Original Article

An Analysis on the Pattern and Distribution of Fatal Injuries Among Homicidal Deaths in Kalaburagi: An Autopsy Based Study.

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How to cite this article: Parvathy Jayapal. An Analysis on the Pattern and Distribution of Fatal Injuries Among Homicidal Deaths in Kalaburagi: An Autopsy Based Study. Indian Journal of Forensic Medicine and Toxicology/ Volume 19 No. 4, October-December 2025.

Abstract

Introduction: Homicide is the act of one person intentionally or negligently causing the death of another. Homicide affects communities by instilling fear, shaping legal policies, and influencing societal perceptions of violence The study of pattern and distribution offatal injuries in homicide helps us to reconstruct events and identify perpetrators. Strategies aimed at reducing homicide rates, improving justice systems, and supporting victims' families should be developed.

Materials and Methods: This is a prospective cross- sectional study of eighteen months duration**.** Out of 1293 cases autopsied during this study period, there were 70 (5.41%) cases of homicide. In the 70 homicidal cases, 60 cases (85.71%) fulfilling our inclusion criteria was included in the study.

Results: Laceration was the most common individual fatal injury observed in our study, in 26 cases (21.13%), apart from fractures in 45 cases. Head was the most common area affected in the majority of victims (in 27 cases). The least affected were abdomen and lower limbs.

Conclusion: Homicide is one of the most serious crimes, affecting individuals, families, and communities in profound ways. The consequences extend beyond the victim and perpetrator, influencing social structures, public policies, and emotional well-being. A study on homicide is essential for understanding the nature of violent crime, can help with the investigation and for preventing future incidents.

Keywords: homicide, laceration, fatal injuries

Introduction

According to United Nations's 'Global Study on Homicide', homicide is defined as the intentional act of taking another person's life, not including killings that occur within warfare and other such conflicts. One of the earliest studies conducted on the psychology of homicide, has defined criminal homicide as a collective transaction, in which an offender, victim and possibly an audience engage in an interchange which leaves the victim dead, but

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Submission date: June 4, 2025 **Acceptance date:** 20 July 2025 **Published date: October 13,2025**

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how these transactions were at times organized and not so in other cases remains a puzzle.[1]

Historically, motives for murder have often centered around desires for money, power, or land. To commit a murder, two key elements must be present: "mens rea" (the intention or premeditation) and "actus reus" (the actual execution of the crime).[2]

The detailed analysis and interpretation of autopsy findings are essential for reconstructing the crime scene. Autopsy surgeons play a critical role in determining the cause of death, understanding the methods and means of the crime, and detailing the inflicted injuries. This information helps in framing charges and determining appropriate punishments. Examining the nature of wounds and the weapon used is key to identifying the charges and subsequent penalties for the accused.[3]

The increase in the incidence of homicide can be attributed to several factors, including rapid population growth, industrialization, globalization, rising unemployment, and the stressful nature of modern life. Additional contributors include widespread depression, familial discord, drug addiction, and socio-political issues.[4]

According to Crime in India 2022 (statistics volume 1) published by the National Crime Records Bureau Ministry of Home Affairs-A total of 28,522 cases of murder were registered during 2022, showing a marginal decline of 2.6% over 2021 (29,272 cases). 'Disputes' (9,962 cases) was the motive in highest number of murder cases during 2022 followed by 'Personal vendetta or enmity' (3,761 cases) and 'Gain' (1,884 cases). The rate of murder in the state of Karnataka is 2.1 while that of its neighbouring state of Maharashtra is 1.8, Andhra Pradesh 1.7, Kerala 0.9.[5]

According to Crime in Karnataka 2021 report, a total of 1357 cases of murder were registered during 2021, showing an increase of 1.95% over 2020 (26 cases)."Dispute" (531 cases) was the motive in highest number of murder cases during 2021 followed by personal vendetta or enmity (341 cases) and illicit relationship (152 cases). In 2021, the rate of murder in Kalaburagi was 2.0 and that of Kalaburagi City was 3.9, as compared to 1.5 of Raichur, 2.1 of Bidar and 1.2 of Bellari. When 40, 41, 36 murder cases were reported in Bellari, Bidar and Raichur respectively, Kalaburagi and Kalaburagi City reported 41 and 39 cases respectively. In 2020 the number of murder cases reported in Kalaburagi was 38 and in Kalaburagi city was 27.[6]

In view of the increasing number of homicidal deaths and its impact on our society, a study on homicidal deaths-its pattern and distribution of fatal injuries, is the need of the hour. It will not only help in connecting the victim to the object or weapon causing the injury, the analysis of the type, location and severity of wounds will also help to reconstruct the events surrounding the death. This would help the investigating authorities in their investigation to piece together the circumstances surrounding the crime.

Material & Methods

The present prospective cross-sectional study is conducted at Gulbarga Institute of Medical Sciences for a period of 18 months, from July 2022 to December 2023. The approval and clearance from the institutional research and ethics committee (ref no. GIMS/GLB/PHARMA/IEC/106/2022-23, dated:18-07-2022)was obtained prior to starting of the study. Convenience sampling technique was used to collect the samples. A total of 60 homicidal cases, fulfilling the inclusion criteria were included in the study. The data collected were entered in the performa, prepared for the study. All the data that were collected were put into charts, analysis was done using mean, percentage, standard deviation. Tables and figures were prepared with Microsoft Excel.

Inclusion criteria:

- All the cases with alleged history of homicide brought to the mortuary of Gulbarga Institute of Medical Sciences, Kalaburagi, for medico legal autopsy by the investigating officer.
- All cases with alleged history of suicide, accident or natural death, but which were later converted to homicide based on autopsy findings and further investigations by the police officers.

Exclusion criteria

- Deaths due to poisoning, asphyxial deaths and burns.

- Bodies found in advanced stages of decomposition.
- Cases of infanticides.
- Custodial deaths

Assessment tools:

Autopsy instruments, measuring tape, weighing machines, photographs.

Statistical Analysis:

The information was collected from the police, inquest reports, hospital records and after postmortem examinations. It was then entered in Microsoft Excel 2019 sheet and the data collected were analysed statistically using SPSS20 software, windows10. Data is presented as frequency and percentage.

Results

Out of 1293 cases autopsied during the 18 months study period, there were 70 (5.41%) cases of homicide. In the70 homicidal cases, 60 cases (85.71%) were due to mechanical injuries and 10 cases were excluded, as they were falling into our exclusion criteria.

Table no. 1: Total number of autopsies conducted

Autopsy conducted	No.	Percentage
Homicidal cases	70	5.41%
Others	1223	94.59%
Total	1293	100%

Fig No.1: Representation of total autopsy conducted

Table no. 2: Total number of homicidal cases

Homicidal cases	No.	Percentage
Due to mechanical injuries	60	4.64%
Others (excluded cases)	10	0.77%
Total	70	5.41%

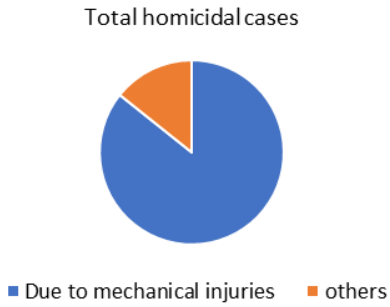

Fig No.2: Representation of total homicidal cases.

Pattern/ Type of fatal injuries

70% (42 cases) of victims had single type of injury. This also included victims with surgical sutured wounds (who had undergone surgery after the incident) which were present in 11 cases. Onanalysis of surgical sutured wounds, 8 were lacerated wounds, 2 were stab wounds and one involved fracture neck of femur. 3 cases (5%) presented with internal contusion and bleeding, without any obvious external injury. Multiple type of fatal injuries were seen in 18 cases (30%). Two types of fatal injuries were seen in 15 cases and 3 type of fatal injuries were seen in 03 cases. Laceration was the most common individual injury observed in our study in 26 cases (21.13%), apart from fractures in 45 cases. It was followed by contusion (17.06%) and stab injuries (12.19%). The least frequent injury was crush injury (2.43 %).

Table No. 3: Fatal injuries.

Fatal injuries	No.	Percentage
Cases with single fatal injury	42	70%
Cases with multiple fatal injuries	18	30%
Total	60	100%

Table No. 4: Cases with single type of injury

Cases with single type of injury	No.
Contusion	14
Stab wound	11
Chop wound	3
Laceration	13
Cut throat wound	0
Incised wound	0
Crush injury	0
Fractures	1
Total	42

Table No. 5: Cases with two types of injuries

Cases with two types of fatal injuries	No.
Laceration + contusion	5
Laceration + incised	3
Laceration + cut throat injury	2
Laceration + stab	1
Stab + chop	1
Stab + cut throat	1
Crush injury + contusion	2
Total	15

Table No. 6: Cases with three types of injuries

Cases with three types of fatal injuries	No.
Laceration + stab + chop wound	1
Laceration + incised + crush injury	1
Laceration + incised + cut throat injury	1
Total	3

Table No. 7: Type of fatal injuries

Type of fatal injuries	Total	Percentage
Contusion	21	17.06%
Stab wound	15	12.19%
Chop wound	05	4.06%
Laceration	26	21.13%
Cut throat wound	04	3.26%
Incised wound	04	3.26%
Crush injury	03	2.43%
Fractures	45	36.59%
Total	123	100%

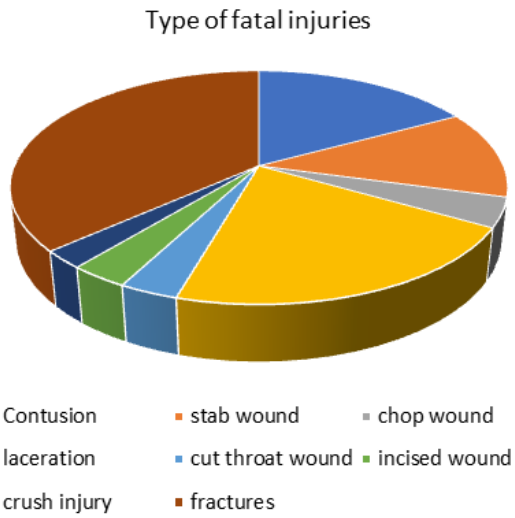

Fig No.11: Representation of types of fatal injuries.

CONTUSION concerned with PM no. 498 dated 14/08/22

LACERATION concerned with PM No.459 dated29/07/22

CUT THROAT WOUND concerned with PM No.116 dated 19/02/23

CHOP WOUND concerned with PM No.310 dated 11/05/23

CRUSH INJURY concerned with PM No.846 dated 07/12/23

STAB INJURY concerned with PM No.621 dated 10/10/22

Region affected by fatal injuries

On analysing the regions affected, (27 cases) 45% of victims have fatal injuries over their head, followed by (09 cases) 15% of victims with fatal injuries over head and chest region. The least affected were abdomen and lower limbs with one case each. Multiple areas, with contusions involving almost the entire body was observed in 07 cases (11.66%)

Table No.18: Region affected by fatal injuries

Region	No.	Percentage
Head	27	45%
Chest	07	11.67%
Abdomen	01	1.67%
Lower limb	01	1.67%
Head + Chest	09	15%
Chest + Abdomen	08	13.33%
Multiple areas (whole body)	07	11.66%
Total	60	100%

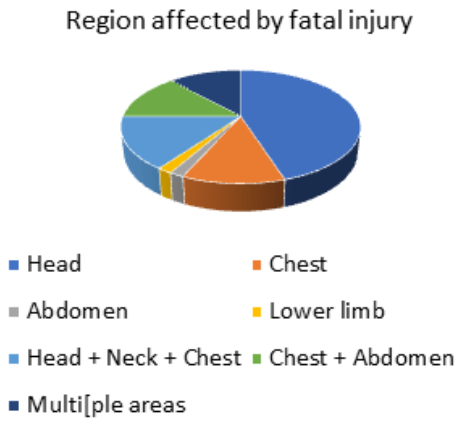

Fig No.12: Representation of region affected by fatal injuries.

Disscussion

A total of 1293 cases were autopsied during the study period of 18 months from July 2022 to December 2023, out of which, 70 (5.41%) cases were of homicidal death. Out of the 70 homicidal cases, 60 cases (4.64%) were due to mechanical injuries and 10 cases (0.77%) were excluded, as they were falling into our exclusion criteria. Similar findings were observed in study conducted by Rathod VV et al[7]where,out of total number of autopsies (3412) conducted during their study period, 179 cases (5.24%) were of death due to homicide. Also, in a study conducted by Sashikanth Z[4], out of 902medico-legal cases autopsied, 39 cases (4.3%) were reported to be alleged homicidal deaths. In the study conducted by Narayana BL et al[8], the total number of medico-legal cases autopsied was 4047, of which 163 (4.02%) cases were with history of homicide. However, in a 2 years study done by Sharp K et al[9], the total autopsies done were 2746, of which only 68 cases were alleged homicidal autopsies (2.47%). Lesser homicidal rates were also observed in study conducted by Sonawane SS et al[10] (2.11%) and Taware AA et al[11] (1.76%). In contrast to our study, higher homicidal rates of 7.84% and 10.19% were observed in studies conducted by Kumar SV et al[12] and Sangal A et al[13] respectively. This difference in homicidal rates in different regions could be attributed to diverse social interactions, economic inequality, geographical factors etc.

On analysing the fatal injuries on the victims, 30% of victims (18 cases) had more than one type of fatal injuries and 70% of victims had only one type of fatal injury, and this includes the 11 cases with surgical sutured wound (assault victims who were operated after the incident). Abrasions were not considered in our study as these are not considered fatal. Laceration was the most common individual injury observed in our study in 26 cases (21.13%), apart from fractures in 45 cases. It was followed by contusions (17.06%) and stab injuries (12.19%). The least frequent injury was crush injury (2.43 %). This is similar to the study done by Infant Raj AD et al[14], where abrasion (52.8%) was the most common injury observed, followed by fracture or dislocation in 47.2%, laceration in 44.5% and contusion in 44.5%. The least frequent injury was chop wound seen in 13.9%. In a study done by Sonawane SS et al[10], head injury (laceration and fracture) was the most common injury seen in 37.87% cases, followed by stab injury in 27.27% and pressure abrasion in 18.2% (ligature mark). However, our finding is in contrast to the study done by Buchade DD et al[15], in which abrasion was the most common injury observed (50.2%) followed by contusion (49.8%). Also, in a study done by Deepak S et al[3],27 deaths (40.29%) were observed due to fatal stab/ incised wounds. On examination of injuries suffered by victims of homicide cases, in the study conducted by Sharp K et al[9], 61.76% were abrasions and contusions. Lacerations were seen in 35.29% cases,

stab injuries in 25% and fractures in 20.58% cases. Therapeutic wounds were seen in 17.64% cases and incised wounds in 16.17% cases. Laceration being the most common injury observed corelates with the finding that blunt weapon was used in majority of the cases in our study.

The most common site of infliction of fatal injuries was over the head, in 27 cases (45%). This was followed by combined head and chest region in 09 cases (15%). Chest and abdomen together were involved in 08 cases (13.33%), whereas multiple areas involving almost the entire body were involved in 07 cases (11.66%). Only chest region was involved in 07 cases. Abdominal region and lower limb alone were involved in 01 case each. Similar finding is observed in studies conducted by Selvaraj K et al[16] where, head was the most common part of the body with injuries seen, in 37 (52.85%) cases. Also, in a study done by Verma LC et al[17], the most common site of infliction of injuries was seen over head in 17 cases (45%) followed by abdomen and chest in 6 cases (16.21%) each. In the study done by Taware AA et al[11], head, neck and face were the most commonly involved anatomical regions affecting 158(49.40%) victims, followed by limbs affecting 65(20.30%) victims. However, in contrast to our findings, in a study done by Sangal A et al[13], chest and abdomen together were the most vulnerable part injured in about half (49.33%) of the victims of homicide followed by head in 18.06%, neck in 6.63% and abdomen and chest individually in 5.28% and 3.97% respectively. Head is one of the most important and sensitive parts of the body. It is the most exposed part and hence can be easily targeted. The knowledge that the victim can be rendered helpless or may even become unconscious easily if head is targeted, may be one of the reasons why the victims are mostly attacked over the head region. Sometimes even a minor trauma, especially over the back of head, may prove fatal.

Conclusion

Out of 1293 cases autopsied during the study period, there were 70 (5.41%) cases of homicide. 60 cases, fulfilling the inclusion criteria were included in the study. Laceration was the most common individual injury observed in our study, in 26 cases (21.13%), apart from fractures in 45 cases. It was followed by contusions (17.06%) and stab injuries (12.19%). The majority of 45% of victims (27 cases) had fatal injuries on their head, followed by (09 cases) 15% of victims with fatal injuries over head and chest regions. The least affected were abdomen and lower limbs with one case each.

The number of homicidal cases has been increasing every year, not just in India but also globally. To keep the incidence of homicide under check and to make effective interventions, it is important to know the changing and varying patterns of homicides, the commonly used weapons and other demographic profile of such cases, in each region. Undoubtedly, post mortem examination has a key role to play. A meticulous examination and study of the injuries, collection of evidentiary materials will help to answer a number of questions like the manner of death, the type of likely weapon used, the identification of the assailant or the victim etc which are all pertinent in solving the crime and for the speedy delivery of the justice.

Source of funding: Nil

Conflict of interest: Nil

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