussion: A total of 1270 dead bodies were brought for post-mortem examination at Sir T. General Hospital, Bhavnagar during a period of one year, from January 2013 to December 2013. After post-mortem examination and correlated

with the history received from the police and relatives of the deceased, it was confirmed that in 102 cases (8.03 %), the victims had died because of Hanging. These 102 cases were the part of our study. This incidence rate is in contrast with the incidence rate of study by Amandeep *et al* (1.27 %) ,but coincides with studies by Patel Ankur *et al* (4.65%) and Sharma B R *et al* (3.4%).[4,5,7] (Table 1)

Table 1: Comparative study of incidence of hanging deaths

Author of Study	Total Autopsy	Total hanging Cases	Percentage
Current study	1270	102	8.03%
Amandeep Singh *et al*	2110	27	1.27%
Patel Ankur *et al*	6880	320	4.65%
Sharma B R *et al*	2668	91	3.41%

The largest group was found to be 21-30 years, followed by 11-20 years and 31-40 years respectively.(Table 2) The previous studies have also reported similar results, with 21-30 years age group being the most commonly involved by different other authors. [4,5,6,7] The above findings can easily be explained by the fact that 21-30 years of age group is most susceptible to frustration in life because of many factors like marriage, financial crunch, failure of love affairs, and pressure of making a good career after completion of studies etc.

Table 2: Age wise Distribution of Death due to hanging

Age group	Total	Percentage%
0-10 years	0	0 %
10-20 years	20	19.61%
21-30 years	37	36.27 %
31-40 years	17	16.67 %
41-50 years	15	14.71 %
51-60 years	08	7.84 %
61-70 years	03	2.94 %
>71years	02	1.96 %
Total	102	100 %

On eliciting the detailed history from the police and relatives of the deceased, we came to know the fact that majority of the victims (97 victims, 95.10 %) were recovered from closed areas that is mostly at home or work place. Only 5 victims (4.90 %) hanged themselves to the branch of a tree or a beam at open place under the sky. (Table 3) This type of finding which was quite similar to the study of Patel Ankur *et al* [7] but with contrast to study of Sharija *et al* [9] at Southern part of Kerala, where 28.73 % victims of hanging were recovered from open places whereas remaining 71.27 % from enclosed area in the room.

Table 3: Place of Hanging

Sr. No.	Place of Hanging	Cases	Percentage
1	Open place	5	4.90%
2	Closed Place	97	95.10%
3	Total	102	100%

In our study, all the cases(100%) of hanging were suicidal and possibility of homicidal nature was ruled out. Homicidal hanging is not recorded in present study. Naik S *et al* have similar type case of Suicidal cases.[6]

In our study, 71 cases of male and 31 cases of female were found. (Table 4) Males predominate in hanging as these are not as commonly opted method of suicide by females as compared to poison intake and burning. [13] The male to female ratio for hanging in the present study was 2.2:1.

Table 4: Sex wise Distribution of Death due to Hanging

Sr.No.	Sex	No.	Percentage%
1	Male	71	52.21%
2	Female	31	22.79%
3	Total	102	100%

Some of the dead bodies of the present study were received with ligature material in situ whereas for remaining cases for ligature material case papers & police papers were verified. In the present study the ligature material is divided into two broad groups. (Table 5)

1. Soft - e.g., dupatta, saree , bed-sheet etc.
2. Hard - e.g., electric /nylon wire, rope etc.

Table 5: Ligature material used in Hanging

Ligature material		No. of Cases	Percentage %	
Soft Material	Bed Sheet	3	2.94%	66.67 %
	Dupatta	47	46.08%	
	Saree	14	13.17%	
	Piece Of Cloth	4	3.92%	
Hard Material	Electric Wire	01	0.98%	33.33 %
	Rope	33	32.35%	
Total		102	100%	100%

In present study, 'dupatta' was most commonly used ligature material (48.08 %) which is easily available in almost every house. The study by Naik S K *et al*, Sharma B R *et al* and Sharija S *et al*, [5,6,9] have shown variation regarding material used for hanging. But all of them are of the opinion similar to present study that soft material being more commonly used than hard one.

On external examination, it was seen that in all the 102 cases (100 %), the mark was situated at and above the level of thyroid cartilage. None of the case showed ligature mark below the thyroid cartilage as the ligature slips upward in hanging position. Congestion of face because of venous occlusion was noticed in 54 cases (52.94 %).

Dribbling of saliva from the angle of mouth opposite to the knot is surest sign of ante-mortem hanging was noticed in 23 cases (22.54%). This finding was also similarly seen in the study of Shaik M.M *et al* (38.37%) ,but with contrast to the study of Patel Ankur *et al* (71.25%). [7,10]

In 12 cases (11.76 %)of our study, the distribution of post-mortem lividity was typical of hanging means present at legs, feet, hands and forearms suggestive that lividity was fixed as the body was suspended for more than 4 to 6 hours. While in 90 cases (88.23 %) the lividity was noticed on back side only, when body was released from the point of suspension within a few minutes after death.

Table 6: Post-mortem findings in cases of Hanging.

Finding		Out of total 102 cases	Total percentage %
Placement of ligature mark	At & above thyroid	102	100%
	Below thyroid	0	0%
Ligature mark	Incomplete	94	92.16
	Complete	8	7.84%
Congestion of face		54	52.94%
Dribbling of saliva		23	22.54%
Post-mortem lividity	Typical	12	11.76%
	On back of body	90	88.23%
Discharge of semen		20	19.60%
Discharge of urine/faeces		17	16.66%
Fracture of hyoid bone		0	0%

Discharge of semen was seen in 20 cases (19.60 %) whereas discharge of urine/faeces was noticed in 17 cases (16.66 %) in our study. This type of finding is also similar to the study of Shaikh M.M *et al* (11.62 % and 13.95% respectively) and by Patel Ankur *et al* (17.5% and 13.75% respectively) [7,10]

In the present study, not a single case had shown fracture of hyoid bone which is same as study by Naik S, while Vijaynath has noted 3.36% cases. [6, 11] But surprisingly an interesting finding in the literature reviewed is that fracture of the hyoid bone is also present in young individuals. Simonsen observed fracture of hyoid bone in 30% of cases aged less than 40 years. [12] Though percentage of hyoid bone fracture in asphyxia by compression of neck cited by many authors as none or less or controversial; they agree that hyoid bone fracture occurs after the age of 40 years (as it is ossifies at age of 40 years) The incidence vary greatly from 0-68 % from author to author. [14]

Conclusion: The incidence rate of hanging is 8.03 % (102 out of 1270) in the present study with

a male: female ratio of 2.2:1 and 21-30 years age group being most commonly (36.27 %) involved population. All the cases(100%) of hanging were suicidal and possibility of homicidal nature was ruled out. Soft material (66.67 %) was more commonly used as ligature than the hard one (33.33 %). However, on an impulse for suicide the victims used whatever material available on the particular time.

The number of suicidal hanging cases is increasing day by day. A well designed and comprehensive programme is needed to identify the causative factors and prevention of suicidal behaviours. Appropriate 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.

Medico legal autopsies not only give the cause and manner of death but also give important statistical data related to legal incidents in the cities and regions where the autopsies are conducted. The further study from the other cities as well as countries could be done to provide a better understanding of the epidemiology of hanging death and how deaths by hanging may further be reduced.

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Conflict of interest: None
Funding: None
Cite this Article as: Bhagora L, Patel T, Parmar A, Suvera K, A Epidemiological Study of Hanging Cases at Bhavnagar Region. Natl J Integr Res Med 2015; 6(3): 40-43