

Epidemiological Study of Hanging Deaths in Muzaffarpur Area, Bihar**Kunal Animesh¹, Santosh Kumar², Bipin Kumar³**^{1,2}Tutor, Department of Forensic Medicine and Toxicology, Sri Krishna Medical College, Muzaffarpur, Bihar³Assistant Professor, Department of Forensic Medicine and Toxicology, Sri Krishna Medical College, Muzaffarpur, Bihar

Received: 25-06-2023 / Revised: 28-07-2023 / Accepted: 30-08-2023

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Conflict of interest: Nil

Abstract:

Background: Asphyxia caused by hanging occurs when the body is suspended by a ligature that wraps around the neck, with the weight of the body acting as the restricting force. The most prevalent reason for hanging is suicide, followed by accidental, with "lynching" being the lone exception. Regarding the demographics, the type of ligature, the types of injuries inflicted to the body, and other factors, this study sheds some insight on the new trends in hanging.

Methods: This is a autopsy based prospective study carried out on cases of death due to hanging in mortuary of Department of Forensic Medicine & Toxicology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar from October 2019 to September 2020.

Results: In our study, 172 cases of hanging deaths (134 men and 38 females) were presented for medical-legal post-mortem examination. In 36.63% of cases, people who hang themselves are between the ages of 21 and 30. Hindus made up 93.02 percent of the entire study population. 42.44% of cases were unmarried, while 57.56% were married. Urban areas had an 83.14 percent higher rate of hanging deaths than rural areas (16.86 percent). In 45.35 percent of cases, the student had finished high school. Nuclear households accounted for 61.04% of incidents. More than half of all cases involved students (30.81%) and self-employed individuals (30.81%). In this study, the majority of victims (72.09% instances) belonged to the middle class socioeconomic group, with 19.77% of cases being brought in on Wednesday and 16.86% on Sunday. In our analysis, the majority of victims were discovered at night (36.63% of cases), then in the early morning (25.0%). 95.93% of the cases were discovered hanging in enclosed spaces.

Conclusion: The results of this study will emphasize the current situation of hanging deaths and assist law enforcement in solving many crimes.

Keywords: Hanging; Epidemiological profile; Socio-economic group.

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Introduction

Since before recorded history and before the dawn of civilization, people have been killed by tying a rope around their neck. One of the prevalent uncivilized society customs that was passed over into civilized civilizations was the use of ligature to end another person's life.

A ligature around the neck is used to suspend a body, with the weight of the body or a portion of the body weight acting as the constricting force, to cause hanging, a type of death. Depending on the type of suspension the body is in, it could be total or partial. [1] A relatively small force is all that is required to cause death; the entire body's weight is not required. [2]

In the course of their work, forensic pathologists frequently encounter deaths brought on by strain on the neck. Due to its guaranteed success rate, quick

availability of materials, and painless operation, hanging is one of the most popular suicide methods.

With the exception of the cost of the ligature material, hanging results in a painless death for the victims. [3] Around the world, hanging is the suicide method used the most frequently; it accounts for more than 50% of all suicides in Saudi Arabia and Hungary. [4]

Hinduism frequently views suicide as being as wicked as murdering someone else, and the souls of those who commit suicide are barred from the afterlife and left to wander the earth. In India, the National Crime Bureau Report 2016 states that 46.2% of all suicides include hanging.

Material and Methods:

The current study is a prospective investigation done on a sample of 172 hanging deaths that occurred between October 2019 and September 2020 in the mortuary of the Sri Krishna Medical College and Hospital in Muzaffarpur, Bihar. On a specifically created proforma, the history of the incident, the deceased's personnel information, and the post mortem results were documented in order to collect and evaluate the data in order to create an epidemiological profile of cases of hanging deaths in Muzaffarpur area, Bihar.

Results:

During the study period, 172 cases of death by hanging were considered. After gathering a thorough history from the police and the deceased's family, several criteria related to the epidemiological profile of hanging deaths were carefully examined. 63 (36.63%) fatalities by hanging occurred in this age group, which was shown to be the most common. The following most vulnerable age range, from 31 to 40, saw 41 (23.84%) fatalities. In the age group of 11 to 20 years, 31 (18.03%) deaths occurred. 22 (12.79%) deaths occurred in the 41–50 age groups. After 61 years, or in old age, the incidence decreased to 2.32%, or 4 deaths. [Table 1]

Table 1: Distribution of the study population according to age (N=172)

Age in years	Number of cases	Percentage
<10	0	0%
11-20	31	18.03%
21-30	63	36.63%
31-40	41	23.84%
41-50	22	12.79%
51-60	11	6.39%
61-70	2	1.16%
>70	2	1.16%

38 (22.09%) instances were female, while 134 (77.91%) cases were male in the study population as a whole. In this survey, there were by much more males than females. 160 (93.02%) cases of the sample's total population were found to be Hindus and 12 (6.97%) were Muslims. [Table 2]

Table 2: Distribution of the study population according to the religion (N=172)

Religion	Number of cases	Percentage
Hindu	160	93.03%
Muslim	12	6.97%

Out of 172 instances, 99 cases (57.56%) and 73 cases (42.44%) were married and single, respectively. The number of hanging deaths in urban regions, or 143 cases (83.14%), surpassed those in rural areas, or 29 cases (16.86%). A total of 78 cases (45.35%) had completed their secondary school, 45 cases (26.16%) had completed their primary education, and 21 cases (12.21%) lacked literacy. The current analysis also discovered 19 graduates (11.05%) and 9 postgraduates (5.23%) as hanging victims. [Table 3]

Table 3: Distribution of the study population according to educational status (N=172)

Educational Status	Number of cases	Percentage
Illiterate	21	12.21%
Primary	45	26.16%
Secondary	78	45.35%
Graduate	19	11.05%
Postgraduate	9	5.23%

In the current study, nuclear families accounted for 105 (61.04%) cases, whereas joint families accounted for 67 (38.95%) cases. Comparing the occupations of those who died by hanging, 53 (30.81%) instances involved students, and 53 (30.81%) cases involved independent contractors. Twenty (11.62%) fatalities of housewives were followed by 25 (14.53%) deaths of government or private employees. 11 incidents (6.39%) involved farmers. Ten (5.81%) deaths were also caused by unemployed people. [Table 4]

Table 4: Distribution of the study population according to their occupation (N=172)

Occupation	Number of cases	Percentage
Farmer	11	6.39%
Self employed	53	30.81%
Student	53	30.81%
Housewife	20	11.62%
Employed	25	14.53%
Unemployed	10	5.81%

In our investigation, the Modified Kuppaswamy scale was used to evaluate the socioeconomic level of each case.

The majority of hanging victims 124 cases, or 72.09% came from middle-class socioeconomic backgrounds. 17 cases (9.88%) and 31 (18.03%) of the cases belonged to the upper class

socioeconomic category. Following Wednesday with 34 (19.76%) cases, Sunday with 29 (16.86%) cases, and Thursday with 24 (13.95%).

There were 23 (13.37%) hanging fatalities on Monday. There were 21 (12.20%) fatalities each on Tuesday and Saturday, and there were 20 (11.6%) hangings on Friday. [Table 5]

Table 5: Distribution of the study population according to the Day of Incident (N=172)

Day of Incident	Number of cases	Percentage
Sunday	29	16.86%
Monday	23	13.37%
Tuesday	21	12.21%
Wednesday	34	19.77%
Thursday	24	13.95%
Friday	20	11.63%
Saturday	21	12.21%

In this study population, 63 (36.63%) cases found that the night was the most convenient period to hang themselves, followed by the early morning in 43 (25.00%) cases. Thirteen (17.56%) instances were hanged in the middle of the day, compared to 17 (9.88%) cases in the morning and 36 (20.93%) cases in the evening. [Table 6]

Table 6: Distribution of the study population according to the Day of Incident (N=172)

Day of Incident	Number of cases	Percentage
Early morning	43	25.00%
Morning	17	9.88%
Mid-day	13	7.56%
Evening	36	20.93%
Night	63	36.63%

In the current study, we discovered that out of 172 cases, 165 cases (95.93%) involved self-hungness in interior spaces such as bedrooms, hallways, kitchens, or drawing rooms, while just 7 cases (4.07%) involved self-hungness in outside spaces such as farms.

Discussion

The most dangerous age for hanging is determined to be between the ages of 21 and 30, where 36.63% of deaths by hanging occurred. The next most dangerous age group is between the ages of 31 and 40, where 23.84% of deaths by hanging occurred. Youth suicide rates may have grown because to modern societal disarray, rising demands from life, and more rivalry for jobs and academic opportunities. In this age group, frustration and breakdown are more frequently encountered as a result of impatience, employment failures, financial instability, dowry torment, failed romantic relationships, and household disagreements. Four Studies conducted by Abouhashem Aisha A. et al; Ahmad M, [5, 6, 7] MZ Hossain ; Patel A.P. et al ; MV P.K. and Rayamane A.P; [8] Sadikhusen G. Momin et al found most common age group committing suicide by hanging to be 21-30 yrs. Whereas, this is [9] in contrast with the studies conducted by Mishra PK et al ; [10] Elfawel MA and Awad OA , who found most common age group committing suicide by hanging to be 30-39

years. In 172 occurrences of hanging from October 2019 to September 2020, men made up 77.91% and women, 22.09%. In the current study, males outnumbered girls by a large margin. Males may have been reported as hanging victims more frequently because they are required to carry out more social and familial responsibilities, which result in greater mental tension and suffering. Similar findings were observed in the studies conducted by B. [11] R. Sharma, D Harish, Virendar Pal Singh, Preminderjeet Singh [12] (Males 68% & Females 32%); DS Badkur et al (Males 68% & Females 32%) [13]; Ali E et al (Males 69.2% & Females 30.8%), [14] Nawal Kumar singh et al (Males 72% & Females 28%), [15] Sharija S and Shreekumari K (Males 71.27% & 28.72%), [9] Mishra PK, Tomar JS, Varun A, Verma P (Males 68.14% & Females 31.86%). It is in contrast to the findings observed by M Ahmad, MZ [5] Hossain (Males 41.37% & Females 58.62%); and M Ahmad, F [16] N Rahman, M A Hussain, M H Chowdhury, B H N Yasmeen (Male 72.29% & Female 27.71%).

In the present study, it was observed that, out of entire study population, Hindus were 93.02% and Muslims 6.97%. Similarly MR Nagendra [17] Gouda et al found Hindus 94.6% and Muslims 5.4 % as hanging victims. [18] Chetan kumar et al

found Hindus 93% and Muslims 5%, as cases who committed suicide by hanging.

The importance of teaching in unnatural deaths, such as hangings, should not be overlooked. Out of 172 cases, 45.35 percent had finished secondary school, 26.16% had only completed elementary school, and 12.21% were illiterates. In the current study, hanging victims included even graduates (11.05%) and postgraduates (5.23%). In study conducted by MR Nagendra Gouda et al [17], 27.4% cases were illiterate and 52.2% cases had completed their high school. The study conducted by Ali E. et al [13] found 51.8 % illiterates, 23.1% cases with primary education, 20.1% cases with SSC education and 1.8% cases with HSC education. Samanta AK et al [20] did a study including 45.7% illiterates, 38.10% cases with high school education and 15.23% cases with graduation.

The bulk of those who died by hanging were students (30.81% of cases), and self-employed people (30.81% of cases), making up more than half of all cases. Government and private sector workers were responsible for 14.53% of fatal hangings, followed by housewives with 11.62%. 5.81% of deaths were also caused by unemployed people. Students may tend to commit suicide more frequently than other study groups if they experience increasing academic competition or failure despite their best efforts. Study by Samanta AK et al [20] found 30.48% cases of suicide by hanging were laborers, 20% were housewives, 18% were business class persons, 16% of cases were in different services and 14.3% were students. MR Nagendra Gouda, [17] Sambaji M Rao found 75.0 % cases in their study were farmers. Pradeep Kumar M.V. & Anand P. [7] Rayamane found 38.0% of cases in their study been home makers and 38.0 % were semi-skilled workers. The study conducted by Bhosle SH et al [21] included farmers (30.12% cases), Laborers (24.10%), Housewives (10.84%), students (10.84%) and servicemen (9.64% cases).

In our investigation, the socioeconomic standing of each case was evaluated using the Modified Kuppaswamy scale. The majority of hanged people, or 72.09% of cases, belonged to the middle class socioeconomic category; lower class people made up 18.03% of deaths; and upper class people made up 9.88% of cases. According to observations made in the study by Ali E. et al, the majority of victims (78.1%) were from the middle class, followed by the lower class (16.5%) and the higher class (2.1%). [18] Chetan Kumar et al. found that 10.09% of cases came from the high class, 25.75% from the lower class, and 62.37% from the middle class. The most common day for hangings among the participants in our survey was Wednesday (19.76%), followed by Sunday (16.86%) and

Thursday (13.95%). The number of hangings was significantly higher in the middle of the week. The amount of mental and physical stress that has built may have a significant impact on the incidence of suicides, making the victims more vulnerable to emotional breakdowns as a result of which they may have engaged in excessive self-harm.

In our analysis, the most opportune period for hanging oneself was at night, followed by early in the morning in 25.0% of cases. Many hanging victims opted to hang themselves at night, closely followed by early in the morning, which can be explained by the vicious cycle of anxiety followed by insomnia over a period of time. Similar findings were observed in the studies conducted by M Ahmad [5], MZ Hossain (Night 69.65% & Day time 30.34%); Vijayakumari N [22] (50.8% deaths in early hours of the day); Abd Alkareem Q. Mohammed [23] (80% cases hanged between 3:00 PM and 3:00 AM).

Only 4.07% of incidents included hanging themselves outdoors, such as in a farm, compared to 95.93% that did it inside, such as in a bedroom, hallway, kitchen, or drawing room. Abouhashem AA et al [4] found 83.3% cases in their study hanged in indoor places and 16.7% cases hanged at outdoor places. Ahmad M et al [16] studied 97.93% cases of indoor hanging and 2.06% cases of outdoor hanging victims. Study conducted by Patel AP et al [6] also found 96.25% cases hanged in indoor places and 3.75% cases in outdoor places.

Conclusion

According to the results of the current study, hanging is among the most popular methods of suicide among young men from lower socioeconomic classes. The increasing rate of suicides among the younger generation is attributed to causes including family conflict and academic stress. According to the study's subsequent findings, hanging suicide has been identified as a major setback for the moral advancement of civilization. Therefore, every effort must be made to reduce the issue. To provide moral and social guidance, to discover the root causes of suicidal acts, and to avoid them, well-planned programs and counseling facilities should be implemented. The rate of suicidal deaths by hanging may be decreased in the future through proper education, influencing the media's portrayal of suicidal news, reporting techniques, and involvement of young generations in motivating activities.

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