

Hanging: A five year retrospective autopsy study of death due to hanging in Jorhat district, Assam

Kanak Chandra Das^{*}, Himangshu Das^{**}, Nitu Kr Gogoi^{***}

^{*} Professor and HOD, ^{**} Associate Professor, ^{***} Assistant Professor, Department of Forensic Medicine, Jorhat Medical College and Hospital, Jorhat, Assam, INDIA.

Email: kanak1960das@yahoo.in

Abstract

A retrospective study was conducted from 1st January 2011 to 31st December 2015 in Jorhat Medical College and Hospital, Jorhat, Assam, India. A total of 2488 autopsies were carried out of which 429 (17.24%) cases were death due to hanging. The key objective of the study was to find the magnitude of the problem within the study area and to determine the relevant factors associated with hanging cases. The study revealed that, the natures of hanging in all the cases were suicide. Male constitute 77.39% and female 23.61%. In regards to age, 58.04% of the cases fell within 20 to 40 years. The most common reason for the hanging was family disputes (34.50%). It was observed that 74.13% were married. The educational status of most of the victims was primary level of education. 72.95% were literate and 27.05 were illiterate. Occupational status of victims, it was observed that 42.19% were labour. The choice of ligature material was nylon rope (50.36%) followed by cotton rope (29.14%), metal wire (7.23%), Saree (5.36%), dhoti (3.50%), Chadar (2.09%), dupatta (1.39%) and bedsheet (0.93%) respectively.

Key Words: Hanging, suicide, retrospective study, Asphyxia deaths, Deaths due to hanging, Forensic Medicine, Ligature marks, Ligature materials, Knots; direction of hanging mark, Ligature points.

*Address for Correspondence:

Dr. Kanak Chandra Das, Professor and HOD, Department of Forensic Medicine, Jorhat Medical College and Hospital, Jail Road, Jorhat-785001, Assam, INDIA

Email: kanak1960das@yahoo.in

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INTRODUCTION

Hanging is the form of violent mechanical asphyxia death, caused by constriction of neck, as a result of suspension of body, where the constricting force being the weight of the body or weight of the head^{1, 2} Hanging is one of the 10-leading causes of death in the world, accounting for more than a million deaths annually. In India, hanging is one of the common methods of committing suicide along with poisoning, burning and drowning. Over the past 30 years the incidence of suicide

by hanging has increased, especially among young adults. The materials necessary for suicide by hanging are readily available to the average person, compared with firearms or poisons. Full suspension is not required, and for this reason, hanging is especially common place among suicidal prisoners. A type of hanging comparable to full suspension hanging may be obtained by self-strangulation using a ligature around the neck and the partial weight of the body (partial suspension) to tighten the ligature. When a suicidal hanging involves partial suspension the deceased is found to have both feet touching the ground, e.g., they are kneeling, crouching or standing.^{2, 3} Most of the times, the ligature mark may be the only evidence available in cases of hanging. Those who survive a suicide-via-hanging attempt, whether due to breakage of the cord or ligature point, or being discovered and cut down, face a range of serious injuries, including cerebral anoxia—which can lead to permanent brain damage. Laryngeal fracture, cervical spine fracture, or carotid artery injury are the other possible serious injuries.

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MATERIAL AND METHODS

The study was conducted during the period of 5 years from January 2011 to December 2015. A total of 2488 autopsies were conducted of which suicidal hanging contributed to 17.4% (429) of cases. All the autopsies had been performed in the mortuary of Forensic Medicine Department, Jorhat Medical College and Hospital, Jorhat, Assam, India. The cases referred to the department of Forensic Medicine for autopsies were the material source for the study. Crime scene examination was done in few cases and majority of the cases investigating officer's records were taken as data. Thorough autopsies were conducted and the neck was the last to be dissected after removal of the cranial structures. The accompanying police papers and detail history from the relatives of the victim provide much of the information regarding age, sex, residence, marital status, date of death, reasons and manner of death, and all other relevant information about the case. The overall collected data was compiled and descriptively studied putting tables, figures and graphs. It was then statistically analysed using percentage and ratio analysis and finally inferences were made.

RESULTS

Table-1 shows that of the total 429 cases, males constituted for 332 (77.39 %) cases and females accounted for 97 (22.61%) cases indicating a male: female ratio of nearly 2: 1. Age of the victims were broadly grouped in to ten (10) years range and the youngest victim noted was of the age 09 years and the oldest one was 86 years old. The 21- 30 years age group, constituted 142 (33.10 %) cases, accounting for the maximum number of cases, followed by 31-40 years group 107 (24.94 %) cases and the 41-50 years group 64 (14.92 %) cases. Table-2 shows the marital status of the victims. With regard to the marital status, 318 (74.13 %) cases were married and unmarried victims were 92 (21.45 %) cases followed by widowed 4 (0.93%). Table-3 shows the educational status of the victims. It was found that 166 (38.69 %) cases were had education up to primary school level, 116 (27.05 %) cases were illiterate followed by high school education in 90 (20.98 %) cases, graduate level education 32 (7.46%) cases and 10 (2.33) % cases had received postgraduate education. Table-4 shows the occupational status of the victims. With regard to occupation, most of the victims were labour 181 (42.19 %) cases followed by house wives 52 (12.12%) cases, unemployed 46 (10.73 %) in number, students and skill workers were 37 (8.63%) each, service personals 24 (5.59%), business personals 18 (4.20%), drivers 13 (3.03%) and farmers 6 (1.39%). It was also observed that 247 (57.58%) cases belonged to rural area and 182 (42.42%) cases were from urban area. According to the

detailed history from the police and relatives of the deceased majority of the cases, the site of incidence was indoor spaces with 372(86.71 %) at home, while only 57 (13.29 %) cases were outside home. Table-5 shows the reasons for hanging. It was found that the most common reason of hanging among these cases were family disputes (marital unhappiness) with 148 (34.50 %) cases followed by financial problems 107 (24.94%) cases, personal affairs 84 (19.58%) cases, mental illness 61(14.23 %), and reason could not be determined in 15 (3.49 %) cases. Table-6 shows the type of ligature material used by the victims. As per table nylon rope was the commonest type of ligature material used for hanging in 216 (50.36%) of the cases, followed by jute rope 125 (29.14%) cases, metal wire 31 (7.23%) cases, saree 23 (5.36%) cases, dhoti 15 (3.50%) cases, chadar 9 (2.09%) cases, dupatta 6 (1.39%) cases and bed sheet 4 (0.93%). Nylon rope as a ligature material for hanging was preferred by both sexes, but saree, chadar and dupatta were preferred by female victims.

Table 1: Age and Sex wise distribution of cases

Age group	Male		Female		Total	
	No	%	No	%	No	%
≤10	0	0	0	0	0	0
11 – 20	36	10.84	10	10.31	46	10.72
21 – 30	105	31.57	37	38.16	142	33.10
31 – 40	83	25.00	24	24.74	107	24.94
41 – 50	51	15.35	13	13.40	64	14.92
51 – 60	19	5.72	4	4.12	23	5.36
61 – 70	14	4.25	2	2.06	16	3.73
>70	13	3.96	3	3.09	16	3.73
Not known	11	3.31	4	4.12	15	3.50
Total	332	100	97	100	429	100

Table 2: Marital status and Sex distribution

Sl. No	Marital status	Male		Female		Total	
		No	%	No	%	No	%
1	Married	256	77.11	62	63.92	318	74.13
2	Single	65	19.58	27	27.84	92	21.45
3	Widowed	0	0.00	4	4.12	4	0.93
4	Not known	11	3.31	4	4.12	15	3.49
	Total	332	100	97	100	429	100

Table 3: Educational status of victims

Educational status	Male		Female		Total	
	No	%	No	%	No	%
Illiterate	92	27.71	24	24.74	116	27.05
Primary school	125	37.65	41	42.27	166	38.69
High school	73	21.99	17	17.53	90	20.98
Graduate	24	7.23	8	8.25	32	7.46
Postgraduate	7	2.11	3	3.09	10	2.33
Unknown	11	3.31	4	4.12	15	3.49
Total	332	100	97	100	429	100

Table 4: Occupational status of victim

Occupation	Male		Female		Total	
	No	%	No	%	No	%
Labour	173	52.11	8	8.25	181	42.19
Skill worker	34	10.24	3	3.08	37	8.63
Driver	13	3.92	0	0	13	3.03
Former	6	1.81	0	0	6	1.39
Student	23	6.92	14	14.43	37	8.63
Service	15	4.52	9	9.27	24	5.59
Business	18	5.42	0	0	18	4.20
Housewife	0	0	52	53.61	52	12.12
Unemployed	39	11.75	7	7.24	46	10.73
Unknown	11	3.31	4	4.12	15	3.49
Total	332	100	97	100	429	100

Table 5: Reasons for suicidal hanging

Reasons	Male		Female		Total	
	No	%	No	%	No	%
Family disputes	97	29.22	51	52.58	148	34.50
Financial problems	88	26.51	19	19.59	107	24.94
Mental illness	54	16.27	7	7.22	61	14.23
Harassment	9	2.71	5	5.15	14	3.26
Personal affairs	73	21.98	11	11.34	84	19.58
Reason unknown	11	3.31	4	4.12	15	3.49
Total	332	100	97	100	429	100

Table 6: Types of ligature material used by victim

Ligature materials	Male		Female		Total	
	No	%	No	%	No	%
Jute rope	107	32.23	18	18.56	125	29.14
Nylon rope	179	53.93	37	38.14	216	50.36
Metal wire	28	8.42	3	3.09	31	7.23
Saree	0	0	23	23.71	23	5.36
Dhoti	15	4.52	0	0	15	3.50
Chadar	0	0	9	9.29	9	2.09
Dupatta	0	0	6	6.18	6	1.39
Bed sheet	3	0.90	1	1.03	4	0.93
Total	332	100	97	100	429	100

DISCUSSION

The present retrospective study was conducted between 2011 and 2015. A total of 2488 cases were autopsied of which deaths due to hanging comprised 429 (17.24%) of autopsies. Similar studies conducted by Hassan *et al*¹⁴ in a two year period in Kuwait reported a total of 118 cases. In another study conducted by Kumar and Verma⁴ in Lucknow (India) a total of 4405 cases were autopsies in a five year period of which only 10% cases were due to hanging. In this study, cases in age group between 21-30 years accounted for the maximum number, with 33.10% of all cases. Similar observation, with regards to, age in hanging cases were documented by Udhayabanu R *et al*⁵ (32.25%), Patel AP *et al*⁶ (32.98 %) and Vijayakumari N

*et al*⁷ (38.5 %) respectively. Whereas Azmak D *et al*⁸ reported that most of the cases in his study were between the age group of 30 – 39 years (20.8 %). The reason can be related to failures in overcoming stress and demands of life such as unemployment, marital disharmony, financial problems, causing mental distress, depression, and feeling of worthlessness resulting in taking such measures to end life. The study also reported 32 (7.46%) of the cases were of above 60 years which was found to be associated with neglect and poverty. The study showed male preponderance with males accounting for 332 (77.39 %) of all the cases. Similar observation with regards to sex in hanging were recorded by Udhayabanu R *et al*⁵ (70.32%), Momin SG *et al*⁹ reported 66.6 % were male cases with male : female ratio of 1.5:1. However Saisudeer T *et al*¹⁰ reported in his study that maximum cases were female. Dinesh Rao¹¹ reported that males and females were equally affected contributing to 128 and 136 cases respectively, and the majority belonged to 31-40 years (50.765%) and the least affected age group was from those below the first decade and above 6th decade. The observations made by Kurtulus *et al*,¹² Jayaprakash and Sreekumaran,¹³ Abd-Elwahab *et al*,¹⁴ Suminska-Ziermann,¹⁵ and Al Madni *et al*,¹⁶ are more deviating as they found that the males were more affected than females in the ratio 3:1. India being a patriarchal society, the male preponderance in the study could be explained as males are expected to shoulder the burdens of life and their responsibility as the main or on most times, the sole bread earner of the family. The present study showed 74.13% of cases were married individuals. Similar findings were reported by Udhayabanu R *et al*⁵ 76.77%, Dinesh Rao¹¹ 70.45% and Saisudheer T *et al*¹⁰ 82% in their studies respectively. In this study, among 97 females, 62 (63.92%) cases were married. The reason could be stress associated with marriage, dowry problems, dependency, interpersonal problems with spouse and his relatives etc. which pose major problems among Indian women at this period. Saisudheer and Nagaraja¹⁷ who concluded that 18% of cases were due to family related issues. It was observed that 166 (38.69%) cases had primary school level education, 116 (27.05 %) cases were illiterate followed by high school education in 90 (20.98%) cases, graduate level education 32 (7.46%) cases and 10 (2.33)% cases had received postgraduate education. Almost similar findings were reported in the study by Udhayabanu R *et al*⁵ 45.80%, and Samanta AK *et al*¹⁸ that 45.7 % cases had no education. With regard to occupation, most of the victims were labour 181 (42.19 %) cases followed by house wives 52 (12.12%) cases, unemployed 46 (10.73 %) in number, students and skill workers were 37 (8.63%) each, service personals 24 (5.59%), business personals 18 (4.20%), drivers 13

(3.03%) and farmers 6 (1.39%). These findings are consistent with the study done by Udhayabanu R *et al*⁵, and Samanta AK *et al*¹⁸. The present study, it was also observed that 247 (57.58%) cases belonged to rural area and 182 (42.42%) cases were from urban area. The cause of the higher rates among rural population in this study could be poverty, poor educational status, unemployment and lack of awareness about the value of life. According to the detailed history from the police and relatives of the deceased majority of the cases, the site of incidence was indoor spaces with 372 (86.71 %) at home, while only 57 (13.29 %) cases were outside home. Similarly findings were recorded by Udhayabanu R *et al*⁵, Ahmad *et al*¹⁹ and Sharija S *et al*²⁰ in their study that most of hanging cases were found hung in indoor places in 93.45%, 97.93% and 71.27% respectively. The choice of indoor spaces in the study, suggests that the victims did not want to be noticed by others and thus foil their suicide attempt. In the present study it was found that the most common reason of hanging among these cases were family disputes (marital unhappiness) with 148 (34.50%) cases followed by financial problems 107 (24.94%) cases, personal affairs 84 (19.58%) cases, mental illness 61 (14.23%), and reason could not be determined in 15 (3.49 %) cases. Similar findings were reported by Dinesh Rao¹¹ that the major motivating factors for hanging were domestic/family related issues comprising 82 cases (31.06%) and Udhayabanu R *et al*⁵ 81 cases (52.25%). Saisudheer T *et al*¹⁰ observed that 18% of cases were due to family related issues. The other major factors were the disease conditions contributing to self-suspension, comprising 54 of cases (20.45%). However, this finding was not noted in the studies by Vijayakumari N *et al*⁷ (6.2%) and Ahmad *et al*²¹ (6.89 %) cases. In the present study the commonest choice of ligature material used was nylon rope 216 (50.36%) of cases and least preferred choice was the bedsheets 4 (0.93%). These findings were contrary to the observations made by Udhayabanu R *et al*⁵ and Vijayakumari N *et al*⁷. Dupatta was the most commonly used ligature in the studies done by Sharma BR *et al*²², Patel AP *et al*⁶, Ahmad *et al*²¹. But in the larger context, contrary to this study, softer materials are being more commonly used than the harder ones. The wide nature of deviations in the choice of ligature material depends on the dressing fashion of the population and occupation. It was observed that sari in the southern part of India and dupatta among females from northern India are widely used and are easily available in the house and hence the obvious choice in these regions. Whereas in the UK (Bennewith)²³ the commonest choice was hard materials like rope, belt, cord and cable etc. Hence factors like sex of the victim,

culture, geographic location and place of the act play an important role in this.

CONCLUSION

Suicide by hanging is a major public health issue of the world especially in developing countries. Physical illness, mental disorder, quarrel with spouse, poverty, are major causative factors which are directly or indirectly responsible for committing suicides. To overcome this problem, prior information and knowledge about suicidal behavior of persons, risk factors associated with it and early diagnosis of psychiatric disorders is required at familial and societal level. In addition, grooming of children at home to build a healthy child and make them mentally strong to face the harsh realities of life. Investigating agencies, media persons, social workers, health personnel, psychiatrists, non-governmental organisations (NGOs), political leaders, Governments and even the common man should play their role in identifying and tackling the underlying factors in the society to prevent the precious loss of life to family and society as well.

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