

Socio - Demographic & Medico - Legal Profile Among the Victims of Acute Fatal Asphyxia Cases at S.M.S Medical College, Jaipur

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ABSTRACT

Background: Asphyxia is typically relevant in a forensic setting when it involves mechanical asphyxia. There are various means in which mechanical asphyxia is carried out like pressure over the neck in form of hanging, ligature/ manual strangulation, mugging, garroting, and, some other forms as smothering, suffocation, choking etc.

Aims & objective: Assessment of socio - demographic profile & medico - legal profile among the victims of acute fatal asphyxia cases at S.M.S hospital, Jaipur.

Material & methodology: a cross-sectional descriptive observational prospective study that used inclusion and exclusion criteria was conducted. 160 (4.90%) autopsies were of these acute asphyxia fatalities (n=3261) were taken in the study. The present study had been conducted in the Mortuary, Department of Forensic Medicine & Toxicology, S.M.S Hospital, Jaipur during the period from June 2018 to October 2019.

Result & observation: The majority of 63 cases (39.37%) were found to be between the ages of 21 and 30. 109 cases (68.13%) were predominantly male. 142 cases (88.75%) were literate & 18 cases (11.25%) were illiterate. Students made up the majority of fatalities with 44 cases (27.5%), followed by homemakers with 41 cases (25.6%). Hanging was responsible in majority of cases (85%). Suicidal manner was present in majority of cases (86.87%).

Conclusion: Majority of victims was of productive age group of society and most of them were students and house makers. The main causes are high expectations, an unhealthy and stressful lifestyle, and less tolerant behaviour in families and social groups. Justice, compassion, educational initiatives, and individual, communal, and societal approaches are required to reduce these cases.

Keywords: mechanical asphyxia, hanging, suicide, socio - demographic and medico - legal profile.

INTRODUCTION

The term Asphyxia is equated in use to the lack of oxygen although; etymologically the term means absence of pulsation². The four physiological causes of asphyxia are reduced

oxygen in the environment, reduced blood oxygenation, reduced cardiovascular oxygen transfer, and interference with cellular oxygen absorption³. Autopsy diagnosis of asphyxia rests upon the identification of classical signs

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of asphyxia viz. cyanosis, congestion and petechial haemorrhages⁴. Acute fatal asphyxia is one of the indicators of level of social & mental health. Acute fatal asphyxia has a serious psychological & social impact on the family and community as most of the cases were of suicidal manner. Out of all means Hanging is one of the most common methods of suicide because the material easily available in market and success rate is also high by this mean⁵. The medicolegal specialist plays a particularly important role in preventing these cases of death by reconstructing the circumstances of death, analysing the injury patterns, and identifying potential sources of danger⁶. Data on acute fatal asphyxia cases in a particular area can also give the reflection of mental health of the population & its law and order situation. A low value can be described in favour of peace, harmony and prosperity in the particular area as there would be less suicides & murders.

AIM & OBJECTIVES

Study was conducted to evaluate the victims of acute fatal asphyxia in terms of socio-demographics and medical-legal profiles and to paint a picture of the causes therefor.

MATERIALS & METHOD

All medico - legal autopsies of acute fatal asphyxia deaths were included in the cross - sectional descriptive observational study. Inclusion criteria were deaths resulting from mechanical asphyxia as per post mortem findings and history of incident narrated by legal heir. Exclusion criteria were medico - legal autopsies suspected hypoxic episodes not characteristically acute fatal asphyxia and cases of death due to terminal asphyxia event but not mechanical asphyxia in preview of Forensic context. Sample size was calculated at 95% confidence level assuming a relative error of 30 % for which sample of 159 cases of medico - legal autopsied were to be required which are further rounded of to minimum 160 cases for the present study.

OBSERVATIONS & RESULTS

3261 medico-legal autopsies were conducted at the study centre during the study period, amongst which 465 were of Asphyxial fatalities, out of these 160 cases were included in the present study. All details were recorded and analysed.

Out of the total 160 cases included in the study, majority were of young adults i.e. 21-40 years age including 94 cases (58.75%); with another high proportion of such deaths reported in middle aged adults i.e. 41-60 years age with 30 cases (18.75%) and adolescents being 26 cases (16.25%). Least number of cases was reported in extreme age groups with seven cases (04.36%) of senior citizens and only three cases (01.88%) of children less than ten years of age. This distribution is quite obvious as majority of unnatural deaths are reported in young adults owing to their active participation in day to day activities and stressful episodes making them vulnerable to all types of unnatural episodes resulting in fatalities (Table 1).

68.13% were males and rest 31.87% were females. Male: Female ratio was 2.14. Males were about more than twice the number of females succumbing to Asphyxial episodes which is an obvious fact, them being active members of our society (Table 2).

Table 1: Age wise distribution of cases of acute fatal asphyxia

Age Group	Number of Cases	Percentage (%)
<= 10	03	01.88
11 - 20	26	16.25
21 - 30	63	39.37
31 - 40	31	19.37
41 - 50	22	13.75
51 - 60	08	05.00
61 - 70	05	03.13
>= 70	02	01.25
Total	160	100.00

Table 2: Gender wise distribution of cases of acute fatal asphyxia

Gender	Number of Cases	Percentage (%)
Male	109	68.13
Female	51	31.87
Total	160	100.00

68.75% cases were married and rest 30.62% cases were unmarried with a single case of a divorced female. Considering the gender wise distribution of cases 43.75% people succumbing to acute fatal asphyxia were married men and 24.4% were unmarried males. Among females, there were 78.43% married females and 19.61% unmarried females and one divorcee female (01.96%) (Table 3).

Majority of the deaths resulting from acute fatal asphyxia were seen in literate people (88.75%) and rest (11.25 %) were illiterate. This shows that with increase in the knowledge about the ways of committing suicide by hanging; most of the victims were literate (Table 4).

Majority of the deaths resulting from acute fatal asphyxia were seen in students (27.5%) followed by house makers (25.6%). All married women including the divorcee succumbing to Asphyxial death in the present study were house makers. 23.7% sufferers were employed in the private sector and 18.1% were self-employed. Highlighting the plight of agricultural economy, there were four farmers among fatal Asphyxial deaths and two cases each were from Labour class and unemployed sections of society (Table 5).

Majority of cases were of hanging (85%) followed by cases of drowning (6.25%) and suffocation (03.1%). Remaining nine cases in

Table 3: Gender wise distribution of cases of acute fatal asphyxia

Marital Status	Number of Cases		Percentage (%)
	Male	Female	
Married	70	40	68.75
Unmarried	39	10	30.62
Divorce	00	01	00.63
Total	160		100.00

Table 4: Gender wise distribution of cases of acute fatal asphyxia

Education	Number of Cases	Percentage (%)
Literate	142	88.75
Illiterate	18	11.25
Total	160	100.00

the present study had suffered fatal asphyxia due to Strangulation or throttling (1.9%) and two cases each suffered traumatic asphyxia, aspiration and lung pathology (1.25% each) (Table 6).

87.5% cases were suicidal and 3.1% were homicidal in nature. Rest 9.4% cases of acute fatality due to asphyxia were accidental in nature. Most common occurrence in the present study resulting in fatal asphyxia was hanging due to which the proportion of suicidal cases has outnumbered the magnitude of Accidental (09.4%) and homicidal cases (03.1%).

Table 5: Occupation wise distribution of cases of acute fatal asphyxia

Occupation	Number of Cases	Percentage (%)
Student	44	27.50
House makers	41	25.60
Private Job	38	23.70
Self Employed	29	18.10
Farmer	04	02.50
Labourer	02	01.30
Unemployed	02	01.30
Total	160	100.00

Table 6: Incidence wise distribution of cases of acute fatal asphyxia

Incidence	Number of Cases	Percentage (%)
Hanging	136	85.00
Drowning	10	06.25
Suffocation	05	03.10
Strangulation & Throttling	03	01.90
Traumatic Asphyxia	02	01.25
Aspiration	02	01.25
Asphyxia due to lung pathology	02	01.25
Total	160	100.00

Table 7: Manner of Incidence wise distribution of cases of acute fatal asphyxia

Manner of Incidence	Number of Cases	Percentage (%)
Suicidal	139	86.87
Accidental	15	09.38
Homicidal	04	02.50
Natural	02	01.25
Total	160	100.00

DISCUSSION

Majority of unnatural deaths are reported in young adults owing to their active participation in day to day activities and stressful episodes making them vulnerable to all types of unnatural episodes resulting in fatalities. The age distribution in the present study was similar to that of Delmonte C, et al (2001) who also reported Asphyxial deaths most commonly in the young adult age groups.

The male population is more exposed to stress in our society as they are the active members of the societal chores and also responsible for the financial management of the household which are matters of challenge in today's world. Moreover, the younger generation nowadays is more ambitious especially males which also leads to more of stress and challenges. Similar male preponderance is reported by most post-mortem studies on unnatural deaths. Males outnumber the females in other studies on Asphyxial episodes as also reported by Delmonte C, et al (2001)⁷ and by Chaudhari KM, et al (2016)⁸.

Stress and emotional challenges are an integral part of marital life. With the advent of married status in life, come an array of responsibilities so that the preponderance of married persons in a study on Asphyxial deaths is quite explanatory more over as most cases of acute fatal asphyxia in the present study were of hanging, a commonly employed method for suicide followed by drowning.

Observations of incidence wise distribution of cases of acute fatal asphyxia are similar to those of Chaudhari KM, et al (2016) although the proportion of cases of drowning was much lower in comparison to those of hanging in the present study. Majority of cases occurred in residential premises (95.62%), which is quite obvious owing to the highest proportion of hanging deaths in the study sample.

Observations of manners of death are dissimilar to those reported by Delmonte C, et al (2001) who reported a preponderance

of accidental cases in their study; although the proportion of homicidal cases are similar in both the studies. These variations are attributable the variation in the study sample in the two studies. The study being compared to had incorporated samples from four groups including Aspiration, Drowning, Suffocation and Strangulation but such an organised sample could not be obtained in the present study where hanging deaths were the predominant proportion amongst cases of acute fatal asphyxia, thus resulting in preponderance of suicidal deaths in the present study. The study sample of the present study included ten cases of drowning, five cases of suffocation and only two cases of aspiration. There were two cases of asphyxia related to chronic lung disease which served as control as also taken up in an organised manner in the study of comparison. The maximum proportion of cases reported by Delmonte C, et al (2001) were of suffocation followed by aspiration, drowning and strangulation. Thus the variations in results of the two studies is attributable to the variation in study samples of the two studies.

CONCLUSION

Majority of cases were of deaths due to hanging seen in young adults and the distribution of incidences of acute fatal asphyxia were highly significant across various age groups. Most cases of Asphyxial deaths were due to hanging and so was the gender wise distribution showing preponderance of hanging in both males and females. All cases of suffocation were of males and two thirds of cases of strangulation and throttling were of females raising concern towards crime against women rampant in our society. The male population is more exposed to stress in our society as they are the active members of the societal chores and also responsible for the financial management of the household which are matters of challenge in today's world. Justice, compassion, educational initiatives, and individual, communal, and societal approaches are required to reduce these cases.

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REFERENCES

1. Sauvageau A, Boghossian E. Classification of asphyxia: the need for standardization. *J Forensic Sci.* 2010 Sep;55(5):1259-67. doi: 10.1111/j.1556-4029.2010.01459.x. Epub 2010 Jun 17. PMID: 20561144
2. Jones AM, Weston JT. The examination of the sudden infant death syndrome: investigative and autopsy protocols. *J Forensic Sci* 1976; 21:883-41.
3. Byard RW, Jensen LL. Fatal asphyxial episodes in the very young: classification and diagnostic issues. *Forensic Sci Med Pathol.* 2007;3(3):177-181. doi: 10.1007/s12024-007-0020-7.
4. Asphyxia and its types [Internet]. How Med. 2012 [cited 2023 Jan 16]. Available from:<http://howmed.net/forensic/asphyxia-and-its-types/>
5. Ballur MS, Nagraj BM. Analytical Study of Deaths Due to Hanging Cases Reported at Dr. B.R. Ambedkar Medical College Mortuary During 2010-2012. P1.
6. Byard RW. Accidental childhood death and the role of the pathologist. *Pediatr Dev Pathol.* 2000;3(5): 405-418. doi: 10.1007/s100240010089.
7. Delmonte C, Capelozzi VL. Morphologic Determinants of Asphyxia in Lungs: A Semi-quantitative Study in Forensic Autopsies. *The American Journal of Forensic Medicine and Pathology.* 2001 Jun; 22 (2): 139- 149.
8. Chaudhari KM, Keoliya AN, Shrigiriwar MB, Pathak AG, Gadhari R, Devraj NA. Histopathology Findings of Asphyxia in Lungs of Hanging and Drowning Deaths. *Medico-Legal Update.* 2016 Jan; 16(1):138. DOI: 10.5958/0974-1283.2016.00030.X