

## Original Article



# Position of Knot and Relation With Working Hand in Hanging Cases- A Medico Legal Study

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### Abstract

**Background:** Hanging is the most common form of violent asphyxial death in our country. Typical and atypical variety of hanging depends on position of knot at the victim body. **Objective:** The objective of this study was to find out the position of knot of ligature material and relation of knot with the working hands in hanging cases along with socio demographical status of the study subjects. **Materials and Methods:** This retrospective study was conducted among 574 Autopsy cases of hanging victims at the Dhaka Medical College Morgue during the period January 2013 to December 2015. **Results:** Out of 574 cases, 159 (27.71%) were male and 415 (72.29 %) female. Among them 304(52.96%) were married and 270(47.04%) were unmarried. Most of the victims 269(46.86%) were from the age group 21- 30 years. Considering the knot, most were situated at right side of neck 281 (48.95%), followed by left side 235 (40.94%), at the nape of neck 50(8.71%) and in front of neck below chin 8(1.39%). Most of the study subjects were right handed. Dopatta (orna) was the commonest 237(41.28%) ligature material. 556 (96.86%) cases had some form of ligature mark in neck. Most of the victims 401(69.86%) hanged themselves at night. 545 body (94.95%) were recovered from inside the living rooms. 472 (82.23%) victims had complete suspension and 102 (17.77%) were cases of partial hanging. **Conclusion:** To reduce the number of suicidal hanging cases a well designed and comprehensive programme is needed, which will identify the causative factors and prevent of suicidal behaviors of affected persons.

**Keywords:** Hanging, Autopsy, relation of working hand, knot position.

**Date of received:** 28.11.2018.

**KYAMC Journal.2019;10(1): 17-20.**

**Date of acceptance:** 25.02.2019.

**DOI:** <https://doi.org/10.3329/kyamcj.v10i1.41477>

### Introduction

Hanging is a form of violent asphyxial death in which the body is suspended from above by a ligature around the neck, which constricts the air passage and prevents entry of air into lungs, the constricting force being the weight of the body.<sup>1</sup> Sometimes the body completely suspended from above which is called complete hanging, sometimes a portion of body touches the ground, which is called incomplete or partial hanging.<sup>2</sup> A good number of people die each year by suicide, making it one of the top ten leading causes of death in the world accounting more than a million death annually.<sup>3</sup> 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 only

15 seconds.<sup>4</sup> Hence the people prefer it as a common method of suicide in the developing countries.<sup>5,6</sup> Even in developed countries like Serbia, Norway or Hungary suicide by hanging cases are commonly found.<sup>7-9</sup> In England and Wales hanging is the commonest method of suicide, accounting 2000 deaths each year.<sup>10</sup>

### Materials and Methods

This retrospective study was conducted among victims of hanging at the Dhaka Medical College Morgue during the period January 2013 to December 2015. Various identification Data of the victim like age, sex, marital status, permanent address, suspension of dead body along with places of

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incidence, time, whether the victim was right handed or left handed, suspected causes of death were noted from the inquest report accompanying the dead bodies and from the victims attendants. Points regarding knot of ligature material, injury to neck structures, stomach condition etc were noted during post mortem examinations.

## Results

Out of 574 cases, 159 (27.71%) were male and 415 (72.29 %) female. Among them 304 (52.96%) were married and 270 (47.04%) were unmarried. Marital disharmony/quarrel between couples was the commonest 172(29.96%) cause of suicidal hanging (Table-I). Most of the victims 269 (46.86%) were from the age group 21- 30 years (Table-II). Considering the knot, most were situated at right side of neck 281 (48.95%), followed by left side 235 (40.94%), at the nape of neck 50(8.71%) and in front of neck below chin 8(1.39%). Most of the study subjects were right handed. Dopatta (orna) was the commonest 237(41.28%) ligature material (Table-III). 556 (96.86%) cases had some form of ligature mark in neck. Most of the victims 401(69.86%) hanged themselves at night. 545 body (94.95%) were recovered from inside the living rooms. 472 (82.23%) victims had complete suspension and 102 (17.77%) were cases of partial hanging.

**Table- I:** Suspected causes of hanging (n=574)

Suspected causes of hanging	Total
Marital disharmony/ quarrel between couples	172(29.96%)
Various family problems	85(14.81%)
Mental depression	77(13.42%)
Drug addiction	65(11.32%)
Failure in love affairs	47(8.19%)
Unwanted pregnancy	37(6.44%)
Incurable disease	23(4.01%)
Mentally imbalance	17(2.96%)
Unknown causes	51(8.89%)

**Table- II:** Variation of age limits of the victims (n=574)

Age limit of victims in year	Total
01-10	5(0.87%)
11-20	31(5.40%)
21-30	269(46.86%)
31-40	251(43.73%)
41-50	15(2.61%)
50 and above	3(0.53%)

**Table- III:** Ligature materials used for hanging (n=574)

Variation of ligature materials	Total
Orna ( dopatta)	237(41.28%)
Jute rope	195(33.97%)
Shari	42(7.32%)
Nylon rope	28(4.88%)
Lungi	25(4.35%)
Kamiz	21(3.68%)
Electric wire	03(0.52%)
Other materials	23(4.00%)

## Discussions

In this study, out of 574 cases, 159 (27.71%) were male and 415 (72.29 %) female. Among them 304 (52.96%) were married and 270 (47.04%) were unmarried. Marital disharmony/quarrel between couples was the commonest cause 172 (29.96%) found for suicidal hanging. In our socio economic condition male are predominantly earning member of the family and husbands torture or harass the wives for various family problems including dowry. The female members may have low frustration tolerance level and weak protective value in social institute like family especially in low socio economic condition. Due to repeated physical and mental torture, sometimes they go beyond the threshold level of self-constrain and commit suicide. In case of male; poverty, lack of job, family problems, defamation, and alcoholism are the main reason for suicidal hanging. These causative factors are similar to those in India.<sup>11-12</sup> Sometimes the victim leave behind a suicidal note which indicate the exact cause behind these suicides. Exact number of suicidal deaths by hanging in Bangladesh are not known but in our neighboring country India, every 5 minutes a person commits suicide, 7 attempts to kill themselves forming around 1,00,000 suicide death per year; either by hanging or ingestion of insecticides or barbiturate tablets.<sup>13</sup> A five year study ( 1998- 2002 ) in Turkey also showed that hanging is the commonest method of suicide in Istanbul.<sup>14</sup> A study in Lithuania has shown that a total of 8324 suicides were committed during 1993- 1997 and 7823 between 1993- 2002. Among all these registered suicides cases, hanging was the commonest method used to commit suicide.<sup>15</sup> In this study most of the victims 269 (46.86%) were from the age group 21- 30 years. Study has shown that people belong to this age group are also common victims of hanging in other countries.<sup>16</sup> In middle and higher class family these young groups belongs to students community. In low socio economic family they are the earning members like garments or other industrial workers. They commit suicides due to mental depression 77(13.42%), drug addiction 65 (11.32%), failure in love affairs 47(8.19 %), unwanted pregnancy 37(6.44%) and these problems are common among this age group. Even failure in examination can also lead to suicide, which is a tragic and preventable public health problem all over the world. In both developed and developing countries the suicide rate among young people appears to be rising.<sup>17</sup> Peer pressure and emotional issues are the triggering factors. The adolescent suicides are increasing in recent times, because the young generations have run out of hope. Hence it is the challenge of adult society to make them realize that life is not a bed of roses, rather they have to struggle to overcome all the difficulties because life is worth living. In our study only 03(0.53%) cases of hanging were found above 50 years of age .The reason could be the family system of our country in which elders are taken care of by earning family members and the elders enjoy their advancing life with grand children and increase inclination towards religious matters. Most of the victims 401 (69.86%) hanged themselves at night. And 545 body (94.95%) were recovered from inside the living rooms or

houses. After a long days of work, the person returns home in exhausted condition with their head full of all the problems and burdens, initiating reflexes for suicidal tendency. More over at dead of night and inside the room, there would be no one to resist them from suicidal behavior. A number of victims committed suicide at late night. Dopatta (orna- about ten feet long cloth used by the ladies to cover the head and chest) was the commonest 237 (41.28%) ligature material used for hanging purpose. 472 (82.23%) victims had complete suspension and 102 ( 17.77%) were cases of partial hanging. Salwar kamiz is the most common dress used by the female population of our country, hence dopatta (orna) is used as commonly available ligature material for hanging. The victims hang themselves from ceiling fan, beams, girder etc using a chair or table or tool as the base for standing, later on push them away by feet. Hence most had complete suspension. In the outdoor cases branch of a tree is commonly used as the point of suspension. In western countries dog chain, belt, electric cable, scarf, tie, dressing gown cord, shoe lace etc are used as ligature materials, which are not so used in our country.<sup>18</sup> Moreover firearms play important role as a method of suicide, which are not available in our country due to poor socioeconomic condition. Considering the knot, most were situated at right side of neck 281 (48.95%), followed by left side 235 (40.94%), at the nape of neck 50 (8.71%) and in front of neck below chin 8(1.39%). This coincides with studies done before by OP Saini<sup>19</sup> in 2005 at SP Medical College at Bikener, India, which had shown that 15 (45.45%) cases had knot on right side , 11 (33.34%) cases had knot on left side and 7 (21.21%) on other places of neck out of 33 (100%) cases of hanging. The knot is usually present in the form of a simple slip knot to produce running noose or fixed by granny or reef knot, occasionally a simple loop is used.<sup>1</sup> The findings of our study differs with a study performed at Mymensingh Medical College by Talukder MA<sup>20</sup> in 2008, who has found knot most of the on left side 21 (31.81%) cases followed by right side at 17 (25.75%) cases,, at nape of neck 14 (21.21%) and in front of neck 14 (21.21%) cases. Our study also differs with another study done at Sir Salimullah Medical College by Rahman ZM et al<sup>21</sup> during January 2000 to December 2004 on 312 cases where 154(49.36%) had knot on left side of neck. Almost all 570 (99.30%) of this study subjects were right handed, which indicates that working hand had no relation with the position of knot. A right handed person can tie knot in any place of neck, but the number in higher on either side (right/ left) rather than behind the neck or front of neck / below chin. In this study, 556 (96.86%) cases had some form of ligature mark in neck. This mark appears as a furrow on the skin whose direction is determined by the point of suspension. Depending upon duration of suspension it may show light brown or yellow parchment like area due to drying of slightly abraded skin. The ligature marks depends on what type of knot (fixed/ running noose) was used. There may be a slight impression of knot if the ligature is very tight. Otherwise the place of knot bears no ligature mark.<sup>22</sup>

## Conclusion

The question often arises, which is the preferable site of tying knots in hanging victims and whether is it possible by seeing the site of knot to comment that the victim was right or left handed in daily activities. The findings of this study indicates that the ligature knot are present more on sides of neck (right/ left) and has no relation with the working hands of the victims. The number of suicidal hanging cases are increasing day by day and young adults are the victims. A well designed and comprehensive programme is needed to identify the causative factors and prevention of suicidal behaviors. Appropriate education, influencing the media in their portrayal of suicidal news, reporting method, involvement of young generations in encouraging activities may reduce the rate of suicidal death by hanging in future.

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