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Original Article

Analysis of Socio-Demographic Profiles of Suicidal Hanging Cases: An Autopsy-Based Study in Northern Region of West Bengal

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ABSTRACT

Background: Hanging is a common method of suicide carrying substantial social and psychological consequences. It is always considered suicidal unless contrary is proved.
Aims and Objectives: This study seeks to analyse the socio-demographic profiles of individuals who died by hanging with an emphasis on the causes and contributing factors.
Materials and Methods: This retrospective study was done over a period of 1-year on all alleged suicidal hanging cases brought for postmortem examination. Data were gathered from next of kin, inquest reports and postmortem reports etc., which were then tabulated and analysed.
Results: Out of 1,087 autopsy cases, 255 (23.45%) were deaths from suicidal hanging. The highest incidence (27.1%) occurred among people aged 21–30 years. Males predominated, with married individuals (60.8%) outnumbering unmarried. Most of the victims were from rural areas and uneducated. A significant portion of the victims were housewives (23.9%) and daily wage earners (21.2%). Incidents occurred mainly indoors (67.1%), typically using nylon or jute ropes. Mental illness emerged as one of the primary predisposing factors followed by family disputes and financial difficulties.
Conclusion: Preventing suicide by hanging is challenging, but identifying vulnerable individuals through screening and providing counselling can help reduce suicide rates.

Keywords: *Hanging; Suicide; Socio demographic profile; Ligature material; Autopsy.*

INTRODUCTION

Hanging is a form of asphyxia caused by suspension of the body by a ligature which encircles the neck, the constricting force being the weight of the body or a part of it.[1] Hanging is ordinarily presumed to be suicidal unless circumstantial and other evidences with autopsy findings are sufficient enough to rebut the presumption. [2]

Suicide is a significant global public health issue. Every year, almost one million people die from suicide. [3] According to the WHO, every 40 seconds a person dies by committing suicide somewhere in the world. [4] And hanging is one the most common methods of committing suicide. It is often preferred since it produces painless and rapid death and can occur even with partial suspension. [5] In India, suicide rates have been rising steadily, with a growing number of individuals resorting to hanging as a method of suicide. Data from the National Crime Records Bureau (NCRB) shows that in 2022, 58.2% of all suicides in India were by hanging, marking an increase from 57% in 2021.[6] This alarming trend underscores the need to closely examine the socio-demographic characteristics of those who choose hanging to end their lives.

Against this backdrop, we have observed that majority of the cases coming to department of FMT, MJN Medical College & Hospital, Cooch Behar, West Bengal for post mortem examinations were deaths due to hanging. This observation prompted the conceptualization of a study aimed at understanding the socio-demographic profile of victims of suicidal hanging in this region. Additionally, we will also delve into the underlying causes that drive individuals to take such drastic

steps and explore the trends in the circumstances and materials used in hanging deaths, which are essential for a comprehensive understanding of the prevalence and characteristics of these cases.

By analyzing these critical aspects, we aim to contribute valuable data that can aid in the development of targeted preventive strategies, raise awareness about mental health and ultimately reduce the incidence of suicide by hanging in the region. The findings of this study could also assist healthcare professionals, law enforcement and policymakers in implementing more effective suicide prevention programs and support systems for individuals at risk.

OBJECTIVE OF RESEARCH

1. To identify the frequency and profile of cases based on various socio-demographic factors like age, sex, occupation etc.
2. To analyse the trends, incidences and circumstances of suicidal death due to hanging.

MATERIALS AND METHODS

Study design: The is an observational, descriptive study with retrospective design.
Study Area: Department of Forensic Medicine and Toxicology, MJN Medical College & Hospital, Cooch Behar, West Bengal
Study Period: 1-year (September 2022 to August 2023)

Study Population and Sample size: All cases of deaths due to hanging of suicidal origin which were brought for autopsy at MJN Medical College & Hospital, Cooch Behar, West Bengal within the specified study period was selected and confirmed on the basis of police/magistrate inquest, autopsy reports and other related information from the next of kin. Unknown, decomposed and skeletonized bodies, accidental and allegedly homicidal hanging cases were excluded from this study.

Data collection and interpretation: Before conducting the study, permission was obtained from the Institute Ethics Committee of MJN Medical College & Hospital, Cooch Behar, West Bengal. The detailed information thus collected was entered in a pre-determined proforma prepared after a thorough review of the literature and analysed thereafter. Data was collected and compiled using a spread sheet. Descriptive data was analysed using number, percentage and appropriate tables were used for presentation. Ethical principles were followed by maintaining due confidentiality when data was obtained from the above records.

Human Subject Protection: Approval from the Institute Ethics Committee was taken before conducting the study and confidentiality regarding identity of the subjects was maintained.

RESULTS

As seen in Table 1, the majority of hanging cases (27.9%) were observed in young adults, specifically in the 21–30 years age group, followed by 21.9% of cases in the 10-20 years age groups. Although significant, the lowest percentage of cases (9.4%) was found in the 51-60 years age group.

Male victims of deaths due to hanging accounted for 171 (67.1%) cases with a male to female ratio of about 2:1. (Table-2).

Table 3 shows that, most of the hanging cases came from rural areas, with 229 cases (89.9%), compared to only 26 cases (10.2%) from urban areas. The incidence of hanging was notably higher among married individuals, comprising 60.8% of the cases.

As per table 4, majority of cases (41.6%) were uneducated while 33.3% had an educational qualification up to secondary school and only 13.3% up to higher secondary school. Occupation wise distribution of cases in our study reveals that most of victims were housewives (23.9%) followed by daily wage earners with 21.2% of the cases. Students accounted for 11% of the cases, while 16.1% of the victims were unemployed.

Of the 255 cases of hanging, maximum number of cases (67.1%) were committed indoors while 84 cases (32.9%) were committed outdoors. (Table 5)

While estimating hanging deaths based on type of suspension, it has been observed that complete hanging is more common with 232 (91%) cases in comparison to partial hanging with 23 (9%) cases. As per Table 6, the ligature material used by majority of the victims was found to be nylon or jute ropes (36.9%). Gamcha was the second common ligature material used (22%) followed by dupattas and sarees.

As per the history elicited from the next of kin and papers provided by the police, mental illness was identified as the leading cause of suicide by hanging, accounting for 41.2% of cases. Many of the deceased were experiencing extreme

distress or suffering from chronic, incurable illnesses. Marital discord or family-related disputes (17.6%) was another significant factor, while in 13.3% of cases, no clear cause could be determined. (Table 7)

TABLES

Table 1: Age-wise distribution of cases.

Age (years)	Age (years)	Percentage
10 - 20 y	56	21.9%
21 - 30 y	69	27.1%
31 - 40 y	48	18.8%
41 - 50 y	27	10.6%
51 - 60 y	24	9.4%
61 - 70 y	31	12.2%
Total	**255**	**100%**

Table 2: Sex-wise distribution of cases.

Sex	No Of Cases	Percentage
Male	171	67.1%
Female	84	32.9%
Total	**255**	**100%**

Table 3: Distribution of cases according to marital status and locality.

Marital status	No Of Cases	Percentage
Married	155	60.8%
Unmarried	98	38.4%
Divorced /Widow	2	0.8%
Total	**255**	**100%**
Locality	**No Of Cases**	**Percentage**
Urban	26	10.2%
Rural	229	89.8%
Total	**255**	**100%**

Table 4: Educational status wise and occupation wise distribution of cases.

Educational status	No Of Cases	Percentage
Uneducated	106	41.6%
Secondary	85	33.3%
Higher-Secondary	34	13.3%
Undergraduate	24	9.4%
Postgraduate	6	2.4%
Total	**255**	**100%**
Occupation	**No Of Cases**	**Percentage**
Housewife	61	23.9%
Daily wages	54	21.2%
Students	28	11%
Unemployed	41	16.1%
Self employed	36	14.1%
Salaried person	25	9.8%
Others	10	3.9%
Total	**255**	**100%**

Table 5: Distribution of cases based on place of occurrence.

Place of occurrence	No Of Cases	Percentage
Indoor	171	67.1%
Outdoor	84	32.9%
Total	**255**	**100%**

Table 6: Distribution of cases based on type of suspension and type of ligature material used.

Type of hanging	No Of Cases	Percentage
Complete	232	91%
Partial	23	9%
Total	**255**	**100%**

Ligature material	No Of Cases	Percentage
Dupatta	39	15.3%
Saree	36	14.1%
Nylon or jute rope	94	36.9%
Gamcha	56	22%
Others	30	11.7%
Total	**255**	**100%**

Table 7: Distribution of cases based on reasons for hanging.

Reason for hanging	No Of Cases	Percentage
Mental illness	105	41.2%
Health issues	36	14.1%
Financial burden	29	11.4%
Family problems	45	17.6%
Others	6	2.4%
Not known	34	13.3%
Total	**255**	**100%**

DISCUSSION

The millions of deaths caused by hanging serve as a powerful statistic that urges reflection and action. It underscores our social responsibility to address the underlying factors contributing to such tragedies, as it represents a profound loss to families, nations and the world as a whole.

In the present study, conducted over the course of one year, a total of 1087 cases were brought for autopsy. Out of these, 255 (23.45%) hanging cases were found. The age group most vulnerable to hanging was found to be between 21 and 30 years, accounting for 27.9% of cases. These findings are consistent with the studies of Waghmare PB. et al [7], Dash A. et al [8] and Sen A. et al [9], all of whom identified the 21-30 years age group as the most susceptible. However, research by Subramanyam S. et al [10] and Biradar G. et al [11] indicated that the majority of hanging cases occurred in the 31-40 years age group. Individuals in age group of 21 – 30 years, often face significant life pressures, such as academic or career challenges, financial instability, relationship issues and the struggle to establish a stable identity. Moreover, this age group may lack the coping mechanisms or support systems necessary to handle intense emotional distress, leading them to resort to drastic measures like hanging. Additionally, young adults may not always seek help for mental health issues due to stigma or a lack of awareness.

The present study found that the majority of suicide victims were male (67.1%), with a male-to-female ratio of approximately 2:1. Similar findings were reported by Biradar G. et al [11], Dash A. et al [8] and Barman S and Bairagi K [12]. However, studies conducted in India by Nayak SR et al. [13] and Sen A et al. [9], as well as in Bangladesh by Shabnam S et al. [14], indicate that females outnumbered males in their respective findings. While authors have suggested that the male preponderance may be attributed to factors such as unemployment, drug addiction, relationship issues and the societal expectation for men to shoulder both family and career responsibilities. [8,10] We feel this observation does not imply that men are more likely to commit suicide than women. As has been aptly stated by Batra AK and Dongre AP [15], this simply indicates that men tend to choose hanging as a method of suicide, whereas women often opt for other methods such as burning, drowning or poisoning.

Our study revealed that incidence of suicidal hanging cases among married individuals (60.8%) were more when compared to unmarried individuals (38.4%). This finding is in concurrence with other studies conducted by Waghmare PB. et al [7], Dash A. et al [8] and Udhayabanu R. et al. [16]. However, Sonawane S. et al [17] concluded that unmarried victims constituted more cases than married victims. Higher prevalence of suicidal hanging among married individuals may be due to a combination of emotional, social and financial pressures. Marital issues such as relationship conflicts, domestic violence or family disputes are significant contributors, as the emotional distress from these problems can lead to feelings of hopelessness. Economic difficulties and the burden of parental responsibilities further exacerbate these pressures. When combined with mental health struggles, these factors often lead to a higher incidence of suicide by hanging among married individuals.

In this study, it was found that the majority of hanging cases were from rural areas. Similar findings were shared by Sen A. et al [9], who noted that most victims were from lower socio-economic backgrounds and rural areas. However, Dash A. et al [8] and Biradar G. et al [11] found that urban hanging deaths outnumbered rural ones, suggesting that more people are now opting to live in urban areas due to the increasing stress of day-to-day life. Nevertheless, Cooch Behar remains a predominantly rural, agriculture-based region, where agricultural work often leads to economic instability especially during crop failures or poor harvests, resulting in financial distress. These hardships often lead to despair, helping explain the higher number of hanging deaths in the region.

Our study confirms that the majority of victims were uneducated (41.6%) followed by 33.3% who had attended up to secondary school and only 13.3% had completed higher secondary school. Similar findings were reported by Samanta AK and Nayak SR [18], with most subjects being illiterate. In contrast, studies by Sen A. et al [9] and Gopal BK. et al [19] found that the majority of victims had an educational qualification up to the pre-university and high school levels, respectively. However, all of these researchers emphasized that the incidence rate of suicidal hanging gradually decreases as the level of education increases.

While analysing the occupation of the victims, it was revealed that 23.9% of them were housewives. Many housewives live in quiet isolation, bound by expectations and without financial freedom. With little support and growing emotional strain, some feel overwhelmed and see no way out. In their despair, suicide by hanging can seem like the only escape. These findings are consistent with those of Pawar VG. et al [20] and Sharija S. et al [21], where the majority of female victims were housewives, while most male victims of hanging were manual labourers. In our study, the next major groups were those of daily wage earners (21.2%) and unemployed (16.1%). These results align with those of Sen A. et al [9], Subramanyam S. et al [10] and Zachariah T and John JT. [22], reinforcing the understanding that hanging is more prevalent among the unemployed and daily wage earners due to the hopelessness associated with financial instability.

Hanging cases are often carried out indoors due to the desire for privacy and seclusion, as individuals may wish to avoid being seen or interrupted. Moreover, the indoor setting provides a familiar and preferred environment. In our study, 67.1% of victims chose an indoor location which aligns with findings from various studies by Dash A. et al [8], Subramanyam S. et al [10] and Udhayabanu R. et al. [16]. among others.

Our study demonstrated that complete hanging is more prevalent, accounting for 91% of cases. Similar findings have been reported in multiple studies by Sen A. et al [9], Barman S and Bairagi K [12] and Sonawane S. et al [17]. The higher number of complete hanging cases may stem from the belief among those attempting suicide that death is quicker and more certain in complete hanging. Since the entire body is suspended, it exerts greater pressure on the neck, cutting off blood flow to the brain and leading to rapid unconsciousness and death. In contrast, partial hanging may not generate enough pressure to block circulation, which can result in brain damage, prolonged suffering or even survival.

The most common ligature materials used in hanging cases were nylon or jute ropes (36.9%), followed by gamcha (22%) and dupatta (15.3%). Similar findings were reported by Ambade VN. et al [23], who also identified nylon ropes as the most commonly used ligature material. However, studies by other authors such as Nayak SR et al. [13] and Sonawane S. et al [17] found that soft, cloth-based materials like sarees, chunni, or dupattas were more frequently used. Bhosle SH. et al [24], while discussing common ligature materials, emphasized that these can be anything readily available at the time, including household items or personal belongings like sari, shawl, dupatta, gamcha, ropes and electric wires. In our study conducted at Cooch Behar, with its agricultural background, nylon and jute ropes are commonly found in households and farms. Unfortunately, the widespread use of these ropes for everyday tasks also extends to tragic incidents like suicides, where the accessibility and physical properties of the material play a significant role.

Our study found that mental illness (41.2%) was one of the primary factors contributing to suicide by hanging followed by family-related disputes (17.6%) and other health-related issues (14.1%). Similar findings were reported by Bachmann S [25] in the study titled “Epidemiology of Suicide and the Psychiatric Perspective,” which highlighted that suicides are often linked to psychiatric conditions such as depression. Zachariah T and John JT. [22] also supported this, emphasizing that mental illness is a major cause of suicidal hanging, with depression and schizophrenia being the most common conditions. However, Biradar G. et al [11] identified chronic illness as the most significant risk factor while Shabnam S et al. [14] in their study in Bangladesh found marital discord to be the primary cause of hanging. People with mental illnesses often perceive no way out of their suffering and without adequate support or treatment, they may view suicide as the only means to escape the pain. Consequently, hanging is frequently chosen due to its accessibility and the perceived certainty of its outcome.

CONCLUSION

The findings of this study highlight the significant burden of suicidal deaths by hanging which predominantly affect young men, often from rural areas, facing silent battles with mental illness, family strain or financial hardship. Many were married, carrying the weight of expectations with little support. The choice of ligature material with nylon and jute ropes being the most common, reflects the availability of household items in rural settings.

The findings of this research stress the need for comprehensive mental health support and awareness, especially in rural areas, to prevent suicides by hanging. There is a critical need for improved access to mental health care, social support systems and education which may alleviate the emotional and financial burdens that contribute to such tragedies. Additionally, addressing societal expectations and promoting open conversations about mental health could help reduce the stigma surrounding mental illnesses and suicide offering individuals healthier coping mechanisms in times of crisis.

In conclusion, while the statistical data provided in this study sheds light on the frequency and socio-demographic profile of suicide by hanging, it also calls for urgent preventive measures at the community and societal levels to address the underlying causes and offer timely intervention to those at risk.

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