

Autopsy Findings in Suicidal Hanging Cases

Siddiqi MM¹, Jabin N², Bari FJ³, Ferdous J⁴, Mazumder MAK⁵, Suraiya R⁶

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Abstract

Background: Suicidal hanging remains a significant health concern worldwide, including Bangladesh. Forensic medicine plays a pivotal role in investigating these tragic events, providing valuable insights into the circumstances surrounding the deaths. By meticulously examining ligature marks, the scene of the incident and post-mortem findings, forensic investigators can piece together the puzzle of a person's final moments. Understanding the common patterns associated with suicidal hangings offers valuable information regarding the suicide incidences and a deeper understanding of the factors that contribute to such tragic acts.

Objective: To find out the post-mortem findings of hanging among the victims who underwent autopsy examination.

Methods: This cross-sectional descriptive study was conducted at the Department of Forensic Medicine, Shaheed Suhrawardy Medical College Hospital, Dhaka from January 2024 to June 2024. A total of 110 autopsies were performed on individuals who died due to suicidal hanging. Data were collected from inquest report, chalan and death certificate (in case of death in hospital) which included information on victim demographics, scene of the incident and suspected cause of death. Additional information was gathered from family members. During autopsies, forensic investigators examined the body for ligature mark, ligature material, knot type, neck injuries, cyanosis, congestion etc. A standardized protocol was followed to ensure data accuracy and consistency.

Results: The majority of victims were female (59.1%) and aged 21-30 years (55.5%). Most of them were married (64.5%) and resided in urban areas (77.3%). The most common ligature material was rope (65.5%), followed by scarves (34.5%). The primary suspected cause of hanging was quarrels between couples (35.5%), followed by financial problems, psychiatric illness and drug addiction etc. The majority of incidents occurred at night (52.7%). Post-mortem findings included ligature marks above the thyroid cartilage, fractures in the thyroid cartilage and hyoid bone, cyanosis, glistening beneath ligature marks, congestion, petechial hemorrhage etc.

Conclusion: The findings highlight the urgent need for targeted suicide prevention strategies, including improved

access to mental health services, education and awareness campaigns, and support systems for individuals at risk. Future research should explore the long-term impact of suicidal hanging on families and communities, as well as the effectiveness of different preventive interventions.

Keywords: Suicide, Hanging, Forensic Medicine.

Introduction

Suicidal hanging remains a grim reality in Bangladesh, mirroring the global trend where it is the third leading cause of death among the younger generation.¹ Forensic medicine, the detective work of death, plays a crucial role in unraveling the mysteries behind these tragic events. By meticulously examining the ligature marks, the scene of the incident, and the post-mortem findings, forensic investigators can piece together the puzzle of a person's final moments, shedding light on the circumstances that led to the suicide.²

Understanding the common patterns associated with suicidal hangings offers invaluable insights into the human psyche and the factors that can drive individuals to such desperate acts.³ This knowledge not only aids in preventing future tragedies but also contributes to a deeper understanding of the human condition. Beyond the immediate goal of preventing suicides, studying these cases can shed light on broader societal issues such as mental health, economic inequality and social isolation.

The forensic examination of a hanging case involves a meticulous assessment of various factors and each of which provided crucial clues about the circumstances surrounding the death. The ligature materials usually used are rope, sharee, scarves (orna) etc. can reveal details about the method chosen.⁴ The point of suspension, whether a fixed object or a part of the body, can offer insights into the victim's position at the time of death.⁵ The scene of the incident, including the presence of suicide notes or other personal effects, can provide valuable information about the victim's state of mind and potential motivations.⁶

Post-mortem examinations of individual who died by hanging typically reveal a number of characteristic findings, such as cyanosis, ligature marks on the neck, congestion of the face, head, petechiae (small, reddish-purple spots) in the eyes and

1. **Maj Muhammed Marzan Siddiqi**, MBBS, MCPS, DFM, Assistant Professor of Forensic Medicine and Toxicology, Armed Forces Medical College (AFMC), Dhaka (E-mail: marzan.siddiqi31215@gmail.com) 2. **Dr Nashat Jabin**, MBBS, MRCP, Assistant Professor of Forensic Medicine and Toxicology, Shaheed Suhrawardy Medical College (ShSMC), Dhaka 3. **Dr Fatema Jahan Bari**, MBBS, Department of Forensic Medicine and Toxicology, ShSMC, Dhaka 4. **Dr Jannatul Ferdous**, MBBS, Department of Forensic Medicine and Toxicology, ShSMC, Dhaka 5. **Maj Md Anayet Karim Mazumder**, MBBS, MPH, DLO, GSO-II (Research & Development), AFMC, Dhaka 6. **Dr Raya Suraiya**, MBBS, Lecturer of Forensic Medicine and Toxicology, AFMC, Dhaka.

and conjunctivae, dried mark of dribbling of saliva from angle of mouth opposite the knot. The severity of these findings can vary depending on factors like the duration of suspension, the type of ligature and the victim's physical condition.⁷ By examining numerous forensic cases of suicidal hangings in Bangladesh, this study aims to identify common patterns and characteristics. This information can help improve forensic investigations, inform suicide prevention strategies, and enhance our understanding of the factors contributing to suicide in Bangladesh. Ultimately, a deeper understanding of suicidal hangings can lead to more effective interventions tailored to the specific needs of the Bangladeshi population.

Materials and Methods

This cross-sectional descriptive study was conducted in the Department of Forensic Medicine at Shaheed Suhrawardy Medical College Hospital (ShSMCH), Dhaka, Bangladesh. The study period spanned from January 2024 to June 2024. A total of 110 autopsies were performed during this time on individuals who had died due to suicidal hanging.

Data collection involved a review of inquest report, chalan and death certificate (in case of death in hospital) accompanying the deceased bodies. These reports provided valuable information on various identification details, including the victim's age, sex, marital status, permanent address, suspension point, place of incident, time of death and suspected cause of death. In addition to the inquest reports, information was gathered from the victim's family members, offering valuable insights into their personal circumstances and the events leading up to the death.

During the autopsies, forensic investigators examined the deceased bodies for any signs of injury or trauma. Specific attention was paid to the ligature material, the knot used, any injuries to the neck structures, the ligature mark and the condition of the stomach. These observations were meticulously documented in a structured data sheet.

To ensure data accuracy and consistency, a standardized protocol was followed for conducting the autopsies and recording the findings. Inter-observer reliability was maintained through regular training and supervision of the forensic investigators involved in the study.

Results

The autopsy findings of the 110 suicidal hanging victims were enrolled in this study with 65(59.1%) of them being females and the rest were males. The data for all 110 victims were available for analysis from their enrollment in this study.

The age of the respondents ranged from 11-50 years where the majority of the affected i.e. 61 (55.5%) were from the age group 21-30 years; 71(64.5%) of the patients were married and 42(38.2%) of them were service holders. More than three-quarters of them i.e. 85(77.3%) resided in urban areas (Table-I).

Table-I: Socio-demographic profile of the patients (n=110)

Attributes		Frequency (%)
Sex	Female	65 (59.1)
	Male	45 (40.1)
Age	11-20	24 (21.2)
	21-30	61 (55.5)
	31-40	17 (15.5)
	41-50	8 (7.3)
	Mean \pm S.D. = 23.57 \pm 4.98	
Area of residence	Urban	85 (77.3)
	Semi-urban	19 (17.3)
	Rural	6 (5.5)
Occupation	Student	11 (10.0)
	Homemaker	37 (33.6)
	Service holder	42 (38.2)
	Business	18 (16.4)
	Others	2 (1.8)
Marital Status	Single	71 (64.5)
	Married	39 (35.5)

The most commonly used ligature material was rope, accounting for 72 cases (65.5%) followed by scarves (orna), which were used in 38 cases (34.5%) (Figure-1).

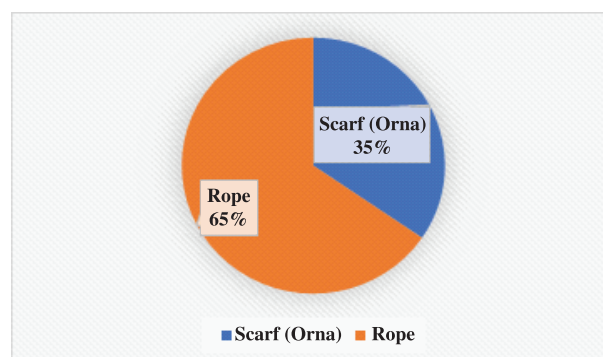


Figure-1: Type of ligature material used

Among the 110 cases, the most common suspected causes of hanging were quarrels between couples (35.5%), followed by debt or financial problem (23.6%), psychiatric illness (16.4%) and drug addiction (20.9%). The causes of the remaining victims were not found (Table-II).

Table-II: Suspected cause of suicidal hanging among the victims (n=110)

Suspected causes of suicidal hanging	Frequency (%)
Quarrel between couples	39 (35.5)
Debt/Financial problem	26 (23.6)
Psychiatric illness (Depression, schizophrenia etc.)	18 (16.4)
Drug Addiction	23 (20.9)
Unknown	4 (3.6)

Of the 110 cases, 7(6.4%) occurred in the morning (5AM-12PM), 12(10.9%) in the afternoon (12PM-5PM), 33(30.0%) in the evening (5PM-10PM) and 58(52.7%) at night (10PM-5AM) (Figure-2).

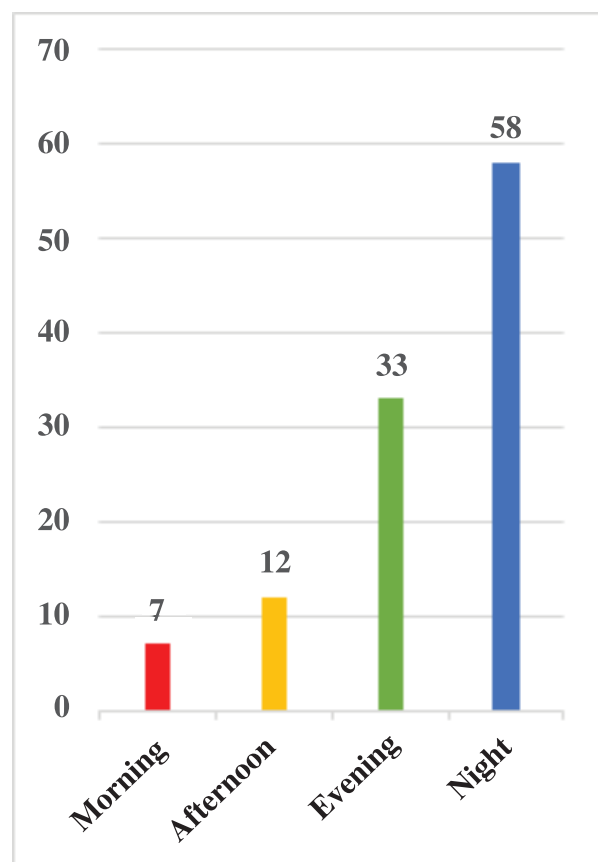


Figure-2: Time of occurrence of suicidal hangings

Post-mortem findings among the 110 victims revealed a ligature mark above the thyroid cartilage in 83 cases (75.5%). The majority (64 cases, 58.2%) had the knot tied on the left side, while a slip knot was present in 59 cases (53.6%). Fractures were observed in the thyroid cartilage (22.7%) and hyoid bone (30.0%) of the victims. Cyanosis was evident in nearly all cases, and glistening beneath the ligature mark was present in 78 (70.9%). Regarding hemorrhages, subconjunctival hemorrhage was noted in 30 cases (27.3%) and petechial hemorrhage in 23 (20.9%). Dried mark of dribbling of saliva occurred in 36 cases (32.7%) and tongue biting was observed in 13 (11.8%) (Table-III).

Table-III: Post-mortem findings in suicidal hangings (n=110)

Post-mortem findings		n (%)
Level of ligature mark	Above thyroid cartilage	83 (75.5)
	Below thyroid cartilage	27 (24.5)
Knot tie	Left side	64 (58.2)
	Right side	31 (28.2)
	Back	15 (13.6)
Hemorrhage	Subconjunctival	30 (27.3)
	Petechial	23 (20.9)
Fracture	Thyroid cartilage	25 (22.7)
	Hyoid bone	33 (30.0)
Slip knot		59 (53.6)
Glistening		78 (70.9)
Dried mark of dribbling of saliva		36 (32.7)
Tongue bite		13 (11.1)

Discussion

This study examined the autopsy findings of 110 individuals who died by suicidal hanging in Bangladesh. The data analyzed in this study were collected from January 2024 to June 2024, during which a total of 110 autopsies were performed on individuals who had died due to suicidal hanging. The demographic information of the victims was obtained from inquest reports and interviews with family members.

This study found a predominance of female victims (59.1%) in cases of suicidal hanging, with a high prevalence of ligature marks above the thyroid cartilage (75.5%). The most common suspected cause was quarrels between couples (35.5%), followed by other various factors. The majority of victims were aged 21-30 years, with a range from 11 to 50. Most were married and employed, residing primarily in urban areas. These findings align with previous studies in Bangladesh and neighboring countries, which have reported similar rates of suicidal hanging among males and identified various risk factors, including interpersonal conflicts, financial difficulties, and mental health issues.^{2,8,9} However, our study also underscores the unique challenges faced by the Bangladeshi population, such as poverty, social stigma, and limited access to mental health services, which may contribute to the high rates of suicidal hanging in the country.

The high prevalence of ligature marks above the thyroid cartilage is likely due to the common method of hanging in Bangladesh, which involves suspending the body by the neck. This method can cause severe damage to the neck structures, including the thyroid cartilage and hyoid bone, which can lead to death.^{10,11}

Dried mark of dribbling of saliva was found (32.7%) and on dissection, beneath the ligature mark glistening was found (70.9%) which was also found in a study conducted in Sylhet.¹² Most of the victim 52.7% committed suicide at night (10 pm to 5 am) and similar finding was seen in other study¹³ too.

The variety of suspected causes of hanging reflects the complex interplay of factors that can contribute to suicidal behavior. While interpersonal conflicts were the most common cause in this study, other factors such as financial difficulties, psychiatric illness and drug addiction also played a role. These findings emphasize the need for a multi-faceted approach to suicide prevention in Bangladesh, addressing both individual and societal factors.

Limitations and strengths of the study

This descriptive cross-sectional study, while informative, has limitations. Its single-center design at a tertiary care hospital limits generalizability to the entire population.

Additionally, the retrospective nature introduces potential biases. However, the large sample size and detailed autopsy examination offer a comprehensive understanding of suicidal hanging in Bangladesh. The inclusion of both demographic and post-mortem data allows for a nuanced analysis of associated factors.

Conclusion

This research offers a comprehensive understanding of suicidal hanging in Bangladesh, revealing prevalent patterns and risk factors. The findings underscore the urgent need for tailored suicide prevention strategies. These include enhancing access to mental health care, implementing comprehensive education and awareness campaigns and providing robust support systems for individuals at risk. Future research should delve deeper into the long-term consequences of suicidal hanging on families and communities, as well as the effectiveness of various preventive interventions. By addressing these critical areas, Bangladesh can make significant strides in reducing the tragic toll of suicide.

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