Frequency of Hanging Deaths in Lucknow, India 2008-2012

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Background: With the advancement of our society, we are able to control death rate by using advanced medical facilities for treatment of natural diseases but certainly we are not able to control the deaths occurring due to the unnatural causes, like deaths due to accidents, suicides and homicides, with hanging being common method of suicide.

Methods: During the 5 years of study period from 2008 to 2012, all the cases of hanging deaths brought to the mortuary of King George's Medical University were studied with respect to incidence, relationship with sex and age, diurnal variations, manner of death, residence, ligature material and various post mortem findings.

Results: A total 1180 hanging death cases were autopsied with male dominance (54.66%). Most cases belong to 11-30 years age group. Noon and night were most frequent times. Ligature material used most commonly was saree by males and dupatta (scarf) by females. Most cases were from urban background (64.40%). Cyanosis and visceral congestion was found in every case. Most cases were of atypical hanging and suicidal in nature.

Conclusion: Our observation and result conclude that males and young age group population between 15–30 years are more vulnerable victims with suicide as the major contributing cause. This, somehow, indicates frustration and carelessness on the part of population which are preventable and needs to be rectified on urgent basis.

►*Implication for health policy/practice/research/medical education:* Hanging Deaths in India

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1. Introduction:

In spite of advancing civilization killing oneself or someone are commonly found these days. Various factors namely, family, structure, and psychosocial environment play an important role for this criminal behavior. An increasing death rate as a result of violence constitutes a large group in medico legal autopsies. Specially, deaths due to asphyxia are one of the most important causes in violence deaths (1). Term Asphyxia may be defined as a state in which

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the body lacks oxygen because of some mechanical interference with the process of breathing (2). Hanging is being common method of suicides while strangulation as one of methods in homicide. With urbanization, rural areas are also not left aloof and this can be seen from the increasing incidence of such cases from these areas (3).

2. Materials and Methods:

The material of the study comprises of all the cases brought as hanging deaths for autopsy in the mortuary of King George's Medical University. It was a data based study with a time frame of five years extending from April 2008 to April 2012.

In this study incidence of hanging deaths, its relationship with sex and age of the deceased, diurnal variations, manner of death, place of residence, ligature material and ligature mark and various other postmortem findings were studied on autopsy.

3. Results:

A total of 21845 autopsies were conducted from April 2008 to April 2012 in the mortuary of King Georg's Medical College, out of which 1180 (5.40%) were of hanging deaths (Table 1). In this study 21-30 years age group in males and 11-20 years age group in females was found to be most commonly involved age group (Table 2). No case of hanging was found below 10 years of age. Among males night was the preferred time (265 cases) and in females it was noon (260 cases) (Table 3). Saree and dupatta were the common ligature material (Table 4). As far as postmortem findings are concerned, cyanosis and visceral congestion was found in every case. Hyoid bone was not fractured in a single case (Table 6). Most of the cases were from urban background (64.40%) (Table 5) and they had atypical hanging (895 cases) (Table 7). Considering manner of death 1090 cases were suicidal and no case of homicidal hanging was found, while the manner was uncertain in 90 cases (Table 7).

Table 1: Incidence of hanging deaths

1.	Total no. of autopsies	21845
2.	No. of hanging deaths	1180
3.	Percentage	5.40%

Table 2: Hanging: age & sex wise distribution

Age group	Cases		
	Male	**Female**	**%**
0-10 years	0	0	0.00
11-20 years	135	240	31.78
21-30 years	210	195	34.32
31-40 years	190	65	21.61
41-50 years	80	10	7.63
51-60 years	25	25	4.24
61-70 years	5	0	0.42
>71 years	0	0	0.00
Total	**645**	**535**	**100**

Table 3: Hanging: age & sex wise distribution

Time of incidence	Male	Female
Morning	45	0
Noon	185	260
Evening	150	75
Night	265	200
Total	**645 (54.66%)**	**535 (45.34%)**

Table 4: Hanging: type of the ligature material

Type of ligature material	Male	Female	Total
Rope	45	45	**90**
Saree	240	170	**410**
Dupatta	105	210	**315**
Towel	35	30	**65**
Dhoti	200	65	**265**
Wire	20	15	**35**
Total	**645**	**535**	**1180**

Table 5: Rural versus urban distribution of cases

Background	No. of Cases (%)
Urban	760 (64.40)
Rural	420 (35.60)

Table 6: Hanging: postmortem findings

Clinical findings	Present	Absent
Cyanosis	1180	0
Visceral congestion	1180	0
Petechiae	910	270
Dribbling of saliva	1045	135
Hyoid bone #	0	1180
Congestion of face	785	395
Hemorrhages in neck muscle	270	910

Table 7: Hanging: type of hanging

Type of hanging	Male	Female	Total
Typical	155	130	285
Atypical	490	405	895
Total	**645**	**535**	**1180**

Table 8: Hanging: manner of death

Manner of hanging	No. of cases
Suicidal	1090
Homicidal	0
Uncertain	90
Total	**1180**

4. Discussion:

Unnatural death is one of the indicators level of social and mental health in a country. In the present series during 5 years of study a total of 1180 cases of hanging were examined. These constitute 5.40% of total forensic autopsies conducted. This was in variance as compared to the findings (3.8%) of the study of Sharma *et al* (4). Though similar results were reported from various other studies (5-9).

Our series shows 54.66% male involvement with maximum cases (34.32%) in the age group of 21-30 years. Consistent findings were reported from various other studies (1) (8, 12, 13). Suggested reasons include male dominance in the society, stress, addictions and unemployment. Hanging as a means of suicide is well described in adolescent and adult populations, but asphyxia deaths due to hanging in children are a rare occurrence (10). A study from Ohio identified only 12 deaths as a result of hanging in the 2-13 year age group (11). Similar to present series where 21 to 30 years age group showed maximum number of cases (48.1%) followed by age group 11-20 years, other studies also reported young adults of the age group 21-25 years accounting for maximum number of cases (8, 13). The burden to earn livelihood, unemployment, failure in love, examination and emotional instability may be the possible reasons of increased involvement of this age group. If we see the sex wise incidence, a preponderance of female victims can be noted in younger age group i.e. 11-20 yrs as compared to 21-30 yrs in males. Similar observations were noted in other studies conducted in India (29, 30), while western studies are not in agreement with these findings, where maximum occurrence in both sexes was between 21 to 30 years (31). As age advances, Indian females appear to be capable of facing problems of life with more responsibility, guts and courage, probably due to strong emotional ties and a feeling of responsibility and bonding to their family and children, the socio cultural scenario being peculiar to India. In Pakistan, where the socio cultural scenario is similar, a study conducted in Faisalabad during the period from January 1st 1998 to December 31st 2001 on suicide has shown that distribution of maximum number of cases of suicide in males was in age group between 20–29 years(12), while in females it was 10–19 years, which is again similar to our study.

Hanging was reported to be more prevalent in urban areas (64.40%). This finding was again in accordance with various national and international studies (4, 12). Urban prevalence could be explained on the basis of higher level of stress and strain in the urban areas.

In the present series the ligature material most commonly used overall was saree (34.74%), followed by dupatta (26.69%). Individually saree was the most commonly

used ligature material in case of males while in females it was duppatta (is a long, multi-purpose scarf that is essential to many South Asian women's suits). Sharma et al. from their study in Chandigarh reported Chunni (Dupatta) as the most common ligature material used (40% cases) followed by nylon rope (31%), bed sheet, and etc. (16%) cases. Shawl (2%) cases were the least used ligature material (14). This was in variance with the present series where saree came out to be used most commonly. This can be explained due to the area of study, as in Chandigarh (Punjab), salwar suit is more frequently worn as compared to sarees in Uttar Pradesh. In the study by Prajapati Pranav *et al*, similar results were reported where Sari, dupatta and cotton rope were commonly used as a ligature material in hanging cases (15). In a study by Sharija S *et al* most commonly used ligature material in males was plastic rope, followed by lungie, and while in females shawl was most commonly used followed by saree (16). This was in variance with the present series which again can be explained on the basis of the region of the study, as in keralalungie is worn commonly by males.

Luke J L *et al* in their study on pathological findings in asphyxia deaths by hanging reported that the presence of conjunctival and facial/per-orbital petechial hemorrhages correlates with increasing levels of body support below the point of ligature suspension.

No petechiae were present in (21%) of the study cases (18). This was in accordance with the present series where petechiae were present in 77.12% cases. Petechial hemorrhages are considered to be a hallmark of asphyxial deaths (10, 18) and are frequently seen above the ligature furrow in hangings.

Dribbling of saliva is considered an important finding of ante mortem hangingand was reported in 88.56% cases in the present series. This was consistent with various other studies (13, 19).

Though percentage of hyoid bone fracture in asphyxia by compression of neck cited by many authors as none or less or controversial; they agree that hyoid bone fracture occurs after the age of 40 years (as it is ossifies at age of 40 years). The incidence varies greatly from 0-68 % from author to author (17, 20-27). Present study has recorded no hyoid bone fracture in any case of hanging which is in accordance with few other national studies (13, 19, 28). None of the cases of hanging under present study showed fracture of thyroid cartilage.

5. Conclusion:

Medico legal autopsies not only give the cause and manner of death but also give important statistical data related to legal incidents in the cities and regions where the autopsies are conducted. Our observation and result conclude that most of the victims died due to hanging were male. Also a preponderance of hanging cases in urban areas was seen. Males and young age group population between 15–30 years are more vulnerable victims with suicide as the major contributing cause. This, somehow, indicates frustration and carelessness on the part of population which are preventable and needs to be rectified on urgent basis. More over these cases of suicide should serve as an eye opener for organizations working for socio economic justice in our country. The number of suicidal hanging cases is increasing day by day. A well designed and comprehensive programme is needed to identify the causative factors and prevention of suicidal behaviors.

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