

## A Study of Unnatural Deaths of Medico Legal Importance in a Tertiary Care Centre

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### Abstract

**Background:** Pattern of unnatural deaths is a reflection of the socio-economic status and mental health of the society. Objective of the study was to determine the pattern and cause of unnatural deaths and to find the association of causes with socio-demographic factors in a rural tertiary care hospital. **Material and Methods:** Retrospective record based study was conducted from the records of previous 2 years and 342 subjects were finally included. Institutional ethical clearance was obtained prior to the start of the study. Structured proforma was used to collect data related to cause and pattern of unnatural deaths. Data was analysed using SPSS 17 version software. p value <0.05 was considered as statistically significant. **Results:** Majority 52.04% were in the age group 41 to 60 years, 67.26% of them were females, 67.83% were from rural background and lower socioeconomic status (42.1%). Most common cause of unnatural death was head injury (35.08%), followed by poisoning (21.05%), burns in 13.45%, drowning in 9.94%, Hanging in 8.77% and other in 11.69%. **Conclusion:** Head injury and poisoning were the most common cause for unnatural deaths and age, sex, locality and socioeconomic status determine the pattern of unnatural deaths.

**Keywords:** Unnatural Deaths; Retrospective Study; Socio Demographic Factors; Head Injury; Poisoning.

### Introduction

Deaths may be accidental, suicidal and homicidal or remain undetermined [1]. The term "unnatural death" has been defined U/s 174 Cr. P.C, as that a person has committed suicide or he has been killed by another or he has been killed by an animal or by a machinery or an accident or the person has died under circumstances raising a reasonable suspicion that some other person has

committed an offence.<sup>2</sup> Pattern of unnatural deaths is a reflection of the socio-economic status and mental health of the society [3]. In few cases, attending physician cannot determine a cause of death or death is suspicious. In such cases, after completion of autopsy, the outcome may often reveal some unnatural causes, the presence of which may trigger issue like association of disease with trauma, work, crime etc. and its relative contribution towards death [4]. This study was done with the objective to determine the pattern and cause of unnatural deaths and to find the association of causes with socio-demographic factors in a rural tertiary care hospital.

### Material and Methods

Retrospective record based study was carried out in a tertiary care centre, Department of Forensic medicine and Toxicology, Sri Devaraj Urs Medical College, Tamaka, Kolar. Study duration was from 2015 to 2017 for a period of 2 years. Sample size was estimated by using the proportion of most common cause for unnatural death as Head injury (33.46%) from the study Phani Kiran

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Peethala et al. [5] using the formula  $N = Z\alpha p (100-p) / d^2$ ,  $p = 33.46$ ,  $100 - p = 66.54\%$ ,  $d = 5$ . Substituting the above values minimum sample size required was 342. Institutional ethical clearance was obtained prior to the start of the study. Data was analysed using SPSS 17 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square test or Fischer's exact test (for 2x2 tables only) was used as test of significance for qualitative data. p value (Probability that the result is true) of <0.05 was considered as statistically significant after assuming all the rules of statistical tests.

### Results

A total of 342 unnatural deaths were included in the study. 52.04% were in the age group 41 to 60 years, 29.84% were age >60 years and 18.12% were in the age group <40 years. Majority 67.26% of them were females, 67.83% were from rural background. Majority were from the lower socioeconomic status (42.1%). Most common cause

of unnatural death was head injury (35.08%), followed by poisoning (21.05%), burns in 13.45%, drowning in 9.94%, Hanging in 8.77% and other in 11.69% (Table 1).

In the present study it was observed that there was significant association between cause of unnatural death and all the socio demographic parameters i.e. age, sex, locality and socioeconomic status. Head injury was most commonly seen in the age group 41 to 60 years, males, urban population, lower socioeconomic status. Poisoning was commonly seen in the age group >60 years, females, rural population, lower socioeconomic status. Burns was commonly seen in the age group 41 to 60 years, females, rural population and in lower socioeconomic status. Drowning was commonly seen in the age group 41 to 60 years, females, rural population and in lower socioeconomic status. Hanging was commonly seen in the age group >60 years, females, rural population and lower socioeconomic status and other causes were commonly seen in the age group 41 to 60 years age group, females, rural population and lower class (Table 2).

**Table 1:** Profile of subjects with unnatural deaths in the study

		Count	%
Age	<40 years	62	18.12%
	41 to 60 years	178	52.04%
	>60 years	102	29.84%
Sex	Male	112	32.74%
	Female	230	67.26%
Locality	Rural	232	67.83%
	Urban	110	32.17%
Socioeconomic Status	Upper	22	6.43%
	Upper middle	35	10.23%
	Middle/lower middle	46	13.45%
	Lower/upper lower	95	27.77%
	Lower	144	42.10%
Cause of Unnatural death	Head Injury	120	35.08%
	Poisoning	72	21.05%
	Burns	46	13.45%
	Drowning	34	9.94%
	Hanging	30	8.77%
	Others	40	11.69%

**Table 2:** Association between Cause of unnatural death and various socio-demographic factors

		Head injury (n=120)	Poisoning (n=72)	Burns (46)	Drowning (34)	Hanging (30)	Others (40)	Total	P value
Age	<40 years	24	8	12	8	2	8	62	<0.001*
	41 to 60 years	74	26	21	22	12	23	178	
	>60 years	22	38	13	4	16	9	102	
Sex	Male	69	11	12	10	6	4	112	<0.001*
	Female	51	61	34	24	24	36	230	

		Head injury (n=120)	Poisoning (n=72)	Burns (46)	Drowning (34)	Hanging (30)	Others (40)	Total	P value
Locality	Rural	58	56	35	28	19	36	232	<0.001*
	Urban	62	16	11	6	11	4	110	
Socioeconomic Status	Upper	6	3	2	4	3	4	22	0.002*
	Upper middle	11	7	4	6	4	3	35	
	Middle/low er middle	13	10	7	6	7	3	46	
	Lower/upp er lower	26	22	11	6	6	24	95	
	Lower	64	30	22	12	10	6	144	

## Discussion

Unnatural deaths are an important indicator for mental health and socioeconomic status in the society. In the present study majority of deaths (52.04%) were in the age group 41 to 60 years. This age group constitutes the working age group, where in a death of a earning family member may lead to socio economic problems in the family. Majority 67.26% of them were females, 67.83% were from rural background and majority were from the lower socioeconomic status (42.1%). The above statistics suggests that females are subjected to unnatural deaths than males, this reflect the mental health and attitude of males towards females in the society. Rural population was subjected for unnatural deaths, this may due to illiteracy. Also they are prone for accidental unnatural causes of death. Socioeconomic status of the individual has shown to be having major influence on the cause of death.

Most common cause of unnatural death was head injury (35.08%), followed by poisoning (21.05%), burns in 13.45%, drowning in 9.94%, Hanging in 8.77% and other in 11.69%. Head injuries and polytrauma as a result of accidents are major contributors of mortality due to unnatural causes. In every year, deaths due to head injury, poisoning and burns are the major contributors of the statistical Medico-Legal deaths. In the study by Phani Kiran Peethala et al. [5], head injury was seen in 33.46% of cases, poisoning in 18.01%, burns in 14.56%, drowning in 2.65%, hanging in 6.2%, miscellaneous in 6.59% of cases. Naresh P. Zanjad et al. observed that most of the cases belonged to age group 31-40 years (28.50%) and 41-50 years (24.10%). Similar findings were found from the study of A. MeinaSingh et al (34.5%) [6], Kagne R.N. et al. (19%) [7], R. M. Whittington et al. [8], T. Sarkoija et al. [9].

From all above these studies, it is seen that the maximum number of unnatural deaths are seen in the middle age (31-50 years). This may be due to westernization of Indian society, increased road traffic accidents and alcohol consumption habit. The other studies were inconsistent in sex distribution, males (84.8%) were predominant in the study by Naresh P. Zanjad et al. [4]. Similar observations were made by T. Sarkoija et al. (82%) [9], Anthony Thomas et al. (73.9%) [10], Ivar Nordrum et al (79.67%) [11] & A. Meina Singh et al. (94.5%) [6]. The present study also observed that unnatural deaths were significantly associated with age, sex, locality and socioeconomic status [12]. This proves the role of socio demographic factors in unnatural deaths and follows a particular pattern.

## Conclusion

From the study it can concluded that Head injury and poisoning were the most common cause for unnatural deaths and age, sex, locality and socioeconomic status determine the pattern of unnatural deaths.

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