Original Research Article

Magnitude of Unnatural Deaths amongst Autopsies Over a Period of 4 Years at a Tertiary Centre Catering to Both Urban and Rural Population

Udaya Shankar B S1, Shivakumar B C2, Sujatha P L1, Tyagaraju M R3 
1Associate Professor; 2Professor and Head, 3Assistant Professor, Dept of Forensic Medicine and Toxicology, Sapthagiri Institute of Medical Sciences & Research Centre, No.15, Chikkasandra, Hesarghatta Main Road, Bengaluru

Abstract

Descriptive study of “Magnitude of Unnatural deaths amongst autopsies” was carried out at a tertiary care centre catering to urban and rural population with aims to determine cause & manner of unnatural deaths and estimate its magnitude according to area and sex.

840 cases (81%) fulfilled criteria, male: female ratio was 2.28:1. In urban & rural areas; vulnerable age group was 21-30 years (35% & 29%) followed by 31-40 years (23% & 20%); most cases were hanging (49% & 32%) followed by RTA (27% & 31%) & poisoning (10% & 19%). Suicides (60% & 55%) were more than accidents (35% & 42%) & homicides (5% & 3%). Hanging was more common in urban, whereas RTA & poisoning common in rural areas. More percentage females succumbed to hanging & poisoning whereas more males to RTA, electrocution & fall from height. Males succumbed mostly during 6 am-12 pm (161) & 8 pm-6 am (157); whereas females succumbed mostly during 6 am-12 pm (74) & 69 cases each in 12-4 pm & 4-8 pm.

This study indicates need of strategies to curb unnatural death through health education & safety measures, counseling & treatment of depression; and better roads with signal boards.

Key words: Unnatural; Cause; Manner of death; Urban; Rural

Introduction

Death could be natural or unnatural. A death is named unnatural when it is caused prematurely against the order of nature by injury, poison, or other means of violence. Unnatural deaths whether accidental or suicidal or homicidal has to be subjected for postmortem examination to rule out foul play. Prevalence of such unnatural deaths depends upon the population density, employment opportunities, transport system, work pressure, poverty, etc.

Our institute is a tertiary care centre catering to both urban and rural dense population with plenty of factories and farm lands, cement & brick houses, salaried & farmers, well planned to cross country roads. Pattern of unnatural deaths in a particular geographic area gives the reflection of its law and order situation, the prevailing social set up and mental health status of that region. The present study was initiated to establish these facts in this region of the country.
Aims and Objectives

1. To determine the cause and manner of unnatural deaths amongst autopsies.
2. To estimate the magnitude of unnatural deaths according to area and sex.

Materials and Methods

Type of Study: Descriptive study

Source of Data: All cases subjected for medicolegal autopsy at Department of Forensic Medicine in a tertiary care centre, Bengaluru North from April 2016 to March 2020.

Method of Collection of Data: History was furnished by police in forms 146 (i) and (ii) and further proforma was filled by interviewing the relatives and friends of deceased, who accompanied the dead body. This proforma was used to collect the socio-demographic details of each case (age, sex, time and place of incidence, month and year etc.). Post mortem examination of each case was carried out as per standard procedure; various causes and manner of death were recorded. Further, comparative evaluation of data was analyzed.

Inclusion Criteria: All cases subjected for autopsy.

Exclusion Criteria: Natural deaths, Obscure and negative autopsies.

Sampling method: Purposive sampling

Period of Study: 4 years from April 2016 to March 2020

Prior ethical clearance was obtained.

Results and Discussion

From prospective record analysis of all autopsy cases over a period of 4 years fulfilling inclusion criteria, 1032 cases were subjected for autopsy, amongst which 840 cases (81%) were unnatural deaths. 584 cases (70%) were males & 256 cases (30%) were females. 532 cases (64%) of the unnatural deaths were from urban areas and 308 cases (36%) were from rural areas [Fig 1]. Majority (64%) of unnatural deaths were from urban areas due to the fast-growing population in urban areas and widening of city limits by the corporation.

Amongst 532 cases of unnatural deaths in urban areas, 370 cases (70%) were males and 162 cases (30%) were females. Amongst 308 cases of unnatural deaths in rural areas, 214 cases (70%) were males and 94 cases (30%) were females. [Fig 2] Male: female ratio of unnatural deaths in both urban & rural areas was 2.28:1. Males (70%) outnumbered females (30%) as males were still considered as earning member of the family and went out in pursuance of their work, hence prone for lots of pressure arising out of managing family and work. This was similar to a study wherein the male: female ratio was 2.3:1 amongst 758 unnatural deaths in the year 2014.

In urban areas, 186 cases (35%) of unnatural deaths were in the 21-30 year age group followed by 120 cases (23%) in the 31-40 year, 73 cases (14%) in 41-50, 60 cases (11%) in 11-20, 40 cases (7%) in 51-60, 22 cases (4%) in <10 year, 21 cases (4%) in 61-70 and 10 cases (2%) in >70 year age groups. In rural areas, 88 cases (29%) of unnatural deaths were in the 21-30 year age group followed by 62 cases (20%) in the 31-40 year, 50 cases (16%) in 41-50, 38 cases (12%) in 51-60, 37 cases (12%) in 11-20, 14 cases (5%) in 61-70, 10 cases (3%) in <10 year and 9 cases (3%) in >70 year age groups. [Fig 3] As age advanced, unnatural deaths were less often. The vulnerable age groups for unnatural deaths both in urban & rural areas were those in 21-30 years (35% & 29%) followed by age groups of 31-40 years (23% & 20%) and 41-50 years (14% & 16%) respectively. The reason being that these age groups of men & women being the young adults with lot of desires are more prone for stress and succumbed mainly due to lack of resilience.

Amongst 532 unnatural deaths in urban areas, hanging (49%, 263 cases) was the commonest cause of death followed by road traffic accidents-RTA (27%, 143 cases), poisoning (10%, 55 cases), murder (5%, 25 cases) & fall from height (4%, 22 cases). Amongst 308 unnatural deaths in rural areas, hanging (32%, 98 cases) was the commonest cause followed by road traffic accidents-RTA (31%, 96 cases), poisoning (19%, 59 cases), drowning (6%, 18 cases) & fall from height (3%, 9 cases). [Fig 4].
Fig. 1: Area wise distribution of Unnatural Deaths

- Rural: 36%
- Urban: 64%

Fig No. 2: Sex wise distribution of Unnatural Deaths

- Urban Males: 44%
- Rural Males: 19%
- Urban Females: 26%
- Rural Females: 11%
Fig. 3: Age-wise distribution of Unnatural Deaths

Fig 4: Area-wise Cause of Unnatural deaths
Hanging was the most preferred method of unnatural deathsmore common in urban (49%) than rural (32%) areas due to impulsive nature of taking decision & action in mostly busy & isolated urban people, thus resorting to faster death. Whereas RTA was more common in rural (31%) than in urban (27%) areas; due to careless fast driving in poor lighted countryside (rural areas) roads without signal boards. Similarly, poisoning was drastically more in rural(19%) than in urban(10%) areas; due to easy availability of insecticides & pesticides in houses & farm lands in rural areas. Drowning in lakes was more prevalent in rural areas (18 cases) whereas drowning in sumps was more in urban areas (10 cases), due to disappearance of lakes as a result of urbanization. Railway deaths (9 cases) were seen exclusively in rural area as railway track was found only in rural areas.
Media including television & movies play vital role in inducing such ideations in these vulnerable groups.

Majority of males in urban areas died of hanging (45%) followed by RTA (31%); whereas majority of males in rural areas died of RTA (36%) followed by hanging (28%) as the commonest cause of unnatural death. Male: female ratio, in urban & rural areas, amongst hanging was 1.76:1 & 1.57:1; amongst poisoning was 1.23:1 & 1.68:1; amongst RTA was 3.76:1 & 4.33:1; amongst drowning was 1.5:1 & 2:1; amongst electrocution was 9:1 & 7:1; amongst snake bite was 1:1 & 2:1; amongst fall was 10:1 & 8:1; and amongst murders was 1.5:1 & 1:1 respectively. In another study, male: female ratio was: in road traffic accidents-4.0:1, in hanging-1.0:1, in poisoning-2.6:1, in burns- 0.5:1, in drowning-2.7:1, in others-6.5:1.3

In urban areas, suicides (60%, 322 cases) were more common compared to accidents (35%, 185 cases) & homicides (5%, 25 cases). Similarly, in rural areas too, suicides (55%, 169 cases) were more common compared to accidents (42%, 131 cases) & homicides (3%, 8 cases)[Fig 5]. Male: female ratio, in urban & rural areas, amongst suicides was 1.82:1 & 1.60:1; amongst accidents was 3.86:1 & 4.24:1; and amongst homicides was 1.5:1 & 1:1 respectively.

In both urban & rural areas, suicides (60% & 55%) were more common compared to accidents (35% & 42%) & homicides (5% & 3%). Similarly, in a study, suicides accounted for 86{76.8%} cases, followed by accidental 14{12.5%} and homicidal 12{10.7%}.4 In contrast, in another study, accidents were 567, out of which, males were 412 (54%) & females were 155(20%); suicides were 165, of which, males were 98 (13%) and females were 67(9%); while homicides were 17 of which males were 12 (1.6%) and females were 5(0.6%). In 9 cases, manner of death was not known, of this, males were 4 (0.5%) and females 5(0.6%).3

Amongst suicides, hanging was the most preferred method of suicide by both males & females, both in urban & rural areas. But in urban areas, deceased, looked for faster methods of suicide like hanging; whereas in rural areas, deceased, also resorted for other methods of suicides like poisoning which caused slow deaths; owing to less severity of suicidal impulse in them compared to urban people. Hanging (72.2%) was also the most frequent method in studies by Chavan BS et al and Soole R et al.5,6 In contrast, the primary method of suicide was poisoning, used by 40.50% of deceased, involved in 45.53% of cases.7 Male: female ratio in urban & rural areas, died of hanging was 0.77:1 & 0.7:1; & died of poisoning was 0.9:1 & 0.73:1; whereas died of RTA was 1.63:1 & 1.89:1; respectively. Most unnatural deaths of females in urban (59%) & rural (40%) areas were suicidal in nature, mostly due to hanging; indicating that women often resorted to faster method of death; whereas more males compared to females succumbed to RTAs owing to their frequent travel outside. Similarly, more men compared to women succumbed to electrocution & fall from height accidentally owing to majority of construction workers being males hence involved in such mishaps. In contrast, in a study, unnatural female deaths encountered were RTAs, poisoning, hanging, burns, snake bite and drowning; wherein poisoning was the most common method of suicidal death followed by hanging and burns.4 Women preferred jumping from height (p<0.001) in a study in Athens.8 Murder was more common in urban (5%) compared to rural (3%) areas suggesting more anguish in urban areas; & was more in urban males compared to females.

Overall, most unnatural deaths occurred in the time period of 6 am-12 pm (28%, 235 cases) followed by 4-8 pm (26%, 211 cases), 8 pm-6 am (24%, 201 cases) & 12-4 pm (22%, 183 cases). Urban males succumbed unnaturally mostly in the time period of 8 pm-6 am (28%) followed by 6 am-12 pm (27%); whereas rural males succumbed unnaturally mostly in the time period of 6 am-12 pm (27%) followed by 8 pm-6 am (24%). But, urban females succumbed unnaturally mostly in the time period of 6 am-12 pm (30%) followed by 4-8 pm (29%); whereas rural females succumbed unnaturally equally in the time periods of 6 am-12 pm & 12-4 pm (28%) followed by 4-8 pm (23%). [Fig 6] Male: female ratio of unnatural deaths, in urban & rural areas, in the time period of 6 am-12 pm was 2.14:1 & 2.23:1; 12-4 pm was 1.62:1 & 1.69:1; 4-8 pm was 1.95:1 & 2.27:1; and in 8 pm-6 am was 4.3:1 & 2.6:1 respectively.
Overall, males succumbed unnaturally mostly in the time period of 6 am-12 pm (161 cases) followed by 8 pm-6 am (157 cases); whereas females succumbed unnaturally mostly in the time period of 6 am-12 pm (74 cases) followed by 69 cases each in 12-4 pm & 4-8 pm. This indicates that for both males (28%) & females (29%), 6 am-12 pm was the most vulnerable time period for unnatural deaths. But, second most vulnerable period for males was 8 pm-6 am (27%) & for females was both 12-4 pm & 4-8 pm (27% each); probably because females were alone during these hours in their houses or rushing back home early compared to males who usually don’t mind going back home in the late hours of night. This attitude of men working that extra hour & going back home in the late hours of night could be the reason for high male: female ratio in the time period 8 pm-6 am amongst unnatural deaths in urban areas (4.3:1) compared to rural areas (2.6:1); whereas in rural areas males went back home early in the evening, hence high male: female ratio in 4-8 pm amongst unnatural deaths in rural areas (2.27:1) compared to urban areas (1.95:1).

Conclusion

In our study, majority of unnatural deaths were from urban areas. Male: female ratio was 2.28:1. Vulnerable age groups for unnatural deaths both in urban & rural areas were those in 21-30 years followed by age groups of 31-40 years. Most unnatural deaths were due to hanging followed by RTA & poisoning. Hanging was more common in urban areas, whereas RTA & poisoning was more common in rural areas. Suicides were more than accidents & homicides. More percentage of females succumbed to hanging & poisoning whereas more males succumbed to RTA, electrocution & fall from height; compared to their counterparts. Males succumbed mostly during 6 am-12 pm followed by 8 pm-6 am; whereas females succumbed mostly during 6 am-12 pm followed by 12-4 pm & 4-8 pm.

Recommendations:

Efforts to decrease mortality by preventive steps like health education regarding importance of life, better roads with appropriate signal boards including speed limits at danger zones, social connection in depressed and isolated are recommended. Suicide prevention efforts should include treating mental disorders such as depression especially in stressed urban areas & their psychological counselling. The media, which includes the Internet, may help prevent suicide by providing a social group for those who are in need during this period & age groups of vulnerability.

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Conflicts of Interest: None

References

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