

A COMPARATIVE STUDY OF DEATHS DUE TO HANGING AND STRANGULATION IN THE NORTH-WEST REGION OF PUNJAB

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Abstract

A 2-yrs study was carried out on deaths allegedly due to hanging and strangulation at Govt. Medical College, Amritsar. Out of total 43 cases, on autopsy, 25(58.1%) were due to hanging and 18(41.9%) were due to strangulation. Majority of victims of both hanging (48%) and strangulation (38.7%) were in 21-30 yrs age group having urban preponderance (83.3%).

Approximately 2/3rd of hanging victims were males as compared to females. Majority of victims comprised of urban population (56%) however rural males were ones predominantly involved (40%). Married victims were double the numbers in comparison to unmarried victims; in known cases (84%). In 76% hanging cases no associated trauma was present other than the ligature mark. Rope was used as ligature material in the majority (44.1%) and the ligature was placed above the level of thyroid cartilage in 88% of cases.

Amongst the strangulation deaths both sexes were equally involved with urban cases double the number of rural ones. Urban females were commonest strangulation victims (38.9%). The offence was 6.5 times more prevalent in married individuals compared to unmarried ones; in known cases (83.4%). No case of unmarried female as victim of strangulation was reported in the present study. Associated trauma was present in 94.5% cases of strangulation; out of which in 44.4% cases, head and neck region was predominantly involved. Ligature was unavailable at the scene of crime in 38.8% cases; and the ligature mark was at the level of thyroid cartilage in 64.7% cases.

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It is concluded that in the North-west region of Punjab, hanging to commit suicide is more prevalent in rural males while married females were the more likely victims of strangulation; amongst the asphyxial deaths. The absence of ligature material with the body of the deceased along with associated trauma, an indicator of relative movement between the victim and the assailant, was a pointer towards death due to strangulation.

Keywords: *Hanging, strangulation, associated trauma.*

Introduction

In today's world crime and violence has occupied a great proportion of human lives. In spite of advancing civilization, killing oneself or someone are commonly found these days. Mostly suicidal in nature, hanging is one of the most common methods for committing of suicide in India. Various other types of hanging are homicidal hanging, judicial hanging accidental hanging, and autoerotic hanging (**Camps et al, 1976**). In terms of methods used for committing suicide, hanging holds a predominant place with its frequency not seeming to depend on the anthropological – cultural characteristics of any one population (**Durso et al, 1995**). Strangulation is assumed to be homicidal until the contrary is shown to be more likely under the circumstances (**Simpson and Knight, 1985**).

Hanging is one of the oldest methods of execution and originally was a way of desecrating dead body of a criminal. The bloody penal code was at its most active level between 1770 and 1830. Some 7000 men and women were executed on public scaffolds then, watched by crowds of thousands. Hanging was confined to murderers thereafter but these were still executed in public till 1868 (**Gatrell, 1966**). The abolition of judicial hanging in Britain may have led to increased acceptability of hanging as a suicide method (**Pounder, 1993**). In the developing countries like India; hanging is mostly used as a form of capital punishment.

Lung (1936) mentioned the Thuggee sect in India, who worshipped the Indian Goddess's of destruction "Kali". Based on the legend of Kali, the Goddesses followers were not allowed to spill blood when they killed. To get around this technicality, they strangled their targets. Various forms of strangulation are ligature strangulation, throttling, mugging, garroting, bansdola etc (**Simpson and Knight, 1985**).

Material and Methods

The present study was done on medico legal autopsies conducted by the Department of Forensic Medicine and Toxicology, Government Medical College, Amritsar from 1.3.2001 to 31.1.2003

The following parameters were studied;

- Alleged cause of death vs. established cause of death.
- Age-, sex- & area-wise incidence and distribution of -hanging deaths and strangulation deaths -marital status of victims.
- postmortem interval
- associated trauma
- material of ligature
- Ligature level in relation to thyroid cartilage.

Observation

Out of total number of 1983 cases which were brought for postmortem examination during the period of study i.e. 1-3-2001 to 31-1-2003, 43 (2.16%) cases were declared to be due to hanging/strangulation while 2 (0.1%) cases were those in which cause of death as per autopsy report was other than hanging and strangulation among asphyxial deaths. 25 (58.1%) cases were that of hanging and 18 (41.9%) were due to strangulation. There was one case of manual strangulation. The total number of cases of hanging and ligature strangulation studied were 42(93.3%) out of total 45 cases of asphyxial deaths. The investigating agency could not allege any cause of death in 2 (4.4%) cases. Maximum i.e. 19 (44.2%) cases of hanging and strangulation deaths were reported in age group 21-30 years. Out of 25 hanging cases, 16 (64%) were males and 9 (36%) were females. Out of 18 cases of strangulation equal (50%) cases were reported both in males and females. No case of hanging or strangulation deaths was reported in 0-10 years of age group (**CHART I**). As depicted in **CHART II**, out of 25 hanging cases, 10 (40%) male and 1 (4%) female were of rural region, whereas 6 (24%) male and 8 (32%) females were from urban area. In 18 cases of strangulation, 4 (22.2%) male and 2 (11.1%) females were of rural region and 5 (27.8%) male and 7 (38.9%) females were from urban region. Out of a total of 25 cases of males who were victims of hanging and strangulation, 14 (56%) were of rural origin and 11 (44%) were of urban origin. Out of a total 18 cases of female victims of hanging and strangulation; 3 (16.7%) belonged to rural area and 15 (83.3%) were of urban origin.

Out of 25 cases of hanging; 8 (32%) males and 6 (24%) females were married and out of 18 cases of strangulation 5 males (27.7%) and 8 females (44.4%) were married. 4 (16%) male and 3 (12%) females in hanging cases were unmarried and 2 (11.1%) male in strangulation cases were unmarried. Marital status of 4 (16%) males in hanging and 2 (11.1%) male and 1 (5.55%) female in strangulation was not known. Out of 43 cases studied, 25 males (30.2%) were married, 13.9% unmarried and in 13.9%, marital status could not be ascertained. In 18 cases of females, 32.6% were married, 6.97% unmarried and in 2.32% marital status was not known (**CHART III**).

CHART I : AGE & SEXWISE DISTRIBUTION OF HANGING AND STRANGULATION DEATHS

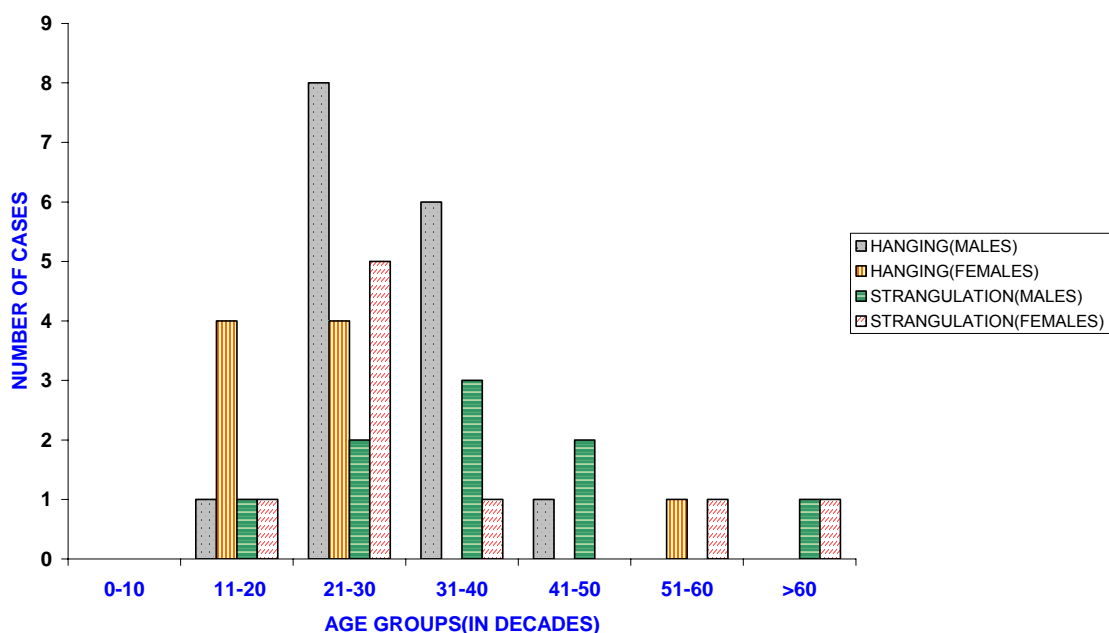


CHART II:SEX & AREAWISE DISTRIBUTION OF HANGING AND STRANGULATION DEATHS

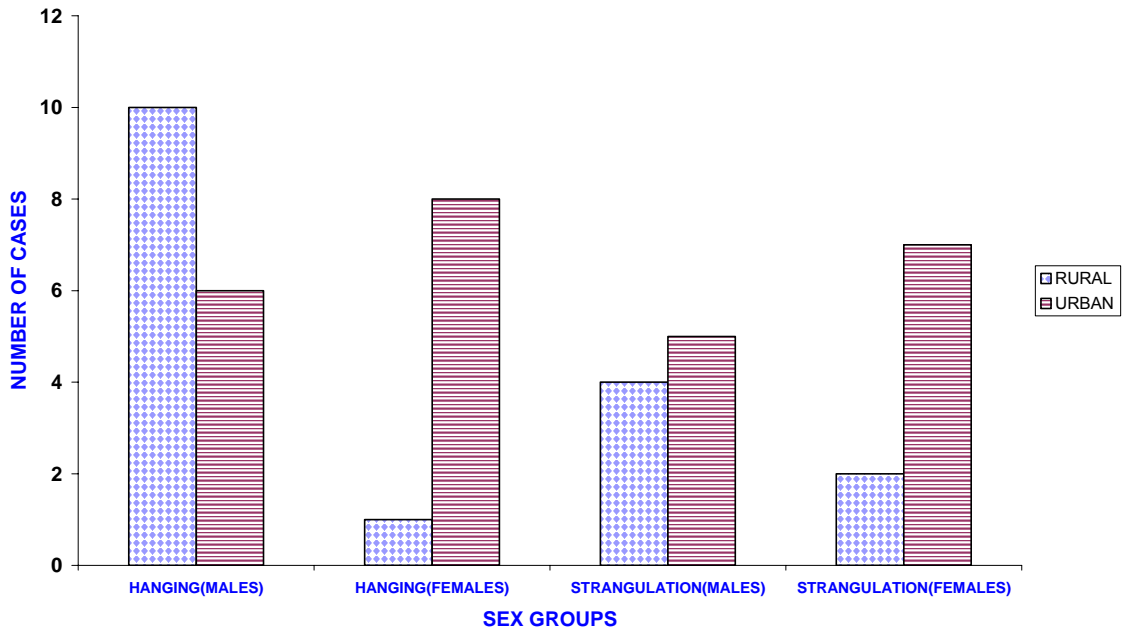
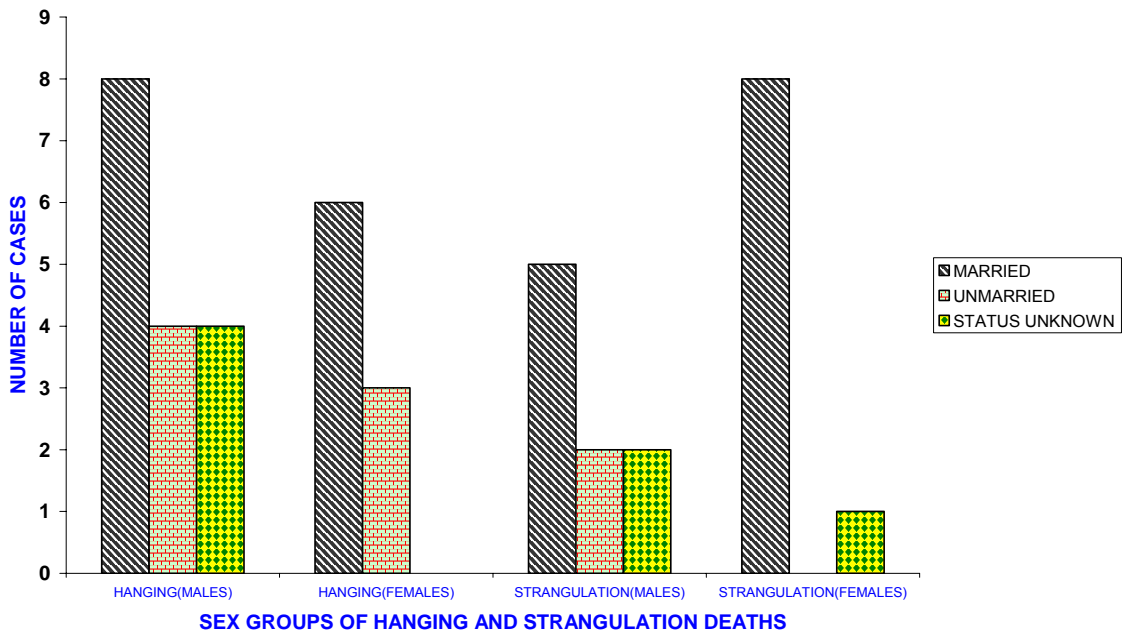


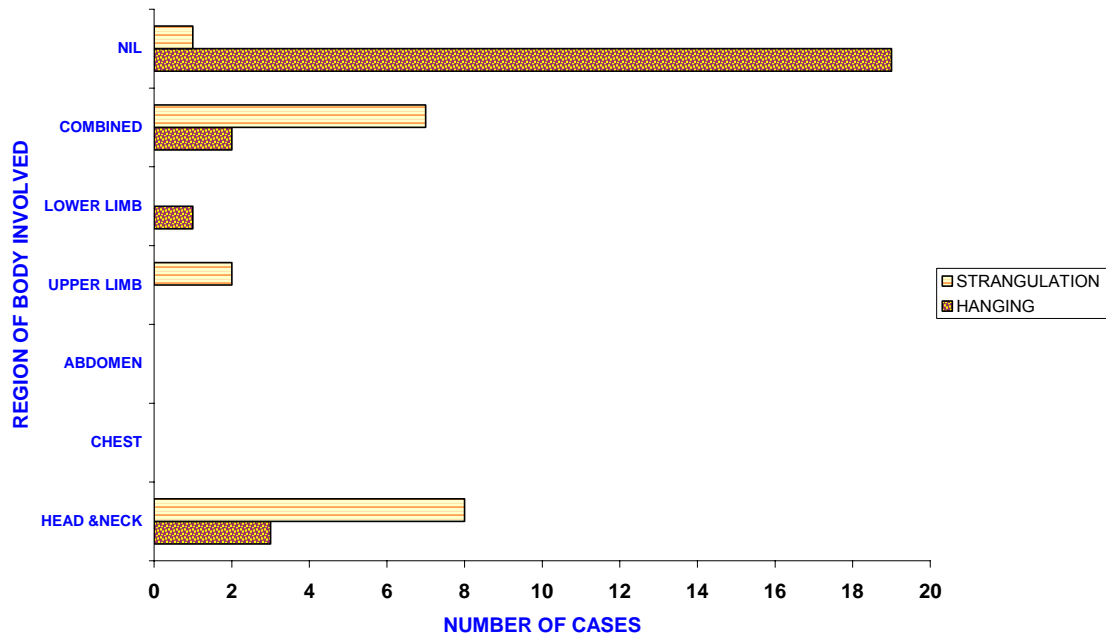
CHART III : DISTRIBUTION OF MARITAL STATUS OF HANGING AND STRANGULATION DEATH VICTIMS



Postmortem interval: 19 (44.18%) cases were brought to mortuary for medico-legal autopsy during post mortem interval of 12-24 hours followed by 18 (41.9%) in 24-36 hours. Thus, maximum i.e. 37 (86.08%) cases were received and autopsy was done during post mortem interval of 12-36 hours. Minimum number of cases i.e. 1 (2.3%) was received and autopsy was done in postmortem interval of 0-12 hours.

Out of 25 cases of hanging deaths, the *associated trauma* was found in 3 (12%) cases on head and neck. In 18 cases of strangulation, maximum associated trauma was found in head and neck in 8 (44.4%) cases (**CHART IV**). No associated trauma was found in 19 (76%) cases of hanging and 1 (5.55%) case of strangulation.

CHART IV : DISTRIBUTION OF ASSOCIATED TRAUMA IN HANGING AND STRANGULATION DEATHS



Ligature material: (**CHART V**) used was rope in maximum i.e. 11 (44.0%) cases of hanging followed by chunni i.e. 5 (20%) of cases, whereas in strangulation cases ligature material was not known in maximum number i.e. 7 (38.8%) of cases and ligature material used was pagri cloth in one case (5.55%). Out of 43 cases of strangulation and hanging deaths, rope as a ligature material was used in maximum number of cases i.e. 14 (32.5%).

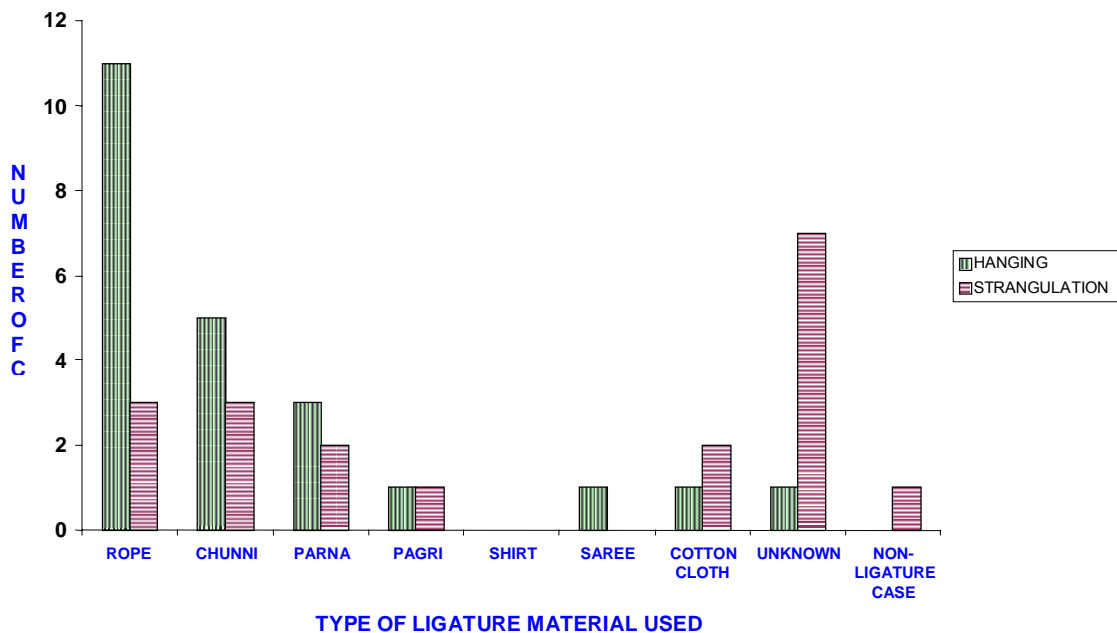
Out of 25 cases of hanging, in 22 (88%) cases the *ligature mark was placed* above the level of thyroid cartilage (**CHART VI**) while in 3 (12%), the ligature mark was placed at the level of thyroid cartilage. Out of 17 cases of strangulation, in 5(29.4%) cases the ligature mark was placed above the level of thyroid cartilage, 11 (64.7%) at the level of thyroid cartilage and in 1(5.9%) case was below the level of thyroid cartilage. In one case (5.5%) of strangulation death it was not due to application of ligature.

Discussion

The observations of the present study are discussed with the findings of the previous studies carried out by various authors as per table shown below:-

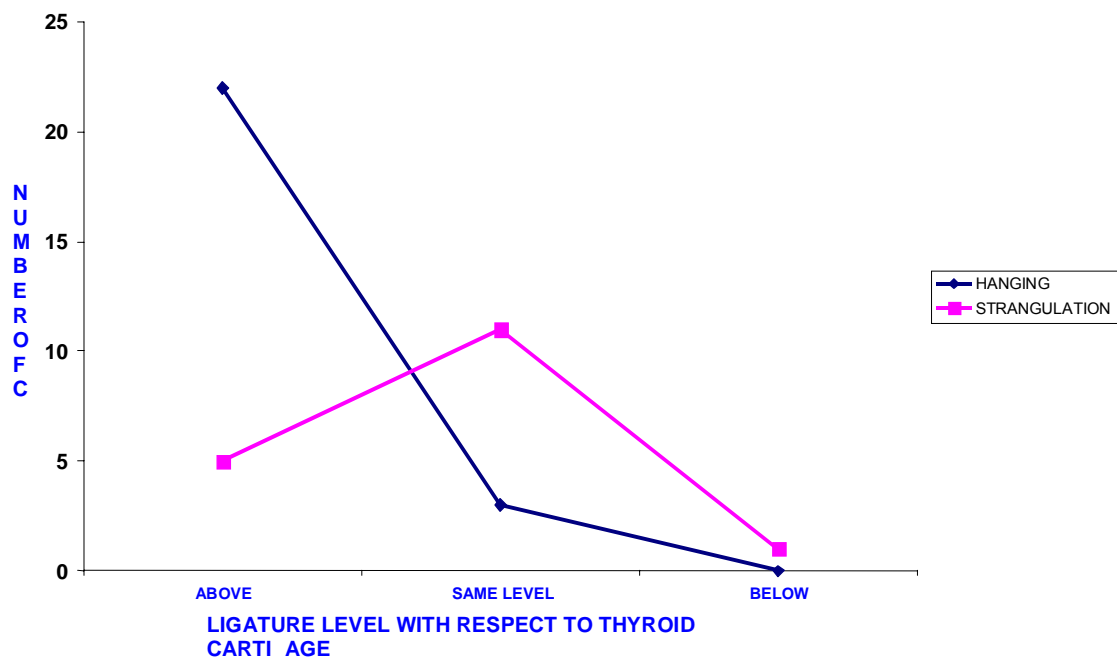
Name of author	Year
Etinne Martin	1950
Tabata	1998
Sheikh et al	1999
Present study	Mar. 2001 to Jan. 2003

CHART V : DISTRIBUTION OF LIGATURE MATERIAL PRESENT



Incidence: In the present study out of total 1983 cases, received for post-mortem examination, during March 2001 to Jan. 2003, 2.16% cases were declared on autopsy as hanging and strangulation deaths, which is similar to **Sheikh et al (1999)**. Further, the number of hanging cases is 1.4 times that of strangulation cases which is quite less than 2.9 times as observed in the study by **Sheikh et al (1999)**. The reason for lesser frequency of suicides in Punjab is that the people of Punjab are very daring and they have been facing the onslaught of the foreign invaders since ancient times. This has made them mentally strong and they have a positive outlook towards life.

1. **Alleged cause of death:** In the present study out of 45 cases studied, 95.6% cases were alleged by the police as having died due to constriction of neck but 4.4% cases were those in which no alleged cause was put forward by the investigating agency. Because of inadequate medical knowledge of investigating officer (I.O.), on autopsy examination, the autopsy surgeon to have died of constriction of neck ascertained them.

CHART VI : DISTRIBUTION OF LEVEL OF LIGATURE

No such parameter has been studied by above mentioned authors.

2. **Age and Sex-wise distribution:** In the present study, 44.18% cases were reported in age group 21-30 years (**CHART I**) which is more or less similar to that (42.42%) observed by **Sheikh et al (1999)**. The reason for this can be attributed to the increasing aggression and early losing of temper among the persons of third decade leading to increased crime rate. The emotional and psychosocial turmoil that peaks in this age group might be the basic cause leading to suicides and homicides. **Tabata (1998)** has observed maximum incidence i.e. 33.3% of cases in 0-10 year age group. In the present study, no case was reported in 0-10 year's age group. **Sheikh et al (1999)** observed 4.54% cases in this age group. Perhaps the reason for none of the cases in 0-10 year's age group in present study might be the study of lesser number of cases i.e. 45 compared to 66 by **Sheikh et al (1999)**.

In the hanging cases, 64% male and 36% female cases were observed. This is more or less similar to the study of **Sheikh et al (1999)** who observed 71.2% males and 28.8% females. The study by **Tabata (1998)** has also observed similar results with 60% males and 40% females.

Out of strangulation cases, equal number (i.e. 50%) of male and female cases were observed in the present study which is in sharp contrast to the study by **Sheikh et al (1999)** who has reported no case of strangulation amongst female which may be due to different crime pattern in that part of the region.

3. **Sex and area wise distribution:** In the present study, 56% male cases were of rural origin, while 44% belonged to urban area, whereas amongst female cases, 16.7% belonged to rural area and 83.3% were of urban origin (**CHART II**). This signifies the fact that crime against women is much more in urban areas, whereas the proportion of male victims of hanging and strangulation were more in rural area. No such parallel study of area wise distribution has been done by the above mentioned authors.

Out of hanging cases, 40% cases were of males belonging to rural area and 24% belonged to urban area, while 32% cases of females of urban origin and only 4% hanging cases were females of rural origin. This is significant finding which showed that in rural areas, females resort to measures of suicide other than hanging. However in urban areas, hanging as a method of suicide is more popular among the females as compared to males.

In strangulation cases also, female victims of urban origin were more (38.9%) compared with females of rural region (11.1%) which indicates increased violence against women in urban areas.

4. **Marital status:** The incidence of hanging in the present study among the married persons was double i.e. 32% males and 24% females compared to unmarried ones i.e. 16% males and 12% females (**CHART III**). This indicates that married persons were more vulnerable to emotional stress resulting in suicide.

Similarly in strangulation deaths married females were more vulnerable to homicide i.e. 44.4% cases; as compared to unmarried ones in which no case has been observed in present study.

In present study 30.2% cases were married males which are lower than 51.5% observed by **Sheikh et al (1999)**. However married female cases in present study i.e. 32.6% cases is more than that observed by **Sheikh et al (1999)** i.e. 16.67%. The reason for this might be the difference in societal behavior and more respect for females in that part of region.

5. **Post-mortem interval:** In present study, 86.08% cases were autopsied in post-mortem interval of 12-36 hours which shows the normal time lag due to the procedure followed in this part of country for fulfilling the legal requirements for conducting an autopsy. In his study **Tabata (1998)** conducted autopsies in 53.3% cases of compression of neck in 12-24 hours. The better facilities available to the investigating agencies in developed countries like Japan might be responsible for this difference observed. In the present study in 2.3% cases autopsy was conducted in time interval of 0-12 hours. **Tabata (1998)** conducted autopsies in 0-12 hours in 13.3% of cases which again emphasizes the better facilities available in Japan.

6. **Associated trauma:** In the present study, associated trauma on head and neck was found in 44.4% cases of strangulation in the form of abrasion, bruises and occasionally laceration (**CHART IV**) which indicates that there is great relative movement between the victim and the assailant during the time of crime. In hanging cases associated trauma though lesser than in strangulation deaths was maximally reported on head and neck in 12% cases.

More significant is the fact observed that 76% hanging cases had no associated trauma while it was absent in only 5.5% cases of strangulation. No other study is available for comparison.

7. **Ligature material:** In the present study, rope as a ligature material was used in 32.5% cases of hanging and strangulation deaths (**CHART V**), whereas **Sheikh et al (1999)** observed it in 63.63% of cases. **Tabata (1998)** has observed towel as a ligature material in maximum (19.9%) of cases. The reason for selecting the rope as choice of ligature material can be explained on the basis of its easy availability and above all it (rope) ensures that the act (Compression of neck) will be successfully accomplished just like judicial hanging. In Japan instead towel is the material that is commonly used for suicide because of lesser popularity of judicial hanging there. Next in frequency is the Chunni (Dupatta) which is a common part of the dress code of the females in Punjab. Hence, it is easy available at hand and it is frequently used in suicide in this part of country.

In strangulation deaths in 38.8% cases, the ligature material was not available at the scene of crime which proves that it is essentially homicidal with the tendency of criminal to abscond along with the ligature

material to conceal the nature of the crime. **Tabata (1998)** observed no ligature material in 19.9% of cases of compression of neck.

8. **Level of ligature:**In the present study, level of ligature was found to be above the level of thyroid cartilage in 88% of cases of hanging and at the level of cartilage in 12% cases (**CHART VI**), whereas in study conducted by **Etinne Martin (1950)** in 80% cases, the level of ligature was above thyroid cartilage, in 15% at the level of cartilage and in 5% below the level of cartilage. This is in contrast with the present study in which no case has been observed with level of ligature below the thyroid cartilage in cases of hanging.

In ligature strangulation cases, 29.4% cases showed the level of ligature above thyroid cartilage, 64.7% cases at the level of cartilage while in 5.9%, the level was below it. This parameter has not been studied by the above mentioned authors.

Summary & Conclusion

1. The majority of victims (44.18%) were in the age group of 21-30 years and nil in age group 0-10 years.
2. 56% of the cases of hanging belonged to rural area and 44% to urban areas. Similarly in strangulation cases, 16.7% belonged to rural area and 83.3% to urban areas.
3. In death due to hanging and strangulation, number of males is more as compared to females (1.4:1 M: F ratio).
4. The majority (44.18%) of autopsies were conducted in postmortem interval of 12-24 hours, while the least number (2.3%) of autopsy were performed in 0-12 hour postmortem interval.
5. In cases of strangulation associated trauma was found maximally on head and neck area in 44.4% of cases, while in hanging deaths it was found in 12% of cases.
6. Rope was the most common ligature material (44%) for causing hanging while in cases of strangulation ligature material was unknown in majority (38.8%) cases.
7. The ligature was placed above the level of thyroid in 88% of hanging while in strangulation deaths the ligature was placed at the level of thyroid cartilage in 64.7% cases.

It is **concluded** that in the North-west region of Punjab, hanging to commit suicide is more prevalent in rural males while married females were the more likely victims of strangulation; amongst the asphyxial deaths. The absence of ligature material with the body of the deceased along with associated trauma, an indicator of relative movement between the victim and the assailant, was a pointer towards death due to strangulation.

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