

**Research Article**

## **Study of Violent Asphyxial Deaths in Chitradurga district of Karnataka**

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### **Abstract**

A one year retrospective study was conducted by evaluating a total of 36 deaths due to mechanical asphyxia from 01-01-2012 to 31-12-2012, autopsied at District Govt. General Hospital, Chitradurga. Analysis of the recorded data related to autopsy examination along with age, sex of the deceased, season and manner of death was done. Asphyxial deaths were 10.50% of total autopsies and number of males (67.96%) was more than females in a ratio of 3: 1. In our study commonest method of asphyxial death was hanging (80.60%), followed by drowning (8.3%), ligature strangulation (5.5%) and each case of Traumatic asphyxia (2.8%) and Postural asphyxia (2.8%). 21-30 years age group were more prone to violent asphyxial deaths (38.88%) and more cases were noticed in summer season (50.0%) constituting majority of suicidal cases (83.30%).

**Keywords:** Hanging, Drowning, Strangulation, Traumatic asphyxia, Postural asphyxia

### **1. Introduction**

Asphyxia is a state in which there is prevention of exchange of air between the atmosphere and the pulmonary alveoli. Adelson defined asphyxia as the physiologic and chemical state in a living organism in which acute lack of oxygen available for cell metabolism is associated with inability to eliminate excess of carbon dioxide.<sup>1</sup>

Asphyxial deaths are caused by the failure of cells to receive or utilize oxygen. The deprivation of oxygen can be partial (hypoxia) or total (anoxia). The classical signs of asphyxia are visceral congestion, petechiae, cyanosis and fluidity of blood.<sup>2</sup>

Asphyxial deaths may be caused by different methods, such as hanging, strangulation (manual and ligature), suffocations (environmental, smothering, choking, mechanical and suffocating gases), chemical asphyxia (carbon monoxide, hydrogen cyanide and hydrogen sulphide) and drowning.<sup>3</sup>

Violent asphyxial deaths have contributed considerably to unnatural homicidal, suicidal and accidental deaths.<sup>4</sup> So it is essential to diagnose and differentiate between different asphyxial deaths, especially between hanging and strangulation by ligature. In addition to the cause of death, the careful examination can also help the investigator to arrive at a conclusion about manner of death.<sup>5</sup> The purpose of this study was to investigate some features related to asphyxial deaths in the Chitradurga region of Karnataka and to compare them with other studies.

## 2. Methodology

The study comprised of all the cases of deaths due to mechanical asphyxia that were autopsied at District Govt. General Hospital, Chitradurga from 01-01-2012 to 31-12-2012. Hanging, drowning, ligature strangulation, traumatic asphyxia and postural asphyxia were included. Relationship of asphyxial deaths with the age and sex of the deceased, season and manner was analyzed. Based on the information collected from police and the relatives of the deceased, manner of death was determined.

## 3. Result

A total of 343 cases being autopsied in mortuary, out of which 36 cases were of mechanical asphyxia (10.50%). The hanging (29 cases; 80.60%) was the commonest type of asphyxial death followed by drowning (03 cases; 8.30%), ligature strangulation (2 cases; 5.5%) and each case of Traumatic asphyxia (2.8%) and Postural asphyxia (2.8%) were noticed. Sex wise distribution and profile of different asphyxial deaths are shown in Table 01.

**Table No. 01: Profile of Asphyxial Deaths**

Type of Asphyxia		Female		Male		Total	
		No.	%	No.	%	No.	%
Drowning		00	00	03	8.3	03	8.3
Hanging	Complete	08	22.2	20	55.6	28	77.8
	Partial	01	2.8	00	00	01	2.8
Traumatic asphyxia		00	00	01	2.8	01	2.8
Postural asphyxia		00	00	01	2.8	01	2.8
Strangulation	Ligature	00	00	02	5.5	02	5.5
	Manual	00	00	00	00	00	00
Total		09	25	27	75	36	100

We found that 21-30 years age group were more prone to violent asphyxial death (38.88%), 31-40 years were second largest group (33.33%) as shown in Table 02.

**Table No.0 2: Age and Sex Wise Distribution of Asphyxial Deaths**

Age (In years)	Female		Male		Total	
	No.	%	No.	%	No.	%
0-10	00	00	00	0	00	00
11-20	2	5.55	2	5.55	4	11.11
21-30	4	11.12	10	27.78	14	38.89
31-40	1	2.78	11	30.56	12	33.33
41-50	00	0	00	0	00	0
51-60	2	5.55	2	5.55	4	11.11
61-70	0	0.0	1	2.78	1	2.78
71-80	00	00	00	0	00	0
81-90	00	00	00	0	00	0
91-100	0	0.0	1	2.78	1	2.78
Total	9	25.0	27	75.0	36	100.0

Out of total autopsies, 94.40% Hindu and 5.60% Muslim, no Christian victim was found as shown in Table 03. Males outnumbered females and most of the victims were married (63.90%) compared to un-married (36.10%) as shown in Table 04. More cases recorded in summer season (50.0%) followed by winter (30.60%) and rainy season (19.40%) as shown in Table 05. The commonest manner of asphyxial deaths was suicidal in nature in both sexes and more cases were recorded between 6pm to 6am as shown in Table 06 and 07 respectively.

**Table No. 03: Religion Wise Distribution of Asphyxial Deaths**

Religion	Female		Male		Total	
	No.	%	No.	%	No.	%
Hindu	09	25	25	69.4	34	94.4
Muslim	00	00	02	5.6	02	5.6
Total	09	25	27	75	36	100.0

**Table No 04: Distribution of Asphyxial Death Cases according to marital status**

Marital status	Female		Male		Total	
	No.	%	No.	%	No.	%
Married	07	19.45	16	44.45	23	63.9
Un married	02	5.55	11	30.55	13	36.1
Total	09	25	27	75	36	100.0

**Table No. 05: Season Wise Distribution of Asphyxial Deaths**

Season	Female		Male		Total	
	No.	%	No.	%	No.	%
Rainy	03	8.3	04	11.1	07	19.4
Summer	05	13.9	13	36.1	18	50.0
Winter	01	02.8	10	27.8	11	30.6
Total	09	25	27	75	36	100.0

**Table No. 06: Manner Wise Distribution of asphyxial deaths**

		Accidental	Homicidal	Suicidal	Total
Hanging	Complete	0	0	28	28
	partial	0	0	1	1
Drowning		2	0	1	3
Traumat Asphyxia		1	0	0	1
Postural Asphyxia		1	0	0	1
Strangulation		0	2	0	2
Total		4	2	30	36

**Table No. 07: Distribution of asphyxial deaths on different timings**

Timings	Female		Male		Total	
	No.	%	No.	%	No.	%
Afternoon (12pm-6pm)	03	8.2	05	13.8	08	22.2
Evening (6pm-12am)	02	5.6	10	27.8	12	33.3
Night(12am-6am)	02	5.6	10	27.8	12	33.3
Morning( 6am-12pm)	02	5.6	02	5.6	4	11.2
Total	09	25	27	75	36	100

#### 4. Discussion

The incidence of mechanical asphyxia was 10.50% which is significantly more than the result of the other studies.<sup>6,7,8,9</sup> and in few studies<sup>1,10</sup> the incidence was lower. This difference in the incidence may be due to geographical variations in the population.

In our study, hanging was the commonest type of asphyxial death followed by drowning, which is consistent with the studies by various authors<sup>1,6,7,9,10,11</sup> but in one of the study<sup>7</sup> it was observed that the incidence of drowning being the

commonest (59.40%) which could be due to the presence of water reserves in the region of the study. According to WHO report 2000<sup>7</sup>, Both China and India have particularly high drowning mortality rates and together contribute 43% of all drowning deaths worldwide. Most of the deaths caused due to drowning (nearly 97%) occur in developing countries like India, drowning is a common method of committing suicide especially amongst women, and more particularly in localities nearby the sea, river, dam or canal.

The asphyxial deaths was more in age group of 21-30yrs ( 38.89 %) which can be compared to other studies<sup>3,5,7,10</sup>, followed by the age group 31-40yrs ( 33.33%) which goes in favour of another study.<sup>7</sup> Males predominance was noticed in our study and male to female ratio is 3:1. This high incidence may be because males are more exposed to stress, strain and occupational hazards compared to females which is similar to the observations reported in different studies.<sup>1, 3, 5-11.</sup>

Maximum number of victims were Hindus (94.4%) followed by Muslim (5.6%) population which is consistent with one of the study.<sup>7</sup> This may be due to the religious beliefs and low per cent of Muslim population in and around Chitradurga district.

We observed that married person (63.9 %) more often become victim compared to unmarried (36.1%). The reason of fact could be that the amount of stress carried by the married people in their day to day life is more than the unmarried males or females which makes them more vulnerable. Majority of cases occurred in summer season which is similar to the study by mujamdar.<sup>12</sup> All hanging cases were suicidal, which is similar to the other studies<sup>13,14</sup> and is the most commonest method used to commit suicide. All strangulation cases were homicidal in our study which is similar to the study done by Azmak D.<sup>13</sup>

## 5. Conclusion

- Asphyxial deaths accounted for 10.50% of the total autopsied Cases in the year 2012.
- The most frequent method of asphyxial death is hanging ((29 cases; 80.60%) followed by drowning (03 cases; 8.30%).
- Males were twice more commonly involved than females and Male to female ratio was 3:1.
- Manner of death was found to be suicidal in all hanging cases and all strangulation cases were homicidal deaths.
- Seasonal asymmetry is observed with maximum mortalities occurring during summer months.

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