

A Retrospective Analysis of Medicolegal Autopsy Cases Conducted at Gims, Kalaburagi, Karnataka

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Abstract

Background: Profiling of medico-legal autopsy cases is essential to prevent future casualties and accurately assess regional crime rates. At present, road traffic accidents remain a leading cause of fatalities. *Objective:* By creating a comprehensive profile of medico legal deaths, we aim to understand the underlying factors and develop effective strategies to prevent future fatalities.

Materials and Methods: A retrospective analysis was conducted on the autopsy cases which were brought to mortuary, Gulbarga Institute of Medical Sciences, Kalaburagi during the year 2023. Throughout this duration, a total of 924 medico legal autopsy cases were conducted.

Result: Out of 924 cases maximum number of deaths were in the age group of 21-30years(210) followed by 31-40 years(204), majority of victims were males (82%), in identified bodies 77.6% were Hindus, 13.85% Muslim, 9.64% others. In our study deaths due to RTA's formed majority of cases (336), followed by Poisoning (138), natural deaths (124), asphyxial deaths (108), railway deaths (81) and homicidal deaths (52).

Conclusion: In our record based study of medico legal autopsy cases- majority were in 3rd decade of life, males constituted more in number as compared to female, Hindus being majority in number formed bulk of cases. The present analysis reveals that road traffic accidents, particularly vehicular accidents, poisoning, natural deaths and asphyxia deaths are increasingly becoming the leading cause of death in medico legal autopsies.

Keywords: natural deaths, asphyxial deaths, homicide, poisoning, road traffic accidents, burns, electrocution.

Introduction

The Bharatiya Nagarik Suraksha Sanhita (BNSS) 2023 mentions the medico-legal post-mortem

examinations for investigating suspicious deaths.

Section 194 BNSS requires these examinations to identify the deceased when not known, to ascertain

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the time since death and to determine the cause of death in unnatural circumstances, ensuring justice and accountability¹. The term autopsy originates from ancient word 'Autopsia' which is derived from 'Autos' i.e. 'Oneself' and 'Opsis' i.e. 'to see for oneself'. An autopsy is frequently done in cases of sudden death where a doctor is not able to give a death certificate or when death is believed due to unnatural cause². The term Post-mortem examination is often used as a simile for autopsy, basically it is not. It means only what it says that the body was examined after death³.

In India, medico-legal autopsies are essential components of forensic investigations and legal inquiries, especially in cases of unnatural or suspicious deaths. However, the way these cases are reported and analyzed varies widely across regions. These differences often reflect local social, economic, and cultural conditions, not just medical or legal factors.

Kalaburagi, in northern Karnataka, has a mix of urban growth, rural life, and busy highways these factors leads to a high number of medico-legal cases like accidents, suicides, and poisonings. Yet, there is limited detailed research on autopsy data from this region, especially regarding age patterns, seasonal trends, and causes of death. Most available studies focus on broader national data, leaving a gap at the local level.

To help fill this gap, the study looks back at medico-legal autopsy cases carried out at the Department of Forensic Medicine & Toxicology, Gulbarga Institute of Medical Sciences (GIMS), Kalaburagi, during 2023. By reviewing 924 cases from that year, it aims to understand the patterns and causes of death in the region and offer insights into the local medico-legal and public health landscape.

We hypothesize that certain patterns such as age group, gender distribution, cause, and manner of death are more commonly seen in medico-legal autopsies in Kalaburagi. By analyzing these cases, the aim of the study is to highlight local trends that may differ from those reported in other regions.

By offering a detailed, data-driven overview of the medico-legal deaths in Kalaburagi, this study aims to connect forensic findings with public health

efforts, helping to improve both prevention strategies and investigative processes in the area.

Materials and Methods

This retrospective study included all cases of deaths brought for autopsy at mortuary of Gulbarga Institute of Medical Sciences, Kalaburagi, from January 1, 2023, to December 31, 2023. In this study, the emphasis has been put on to find the total number of death cases, the sex of the individuals, and the month-wise distribution. The cause of death variables analyzed includes age, sex, month of incidence, causative agent, and cause of death at autopsy. The data were collected, compiled and tabulated to determine the frequency and proportion of these fatalities, and the results were expressed in percentages.

Observations and Results

A total number of 924 autopsy cases were done during the study period of 01 year (2023), out of which 756(82%) were males and 168(18%) were females [Fig 01]. 718 cases were from the working age population (21-60 years of age) indicating that deaths predominantly affected the economically productive segment of the population. 11 cases were in the age group between 0-10 years, 87 cases were in the age group between 11-20 years and 108 cases were above 61 years of age [Table No 01].

Maximum number of death occurred in the month of December i.e. 100 cases whereas minimum number of deaths occurred in the month of January i.e.64 cases. [Fig 02]. This seasonal variation may reflect regional factors such as weather conditions, agricultural cycles, or festive periods influencing accident rates and other causes of death, a pattern that warrants further investigation.

Out of 924 cases, 834(90.36%) were identified, 89(9.63%) were unidentified. Of the identified 76.4% were Hindu and Muslims were (13.85%). In 9.63% cases religion could not be determined as they were unidentified bodies [Fig 03]. This demographic distribution aligns with the local population structure, reinforcing the representativeness of the data.

Major causes of death include Road traffic accidents (336), Poisoning (138), natural deaths (124), asphyxial deaths (108), railway deaths (81) and homicide (52). Other minor causes include snake bite

(33), self fall (28), electrocution (13), burn (7) and by lightning (2) [Table No 02]. The predominance of RTAs and poisoning highlights the ongoing public health challenges related to road safety and substance exposure in the region.

As per history, circumstantial evidences and postmortem findings, this study indicates that the predominant manner of death was accidental, with a total of 515 cases, whereas suicidal, natural, and homicidal deaths accounted for 233, 124, and 52 cases, respectively. [Table No 02]. This finding underscores the critical need for targeted preventive strategies focused on accident reduction and mental health interventions to address suicide rates.

One notable finding was the much higher number of deaths in December compared to other months

something not commonly seen in similar studies from other regions which suggests there might be unique seasonal factors at play in Kalaburagi. Also, the relatively large share of railway-related deaths (8.77%) stands out, likely due to the district’s major railway junctions.

Overall, these results shed light on the patterns of death in Kalaburagi and highlight key areas where public health and safety efforts could be improved.

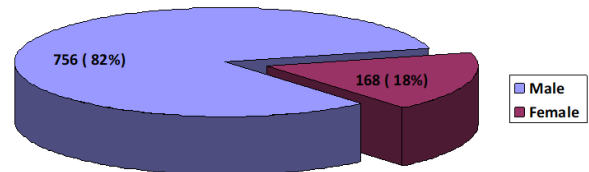


Fig 1: sex wise distribution

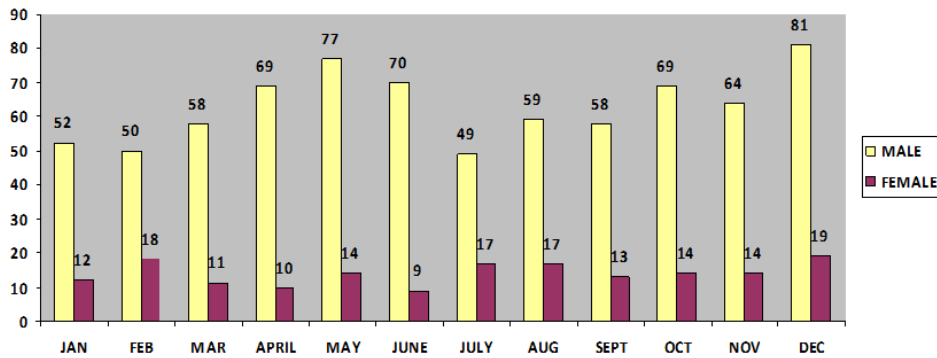


Fig 2: Month Wise Distribution

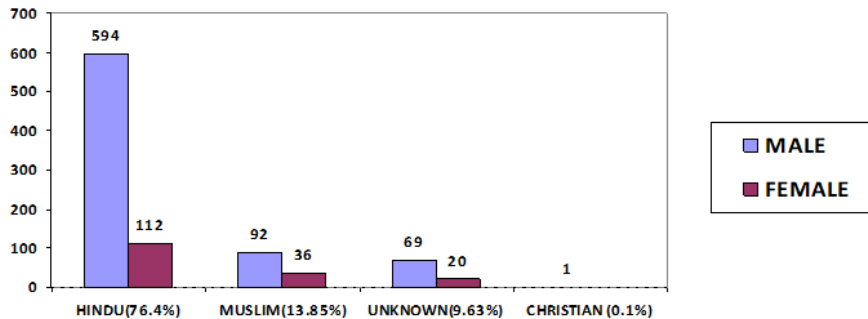


Fig 3: Religion Wise Distribution

Table 1: Age Wise Distribution

AGE	TOTAL	PERCENTAGE
<01	04	0.4%
1-10	07	0.75%
11-20	87	9.41%
21-30	210	22.7%

31-40	204	22.07 %
41-50	171	18.5%
51-60	133	14.3%
61-70	77	8.3%
71-80	26	2.8%
81-90	05	0.5%
Total	924	100%

Table 2: Distribution of cause of death cases according to manner of death.

CAUSE OF DEATH	ACCIDENTAL		SUICIDAL		HOMICIDAL		NATURAL		TOTAL	PERCENT-AGE
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE		
RTA	288 (31.1%)	48 (5.19%)	-	-	-	-	-	-	336	36.1%
POSITIONING	10 (1.08%)	-	94 (10.17%)	34 (3.67%)	-	-	-	-	138	14.71%
SNAKE BITE	21 (2.27%)	13 (1.4%)	-	-	-	-	-	-	34	3.57%
HANGING	-	-	71 (7.68%)	21 (2.27%)	-	-	-	-	92	9.95%
DROWNING	11 (1.19%)	5 (0.5%)	-	-	-	-	-	-	16	1.73%
ELECTROCUTION	12 (1.29%)	1 (0.1%)	-	-	-	-	-	-	13	1.4%
LIGHTNING	2 (0.2%)	-	-	-	-	-	-	-	2	0.2%
NATURAL	-	-	-	-	-	-	103 (11.14%)	19 (2.05%)	122	13.4%
ASSAULT	-	-	-	-	40 (4.32%)	12 (1.29%)	-	-	52	5.95%
SELF FALL	27 (2.9%)	1 (0.1%)	-	-	-	-	-	-	28	3.03%
RAILWAY	60 (6.49%)	11 (1.19%)	10 (1.08%)	-	-	-	-	-	81	8.76%
BURNS	4 (0.43%)	-	-	3 (0.32%)	-	-	-	-	7	0.75%
SEPSIS	-	-	-	-	-	-	2 (0.2%)	-	2	0.2%
OTHER ACCIDENT	1 (0.1%)	-	-	-	-	-	-	-	1	0.10%
TOTAL	436	79	175	58	40	12	105	19	924	100%
	515 (55.73%)		233 (25.2%)		52 (5.62%)		124 (13.41%)			

Discussion

This retrospective study was conducted in the Department of Forensic Medicine & Toxicology at the Gulbarga Institute of Medical Sciences, Kalaburagi, in 2023. The findings from this study were compared with similar research from other regions to identify both commonalities and differences. This comparison aimed to explore variations in trends, causes, patterns, and outcomes in forensic and toxicological cases, providing a broader context for the observed data.

During the study period, a total of 924 medico-legal autopsies were performed, of which 756 cases

(82%) were male and 168 cases (18%) were female. These findings are consistent with the studies conducted by Narendra Singh et al², Rahul Agarwal et al³, Anand Mugadlimath et al⁵, Jigneshkumar B Patel et al⁶. The higher incidence of male cases can be attributed to traditional gender roles, which place men at greater risk of accidents, violence, and stress, and can also increase their susceptibility to addiction and risk-taking behaviors.

Our study revealed that the majority of victims (210) fall within the 21-30 age range, followed closely by those in the 31-40 age range (204 cases). This finding aligns with previous research conducted by

Narendra Singh et al², Rahul Agarwal et al³, Soni Verma⁴, Anand Mugadlimath et al⁵ and Paresh V Chandegara et al⁷. The high representation of young adults can be attributed to their recent entry into significant life responsibilities, including career establishment, romantic relationships, marriage, and stressful situations.

Our study's demographic analysis revealed that 76.4% of the identified individuals were Hindu, 13.85% were Muslim, and 9.63% remained unknown. These findings are consistent with the results reported by Anand Mugadlimath et al⁵. The observed distribution may be attributed to the prevailing population dynamics and demographic characteristics of India.

In our study most common manner of death was accidental (515) followed by suicides (233) followed by natural (124) followed by homicidal (52) which was consistent with the study conducted by Rahul Agarwal et al³, Chandru K, Rudramurthy⁸ and Khaja Azizuddin Junaidi et. al⁹.

In our study road traffic accidents (RTAs) were the leading cause of death, accounting for 336 cases (36.1% of total cases). Poisoning cases were the second most common, with 138 cases (14.71% of total cases), followed by natural deaths, which comprised 122 cases (13.4% of total cases), and hanging cases, which accounted for 92 cases (9.95% of total cases). Notably, our findings diverge from those reported by Rahul Agarwal et al³, which identified burns cases as second most common cause of death and Anand Mugadlimath et al⁵, which identified burns cases as a more common cause of death than RTAs. The high incidence of RTAs in our study may be attributed to the fact that Kalaburagi is a district headquarters surrounded by highways, resulting in a higher frequency of accidents. The tertiary care center in the region likely receives a disproportionate number of accident victims.

In the present study, the total numbers of poisoning cases conducted were 132 cases (14.71% of total cases). Interestingly, poisoning was the second leading cause of death, with farmers being disproportionately represented among the victims. This may be due to the financial instability and lack of knowledge about precautionary measures related to agricultural poisons.

Natural deaths were the third most common cause of death in our autopsy cases which comprised 122 cases (13.4% of total cases). Notably, a significant proportion of natural death cases involved beggars, which may be related due to the presence of tourist attractions and railway junctions in Kalaburagi.

In our study maximum number of death occurred in the month of December i.e. 100 cases whereas minimum number of deaths occurs in January i.e. 64 cases.

Conclusion

This study looked at medico-legal autopsy cases from Gulbarga Institute of Medical Sciences, Kalaburagi, and provided important insights into the causes and patterns of deaths in the area. The results highlight the need for focused efforts by policymakers, law enforcement, and the community to reduce accidental deaths, suicides, and other medico-legal cases.

One key takeaway is the importance of health awareness programs that address stress and mental health, along with education on traffic rules and safe driving. Improving road conditions, enforcing safety laws, boosting emergency response, and setting up trauma care centers are also essential steps, especially as the population grows and risks increase.

This study's findings help connect forensic data with public health, pointing to local issues that need attention. However, there are some limitations since it's a retrospective study, it depends on existing records that might be incomplete or inconsistent, especially for unidentified bodies. Also, since the data comes from just one center, the results might not apply everywhere. We didn't explore social or environmental factors in depth, which could also affect death patterns.

Looking ahead, future research should include studies that follow cases over time and involve multiple centers to get a broader picture. It would also be helpful to study social and behavioral factors more closely and to look into seasonal trends that might be unique to this region.

Overall, this study provides valuable local data that can help improve forensic investigations and

public health efforts in Kalaburagi, stressing the need for coordinated action to reduce preventable deaths and keep the community safer.

Conflict of interest: None

Source of funding: Nil

Ethical Clearance: Permission was not taken from IEC as it was a record based retrospective study without involving any live subjects or experimentation.

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