

## A study on hanging in 167 Cases

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### Abstract

**Background:** Hanging signifies an asphyxiation form which, by a noose or another constricting band tightened by body weight, is secondary to compression or restriction of the neck structures. Death due to hanging is always suicidal until and unless otherwise specified. **Objective:** To evaluate the socio-demographic characteristics in cases of death due to completed hanging in Bangladesh. **Materials and Method:** This descriptive study was conducted in the Department of Forensic Medicine, Dhaka Medical College Hospital. The period of study was from July 2020 to June 2022. A total number of 167 autopsies were done during this period on dead bodies that died due to hanging. Points regarding knot of ligature material, injury to neck structures, ligature mark, and stomach condition were noted during post-mortem examinations. All information was noted in a structured data sheet. Data were analyzed using a computer-based programme statistical package for social science (SPSS) for windows version 25. **Result:** This study shows maximum number of hanging cases 34.1% were in the age group of 21-30 years. Among the 167 suicide cases by hanging, the majority (69.5%) were male. Majority (56.9%) of the cases were married. Family disputes were most common motive 66(39.5%) and in females, the most common motive was marriage related harassment, particularly in married women 38(22.8%). Soft material like cloth, saree, orna, and dupatta was the preferred material for hanging in this study (85.6%) followed by firm materials (7.8%) like a rope. Hard material like iron wires, cable wires, etc were used very rarely (2.4%) and the victims who used these were almost always male. **Conclusion:** This culture has a great socio-economic burden due to the high incidence of suicidal hanging among young adults. The private essence of hanging and convenient access to ligature points and ligature supplies renders suicide avoidance challenging. Marital disappointment, organic disease issues, and dowry abuse are the primary reasons behind suicide hanging. Social, legal and psychiatric interventions are required to prevent suicide.

**Key words:** Hanging, Noose, Ligature mark.

**Introduction:** Hanging is one of the important causes for unnatural death and also one of the preferred methods of suicide worldwide. Once attempted, there is no retreat as death is rapid occurring within minutes of the act.<sup>1</sup> Suspension of the body by a ligature, noosed around the neck which tightens with the body weight is hanging, which is popular for its lethality.<sup>2</sup> Modus operandi in suicide varies worldwide and also in different states in the same country which depends upon the availability and accessibility of the means of committing the act; and also upon the fatality of the method. Hanging is popular in this regards as any available object which could hold body weight during suspension can be used as a ligature material ranging from shoelaces to strong nylon ropes.<sup>1</sup>

Hanging is a form of violent asphyxial death produced by suspending the body with a ligature around neck and the constricting force being the weight or part of the body weight.<sup>3</sup> Weight of the head (5kg-6kg) is enough to act as constricting force. So death happens in partial hangings also, which are on toes, feet touching, sitting, kneeling and lying down postures. Hanging produces painless death for the victims and there is no costs involvement other than that of the ligature material. A thin rope around the neck will cause unconsciousness in 15 seconds.<sup>4</sup>

Passion, disappointments, loss of property, misfortune, financial losses, poverty, disgust with life, physical and mental sufferings, religious mania,

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unhappy love, failures in many aspects, marital problems, jealous, unbearable fear and pain are some of the common known reasons for hanging. These vary widely from country to country, between religions and socio-economic classless. Marital problems is the leading cause in developing countries like Bangladesh.<sup>4</sup> This study is intended to explore the socio-demographic characteristics in cases of death due to completed hanging in Bangladesh.

### Materials and methods

This descriptive study was conducted in the Department of Forensic Medicine, Dhaka Medical College Hospital. The period of study was from July 2020 to June 2022. A total number of 167 autopsies were done during this period on dead bodies that died due to hanging. Various identification data of the victim like age, sex, marital status, permanent address, suspension of dead body along with places of incidence, time and suspected causes of death were noted from the inquest report accompanying the dead bodies. The preliminary investigating report submitted by the police (inquest report) played very important role in this regards. Other related information's were gathered from the victim's attendants. Points regarding knot of ligature material, injury to neck structures, ligature mark and stomach condition were noted during post mortem examinations. All information was noted in a structured data sheet. Data were analyzed using computer based programme statistical package for social science (SPSS) for windows version 25.

### Results

**Table 1: Demographic characteristics of the study subject (n=167)**

Characteristics	Number of Victims	Percentage (%)
<b>Age in years</b>		
11-20	19	11.4
21-30	7	34.1
31-40	53	31.7
41-50	22	13.2
51-60	19	9.6
Mean ±SD	28.79±11.39	
<b>Gender</b>		
Male	116	69.5
Female	51	30.5
<b>Marital status</b>		
Married	95	56.9
Unmarried	72	43.1

<b>Education</b>		
Illiterate	86	51.5
Primary	38	22.8
S.S.C	34	20.4
H.S.C	6	3.6
Graduate	3	1.8
<b>Monthly income</b>		
Lower income	131	78.4
Middle income	32	19.2
Higher income	4	2.4

Table 1 shows demographic characteristics of the victim according to age, gender, marital status, education and monthly income where most of the victim are of 31-40 age group 53 (31.7%), male, married, illiterate and lower socioeconomic condition.

**Table 2: Risk factors associated with suicide**

Risk factors	Number of victims	Percentage (%)
Nuclear family	128	76.6
Family disputes	66	39.5
Harassment	38	22.8
Alcoholism	22	13.2
Physical illness	17	10.2
Economic crisis	16	9.6
Widowhood	9	5.4
Mental Illness	8	4.8
Criminality	9	5.4

Table 2 shows risk and precipitating factors associated with suicide. Most of the victims are from nuclear family 128 (76.6%) followed by familial problem 66 (39.5%), harassment, alcoholism and mental illness.

**Table 3: Nature of ligature material**

Ligature material	Number of victims	Percentage (%)
Soft	143	85.6
Firm	13	7.8
Hard	4	2.4
Unknown	7	4.2

Table 3 shows distribution of the victim according to nature of ligature material used where most of the victim use soft material 143 (85.6%) followed by firm and hard material.

**Table 4: Post-mortem findings (n=167)**

Postmortem findings	Number of victims	Percentage (%)
<b>Ligature mark over the neck</b>		
Above thyroid cartilage	148	88.6
Over the thyroid cartilage	16	9.6
Below the thyroid cartilage	3	1.8
Grooving of the ligature over the skin of neck	92	55.1
<b>Position of the knot</b>		
Left side of neck	101	60.5
Right side of neck	47	28.1
Back of neck	19	11.4
<b>Pattern of ligature</b>		
Over the skin present	16	9.6
Over the skin absent	151	90.4
<b>Evidence of a slip knot</b>		
Slip knot present	99	59.3
Fixed knot present	52	31.1
None particular type of knot	16	9.6

Table 4 shows postmortem findings of the victim according to level of ligature mark, position and type of knot and pattern of ligature material. Most of the ligature mark found in the neck above thyroid cartilage 148 (88.6%), not present on left side of neck, 101 (60.5%) and type of knot is slip knot 99 (59.3%).

### Discussion

Each suicide is a horrific tragedy that has the premature end of the life of a person and an unabated effect that has a profound effect on the lives of family and community.<sup>5</sup> This study was carried out to look in to the suicide cases by hanging with special attention to causes or factors that led the suicide victim to hang themselves. The present study findings were discussed and compared with previously published relevant studies.

This study shows maximum number of hanging cases 34.1% were in the age group of 21-30 years. This finding is comparable with that of other studies.<sup>4-7</sup> This could be explained by the fact that this age group is the most active phase of life and exposed to stress and strain of life.

This study shows among the 167 suicide cases by hanging, majority (69.5%) were male which is consistent with other hanging studies.<sup>4-9</sup> There is higher risk of suicide in males during young and middle age compared to females hence it won't be wrong if completed suicide is attributed to a male phenomenon.<sup>10-11</sup> An increase in suicide rate among males was observed in Poland over past forty years,

with a similar trend in Asian and African countries.<sup>12,13,14</sup> World Health Organisation (WHO) estimates male/female ratio of 1.57:1 in completed suicides in South East Asia which includes the countries Bangladesh, India, Sri Lanka and Nepal.<sup>13</sup>

In this study, 56.9% of the cases were married. This is in agreement with several authors due to the fact that familiar environment devoid of any interference preferred by the victims as most of the hanging cases were suicidal in nature.<sup>4,5,15,16</sup>

In this study, hanging deaths is rare (2.4%) in upper income group. This is in accordance with the general trend of criminal profile which originates from the roots of environmental and psychological factors. This is why, the maximum incidence of the hanging deaths are seen in middle income group (78.4%), who never compromise or accept the reality. In contrast, the lower income group shows the same trend, but on a lesser scale, which indicates the incidence of hanging deaths is more of psychological in origin. This finding were consistent with other hanging studies.<sup>4-9</sup>

This study shows family disputes were most common motive 66(39.5%) and in females, the most common motive was marriage related harassment particularly in married women 38(22.8%). This is in agreement with several authors the victims as most of the hanging cases were suicidal in nature.<sup>4,5,8,9</sup> Several studies in different parts of the world showed that conflicts relating to marriage like dowry harassment are one of the major social evil that had a crucial role in areas of poor socioeconomic condition. Family quarrel among husband and wife was also a important cause in this group.<sup>11,13</sup> Nuclear family, age in the 4th decade and above, alcoholism, physical & psychiatric illness, economic crisis were the other factors that contributed to self hanging. In other studies, organic illness was important precipitating factor (18.5%) next to marital unhappiness. Chronic abdominal pain, cardiac disease, epilepsy and cancer were frequently associated with suicidal hanging.<sup>14,15</sup>

Soft material like cloth, saree, orna, dupatta were the preferred material for hanging in this study (85.6%) followed by firm materials (7.8%) like rope. Hard material likes iron wires, cable wires, etc were used very rarely (2.4%) and the victims who used these were almost always male. According to our study, male choose soft and firm materials for ligation equally.

In contrast, female choose soft material only. These findings are consistent with other studies.<sup>4,7,11,12,16, 17</sup>

In this study, usual position of the ligature mark was above the thyroid cartilage (88.6%), whether it is complete or partial hanging, followed by mark over thyroid (9.6%). Only in 2.1% cases, it is seen below the thyroid cartilage. This contradicts the misconception that in partial hangings the ligature mark is seen at a lower level, compared to complete hanging. This is due to the application of slip knot in majority of cases where final tightening of ligature occurs after the noose reaches its final destination, i.e. upper part of the neck. Pattern of ligature over the skin was observed in 9.6% of cases of hanging deaths. Presence of pattern indicates that a firm or hard material is used for ligation, but absence of pattern cannot exclude a firm material. These findings are consistent with other studies.<sup>4,7</sup>

In 60.5% the knot was in left side of neck, in 28.1% it was in right side of neck and in 11.4% it was on the back of neck. Knot on right side of neck is commonly available for right hand users, who are more abundant in our country than left hander. This is in agreement with several authors the victims as most of the hanging cases were suicidal in nature.<sup>4,5,8,9</sup>

### Conclusion

This study shows hanging among young adults are commonly encountered which represent the most active and productive section of the community and is usually committed by married victim with a male preponderance. It is usually committed in a familiar surrounding especially indoors by using easily available household ligature materials. Suicide is a major health problem and the medical profession has to take a role in the management of this health problem. Education, compassion and untoward pressure upon youths will definitely decline the rate for committing suicide during young age. If mortality by self harm could be decreased in youth years; economically active population; it will undoubtedly boost the economy of the developing country like Bangladesh.

**Conflict of interest:** None.

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### Data availability statement

Data will be made available on request.

### Ethical Approval

The ethical permission received from the ethics review committee of Dhaka Medical College Hospital (DMCH), Dhaka, Bangladesh. Prior to data collection, doctors of forensic medicine department were told about the project and consented, and anonymity was maintained throughout the study.

**Consent for Publication:** Not applicable

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