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# Study of Pattern of Death in Bilaspur Region, Chhattisgarh: A Two-Year Retrospective Autopsy Study

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## ABSTRACT

**Background**: Mortality pattern analysis of medico-legal autopsies provides essential insight into demographic characteristics, causes of death, and regional public-health priorities. This retrospective study aimed to evaluate death patterns in the Bilaspur region using autopsy records from a tertiary care center.
**Methods**: A record-based retrospective analysis of 2,100 medico-legal autopsies conducted at the Department of Forensic Medicine, CIMS Bilaspur, was performed. Data on age, sex, manner, and cause of death were extracted from postmortem records and analyzed descriptively to report distributions and percentages.
**Results**: Males comprised 78.4% of cases, and the highest burden occurred in the 21–30 years age group (26.1%). Accidental deaths accounted for 52.9% of cases, with road traffic accidents the leading cause (34.2%). Suicides represented 30.2% of deaths; poisoning accounted for approximately 60% of suicidal cases and hanging was also common. Homicidal deaths constituted 2.2%, most frequently due to blunt-force injuries.
**Conclusions**: The predominance of young male victims and the high proportion of preventable deaths—principally from road traffic accidents, poisoning, and suicide—underscore the need for reinforced road-safety enforcement, poison-control strategies, and expanded mental-health and suicide-prevention services in the region.

***Keywords***: Mortality Pattern; Road Traffic Accident; Suicide.

## INTRODUCTION

Death represents the complete and lasting cessation of the body's essential life-sustaining system. In both medical and legal contexts, death is recognized when there is an irreversible loss of function across the circulatory, respiratory, and central nervous systems.[1] Deaths resulting from external factors-such as accidents, self-harm, violence, poisoning, thermal injuries, submersion, and other traumatic events-are classified as unnatural. These fatalities are particularly concerning because a substantial proportion are avoidable, and they disproportionately impact individuals during their most productive years.[2] The medico legal autopsy serves as a cornerstone of forensic practice, providing objective awareness in case of unexpected, suspicious, or unnatural deaths. Unlike clinical autopsies, conducted primarily for educational or research purposes, medico-legal autopsies are mandated by legal authorities to establish both the cause and manner of death. The resulting evidence supports law enforcement agencies, judicial proceedings, and public health surveillance system.[3-4]

Autopsy-derived mortality data reveals essential information about victim demographics, causes of death, and shifting mortality trends within a community. This evidence base is instrumental in identifying priority public health concerns and designing targeted preventative interventions.

A considerable number of deaths referred for medico-legal examination occur suddenly and without warning. In instances where death takes place without witnesses or preceding illness, the precise cause often remains unknown until a comprehensive autopsy is performed.[5]

Across India, deaths from road traffic accidents, poisoning, suicide, burns, drowning, and interpersonal violence continue to impose a substantial mortality burden. The distribution of these fatalities varies by geographic region, socioeconomic conditions, occupational exposures, and healthcare accessibility.

Bilaspur functions as a major referral hub in central Chhattisgarh, receiving medico-legal cases from urban, semi-urban, and rural catchment areas. Analyzing autopsy records from this center can yield meaningful insights into local death patterns and highlight domains requiring preventive action.

Accordingly, this study was designed to evaluate death patterns in the Bilaspur region through a retrospective examination of medico-legal autopsies conducted over a two-year period.

## MATERIALS AND METHODS

This retrospective investigation was carried out in the Department of Forensic Medicine at Chhattisgarh Institute of Medical Sciences (CIMS), Bilaspur, Chhattisgarh, India. All medico-legal autopsies performed at the institute from 1 January 2024 through 31 December 2025 were considered for inclusion.

During the study window, 2204 autopsies were performed. After applying the inclusion and exclusion criteria, 2100 cases were selected for final analysis. Data pertaining to age, sex, cause of death, and manner of death were extracted from postmortem records and accompanying medico-legal documentation.

Information was compiled in Microsoft Excel 2024 and analyzed using descriptive statistical methods. Results were presented as tables, percentages, bar diagrams, and pie charts to illustrate death patterns in the Bilaspur region.
Inclusion Criteria: All medico-legal autopsy cases with complete records. Cases received from Bilaspur and the surrounding districts.

**Exclusion Criteria:** Decomposed, Unknown bodies, and fetuses where the exact age and cause of death were not clearly established

## RESULTS

A total of 2100 medico-legal autopsy cases were analyzed during the study period from 1st January 2024 to 31st December 2025.

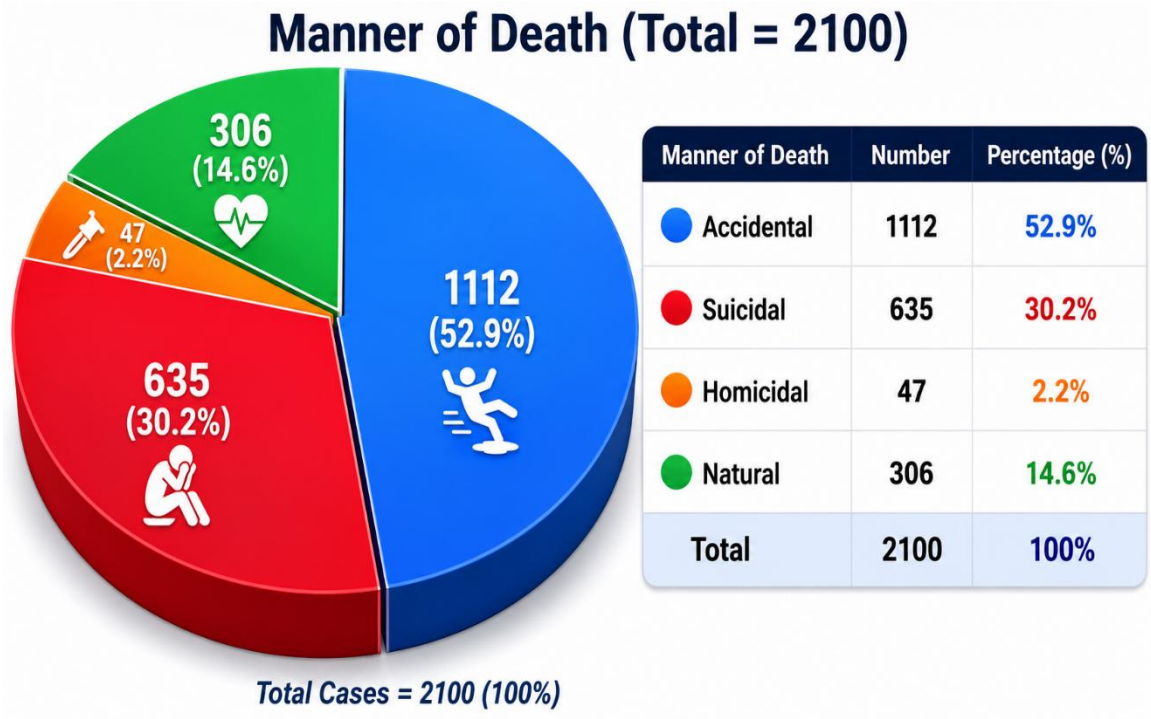
| Age Group (in years) | Male (%) | Female (%) | Total (%) |
|---|---|---|---|
| 0–10 | 32 (1.52) | 26 (1.24) | 58 (2.76) |
| 11–20 | 176 (8.38) | 74 (3.52) | 250 (11.90) |
| 21–30 | 431 (20.52) | 117 (5.57) | 548 (26.10) |
| 31–40 | 334 (15.90) | 88 (4.19) | 422 (20.10) |
| 41–50 | 270 (12.86) | 51 (2.43) | 321 (15.29) |
| 51–60 | 228 (10.86) | 46 (2.19) | 274 (13.05) |
| >60 | 175 (8.33) | 52 (2.48) | 227 (10.81) |
| Total | 1646 (78.38) | 454 (21.62) | 2100 (100) |

**Table 1. Age and Sex-wise Distribution of Cases.**

Table 1 show that males accounted for most medico legal autopsy cases (78.3%), while females constituted 21.6% of the cases. The highest number of cases was observed in the 21–30 years age group (26.1%), followed by the 31–40 years age group (20.1%). Together, these two age groups contributed nearly half of all cases. Male cases were higher than female cases across all age groups.

| Male (%) | Female (%) | Total (%) |
|---|---|---|
| 1646 cases (78.3%) | 454 cases (21.6%) | 2100 cases (100%) |

**Table 2. Distribution of autopsy cases by gender**




| Manner of Death | Number | Percentage (%) |
|---|---|---|
| Accidental | 1112 | 52.9% |
| Suicidal | 635 | 30.2% |
| Homicidal | 47 | 2.2% |
| Natural | 306 | 14.6% |
| Total | 2100 | 100% |

**Figure 1 Distribution of cases according to manner of death.**

Figure 1 shows that accidental deaths were the most common, accounting for 52.9% of all cases. Suicidal deaths were the second most common (30.2%). Natural deaths made up 14.6% of the cases, while homicidal deaths were the least common, accounting for only 2.2% of cases.

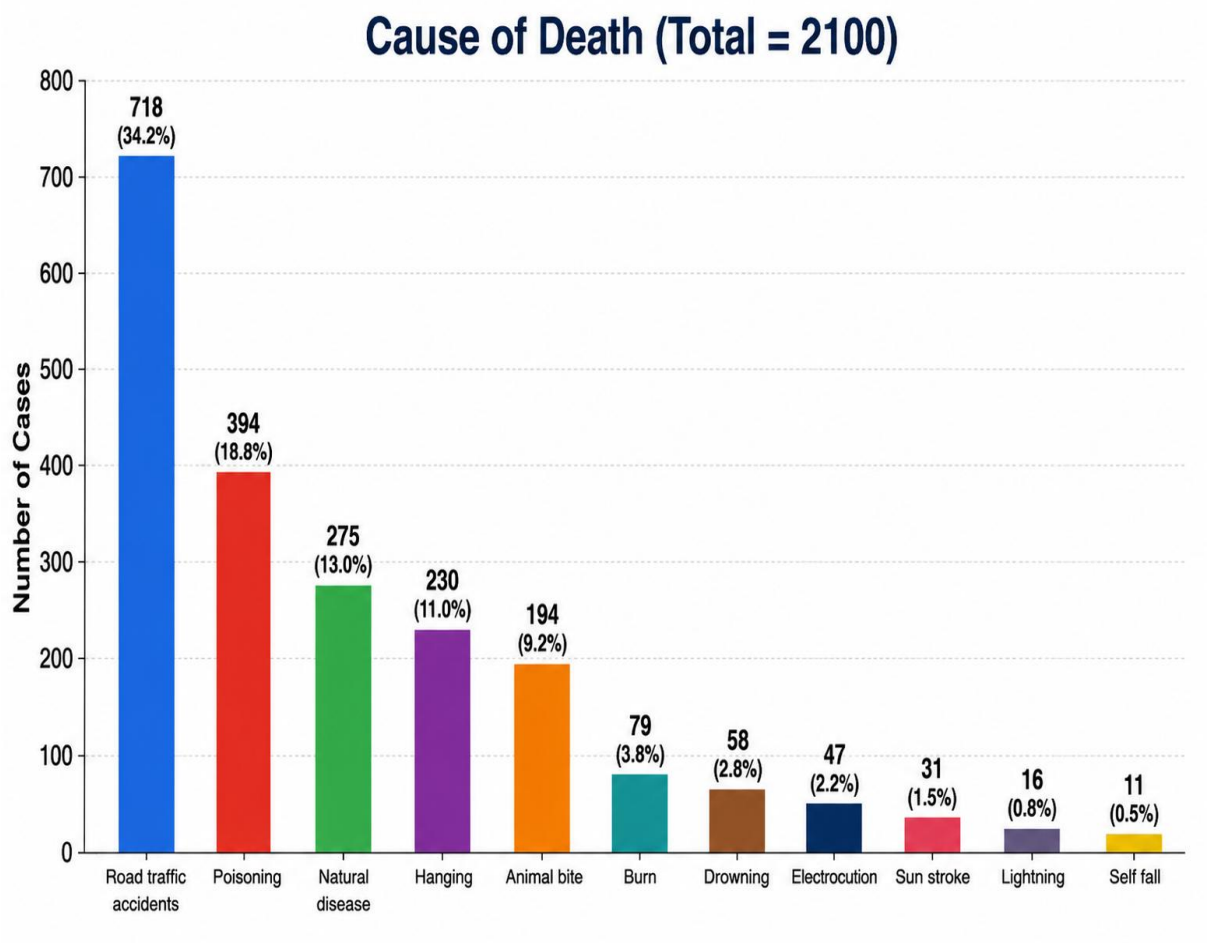



**Figure 2. Distribution of cases according to cause of death.**

Figure 2 shows the distribution of autopsy cases according to the cause of death. Road traffic accidents were the leading cause, accounting for 34.2% of all cases. Poisoning was the second most common cause (18.8%), followed by natural diseases (13.0%). Other causes of death included hanging (11.0%), animal bites (9.2%), burns (3.8%), drowning (2.8%), electrocution (2.2%), sunstroke (1.5%), lightning strikes (0.8%), and falls from height (0.5%).

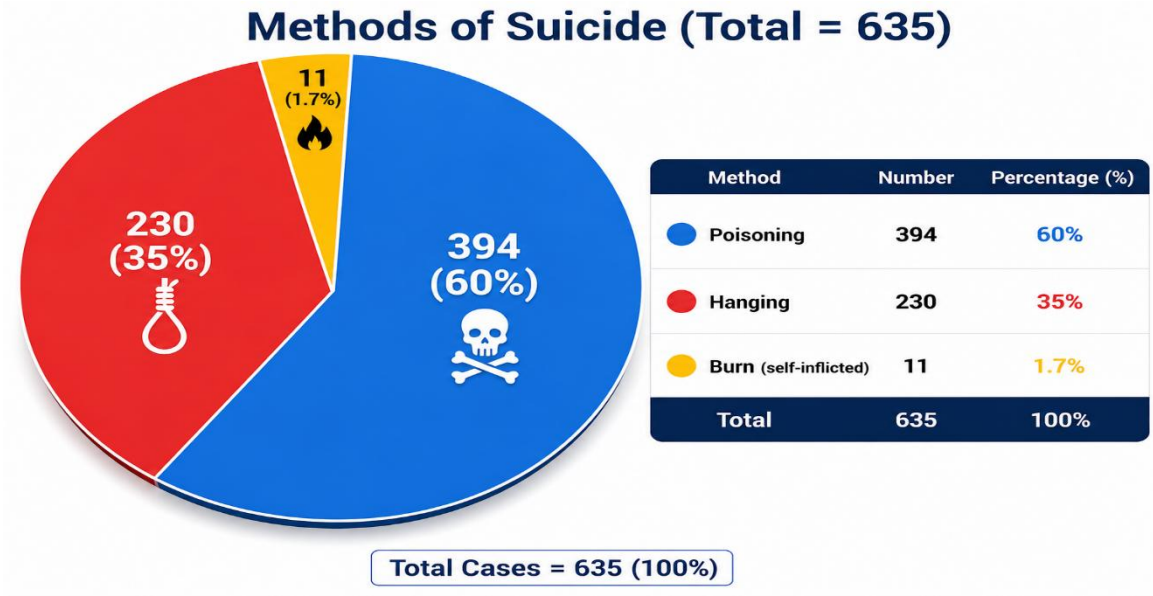



**Figure 3: Distribution of cases according to different methods of suicide**.

Figure 3 The pie chart demonstrates that poisoning is the largest proportion of cases (60%) among methods of suicide, followed by hanging (35%).

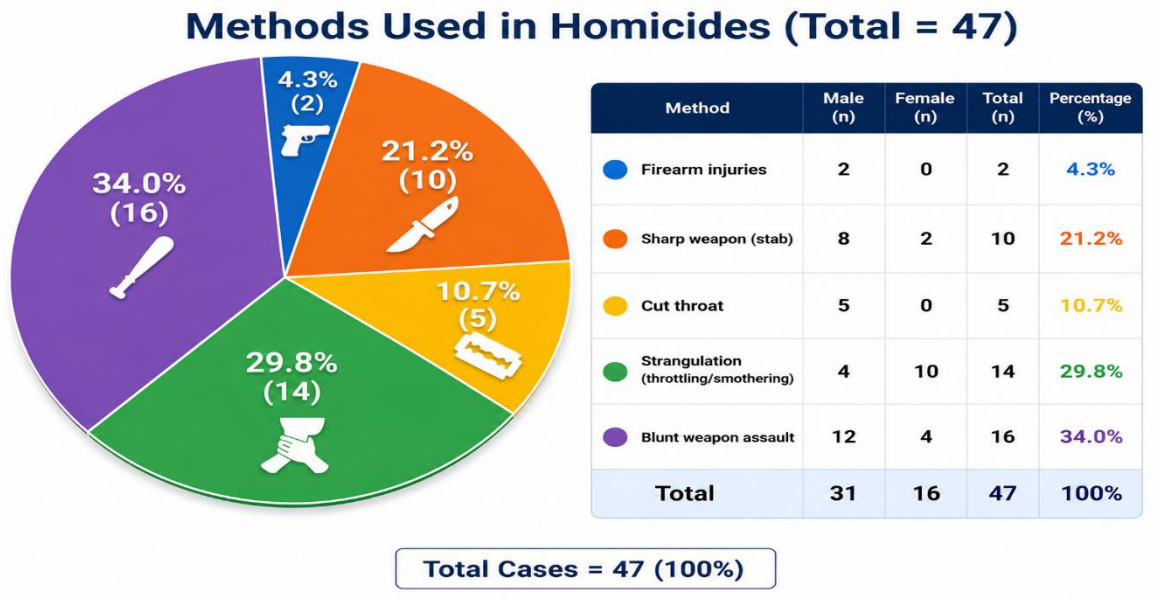



**Figure 4 Distribution of cases according to different methods of homicide.**

Figure 4 shows the distribution of methods used in homicidal deaths. Blunt weapon assault was the most common method, accounting for 34.0% of cases, followed by strangulation (29.8%). Other methods included stab injuries (21.2%), cut-throat injuries (10.7%), and firearm injuries (4.3%). Males constituted the majority of homicide victims (66%), while females accounted for 34% of the cases.

## DISCUSSION

This study examined 2100 medico-legal autopsies conducted at a tertiary care facility in Bilaspur, Chhattisgarh, to characterize regional death patterns. The medico-legal autopsy remains an indispensable tool for ascertaining the cause and manner of death, generating data that informs public health planning and preventive strategies. In our study, males accounted for the majority of deaths (78.38%). This observation aligns with the work of Munir U et al.[6] and Bansude M et

al.[7] The predominance of male victims may reflect higher levels of outdoor activity, occupational hazard exposure, greater mobility, and increased risk-taking behaviour.

The highest mortality was observed in the 21–30 years age group, consistent with findings by Bansude M et al.[7] and MZ Marri et al.[8] This age demographic represents the economically most active segment of the population and is consequently more exposed to road travel, workplace hazards, interpersonal conflicts, and psychosocial stressors, placing young adults at elevated risk for both accidental and intentional injuries.[9]

Accidental deaths constituted more than half of all deaths examined, followed by suicidal deaths. Similar observations have been reported in previous Indian autopsy studies, Anjanamma TC et al.[10], highlighting the significant burden of preventable injuries in the region. Road traffic accidents emerged as the leading cause of death, accounting for over one-third of all cases. This finding is consistent with national trends showing increasing mortality due to road traffic injuries.

Suicidal deaths formed the second largest category. Poisoning was the most frequently employed method, followed by hanging. The widespread availability of agricultural pesticides and other toxic agents in rural and semi-urban settings may be a significant factor driving the high number of poisoning-related fatalities. These observations point to an urgent need to expand mental health services, enhance suicide prevention efforts, and regulate access to highly toxic substances.

Homicidal deaths constituted only 2.2% of total cases. Blunt weapon assaults and strangulation were the leading homicidal methods, indicating the predominance of interpersonal violence involving readily available means.

Collectively, these findings underscore the critical importance of effective road safety measures, rigorous enforcement of traffic laws, improved poison control practices, enhanced mental health support services, and sustained public awareness campaigns to reduce preventable deaths in the community.

## CONCLUSION

The present study revealed that young adult males formed the majority of medico-legal deaths in the Bilaspur region, Chhattisgarh. Accidental deaths were the most common manner of death, with road traffic accidents being the leading cause. Poisoning and hanging were major contributors to suicidal mortality, whereas blunt weapon assault and strangulation predominated among homicidal deaths. Accidental deaths can be prevented by the strict implementation of traffic rules regulation like wearing helmets, seatbelts, etc. Suicidal poisonings can be prevented by ensuring mental health service and increasing its awareness. Strengthening preventive strategies in road safety, poison control, and mental health care could substantially reduce mortality in the region.

**CONFLICT OF INTREST:** Nil

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