

Original Article

Death due to Hanging: A Retrospective Medico-legal Study at a District level in Bangladesh

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Abstract:

Background: After suicidal poisoning, death due to hanging is one of the common modes of suicide encountered in medico-legal procedure in Bangladesh. **Objective:** To study on demographic and autopsy findings associated with suicide by hanging at Manikganj district, Bangladesh. **Methodology:** This retrospective cross-sectional study was conducted in the District hospital, Manikganj, Bangladesh during the period of January 2019 to December 2020. **Results:** A total of 381 medico-legal autopsies were analyzed, out of which 169 were deaths due to hanging. Out of 169 cases, the maximum (69, 40.8%) deaths were due to hanging in the age group of 21-30 years. Majority (101, 59.8%) of the cases were observed in females and among them, maximum were housewives (60, 35.5%). Most of the death bodies (47, 27.81%) were brought from Manikganj police station. Regarding the ligature material used, majority (133, 78.7%) of victims had used soft ligature material, like Dopatta (orhna) (56, 33.1%). Considering the autopsy findings, cyanosis of fingertips and nail bed was the commonest (163, 96.4%), followed by subcutaneous tissue under the ligature mark found pale, white, hard and glistening (159, 94.0%), and dribbling mark of saliva in case of asphyxial death due to hanging (144, 85.2%). **Conclusion:** Suicidal hanging was commonly encountered in younger age group and in many cases of financial problem, followed by family disputes were commonly observed.


Keywords: Hanging, Suicide, Medicolegal procedure

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Introduction:

Hanging is one of the most common modes of suicide encountered in medico-legal procedure in Bangladesh after suicidal poisoning.¹ Hanging is a mechanical form of asphyxia, which is caused by constriction of neck by suspending the body and force of constriction is either the weight of the body or weight of the head alone.² Hanging is always suicidal unless otherwise proved, except in some masochistic accidental cases.³ Victim die due to asphyxia and/or venous congestion, cerebral ischaemia, shock, fracture or dislocation of cervical vertebrae.⁴ Cervical vertebrae usually are broken in long drop hanging and it is very unusual in suicidal hanging.⁵ Hanging is chosen for suicide, because it produces sure,

quick and painless death with little awareness of dying and hanging elements are readily available. So, hanging has been considered as the 'quickest' and 'easiest' method.⁶

In the last 30 years, the suicidal hanging have been on the rise, especially among young adults.⁷ According to data from Police Headquarters, among the 11,095 people who committed suicide in Bangladesh in 2017, 569 (5.12%) hanged themselves, 3,467 (31.24%) took poison, and 59 (0.53%) people set themselves on fire.⁸ Over the centuries, people have been plagued by the increasing pressures of life, broken in such a way that the only way for them is to die by hanging.⁹ It is one of the most important cause for unnatural deaths during day-to-day autopsies.

This study was carried out to assess the autopsy analysis of death due to hanging among the people of Manikganj district.

Methodology

This retrospective cross-sectional study was conducted in the district hospital, Manikganj, Bangladesh, during the period of January, 2019 to December, 2020. The ethical clearance was approved by ethics review committee of Monno Medical College.

The study included 169 cases of death due to hanging, out of 381 suicidal cases. All autopsies have been done in District hospital, Manikganj, Bangladesh. Information regarding age, sex, residence, occupation, socio-demographic characteristics, marital status, date of death, reasons of suicide, nature of ligature material, postmortem findings and all other relevant information about the cases had been collected from the accompanying police papers and detail history from relatives of the victims. The findings were recorded and analysis was done to find out age and sex distribution, occupation, nature and type of ligature material used, post-mortem findings and socio-demographic distribution, etc.

The data analysis was carried out by using descriptive statistics and presented with suitable table. Statistical analysis was performed by using window-based computer software devised with Statistical Packages for Social Sciences with 95% confidence limit.

Results

Among a total of 381 medico-legal autopsies, 69(44.4%) deaths were due to hanging. Regarding the sex, it was observed that incidence of hanging was more in females than males. Out of 169 cases, 101(59.8%) were females, while 68(40.2%) were males. (Table 1)

Table 1: Sex wise distribution of the cases (n=169)

Sex	Frequency	Percentage
Male	68	40.24
Female	101	59.76
Total:	169	100.00

Among all the cases of hanging, it was observed that the riskiest age group was 21-30 years with total 69(40.8%) cases, followed by age group 10-20 years 53(31.4%). (Table 2)

Table 2: Age wise distribution of the cases (n=169)

Age Group (Yrs)	Frequency	Percentage
10-20	53	31.36
21-30	69	40.83
31-40	21	12.43
41-50	13	7.69
51-60	9	5.33
Above 60	4	2.36
Total:	169	100.00

About the occupational status, majority were housewives (60, 35.5%), followed by 24.9% students. (Table 3)

Table 3: Occupation wise distribution of the cases (n=169)

Occupational status	Frequency	Percentage
Housewife	60	35.50
Student	42	24.85
Farmer	16	9.47
unemployment	16	9.47
Businessman	10	5.92
Labour	9	5.32
service holder	7	4.14
Driver	4	2.37
unknown	5	2.96
Total:	169	100.00

In relation to ligature material, 133(78.7%) cases used soft ligature material, in 19(11.2%) cases, it was firm, it was hard in 8(4.7%) cases. (Table 4)

Table 4: Nature of ligature materials used by the cases (n=169)

Ligature material	Frequency	Percentage
Soft	133	78.70
Firm	19	11.24
Hard	8	4.73
unknown	9	5.33
Total:	169	100.00

Among these ligature materials, dupatta (orhna) was the most common (56, 33.1%), followed by sari (28.4%) and others. (Table 5)

Table 5: Types of the ligature materials used by the cases (n=169)

Material used	Frequency	Percentage
Dopatta (orhna)	56	33.1
Sari	48	28.4
Nylon rope	19	11.2
Towel (Gumcha)	16	9.5
Electric wire	8	4.7
Lungi	6	3.6
Cloth	5	3.0
Bed sheet	4	2.4
unknown	7	4.1
Total:	169	100.0

.Regarding the postmortem findings, cyanosis was found in 163 (96.4%) cases, subcutaneous tissues underneath the ligature mark was found pale, white, hard, glistening in 159 (94.1%) cases, dribbling marks of saliva were seen in 144 (85.2%) cases, sub-conjunctival hemorrhages were noticed in 85 (50.2%) cases, while petechial hemorrhages were in 78 (46.2%). (Table 6)

Table 6: Post-mortem findings recorded among the cases (n=169)

Findings	Frequency	Percentage
Cyanosis	163	96.4
Subcutaneous tissue underneath the ligature mark found pale, white, hard, glistening	159	94.1
Dribbling marks of Saliva	144	85.2
Subconjunctival haemorrhage	85	50.3
Petechial haemorrhage	78	46.2
Tongue bite	24	14.2
Injury to subcutaneous tissue underneath the ligature mark	11	6.5
Injury to the neck muscle	9	5.3

In relation to demographic distribution of the cases, most of the death bodies (47, 27.8%) were brought from Manikganj sadar police station, then Singair police station (34, 20.1%), and Saturaia (24, 14.2%). (Table 7)

Table 7: Geographical distribution of the cases in two years (n=169)

Locality (police station of the victim)	Incidences		Total victims (n=169)	Percentage
	2019	2020		
Manikganj	17	30	47	27.81
Singair	24	10	34	20.1
Saturaia	15	9	24	14.2
Shivalaya	14	7	21	12.4
Daulatpur	10	11	21	12.4
Ghior	6	7	13	7.7
Harirampur	4	5	9	5.3
Total:	90	79	169	100.0

Discussion

Suicide is a public health problem often overlooked by researchers, health policy makers and the medical professionals.^{10,11} The suicidal rate is higher among men worldwide. In contrast, women in our community have a higher suicide rate, which is also reflected in our study. In this study, majority 101(59.77%) were females and 68(40.23%) males. A similar study conducted by Ahmed et al shows female majority (58.63%) in their study on suicide by hanging in Bangladesh.¹² High suicide rate among young adults, especially, females impose a huge social, emotional and economic burden in our society. Suicide rates among young people seem to be on the rise in both developed and developing countries.¹²⁻¹⁵ Marriage stress, dependency, dowry problems, interpersonal differences with spouse and his relatives are the main reasons for Asian women.¹⁶ In our study, it is observed that most vulnerable age group for suicidal hanging were between 21-30 years. Similar study has been conducted by Ahmad et al, which reported that most of the victims were from the age group 20-30 years (45.51%).¹² These are the most crucial period of life and individuals must face different kinds of life struggles. Similar observations have been documented in many other studies.^{10,17,18} According to suicide data by WHO, which states that suicide occur throughout life and is second leading cause of death among 15–29-year olds worldwide.¹⁹ The incidence of hanging deaths is minimal in the extremes of age. Below 10 years, it is mostly due to homicidal or accidental in nature. Other extreme of age, i.e., old age has low incidence and is most likely due to aging, compromising and getting accustomed to the causes of suicide. Regarding occupation, Biradar et al reported in 2021 that most of the deceased cases were employed (50%), followed by unemployed (17.69%), were housewives (14.04%) and students (12.07%).²⁰ Sharijia et al found that the majority of females were housewives (53.8%).²¹ Similarly, in our study, hanging deaths were the most common among housewives (35.52%), followed by students (24.85%), farmer (9.47%) and other professionals. Marriage related harassment, dowry harassment, marital discord, low socioeconomic status, husband’s drug addiction, husband’s extramarital affair- for all these reasons, the suicidal rate by hanging among the housewives is higher in Manikganj district area. Many students committed suicide by hanging out of frustration during the pandemic situation. Failure in the examinations, unemployed after finishing their studies are two of the major causes. Unemployed persons constituted the major percentage, probably due to lack of social and financial support. Low socioeconomic conditions can lead to increased stress in daily life.

Regarding the nature of ligature material, females usually choose soft ligature material like cloth, saree, orhna, dupatta for suicidal hanging. In our study, maximum deceased were females, so, preferable material for hanging was soft material (78.71%), followed by firm material (19%) like rope. Hard material likes iron wires, cable wires, etc are used very rarely (4.73%) and the male victims used the later materials more. In our study, males choose soft and firm material for ligation and females choose only soft materials. These findings are consistent with other studies.^{12,22-24}

In our study, majority of victims used dupatta (33.13%) in hanging cases, followed by sari (48%), nylon rope (19%), towel (16%), electric wire (8%), lungi, cloth, bed sheet etc. Similar study conducted by Sharma et al²² and Ahmad et al¹² shows that dupatta was commonly used material by females and sarees was used by males. For the easy availability of these materials, it is very difficult to greatly limit the cases. Almost similar observations were made by good number of authors.^{12,17,18}

In relation to autopsy findings, majority of the deceased shows cyanosis (96.44%) in the fingertips, lip and nail bed of both hands followed by pale, white, hard and glistening subcutaneous tissue (94.08%) under the ligature mark, dribbling marks of saliva (85.2%), subconjunctival haemorrhage (50.29%), petechial haemorrhage (46.15%) and tongue bite (14.2%). These are the cardinal features of asphyxia and similar findings are observed in another literature available.¹⁷

Samanta et al observed 32.31% cases with dribbling of saliva.⁹ Sarangi found dribbling of saliva in only 11% cases of hanging and did not find in any cases of ligature strangulation.²⁵ Dribbling of saliva is the surest sign of antemortem hanging. Regarding the geographic distribution of the post-mortem victims, majorities of victims belonged to Manikganj proper urban area. In urban area, most of the victims attempted suicide or committed suicide due to some form of depression or psychiatric illness.²⁶

There are limitations of the study. This study was conducted in the selected area, which may not reflect the real picture of Bangladesh and in many cases, typical post-mortem findings were not observed.

Conclusion

In above study, we concluded that hanging death are most common among young adults, especially females, place a huge social and emotional and economic burden on our society. Most of the women, who died by hanging, were married and lived with their families. Financial burden is the most common cause of hanging deaths, followed by family quarrels, domestic trouble, doubts, failure in exams, mental illness, dowry harassment, personal matters, and

depression in life. Regarding the ligature material of hanging, majority have used soft material (Dupatta). Typical post-mortem findings of hanging were found in maximum victims. Suicidal death can be prevented through all-out efforts, like raising awareness among the people, proper counselling, maintaining good family relationships, practicing religious culture, appropriate employment facilities etc.

Conflict of Interest: None.

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