

A RETROSPECTIVE STUDY OF PATTERN OF MEDICOLEGAL AUTOPSIES CONDUCTED AT KADAPA, ANDHRA PRADESH

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ABSTRACT

Objective: Death of an individual is a serious and grave loss to the family and community at large in whatever form it occurs whether natural or unnatural. Analysis of unnatural deaths helps in understanding the causes, manner, and modes of deaths thereby formulating and implementing a proper policy to reduce them.

Methods: This is a retrospective study of autopsies conducted over 3 years (2020–2022) in the mortuary of Government Medical College, Kadapa. During this period, 1857 autopsies were performed. All the necessary data were collected from the police requisitions, inquest reports, hospital case sheets, medicolegal register, and postmortem reports in a performed pro forma.

Results: Out of the 1857 cases, high proportion was in the age group of 21–30 years (40.26%), followed by 31–40 years (18.68%). Ratio of male to female was 2.57:1. Majority belonged to Hindu community (67.69%) and most of the subjects hailed from the rural areas (63.14%). Majority were married (70.86%). The most common cause of death was road traffic accidents (45.07%), followed by poisoning (15.67%). The manner of deaths was accidental deaths in most cases (57.78%) followed by suicidal deaths (36.02%).

Conclusion: The present study reveals that most cases were in 21–30 years age group. The proportion of males outnumbered females and the subjects were mostly married and were from rural areas. Road traffic accidents were common cause of death in males and burns were the common cause of death in females.

Keywords: Mortality pattern, Autopsy, Age, Sex, Cause of death, Road traffic accidents, Burns.

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INTRODUCTION

Each year 554 million people die around the world. Of this, injuries are responsible for 44 million deaths. This accounts for about 8% of all deaths [1].

As per the UN report, crude death rate in India between 2015 and 2020 is 7.2 [2].

Death may be due to natural causes or unnatural causes. In India, unnatural deaths make up 10.3% of total deaths. In India, the unnatural mortality rate is 0.67/1000 population. It is 0.84/1000 among males and 0.49/1000 among females [3].

Deaths due to unnatural causes include road traffic accidents, railway accidents, mechanical asphyxia, drowning, accidental fire, electrocution, poisoning, fall from heights, killed by animals, illicit liquor, snake bites, and food poisoning.

In a diverse country like India, the pattern of unnatural deaths varies according to region, religion, caste, culture, food habits, and livelihoods. These diversities and regional variation do affect the mortality trends.

The mortality pattern of unnatural deaths is essential to know the various mortality statistics and parameters of a region which further helps in addressing the problems and issues specific to that region. It is also necessary to prevent the casualties in future and to study the genuine crime rate in the area.

The lack of in-depth, precise, and reliable studies of mortality patterns at the district level further hampers the prevention of these deaths. The present study aims to study the pattern of unnatural deaths and analyze age and sex distribution and gravity of different causes

of unnatural deaths. Policymakers, law enforcement agencies, and other organizations can utilize the findings of this study to plan and implement strategies for the prevention of such incidences.

METHODS

The present retrospective study of medicolegal autopsies conducted over the dead bodies brought to the Department of Forensic Medicine, Government Medical College, Kadapa, Andhra Pradesh, India, from January 2020 to December 2022. Detailed information regarding the circumstances of death was collected from inquest, hospital records, and postmortem report.

During the study period, 1857 medicolegal autopsies were conducted. Various parameters such as sex, age, religion, marital status, causes of death, and manner of death were noted. Collected data were compiled and analyzed maintaining at most confidentiality. Causes of death were grossly classified as burns, electrocutions, road traffic accidents, hanging, railway injuries, poisoning, drowning, and other natural causes.

RESULTS

One thousand eight hundred and fifty-seven medicolegal autopsies were conducted during the study period. Data from these autopsies were collected and analyzed and subsequent observations were drawn. From the data, it is observed that 72.05% of cases were males and 27.94% were females (Table 1). Males outnumbered females with male-to-female ratio of 2.57:1. Most number, i.e., 35.91% of cases were in the age group of 21–30 years, followed by 16.80% in 31–40 years age group and least number of cases (0.37%) were seen in 0–10 years age group (Table 1).

Out of 1857 cases, 97.52% of cases were identified and 2.47% of cases were unidentified. Of the identified, 67.69% were Hindu, 22.56% were Muslim, and 7.268% were others (Fig. 1). Majority of the cases were from rural areas with 63.14% of cases and 34.35% were from urban areas (Fig. 2). Out of 1857 cases autopsied, 70.86% cases were married, and 26.65% cases were unmarried and in 2.47% cases, marital status was not known (Fig. 3).

Accidental deaths dominated the present study with 1073 (57.78%) cases followed by suicidal 669 (36.02%), natural deaths 69 (3.71%), and homicidal deaths 40 (2.15%) (Table 2). Death due to road traffic accidents (45.07%) was most common cause of death, followed by poisoning (15.67%), burn injuries (7.59%), railway accidents (6.35%), hanging (6.13%), and drowning (4.41%). Minor causes of death include deaths due to accidental occupational injuries (5, 0.26%), blast injuries (3, 0.16%), gunshot injuries (1, 0.05%), which were accidental in nature and operational deaths (1, 0.05%), pathology or disease related (69, 3.71%) which were natural deaths (Table 2).

Deaths due to road traffic accidents were more common in males (1033, 56.04%) when compared to females (206, 27.98%) where deaths due to poisoning were more common in females (219, 29.75%) when compared to males (189, 10.25%) similarly burns and hanging were more common in females when compared to males (Fig. 4).

Months of May to August accounted for 36.99% of cases, followed by months of September to December with 33.44% of cases (Fig. 5).

DISCUSSION

A total of 1857 cases of medicolegal autopsies were performed by the department of forensic medicine during the study period. Out of 1857 cases, maximum number of postmortems were in the age group of 21–30 years (40.26%), followed by 31–40 years age group (18.68%) which is the most productive period in one’s life. The adult age groups are mostly involved in activities of life and are more prone for danger (Table 1). Similar findings were noted in the studies

conducted by Radhakrishna et al. [4], Bhabhor and Parmar [5], and Rathod et al. [6].

Males outnumbered women by 2.57:1. Majority of the time, males are the sole bread earners of the family and are more exposed to harm such as road traffic accidents, railway accidents, violence, and stress. Males are more prone to addiction and risk taking. Similar findings were reported by Bhabhor and Parmar [5], Rathod et al. [6], Murthy et al. [7], Radhakrishna et al. [4], Prabjot [8], and Junaidi et al. [9].

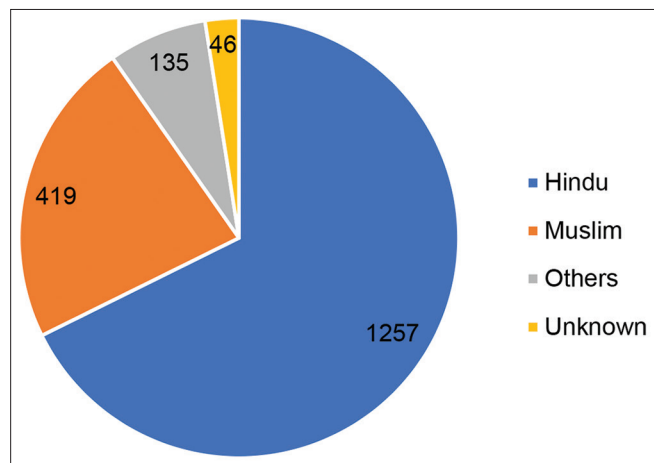


Fig. 1: Distribution of cases according to religion

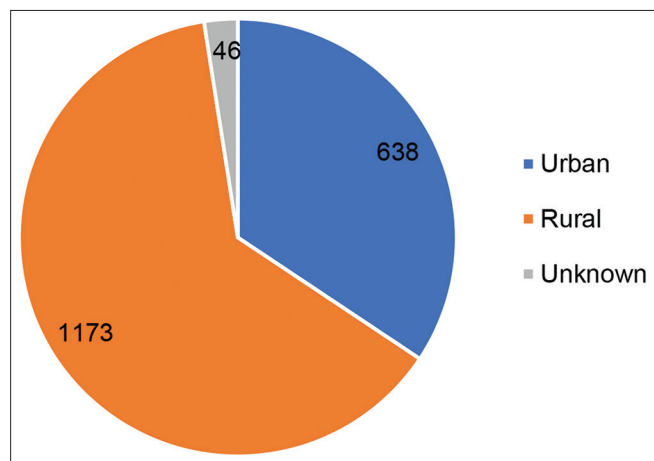


Fig. 2: Distribution of cases according to region

Table 1: Age and gender distribution of cases

Age group	Male, n (%)	Female, n (%)	Total, n (%)
0–10	6 (0.44)	1 (0.19)	7 (0.37)
11–20	91 (6.80)	22 (4.23)	113 (6.08)
21–30	458 (34.23)	209 (40.26)	667 (35.91)
31–40	215 (16.06)	97 (18.68)	312 (16.80)
41–50	223 (16.66)	85 (16.37)	308 (16.58)
51–60	174 (13.00)	58 (11.17)	232 (12.49)
61–70	85 (6.35)	34 (6.55)	119 (6.40)
71–80	67 (5.00)	10 (1.92)	77 (4.14)
>80	19 (1.42)	3 (0.57)	22 (1.18)
Total	1338	519	1857

Table 2: Cause of death-manner of death

Causes of death	Accidental	Suicidal	Homicidal	Natural	Total, n (%)
RTA	837	-	-	-	837 (45.07)
Poisoning	7	284	-	-	291 (15.67)
Burns	20	121	-	-	141 (7.59)
Electrocution	53	-	-	-	53 (2.85)
Fall from height	47	6	-	-	58 (2.85)
Snakebite and insect bite	29	-	-	-	29 (1.56)
Hanging	1	113	-	-	114 (6.13)
Strangulation	-	-	6	-	6 (0.32)
Drowning	19	63	-	-	82 (4.41)
Lightning	14	-	-	-	14 (0.75)
Railway accidents	36	82	-	-	118 (6.35)
Assault	-	-	40	-	40 (2.15)
Others	10	-	-	69	79 (4.25)
Total	1073	669	46	79	1857 (100)

RTA: Road traffic accident

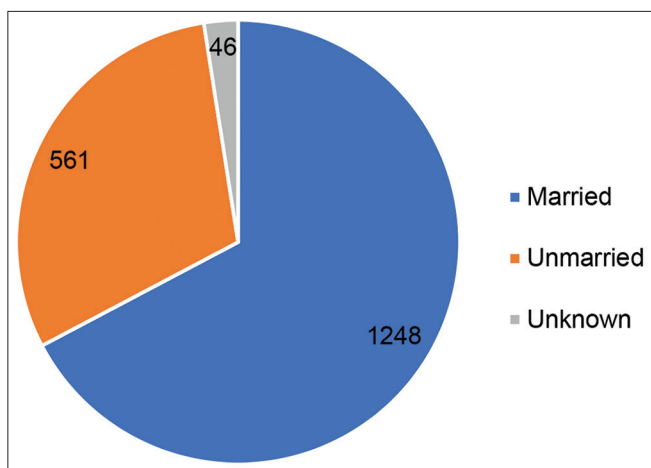


Fig. 3: Distribution of cases according to marital status

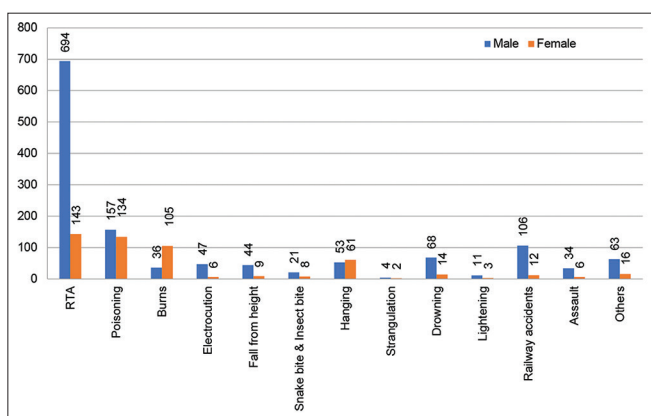


Fig. 4: Cause of death - sex distribution

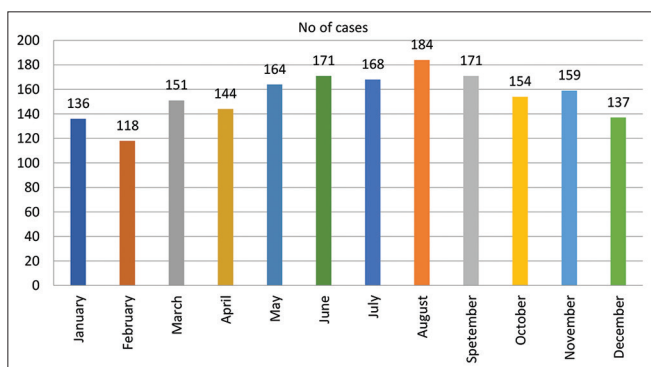


Fig. 5: Month-wise distribution of cases

Of the study population, 67.69% of cases were Hindus and 22.56% were Muslims, which is in tune with the population percentage of this region. Religion was not known in 7.26% of cases as their identity is not known. Similar findings were observed by Mugadlimath *et al.* [10], Radhakrishna *et al.* [4], and Manish *et al.* [11].

About 63.14% of the cases of autopsies were from rural areas and only 34.35% were from urban areas. This is because the catchment area is rural and most of the cases are referred from far-off places as it is tertiary care center. Similar findings were seen in studies by Junaidi *et al.* [9] and Manish *et al.* [11]; contradictory findings were seen in Radhakrishna *et al.* [4].

Of the study population, 70.86% cases were married and 26.65% of cases were unmarried. Marital status was not known in 2.47% of cases

as their identity was not known. Similar findings were noted by Manish *et al.* [11].

In the present study, out of total 1857 autopsies, most of the deaths were accidental in nature 1073 (67.61%) followed by suicides 669 (36.02%), natural deaths 69 (3.71%), and homicides 40 (2.15%). Similar findings were reported in the studies conducted by Ramalingam and Narendar [12] and Prabjot [8]. Contrary findings were reported by Manish *et al.* [11].

Road traffic accidents and its complications accounted as major cause of death with 45.07% cases followed by poisoning (15.67%) and burn injuries (7.59%). Similar findings were observed by Radhakrishna *et al.* [4], Rathod *et al.* [6], and Manish *et al.* [11]. Most of the road traffic accidents are referred to this center from far-off places as it is a tertiary care center; moreover, the presence of many super specialty hospitals in the area also adds to it. The other reason being a pilgrim center people come from different places after long road journeys making the drivers exhausted and lacking control over the vehicles. The ghat road to the temple also increases the chances of accidents and deaths.

Deaths due to road traffic accidents were more common in males (694, 51.86%) whereas deaths due to burns were more common in females (105, 20.23%). Deaths due to burns and hanging were more common in females when compared to males. Similar observation was made by Vinay Kumar *et al.* [13] and Rathod *et al.* [6]. This is because males have more access to the vehicles and are the primary drivers whereas females are mostly in the homes and kitchens and have ready access to poisons and flammable substances.

Month-wise distribution of findings shows more cases in the period of May to August, 687 (36.99). This period being vacations and starting of rainy season accounts for higher number of causalities. Similar findings were seen in study by Patel *et al.* [14].

CONCLUSION

The present study helps to understand the pattern of unnatural deaths in this region, thereby providing an insight to the policymakers, law enforcement departments, and the community to investigate the different aspects of the cases. Maximum number of unnatural deaths are accidental in nature, seen among young individuals and in rural inhabitants. These accidental deaths can be prevented by giving proper education, awareness, and training of safety standards by administrators, health officials, social workers, and NGOs to the general population. There is also a need to implement traffic rules strictly and reinforce awareness programs regularly. Since suicide is multifactorial, there is a need to develop effective strategies to prevent these avoidable deaths. Production, sale, storage, and procurement of agrochemicals and inflammable substances should be controlled through strict legislation and its implementation should be monitored. Further multicenter studies are required to better understand and design frameworks for preventing unnatural deaths.

CONFLICT OF INTEREST

Nil.

SOURCE OF FUNDING

Self.

ETHICAL CLEARANCE

It is a retrospective study and identity, and other details of the deceased are nowhere disclosed. Therefore, the approval of Institutional Ethics Committee is not required.

REFERENCES

1. Global Health Estimates 2019: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2019. Geneva: World Health Organization; 2020.

- Available from: <https://platform.who.int/mortality/themes/theme-details/MDB/injuries> [Last accessed on 2023 Jul 01].
- United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects. Vol. 2. United Kingdom: Demographic Profiles (ST/ESA/SER.A/427); 2019.
 - IPS and ICF International. National Family Health Survey (NFHS-4), 2015–16: India. Government of India, Mumbai; 2017. Available from: <https://rchiips.org/nfhs/nfhs-4reports/india.pdf> Last accessed on 2023 May 25].
 - Radhakrishna KV, Makhani CS, Nikhil S, Sachin C, Sarala M, Khan RN. Profile of medicolegal autopsies conducted at tertiary medicolegal centre in southwestern India. *Int J Health Biomed Res* 2015;3:70-5.
 - Bhabhor R, Parmar A. Profile of medicolegal autopsies at a tertiary centre in Bhavnagar region. *J Indian Acad Forensic Med* 2018;40:383-6.
 - Rathod AL, Garg RK, Zine KV. Study of postmortem cases to establish the mortality patterns in Aurangabad district of Marathwada Region. *J Indian Acad Forensic Med* 2018;40:17-22.
 - Murthy MS, Dutta BN, Ramalingaswami V. Coronary atherosclerosis in North India (Delhi Area). *J Pathol Bacteriol* 1963;85:93-101.
 - Prabjot S. Alarming Rise in Fatalities. Chandigarh: The Tribune; 2000. p. 1-22.
 - Junaidi KA, Pujar SS, Honnungar RS, Jirli PS, Koulapur VV, Ali K, et al. Profile of medicolegal autopsy cases at tertiary care centre in Belagavi, Karnataka. A one year retrospective study. *Medico Legal* 2020;20:170-4.
 - Mugadlimath A, Kadagoudar S, Sheelvant S, Bambeshwar K. Profile of medico legal autopsy cases at tertiary care centre in Bagalkot, Karnataka. *Indian J Forensic Med Pathol* 2017;10:63-6.
 - Manish K, Khaja AJ, Deepak S, Umesh SR. Profile of medicolegal autopsy cases conducted at tertiary care centre, Kalaburagi, Karnataka. *Indian J Forensic Med Toxicol* 2020;14:269-74.
 - Ramalingam S, Narendar R. Profile of medico - legal cases which are brought for autopsy in the year 2015 in the institute of forensic medicine, Madras Medical College, Chennai, Tamil Nadu, India - A retrospective study. *Chettinad Health City Med J* 2016;5:177-83.
 - Vinay Kumar MS, Ajay Kumar S, Raghavendra Babu YP. An autopsy based study on fatal road traffic accidents in Koppal. *J Indian Acad Forensic Med* 2017;39:375-7.
 - Patel JB, Chandegara PV, Patel UP, Parkhe SN, Govekar G. Profile of autopsy cases at New Civil Hospital, Surat: A retrospective study. *Int J Med Sci Public Health* 2016;5:10-3.