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An Autopsy Study on Medico legal Aspects in Culpable Homicide

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ABSTRACT

Background Homicide represents one of the most serious crimes against the human body and poses significant medico-legal challenges. The investigation of homicidal deaths requires careful correlation between autopsy findings, circumstantial evidence, and police investigation. Understanding the demographic and injury patterns in homicidal deaths is essential for improving forensic interpretation and developing preventive strategies.
Aim: The present study was conducted to analyze the epidemiological and medico-legal profile of culpable homicide cases autopsied at a tertiary care centre in Punjab.
Materials and Methods: This prospective study was carried out in the Department of Forensic Medicine and Toxicology at Guru Gobind Singh Medical College and Hospital, Faridkot, Punjab, over a period of 18 months from January 2023 to June 2024. During the study period, 900 medico-legal autopsies were performed, among which 62 cases were identified as culpable homicide. Data regarding age, sex, marital status, occupation, residence, alleged weapon used, cause of death, survival period, and relevant medico-legal findings were collected from police records, autopsy reports, and hospital documents and analyzed statistically.
Results: Culpable homicide accounted for 6.89% of all medico-legal autopsies. The majority of victims belonged to the 21–30 years age group (33.87%), with a marked male predominance (79.03%). Most victims were married (75.81%) and belonged to rural areas (61.29%). Labourers and farmers constituted the largest occupational groups. Blunt weapons (37.10%)were the most commonly alleged weapons, followed by firearms (25.81%) and ligature (12.90%). Head injury (38.71%) was the most frequent alleged cause of death. Nearly 46.77% of victims died within six hours of sustaining injuries, indicating the severity of trauma.
Conclusion: The study highlights that homicidal deaths predominantly involve young adult males from rural backgrounds, with blunt force trauma and head injuries being the most common causes. Autopsy examination plays a crucial role in establishing the cause and manner of death and assists investigative agencies in the administration of justice.

Keywords: *Culpable homicide, Medicolegal autopsy, Homicidal deaths, Blunt force trauma, Forensic pathology, Head injury, Firearm injuries, Rural population, Punjab.*

INTRODUCTION

The term homicide originates from the Latin words homo meaning “human being” and caedere meaning “to kill,” literally translating to the killing of one person by another.[1] In legal and forensic contexts, homicide refers to the act in which a human being causes the death of another.[2] The phenomenon of homicide has been recognized since ancient times and remains one of the most serious crimes affecting human society. Crimes against the human body, particularly homicide, have profound legal, social, psychological, and moral implications.[3] Historical narratives such as the biblical account of Cain and Abel illustrate how the act of killing another human being has long been considered one of the gravest offenses in human history.[3]

Throughout history, societies have attempted to regulate and punish homicide through evolving legal systems. India, one of the world's oldest civilizations, has witnessed significant transformations in its legal and social structures. Early legal frameworks such as those described in Manusmriti, followed by the legal traditions during medieval Islamic rule, and later the influence of English common law during British colonization, collectively contributed to shaping the modern legal system of India. These historical developments laid the foundation for contemporary laws governing crimes against the human body, including homicide.

Despite advancements in social structures and legal institutions, the underlying motives behind homicide remain largely unchanged. Common motives include disputes over property, financial conflicts, personal vendetta, domestic issues, and interpersonal rivalries. These motivations often arise from social tensions, emotional conflicts, or economic pressures, making homicide a multifactorial phenomenon that reflects broader societal dynamics.

The United Nations Office on Drugs and Crime (UNODC) defines homicide as the unlawful death inflicted upon a person with the intent to cause death or serious injury. According to the International Classification of Crime for Statistical Purposes (ICCS), homicide involves three essential components: an act resulting in death, the intent to cause death or serious harm, and the unlawful nature of the act. This definition helps standardize crime reporting and allows for comparison of homicide statistics across countries.

From a forensic perspective, the investigation of homicidal deaths requires close collaboration between legal authorities and medical professionals. Forensic pathology plays a critical role in determining the cause and manner of death. Forensic pathologists conduct detailed post-mortem examinations to identify injuries, toxicological evidence, and other indicators that may help reconstruct the events leading to death.These findings assist investigating agencies and courts in determining whether a death occurred due to natural causes, accident, suicide, or homicide.

Homicide can be broadly categorized into lawful and unlawful homicide. Lawful homicide includes cases where the killing is legally justified, such as acts committed in self-defense or during the lawful execution of duty by law enforcement personnel. Unlawful homicide, on the other hand, encompasses offenses such as murder and manslaughter, where the act of killing violates legal statutes. The distinction between lawful and unlawful homicide depends on the circumstances, intent, and legal justification surrounding the act.

In criminal law, establishing homicide typically requires the presence of two essential elements: actusreus and mensrea.Actusreus refers to the physical act that caused the death, while mensrea refers to the mental intention or knowledge associated with the act. When both elements are present, the offense may qualify as murder under criminal law. However, not all homicidal acts involve premeditation or deliberate intent. In certain situations, deaths may occur during sudden provocation or without prior planning. Such cases may fall under the category of culpable homicide not amounting to murder.

In India, legal provisions related to homicide are contained within Chapter XVI of the Indian Penal Code (IPC). Section 299 defines culpable homicide, describing it as causing death with the intention of causing death or with the knowledge that the act is likely to cause death. Section 300 elaborates the circumstances under which culpable homicide amounts to murder. Section 302 prescribes punishment for murder, which may include death penalty or life imprisonment. Section 304 deals with punishment for culpable homicide not amounting to murder.[1]These legal provisions provide the framework through which homicide cases are investigated and prosecuted in India.

Homicidal deaths may occur through various mechanisms. These include mechanical injuries, firearm injuries, violent asphyxia, thermal injuries, and poisoning.[11] Mechanical injuries involve trauma caused by blunt or sharp objects, leading to fatal damage to vital organs. Firearm injuries involve projectile weapons capable of causing severe tissue destruction. Violent asphyxia refers to deaths caused by obstruction of breathing, such as strangulation, smothering, or drowning. Thermal injuries include deaths resulting from burns or exposure to extreme temperatures. Poisoning involves the administration of toxic substances that interfere with vital physiological processes.[11]

The magnitude of homicidal deaths remains a major public health and social concern worldwide. According to the National Crime Records Bureau (NCRB) Crime in India Report 2022, a total of 28,522 murder cases were registered in India, averaging approximately 78 murders per day.[12] Certain states such as Uttar Pradesh, Bihar, Maharashtra, Madhya Pradesh, Rajasthan, and West Bengal reported higher numbers of homicide cases. In the state of Punjab, the number of murder cases declined from 757 in 2020 to 654 in 2022.[12]

The medico-legal investigation of homicidal deaths relies heavily on post-mortem examination. Autopsy findings provide essential information about the cause of death, the type of injuries sustained, and the probable weapon used.[6]

Given the complexity and societal impact of homicidal deaths, systematic analysis of such cases is essential. Studying patterns related to age distribution, gender, motive, weapon used, place of occurrence, and survival period can provide valuable insights into the epidemiology of homicide.[17] The present study aims to examine the patterns of homicidal deaths through detailed analysis of medico-legal autopsies conducted at a tertiary care center. It also focuses on cases initially

reported as accidental, suicidal, or natural deaths but later identified as homicide following autopsy findings and police investigation.[17]

REVIEW OF LITERATURE

The study of homicidal deaths through medico-legal autopsy data has been an important area of forensic research. Over the years, numerous researchers have attempted to analyze patterns of homicide in terms of demographic characteristics, causes of death, weapons used, and socio-economic factors.

Historical references to the investigation of suspicious deaths can be traced back to ancient Indian texts such as Kautilya'sArthashastra. This ancient treatise described various methods of covert killings, including poisoning and suffocation, and emphasized the importance of examining bodies to determine the cause of death. Shamasastry's translation of the Arthashastra highlights early attempts to distinguish between different manners of death through careful observation and investigation.[1]

During the colonial period, medico-legal practices in India became more organized with the introduction of structured legal codes such as the Indian Penal Code and the Criminal Procedure Code. Early studies reported that homicidal poisoning was relatively more common in India compared to Western countries such as England and Wales. These observations emphasized the importance of forensic medicine in detecting concealed crimes.[1]

Several autopsy-based studies have examined the incidence of homicidal deaths among medico-legal cases. Gupta and colleagues reported that homicidal deaths accounted for approximately 5.9% of all autopsies, with young adult males being the most common victims. Their study also observed that sharp weapons were frequently used in homicidal assaults.[2]

The historical development of forensic medicine in India has also been documented by researchers such as Mathiharan, who highlighted the growing importance of forensic science in criminal investigations. The role of forensic experts in determining the cause and manner of death has become increasingly significant with advancements in scientific techniques.[21]

Other studies have reported varying incidences of homicide across different regions. Singh and Gupta reported that homicidal deaths constituted approximately 2.89% of medico-legal autopsies, with blunt force trauma being the most common cause of death. Similarly, Mittal and colleagues observed that sharp weapon injuries were frequently encountered in homicidal cases.[22] [23]

Prospective studies conducted in various regions of India have consistently shown that young adult males between 21 and 40 years of age represent the majority of homicide victims. Viswanath and colleagues reported that sharp weapons were commonly used in homicidal assaults, while Kumar observed that firearms were a leading cause of homicidal deaths in certain regions.[2]

Retrospective analyses have also provided valuable insights into the patterns of homicidal injuries. Jhaveri and colleagues reported that stab injuries and blunt trauma were the most frequent causes of death in homicide cases. Their study also noted that the brain was often the most severely injured organ, highlighting the vulnerability of the head in fatal assaults.[2] Other studies have examined the socio-demographic characteristics of victims. Kokatanur and colleagues observed that most victims belonged to the 20–29 year age group, while Gogoi and Das reported that many victims came from rural areas and lower socio-economic backgrounds.[2,3]

Research on specific forms of homicidal violence has also been conducted. Subba Reddy and colleagues studied murder-suicide cases, identifying domestic conflicts, financial stress, and interpersonal disputes as common contributing factors. Similarly, Azher and colleagues reported that firearms were commonly used in homicidal assaults in their study population.[2]

Prospective studies conducted in metropolitan regions have highlighted the role of blunt force trauma in fatal assaults. Sonawane and colleagues reported that homicidal deaths accounted for approximately 2.11% of autopsies, with blunt weapons frequently involved. Taware and colleagues also observed that head injuries were a leading cause of death in homicidal cases.[31,32]

Recent studies have continued to examine socio-demographic trends in homicidal deaths. Rathod and colleagues reported that many victims belonged to lower socio-economic groups, suggesting a possible association between socio-economic conditions and vulnerability to violent crime.[33]

The presence of defense injuries is another important aspect of homicidal investigations. Subramanyam and Janardhanan reported that defense injuries were present in a significant proportion of homicide victims, indicating attempts by victims to protect themselves during assault.[3]

Studies focusing on patterns of unnatural deaths have also shown that trauma remains a major cause of mortality in medico-legal cases. Bansude and colleagues reported that traumatic injuries, including head injuries and multiple injuries, accounted for the majority of unnatural deaths.[3]

Globally, homicide remains a significant public health concern. According to the Global Study on Homicide (UNODC 2023), approximately 440,000 people die due to homicide each year worldwide, with males constituting the majority of victims. Firearms remain the most commonly used weapons in many regions of the world.[3]

Recent regional studies in India continue to highlight similar trends. Basra and Singh reported that most victims were young adult males from rural areas and that sharp weapons and combined blunt-sharp weapons were commonly involved in homicidal assaults.[3]

Overall, the existing literature demonstrates that homicidal deaths are influenced by a complex interplay of demographic, social, and environmental factors. Autopsy-based studies remain essential for understanding the epidemiology of homicide and for improving medico-legal investigative practices.

MATERIALS AND METHODS

Study area: The study was conducted in the Mortuary under the Department of Forensic Medicine and Toxicology, G.G.S. Medical College and Hospital, Faridkot, Punjab.

Study period: The study spanned 18 months i.e. from January 2023 to June 2024.

Study design: It was a descriptive study.

Study population: Exclusion criteria: The following cases were excluded from the study:

1. Deaths due to rash and negligent acts.
2. Deaths due to self-infliction or suicidal deaths.
3. Unknown cases.
4. Re-examination cases.

Inclusion criteria:

1. All cases of alleged homicidal deaths were included.
2. Alleged cases of other causes but with postmortem injuries leading to homicide.

Sample size: The estimated number of study subjects was 60 according to the statistics from the year 2021-2022 of the Mortuary at GGSMCH Faridkot. All homicidal cases related to the study were included during the 18-month study period i.e. from January 2023 to June 2024.

Sampling technique: A non-random convenient sampling technique was used, considering the availability and feasibility of participants/deceased. Consequently, all cases of Culpable Homicides within the study period, as per the inclusion and exclusion criteria, were considered for the study.

Data collection tools: The proforma attached in annexures was used and a Master Key was formed

Methodology: After obtaining informed consent from relatives/guardians of the deceased, autopsies were conducted on all included cases brought to the mortuary of Guru Gobind Singh Medical College, Faridkot. Demographic information regarding the deceased, including age, gender, religion, occupation, time of incidence, place of incidence, weapon used, alleged cause for homicide death, and circumstances of death, was collected from the police and relatives. Details such as the method or weapon used, duration between injury (time of attack) and death, hospitalization period, any operations or major procedures during hospitalization, and duration between death and postmortem were duly documented from history and police records. Some psychological studies were conducted by interviewing the victim's family regarding the circumstances between the victims and accused that led to death. Emphasis was placed on documenting the external state of the body, whether fresh or decomposed, prior to examination. Thorough external and internal examinations of the body were conducted. Descriptions of clothing, height/length, rigor mortis, postmortem staining, vital organ injuries, weapons used to cause death, injuries causing death, and opinions were documented. Forensic photography was conducted to document fatal injuries and findings.

Data analysis plan: The collected data were entered into Microsoft Excel and Master Key and Master chart was prepared and appropriate statistical tests were applied accordingly.

Ethical considerations: The present study was conducted after approval by Hospital Ethical Committee and obtaining written informed consent from the relatives of the deceased for the study.

OBSERVATIONS AND RESULTS

The present comprehensive prospective study was conducted at the Mortuary of the Department of Forensic Medicine and Toxicology, Guru Gobind Singh Medical College & Hospital, Faridkot, Punjab, from January 2023 to June 2024. During this 18-month study period, a total of 900 medicolegal autopsies were performed. Among these, 62 cases were identified as culpable homicides, accounting for 6.89% of the total autopsies conducted during the study period.

The majority of cases fell within the age group of 21 to 30 years, accounting for 21 cases (33.87%). This was followed by the 31 to 40 years age group with 15 cases (24.19%), and the 41 to 50 years age group with 9 cases (14.52%). The 61 to 70 years age group had 6 cases (9.68%), while the 51 to 60 years group had 5 cases (8.06%). The 11 to 20 years age group comprised 4 cases (6.45%), and the age group over 70 years had 2 cases (3.23%). Out of the 62 cases studied, males significantly outnumbered females, with 49 males (79.03%) and 13 females (20.97%). Among the cases, 47 were married (75.81%), 13 were unmarried (20.97%), with 1 case each of divorced (1.61%) and widow (1.61%). Labourers constituted the largest occupational group (24.19%), followed by farmers (22.58%) and housewives (16.13%). Other categories included service employees (11.29%), others (8.06%), unemployed individuals (6.45%), retired persons (4.84%), and businessmen and students (3.23% each). The incidence occurs more in Rural area as compare to Urban area with Rural 38 cases (61.29%) and Urban 24 cases (38.71%). The majority of cases were registered under Section 302 IPC (79.03%), followed by Section 304 IPC (14.52%), while Section 304-B IPC and other sections accounted for 3.23% each. 40.32% of cases had no specified personal habits, while multiple substance abuse was noted in 35.48% and alcohol consumption in 22.58%. Only one case (1.61%) was identified as a smoker, and no cases involved isolated intravenous drug abuse. 51.61% of cases had intact and clean clothing, while 25.81% had torn or cut blood-stained clothes. Intact blood-stained clothes were observed in 19.35% cases, and 3.23% had torn or cut but clean clothing. 46.77% of victims died within 6 hours of injury, representing the largest proportion. 11.29% each died within 12–24 hours and 24–36 hours, while 14.52% survived more than 72 hours. Smaller proportions survived 6–12 hours (4.84%), 36–48 hours (8.06%), and 48–72 hours (3.23%).

Table 1 Incidence of alleged weapon used for Culpable Homicide

Alleged weapon used	Frequency	Percentage (%)
Blunt	23	37.10
Sharp	6	9.68
Blunt pointed	0	0.00
Sharp pointed	3	4.84
Firearm	16	25.81
Ligature	8	12.90
Fire	1	1.61
Unknown	5	8.06
Total	62	100.00

Blunt weapons were the most commonly alleged weapons (37.10%), followed by firearms (25.81%). Other weapons included ligature (12.90%), sharp weapons (9.68%), sharp-pointed weapons (4.84%), and fire (1.61%), while 8.06% of cases involved unknown weapons.

Table 2 Incidence of alleged cause of death (As per police papers)

Alleged Cause of Death	Frequency	Percentage(%)
Head Injury	24	38.71
Chest Injury	4	6.45
Hanging	1	1.61
Strangulation	6	9.68
General injuries	5	8.06
Poison	3	4.84
Due to Disease	0	0.00
Firearm	14	22.58
Burns	1	1.61
Unknown	4	6.45
Total	62	100.00

Head injury was the most common alleged cause of death (38.71%), followed by firearm injuries (22.58%). Other causes included strangulation (9.68%), general injuries (8.06%), chest injuries and unknown causes (6.45% each), poisoning (4.84%), and hanging and burns (1.61% each).

DISCUSSION

In the present study, culpable homicide accounted for 6.89% of total medicolegal autopsies. Comparable incidences have been reported in earlier studies. Gupta et al. (2004) reported 5.9% homicide cases among autopsies, Singh & Gupta (2007) reported 2.89%, Viswanath et al. (2012) reported 4.76%, and Mada& Krishna (2013) reported 3.24% cases.[20],[22],[24],[13] Differences in incidence may be related to variations in geographic region, population characteristics, and study period.

Age distribution in the present study showed that the majority of victims belonged to the 21–30 years age group (33.87%), followed by 31–40 years (24.19%). Similar findings were reported by Gupta et al. (2004), Mittal et al. (2007), Viswanath et al. (2012), Mada& Krishna (2013) and Kokatanur et al. (2015), who also observed the highest incidence in the 21–30 years age group.[20],[23],[24],[13],[27] Singh & Gupta (2007) and R. Kumar (2013) also reported predominance of victims among young adults.[22],[25] However, Jhaveri et al. (2014) and Gogoi& Das (2017) reported higher incidence in the 31–40 years group, while Subba Reddy et al. (2016) observed predominance in the 15–30 years group and Azher et al. (2016) reported majority of victims in the 22–29 years range.[26],[30],[28],[29] Taware et al. (2018), Rathod et al. (2020), S. Kumar et al. (2021) and Basra & Singh (2024) also reported similar predominance in the 21–30 years age group.[32],[33],[35],[38] The predominance of young adults may be attributed to greater social interaction, occupational exposure, financial responsibilities, and interpersonal conflicts.

A marked male predominance was observed in the present study, with males accounting for 79.03% of victims. Similar findings have been reported by Gupta et al. (2004), Singh & Gupta (2007) and Mittal et al. (2007).[20],[22],[23]Gogoi& Das (2017) and Sonawane et al. (2017) also observed male predominance in their studies.[30],[31] Globally, the United Nations Office on Drugs and Crime (2019) reported that approximately 81% of homicide victims are males.[37] This may be due to greater male involvement in outdoor occupations, conflicts, and substance abuse.

In the present study, 75.81% of victims were married. Similar observations were reported by Rathod et al. (2020) and Basra & Singh (2024), who also reported higher proportions of married victims.[33],[38] Married individuals may be more exposed to domestic disputes, property conflicts, and interpersonal tensions within families.

Occupational distribution showed that labourers (24.19%) and farmers (22.58%) constituted the majority of victims. Similar findings were reported by Rathod et al. (2020) and Subba Reddy et al. (2016), who also observed higher incidence among labourers, farmers, and employees.[33],[28] This pattern may be attributed to the agrarian nature of Punjab and the socio-economic stress associated with agricultural and daily wage occupations.

The present study showed that 61.29% of victims were from rural areas, which is comparable with findings reported by Gogoi& Das (2017) and Basra & Singh (2024), who also reported higher homicide incidence in rural populations.[30],[38] Rural predominance may be related to land disputes, socio-economic inequalities, and interpersonal conflicts in rural communities.

Most cases (79.03%) in the present study were registered under Section 302 IPC (103BNS), followed by Section 304 IPC (105 BNS) (14.52%). This indicates that the majority of cases were initially treated as murder by investigating authorities. Analysis of personal habits revealed alcoholism in 22.58% of victims and multiple substance abuse in 35.48%. Similar findings were reported by Singh & Gupta (2007), Azher et al. (2016) and Basra & Singh (2024), who also identified alcohol consumption as a significant contributing factor in homicidal incidents.[22],[29],[38] Alcohol may increase aggression, reduce inhibitions, and contribute to violent behaviour.

Clothing examination showed that 51.61% of victims had intact and clean clothes, while 25.81% had torn or cut blood-stained clothes. Similar findings were reported by Mittal et al. (2007) and Basra & Singh (2024).[23],[38] Studies by Gupta et al. (2004) and Bansude et al. (2021) have also highlighted the forensic significance of clothing examination in reconstructing events during violent assaults.[20],[36]

In the present study, 46.77% of victims died within 6 hours of injury, indicating severe trauma. Similar observations were reported by Mittal et al. (2007) and Basra & Singh (2024).[23],[38] Studies by Viswanath et al. (2012) and Azher et al. (2016) reported longer survival intervals in some cases depending on injury severity and medical care availability.[24],[29] Rathod et al. (2020) and Subramanyam&Janardhanan (2021) also reported variable survival times following injuries.[33],[34]

Blunt weapons (37.10%) were the most commonly alleged weapons in the present study, followed by firearms (25.81%) and ligature (12.90%). Similar findings were reported by Mittal et al. (2007) and Basra & Singh (2024).[23],[38] The United Nations Office on Drugs and Crime (2019) also reported firearms as a major contributor to homicide worldwide.[37] Studies by Jhaveri et al. (2014) and Azher et al. (2016) also documented the use of sharp weapons in homicidal incidents.[26],[29] The predominance of blunt weapons in this region may be due to their easy availability in agricultural and domestic settings.

Head injury was the most common alleged cause of death in the present study (38.71%), followed by firearm injuries (22.58%) and strangulation (9.68%). Similar findings were reported by Gupta et al. (2004) and Basra & Singh (2024) where head injuries were the leading cause of death.[20],[38] Firearm-related deaths correspond with global observations reported by the United Nations Office on Drugs and Crime (2019).[37]Rathod et al. (2020) and Subramanyam&Janardhanan (2021) also emphasized the role of asphyxial deaths such as strangulation in homicide investigations.[33],[34]

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