

# Analysis of Post Mortem Findings in Suicidal Hanging- Study in a Tertiary Care Hospital

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### Abstract:

**Background:** Suicide is the act of intentionally taking your own life. Hanging is always suicidal unless otherwise proved. It is a form of violent asphyxial death. It produces painless death for the victims so that it is a widely practiced method of suicide. Every year, 8 lac people die for hanging. In Bangladesh hanging is one of the Commonest methods of suicide.

**Objectives:** The objective of this study was to find out Socio-demographic characterizes of victims, common ligature materials used by victims and post mortem findings.

**Materials and method:** A retrospective cross sectional study was done in Shaheed Suhrawardy Medical College mortuary during the period of July 2018 to December 2020. During this period data were collected from 1815 cases of medico legal autopsies by purposive sampling.

**Results:** A total of 1815 medico legal autopsies were analysed of which 818 (45.06%) were deaths due to hanging. out of these 818 cases maximum 395(48.28%) deaths due to hanging were in age group of 21-30 years. Majority of the cases 546(66.74%) were observed in female and others in male 272(33.25%). Majority 425 (51.95%) of victims had used Dopatta (Orna) as a ligature material. Cyanosis of finger tips and nail beds was the commonest 797 (97.43%) finding in cases of asphyxia death due to hanging.

**Conclusion:** In this study all the cases of hanging were suicidal and no case of post-mortem hanging was documented. Majority of the victims were between 21-30 of age (48.28%). Two-thirds of them were females. Most frequent occupation was students. More than two thirds belonged to low socio-economic condition and none of the case were from higher socio-economic condition. More than 70% victims were found inside house with locked door. In more than three-fourth of the cases, the ligature material was dopatta (orna), apparently because of cost and availability. In most cases the point of suspension was ceiling fan. Complete hanging was most frequent type of hanging. Other external and internal autopsy findings were like book picture.

### Key Words:

Suicide, asphyxia, hanging.

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### Introduction:

Hanging is a mechanical form of asphyxia which is caused by suspension of the body by the neck. Any material capable of forming a ligature can be used for hanging. The pressure of the ligature on the neck is produced by the weight of the body. The body needs not to be completely suspended, as death may result from hanging even in sitting, kneeling or half-ling position.<sup>1</sup>

The Precise mechanism of death in hanging is incompletely understood causes of death include asphyxia or venous congestion, cerebral ischemia, shock, fracture, or dislocation of the cervical vertebrae.<sup>1</sup> It is very unusual for the cervical spine to be broken in suicidal hanging unless there has been an unusually long drop.<sup>2</sup> Even in the absence of classical signs of asphyxia, death may occur very rapidly where carotid sinus pressure and neurogenic arrest play an important.<sup>3</sup>

Hanging is always suicidal unless otherwise proved. It is one of the most common methods of suicide form the primitive era.<sup>4</sup> A review based on world health organization mortality data reported that hanging was the most common methods in most of the countries and incidence has increased over the last about 40 years.<sup>5</sup> It is anticipated as a sure, quick and painless death with little awareness of dying and materials for hanging are easily available. So hanging is seen as the quickest and easiest method with few barriers to completion and sometimes adopted despite not being a first choice.<sup>7</sup> In Bangladesh hanging and

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ingestion of insecticides are the most common methods of suicide.<sup>8</sup>

#### Materials and Method:

This retrospective cross sectional study was done in SHSM College mortuary, Dhaka, Bangladesh during the period of July 2018 to December 2020. During this period date were collected form 1815 cases of medico legal autopsies. Date were collected on socio-demographic characteristics, nature of Ligature material and post mortem findings. Date were presented by a descriptive frequency.

#### Results:

A Total of 1815 medico legal autopsies were conducted during the period of July 2018 to Decemer 2020 of which 818 (45.06%) deaths were due to hanging. Majority of he cases 546 (66.75%) were observed in female and others in ma le 272 (33.25%). Majority 425 (51.95%) of victims had used Dopatta (Orna) as a ligature material cases of asphyxia death due to hanging were Cyanosis of fingertips and nail beds 797 (97.43) and pale, white, hard, glistening of sub cutaneous tissue of underneath the ligature mark 775 (94.74%) followed by dribbling marks of saliva 322 (39.36%).

#### Sex Wise Distribution:

**Table I**

*It Shows that the majority of the victims were female 546 (66.74%)*

Sex	Frequency	Percentage
Male	272	33.25%
Female	546	66.75%
N=	818	100

#### Age Wise Distribution:

**Table II**

*It Shows that most vulnerable age group was 21-30 years with total cases 395 (48.288%).*

Age group (Years)	Frequency	Percentage
10-20	120	14.66%
21-30	395	48.28%
31-40	210	25.67%
41-50	50	6.11%
51-60	43	2.25%
Total	818	100

#### Distribution According to Ligature Material used

**Table III**

*It Shows that out of 818 cases most common legaturer materials used was Dopatta (orna) 425 (51.95%), Nylon (rope) 245 (29.95%), Sari 60 (7.33%), Eletric wire 17 (2.07%), Gamcha (Towel) 35 (4.27%) Cases.*

Material used	Frequency	Percentage
Dopatta (orna)	425	51.95%
Nylon (rope)	245	29.95%
Sari	60	7.33%
Eletric Wire	17	2.07%
Bed Sheet	16	1.95%
Gamcha (towel)	35	4.27%
Lungi	10	1.22%
Cloth	10	1.22%
N=	818	100

#### Distribution Socio-economic Status

**Table IV**

*It Shows that Low Socio-economic status is higher than middle class socio-economic status.*

Socio-economic Status	Frequency	Percentage
Low	725	88.63%
Middle class	93	11.36%
N=	818	100

#### Distribution of Circumstances dead body found

**Table V**

*It Shows that in side the house with locked door is more common than in side the house with open door.*

Valid	Frequency	Percentage
In the house with locked door	625	76.40%
In the house with open door	153	18.70%
Out side the house	40	4.88%
N=	818	100

**Inquest Report By Police:**

**Table VI**

*It shows that Police is made inquest report in all cases.*

Valid	Frequency	Percentage
Suicide	818	100%
N=	818	100

**In Autopsy Report**

**Table VII**

*It Shows that autopsy report in all cases is suicide.*

Valid	Frequency	Percentage
Suicide	818	100%
N=	818	100

**Specific Cause of Death found according to the reports:**

**Table VIII**

*It Shows that cause of death is hanging in all of the cases*

Valid	Frequency	Percentage
Suicide	818	100%
N=	818	100

**Point of suspension:**

**Table IX**

*It Shows that Angle of roof is more common than ceiling fan.*

Valid	Frequency	Percentage
Ceiling Fan	197	24.08%
Angle of Roff	621	75.92%
N=	818	100

**Type of Ligature Mark:**

**Table X**

*It Shows that an oblique, Non continuous ligature mark found high up of the neck 818 (100%).*

Valid	Frequency	Percentage
Oblique	818	100%
Non Continuous	818	100%
High up of the neck	818	100%

**Position of Ligature Mark:**

**Table 11**

*It Shows that ligature mark above the Thyroid Cartilage is more common than over the Thyroid Cartilage*

Valid	Frequency	Percentage
Above the Thyroid Cartilage	808	98.77%
over the Thyroid Cartilage	10	1.22%
N=	818	100

**Periligature Injury:**

**Table XII**

*It Shows that patterned abrasion is more common than bruise*

Valid	Frequency	Percentage
Abrasion (Patterned)	808	98.77%
Bruise	10	1.22%
N=	818	100

**Type of Hanging:**

**Table XIII**

*In shows number of complete hanging is more than partial*

Valid	Frequency	Percentage
Partial	98	11.98%
Complete	720	88.20%
N=	818	100%

**Table XIV**

*It Shows that Complete and Atypical type of hanging is more common than others.*

Valid	Frequency	Percentage
Typical	33	4.03%
Atypical	785	95.96%
N=	818	100%

**Position of Gap:**

**Table XV**

*It Shows that Position of the Back of the neck is more common than Left/Right side of the Neck.*

Valid	Frequency	Percentage
Left/Right side of the Neck	613	74.93%
Back of the Neck	205	25.06%
N=	818	100%

**Presence of Knot Impression :****Table XVI**

*It Shows that knot impression is found about all cases of hanging.*

Valid	Frequency	Percentage
Yes	708	86.55%
No	110	13.44%
N=	818	100%

**Type of neck Injury (Fracture)****Table XVII**

*It Shows that Hyoid Fracture is more common than Thyroid Cartilage Fracture.*

Valid	Frequency	Percentage
Hyoid Bone Fracture	25	3.05%
Thyroid Cartilage Fracture	5	0.611%

**Distribution according post mortem findings:****Table VII**

*It Shows that all signs found into the hanging for suicidal aspects*

Findings	Frequency	Percentage
Cyanosis	797	97.43%
Sub-cutaneous tissue underneath the ligature mark found pale, white, hard, glistening	775	94.74%
Dribbling marks of saliva	322	39.36%
Petechial Hemorrhage	785	95.96%
Tongue bite	439	52.44%
Injury to the Sub-Cutaneous tissue underneath the ligature mark	252	30.80%
Injury to neck muscles (below angle of the mandible)	122	14.91%

**Discussion:**

Suicide is a public health problem too often neglected by researchers, health policy makers and the medical profession.<sup>10</sup> Our study most of the suicidal hanging cases were found in age group of 21-30 years. These are the most active years and an individual has to face various

sorts of struggle of life with emotional, financial, familial or other crisis's. In many other studies similar observations were documented.<sup>11,12,13</sup> Suicide date by WHO also mentions that suicide occurs throughout the life span and the second leading cause of death globally.

Worldwide Suicide rate is higher in males.<sup>15</sup> In UK Suicide is three to four times rate is higher in women in our country which was also reflected in our study. Suicidal hanging was more common among female in this study. Due to inequity of gender familial and social oppression, marital disharmony, lack of economic majority of the Asian Countries has lower male to female suicide gender ratios<sup>(11,15)</sup>. Most of the previous studies done in Bangladesh reported similar trend with a negligible exceptions in a few studies.<sup>17-20</sup>

Majority of victims used dopatta (orna) followed by nylon (rope), sari and electric wire. Ali et al. Reported that soft material like orna, saree, and cloth were the preferred material for hanging in their study followed by firm materials like rope.

Hard materials like iron wires, cable wires, etc were used very rarely<sup>(20)</sup>. Almost similar observations were made by a good number of authors.<sup>12,13,18,19</sup>

In present study Cyanosis of fingertips and nail beds of both hands was the commonest finding followed by pale, white, hard and glistening sub-cutaneous tissue underneath the ligature marks and dribbling marks of saliva. These findings are the most important signs of asphyxia and are mentioned in every literature available.<sup>12</sup>

Suicide is a global phenomenon throughout the world and according to WHO 78% of suicide occurred in low and middle income countries in 2015. In 2015 suicide accounted for 1.4% of all deaths worldwide making it the 7<sup>th</sup> leading cause of death. It is recommended that effective and evidence based interventions should be implemented at population, sub-population and individual levels to prevent suicide and suicide attempts.<sup>14</sup>

As suicide is stigmatized, it remains under reported. To combat a phenomenon such as suicide, the issue must be prioritized as a public health issue and should involve both state and non state actors. It would require resource allocation in the annual budget that would pay for health services and educational materials, raising a awareness amongst the general population with the aid of national media, which has its role in being responsible when it comes to reporting on suicide, educating the masses by providing information on where and how to get help.<sup>21</sup> Suicide deaths should be prevented by all out of effort.

**Conclusion:**

In this study all the cases of hanging were suicidal and no case of post-mortem hanging was documented. Majority of the victims were between 21-30 of age (48.28%). Two-thirds of them were females. Most frequent occupation was students. More than two thirds belonged to low socio-economic condition and none of the cases were from higher socio-economic condition. More than 70% victims were found inside house with locked door. In more than three-fourth of the cases, the ligature material was dopatta (orna), apparently because of cost and availability. In most cases the point of suspension was ceiling fan. Complete hanging was most frequent type of hanging. Other external and internal autopsy findings were like book picture.

**Recommendation:**

Further studies involving multiple sites should be conducted to validate the findings of present study. A very high prevalence of suicidal deaths by hanging in low socio-economic strata young female population demands an urgent national suicide prevention strategy & action and appropriate public health programs to prevent suicide in Bangladesh.

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