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Original Research Paper

Profile and Pattern of Hanging Cases at a Tertiary Care Hospital, Khammam; Telangana

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Abstract

Out of 824 medico legal cases presenting to Dept. of Forensic Medicine, MGH, Khammam, TS during one year (November 2014 to October 2015), 32 (n=32) hanging cases were reported and all of them were taken into the present study. It was observed that the most vulnerable age group was 21 to 30 years [75.00%] in both sexes, with male to female ratio being 3:1. Males, Married, Hindu by religion, from rural area accounted for 71.87 %. 24[75.00%] belonged to low income group. Preferred place of hanging was indoor setting in 31[96.81%] cases. Financial problem was the main cause of committing suicidal hanging. Marital unhappiness, chronic non-curable illness, domestic violence were the other main causative factors of hanging. Hanging was complete in 24[75.00%] and was atypical in 22 [68.75%] cases. Ligature material was present in 31 cases, it was above the level of thyroid cartilage in 28[87.50%], the ligature mark was oblique in 31[96.87%], deep in 26[81.25%].Rope was used as ligature material by 24[75.00%]. Salivary discharge was observed in 14[43.75%] cases. Protrusion of tongue was seen in 12[37.50%]. Asphyxial signs and congestion of organs, soft tissue petechial hemorrhage was seen in 2 [6.25%], intimal tears of carotid artery in 4[12.50%]cases , fracture of hyoid bone in 7[2187%] cases and no thyroid cartilage fracture were seen. The study objective was to find out the epidemiological findings, pattern of hanging and identifying appropriate reasons

Key Words: Hanging, Incidence, Ligature material, place, Income, Education

Introduction:

The high incidences of suicidal hanging among young adults impose an enormous socio economic burden on the society and are very sparingly reported from rural parts of India [1]. Hanging is a form of mechanical asphyxia caused by suspension of the body by ligature which encircles the neck, the constricting force being the weight of the body[2].Depending on method adopted for hanging, body is either completely suspended without any part touching the ground as in Complete hanging or as in Partial hanging, some part of the body touches ground. A slight force produced by Weight of the head [5-6 kg] acts as a constricting force and can kill a person.

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In India, killing a victim and suspending the body from a tree or a rafter to avert suspicion is very common practice, such postmortem hangings simulate suicidal hanging and it is necessary to find out if hanging is the cause of death in a suspended body [2]. Thorough external and internal examination helps in arriving at an opinion on the cause of death and to forward the same to Investigating officer. The forensic pathologist has to distinguish between hanging and other forms of strangulation and between suicidal, homicidal and accidental hangings. A study on common methods of suicide, risk factors, sociodemographic factors, cultural aspects and other established etiologies in an area serve as road map not only for a forensic expert but also for local governing bodies to take appropriate control measures. This study is meant to conclude the above perspective.

Aims & objective:

1. To study of profile and analysis of risk factors and pattern of hanging
2. To study the prevalence of hanging fatalities and determine the reasons

Material and Methods:

The present study was carried out at Mamata General Hospital, Khammam between November of 2014 and October of 2015 after obtaining prior permission from Institutional Ethics Committee and proper consent from either attendant or victim. Detailed history from victims, relatives, hospital records, inquest, and autopsy reports etc., were filed in a specially designed Pro forma. All the data was analyzed compared statistically and the results are tabulated

Observation and Discussion:

Incidence It is observed that, out of 824 medico legal cases presented to the Dept. of Forensic Medicine, 32 were cases of hanging. Incidence was 3.88%.Similar observation was reported by author [3].

Age & Sex: The maximum numbers of hanging 18[56.25%] cases were observed between age group of 21-30 years. 28[87.50%] victims aged less than 40 years. The most vulnerable age group for hanging was observed as 21-40 years. 4 [12.5%] each in young (up to 20 years) and elderly (above 40years) aged group chose hanging. In age below 10 years only one accidental hanging case was seen and in extreme age above 60 years no cases were found. These were consistent with authors [3, 4].This particular age group is most active period in one's life. Frustration due to various reasons such as financial problems, the burden of livelihood, unemployment, and poverty contributed to their death. Among 32 hanging cases, 24 were males and 8 females, which suggests male predominance. The male to female ratio is 3:1. These were consistent with authors [3-7].[Table no.1]

Religion: Religion wise, most of victims 25[78.12%] were Hindu, which is similar to author [8].[Fig 1]

Marital status: 21 [65.62%] victims were married which outnumbered the unmarried. Similar observations are noted by author [5-10]. This shows that the marital disharmony, personal, financial responsibilities stimulated them to commit suicidal hanging.[Fig 2]

Domicile pattern: Highest numbers of 23 [71.81%] victims were from rural .Similar to authors[6,7].High incidence in rural area due to rural population migration, crops loss eitherdroughtsor rains, lack of work.[Fig 3]

Place for Hanging: 23[71.81%] cases were rural in origin which was similar to author [6, 7]. Population migration, crop loss either by droughts or floods, lack of work, loss in other traditional occupations contributed to their high incidence.

Income group: We observed that incidence of hanging was more in low income groups 24[75.00%]. These are consistent with authors [6-10]. This showed that low income served as a motive for dissatisfaction among individuals and commit suicide by hanging which indicated that hanging was more of psychological in origin. [Fig 4]

Educational status: Out of 26[81.25%] victims who went to school, 12[37.50%] received primary education, 8 [12.5%] received secondary education. Same results are made by author [10].[Fig 5]

Occupation: More number of cases of suicide by hanging was found in farmers 24[75.00%]. These findings were consistent with authors [10-13, 15].Committing suicide by hanging was observed in farmers with financial problems due to failure of crops either by floods or droughts. Presence of poverty, lack of crop insurance schemes also contributed.[Fig 6]

Site of Hanging: Usually victim of suicide prefers any secluded place which will suit his purpose of committing suicide. We observed that the home was the place of choice by 22[68.75%] victims. Among total number of hanging cases outside home, 10[31.25%] were male. Similar findings were found in study done by authors [10-16]. This suggests that females chose home for hanging more than male [Table no.2]

Time of Hanging: Most of the victims [81.25%] committed hanging in day time. These are consistent with Indian authors. It suggests that victim of suicide prefers any particular time which will suit his purpose of committing suicide also other family members engaged with their daily activates during day time.

Season of Hanging: Highest incidences of hanging [37.50%] cases were reported in rainy season. Similar findings are observed by authors [11, 13]. Loss of crops either due to droughts or floods badly resulted financial crisis.

Reason for Hanging: Reasons for committing suicide by hanging was observed maximum in persons with financial problems[43.75%] followed by marital disharmony [15.62%], psychiatric 4[12.50%], chronic non–curable illness [9.37%], domestic violence [9.37%], academic failure [6.25%] and love failure [3.12%] .These are consistent with authors[6,7,11,13].While in most active phase of one's life (21-40 years), exposure to anxiety, stress, financial problems, unemployment, failure in studies, love endings, alcohol addiction, and emotional instability were the alleged reasons for committing hanging.[Fig 7]

Type of Hanging: Complete hanging was observed in 24 [75.00%] cases. These are consistent with other studies [7, 15, and 18].Typical hanging was observed in 10[31.25%] cases while atypical hanging was reported in 22[68.75%]. These are similar to authors [15-19]

Position of Ligature: In our study, position of the ligature was fixed around neck in 25[78.12%] cases. Same findings are made by authors [18-19].[Table no 3]

Type of ligature loop: We observed single ligature loop in 19[59.37%] cases. These are consistent with authors [19-20].

Manner of Hanging: Regarding the manner, in our analysis, it showed that 30[93.75%] cases were suicidal in nature.1 [3.12%] case was homicidal in nature, where female was found to be victim due to family disputes and 1 [3.125] accidental hanging occurred while a male child was playing with rope. These are consistent with authors [7, 20].[Fig 8]

Cause of death: Cause of death in maximum [50.00%] cases was due to the combination of both asphyxia as well as venous congestion. Similar results were observed by authors [7, 14, and 20]. [Fig 9]

Ligature findings: According to the ligature findings, in majority of hanging cases, the ligature mark was oblique 31 [96.87%], above the thyroid cartilage in 29 [90.62%], incompletely encircling the neck in 24 [75.00%], single turn in 19 [59.37%], with a width of 0—2 cms. in 23[71.87%] cases, and rope was used as a ligature material in 18[56.25%] cases. Similar results were noted by authors [15-20]. Ligature mark around the neck, presence of abrasions, ecchymoses and redness about the ligature mark, trickling of saliva from mouth, ecchymoses of larynx or epiglottis, rupture of intima of the carotid and post mortem signs of asphyxia served as tool for diagnosis of hanging.[Table no. 4]

Other postmortem findings: Postmortem findings, asphyxial signs, congestion of organs were observed in all cases. Petechial hemorrhages were seen in the eyes. Body showed lividity in the legs, forearms and hands. Similar results were noted by authors [17-22]. Asphyxia in hanging is usually related to the compression of the carotid arteries, rather than blockage of the airways. Their absence helped to distinguish hanging from other strangulations.[Table no. 5]

The ligature mark was reddish brown in 18 cases, it was pale in 2 [6.25%] and parchmentized in 12[37.50%]. Similar observations are reported by authors [14, 15]. The color of the ligature mark depends mostly on the duration of suspension of the body and nature of the ligature materials used and also the time elapsed between death and autopsy.

Protrusion of tongue was seen in 12 [37.12%] cases. Similar findings were made by authors [20-22]. The probable reason for this phenomenon could be that the constricting force of the ligature caused upward pressure on the neck structure causing elevation of the tongue.

Salivary stain was present in 14 [43.73%] cases of hanging. These are consistent with authors [17, 19, and 22]. Saliva is often found dribbling from angle of the mouth down the chin. This is supposed to be sure sign of ante mortem hanging as secretion of saliva being a vital function, cannot occur after death.

Hyoid bone fracture was noted in 7 [21.87%] cases of hanging and that age was above 40 years. This may be due to calcification and fragility of bony structures. These results were also observed by authors [17-20]. In our study, majority of victims were of young age below 40 years, and the fracture frequency of hyoid bone increased with age as it got ossified.

Conclusion:

Incidence of hanging was 3.88%.Most vulnerable age group was 21 to 30 years with male to female ratio being 3:1. Married Hindu males, from rural areas, working as farmers with low educational and financial background committed suicidal hanging in rainy season during day time at their homes. Ligature material was soft in majority of the cases. 90.62% were suicides, one case of accidental and one homicidal hanging was observed. Financial problem was the most common reason in male. Marital disharmony is utmost reason in female. Asphyxial signs and congestion of the organs, cardinal sings dribbling of saliva, presence of redness of ligature mark, and evidence of fracture of hyoid bone helped in arriving at a conclusion in most cases. Combination of asphyxia and congestion remained as cause of death.

Preventive measures: Appropriate education, farmer's crop insurance, proper psychotherapy, and careful monitoring of children while they are playing control hangings in most of the cases

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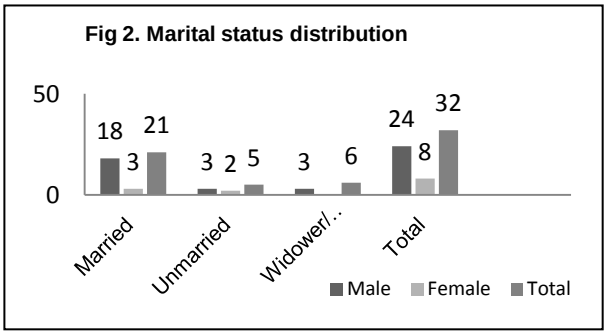
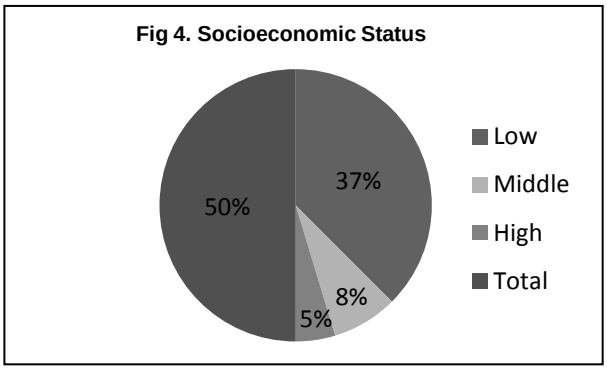
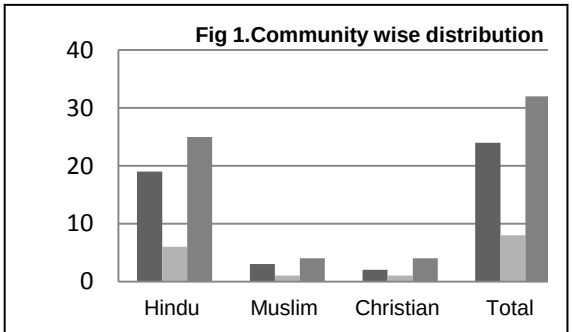
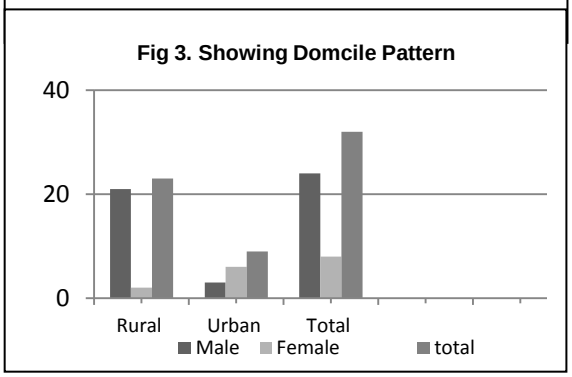
Table No.1. Age and Sex wise distribution

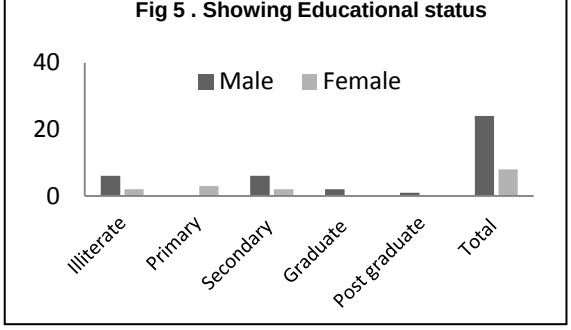
Age in yrs	Male	Female	Total
0-9	1[3.12%]	0	1[3.12%
10-20	2[6.25%]	1[3.12%]	3[9.37%]
21-30	14[43.75%]	4[12.50%]	18[56.25%]
31-40	4[12.50%]	2[6.25%]	6[18.75%]
41-50	2[6.25%]	1[3.12%]	3[9.37%]
51 -60	1[3.12%]	0	1[3.12%]
61 above	0	0	0
Total	24[75.00%]	8[25.00%]	32

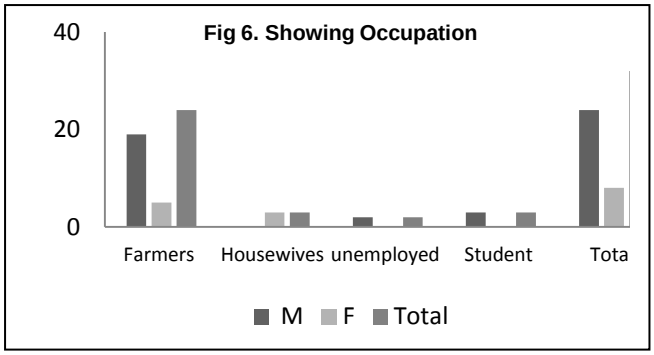












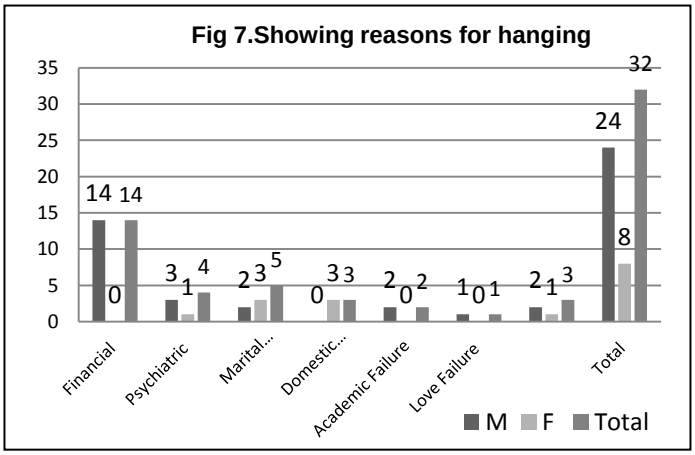


Table 2 Showing Site of hanging

Indoor	Place of hanging	Male	Female	Total
	Residence	14[43.75%]	8[25.00%]	22[68.75%]
	Lodging	5[15.62%]	0	5[15.62%]
	Office	2[6.25%]	0	2[6.25%]
	Hospital	1[3.12%]	0	1[3.12%]
	Jail	1[3.12%]	0	00
Outdoor	Park	1[3.12%]	0	1[3.12%]
	Total	24	8	32

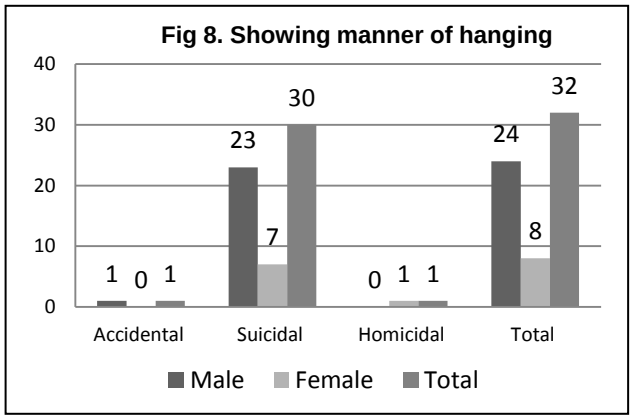


Table 3. Showing position of ligature knot

Position of ligature knot	Male	Female	Total
Fixed knot	20[62.50%]	5[15.62%]	25[[78.12%]
Running noose	3[9.37%]	2[6.25%]	5[15.62%]
Slip knot	1[3.12%]	1[3.12%]	2[6.25%]
Total	24	8	32

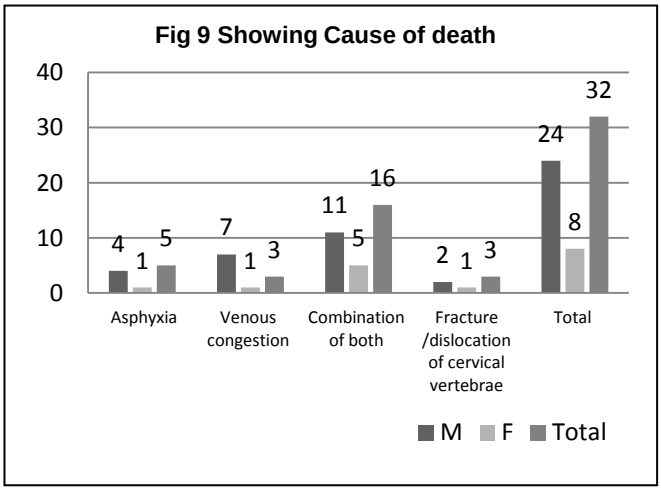


Table 4. Showing ligature findings

Patho-anatomic finding	Present	Absent
Ligature material	32[100%]	-
Ligature mark	32[100%]	-
Above the level of thyroid cartilage	29[9 0.62%]	2[6.25%]
Below the level of thyroid cartilage	2[6.25%]	30[93.75%]
At the level of thyroid cartilage	1[3.12%]	3196.87%]
Protrusion of tongue	12[37.50%]	20[62.5%]
Salivary discharge	14[43.75%]	18[56.25%]
Hyoid bone fracture	7[21.87%]	25[78.12%]
Fracture of Thyroid cartilage	00	00
Fracture of Cricoid cartilage	00	00
Soft tissue hemorrhage	2[6.25%]	30[93.75%]
Carotid artery intimal tears	4[12.50%]	28[87.50%]
Other discharges	2[6.25%]	30[93.75%]

Table 5 Showing other Postmortem findings

Post mortem	Cases	%
External findings		
Rigor mortis	21	65.62
Pm staining	12	37.50
Blood in natural orifices	6	18.75
Protrusion of tongue	12	37.50
Struggle marks	1	3.12
Salivary stains	12	37.50
Asphyxial signs	32	100
Internal findings		
Hyoid bone fracture	7	21.87
Thyroid cartilage fracture	0	-
Cricoid cartilage fracture	0	-
Congestion of organs	32	100