

## Original Research Article

# Homicidal deaths due to weapons: an autopsy-based study

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## ABSTRACT

**Background:** Homicide, one of the oldest crimes in human civilization, involves the killing of one human being by another. Defined legally as the intentional destruction of human life, it is a leading cause of unnatural deaths worldwide. The crime involves two key elements: *Mens rea* (preplanning) and *Actus reus* (execution). Homicidal methods and patterns vary globally, influenced by factors such as weapon availability, motives, cultural and social influences, and socio-economic status. Violence is recognized as a global public health issue, contributing to significant mortality and disability, with approximately 520,000 people dying annually from interpersonal violence. The study aims to explore the types of injuries, weapons, and anatomical regions of the affected victim.

**Methods:** This retrospective observational study was conducted at the department of forensic medicine, Dhaka medical college and hospital, Dhaka, Bangladesh, focusing on 120 autopsied homicide cases involving definite weapons from January 2021 to December 2023. The study included all age groups, excluding accidental burn deaths, suspected homicidal poisonings, and decomposed bodies. Data were gathered from police inquest and post-mortem reports, analyzing injury types, weapons used, and their anatomical distribution. The findings were correlated with victims' age and gender. The ethics committee approved the study, and data were presented using SPSS for statistical analysis.

**Results:** The study analyzes violent incidents, focusing on participant demographics, weapon types, injury patterns, and homicide intentions. The highest participant age group is 21-30 years (33.33%), with males dominating at 84.17%. Knives are the most used weapon (51.67%), followed by blunt objects (38.33%). Head injuries are most common (44.17%), with intracranial hemorrhage (ICH) as the leading cause of death (48.33%). Non-intentional homicides constitute 60%, while 35.83% are deliberate. The study provides detailed insights into the nature and causes of homicides in the population studied.

**Conclusions:** The study in Dhaka, Bangladesh, reveals that young males are the primary victims of homicide, with knives and blunt objects frequently used. Head injuries, especially ICH, are the leading cause of death. The findings call for targeted interventions and further research into the factors driving non-intentional homicides.

**Keywords:** Homicidal deaths, Weapons, Autopsy findings

## INTRODUCTION

Homicide is a grave and longstanding crime in human society.<sup>1</sup> While death is a natural and inevitable part of life, the premature loss of life at the hands of another has risen alarmingly in recent years. The term "homicide" (from the Latin words "homos", meaning human being, and "caedere", meaning to kill) refers to the act of one person killing another. It is recognized as one of the primary

causes of unnatural deaths.<sup>2</sup> Legally, homicide is described as the deliberate ending of a human life through acts, agencies, or culpable negligence by another person or persons. The world health organization (WHO) defines homicide as any death caused by intentionally inflicted injuries from another person, which is categorized under codes E960-E969.<sup>3</sup> For a killing to be classified as murder, two key elements must be present: "*Mens Rea*" (the intent or premeditation) and "*Actus Rea*" (the actual act of

committing the crime).<sup>4</sup> Homicide can occur in various ways, ranging from impulsive acts of rage to meticulously planned killings. The number of perpetrators involved can vary from a single individual to multiple assailants. Homicidal patterns differ across countries and regions, influenced by numerous factors such as the availability of weapons, methods of killing, underlying motives (e.g., family disputes, cultural and psychological factors), as well as social, economic, and political influences. Common methods of homicide include sharp weapons, blunt instruments, firearms, strangulation, hanging, smothering, drowning, poisoning, and burns. Violence is widely acknowledged as a global public health issue, contributing to 9% of global mortality and 12% of all disability-adjusted life years. According to the global burden of armed violence report, the average annual violent death rate worldwide from 2004 to 2009 was 79 per million. Around 520,000 people die each year due to interpersonal violence, which translates to approximately 1,400 deaths per day.<sup>4</sup> In Dhaka, Bangladesh, media reports frequently highlight the rising incidence of these violent crimes. This study seeks to investigate the types of injuries, weapons used, and the anatomical regions affected in homicide cases.

## METHODS

This retrospective observational study was conducted at the department of forensic medicine in Dhaka medical college and hospital (DMCH), Dhaka, Bangladesh. The study included all homicide cases autopsied in the hospital where a definite weapon was used. A total of 120 autopsied cases between January 2021 to December 2023 were enrolled and analyzed in this study.

### Inclusion criteria

Individuals across all age groups and confirmed homicide cases where weapons are present on the deceased bodies, were included.

### Exclusion criteria

Burn cases of accidental death, suspected homicidal poisonings and decomposed body were excluded.

The data for this study was gathered from police inquest and post-mortem reports. Each case's injuries were examined and classified by type, and the weapon used in each incident was recorded. The anatomical locations of the injuries were also analyzed. Key factors such as fatal injuries, the weapon type, and the anatomical distribution of fatal injuries were examined and compared with the age and gender of the victims. The study was conducted following approval from the institutional research and ethics committees. All data were presented in appropriate tables or graphs, with accompanying descriptions for clarity. Statistical analysis was performed using the SPSS (Version 26.0) software on a Windows platform.

## RESULTS

The analysis of the study's participant demographics, weapon types, injury patterns, and the intentions behind homicides provides a detailed insight into the nature of violent incidents within the studied population.

As detailed in Table 1, the age distribution reveals that the highest frequency of participants falls within the 21-30 age group, representing 33.33% of the total sample. This is followed by the 31-40 age group, comprising 20.83% of participants. The distribution across other age brackets is more varied, with 15.00% of participants aged 11-20 years, 10.84% aged 41-50 years, 6.67% under ten years, 8.33% over 60 years, and 5.00% in the 51-60 years range.

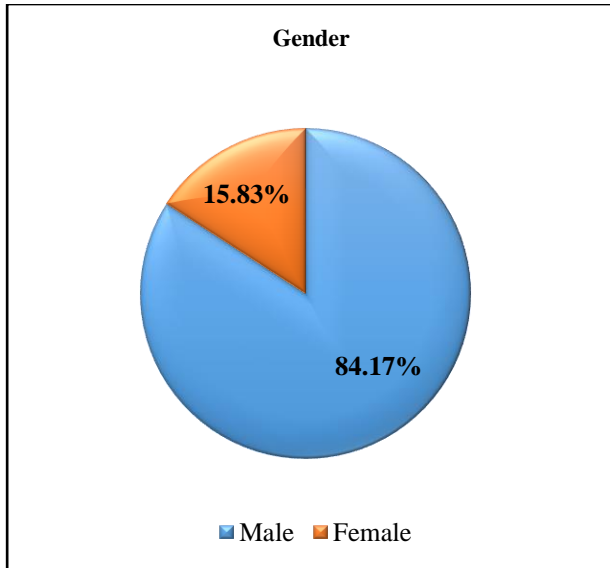
Gender distribution, as illustrated in Figure 1, shows a notable imbalance, with males representing a dominant 84.17% of the participants and females making up 15.83%. Weapon usage in homicides is detailed in Table 2, where knives emerge as the most frequently used weapon, involved in 51.67% of the cases. Blunt objects follow, accounting for 38.33% of the incidents. Firearms, ropes, and bare hands are less commonly reported, with usage rates of 3.3%, 1.67%, and 5.00%, respectively. Injury patterns are extensively covered in Table 3, which shows that head injuries are the most prevalent, occurring in 44.17% of cases.

Injuries to the chest and abdomen are also significant, with frequencies of 25.00% and 17.50%, respectively. Table 4 provides a breakdown of injury modes, highlighting that stab wounds and ICH are the most common types of injuries, observed in 32.39% and 35.80% of cases, respectively. Other injuries, such as fractures, abrasions, and bruises, also feature prominently.

The prevalence of ICH as a leading cause of death is further emphasized in Table 5, where it is responsible for 48.33% of fatalities, with stab wounds closely followed at 43.33%. The intention behind the homicides, as detailed in Table 6, reveals that a majority, 60%, were non-intentional, while 35.83% were deliberate acts. The remaining 4.17% of cases were classified as having an unidentified intent.

**Table 1: Age distribution of the study cases, (n=120).**

Age group (in years)	N	Percentage (%)
<10	8	6.67
11-20	18	15.00
21-30	40	33.33
31-40	25	20.83
41-50	13	10.84
51-60	6	5.00
>60	10	8.33
<b>Total</b>	<b>120</b>	<b>100.00</b>



**Figure 1: Gender distribution of the study cases (n=120).**

**Table 2: Type of weapon used for homicide cases.**

Type of weapon	N	Percentage (%)
Knife	62	51.67
Fire arm	4	3.33
Blunt object	46	38.33
Rope	2	1.67
Bare hand	6	5.00

**Table 3: Region wise distribution of injuries among the homicide cases.**

Region	N	Percentage (%)
Head	53	44.17
Neck	8	6.67
Chest	30	25.00
Abdomen	21	17.50
Upper limb	4	3.33
Lower limb	4	3.33

**Table 4: Various modes of injury among the homicide cases.**

Type of injuries	N	Percentage (%)
Abrasion	18	10.23
Bruise	26	14.77
Laceration	23	13.07
Incision	7	3.98
Stab	57	32.39
Chop	4	2.27
Penetrating	41	23.30
Cut throat injury	5	2.84
ICH	63	35.80
Fracture	29	16.48

**Table 5: Type of injury cause death among the homicide cases.**

Types of injury cause death	N	Percentage (%)
Stab	52	43.33
ICH	58	48.33
Cut throat	5	4.17
Bullet penetration	5	4.17

**Table 6: Attempt intention among the homicide cases, (n=120).**

Intention	N	Percentage (%)
Intentional	43	35.83
Non-intentional	72	60.00
Unidentified	5	4.17
Total	120	100.00

## DISCUSSION

The current study offers a comprehensive analysis of the epidemiology of homicidal deaths within the region, with a particular emphasis on the types of weapons employed, the anatomical targeted areas, and the nature of injuries that resulted in fatalities. The age distribution of the victims highlights that the majority of homicides occurred within the 21-30 and 31-40 age brackets, accounting for 33.33% and 20.83% of the cases, respectively. These findings are consistent with prior research, which also identified a higher incidence of homicides among young and middle-aged adults.<sup>5</sup> This trend aligns with other studies conducted in India and neighboring Asian countries, including Pakistan, Malaysia, and Sri Lanka.<sup>6-10</sup> The gender distribution in this study further corroborates existing literature, revealing that males were disproportionately affected, comprising 84.17% of the total victims. This observation is consistent with previous findings that underscore a higher vulnerability of males to homicidal violence.<sup>5</sup> The study identifies knives as the most frequently employed weapon, involved in 51.67% of the cases, followed by blunt objects, which were used in 38.33% of the incidents. Firearms, ropes, and bare hands were less commonly reported, with usage rates of 3.3%, 1.67%, and 5.00%, respectively. These findings align with those of previous studies, such as those conducted by Shivakumar et al, Vij et al, Mohanty et al and Hugar et al which also reported a high prevalence of sharp weapons in fatal assaults.<sup>11-14</sup> However, it is worth noting that Hilal et al documented firearm injuries as the most prevalent in their study, a finding that contrasts with the minimal incidence observed in the present research.<sup>15</sup> The study also reveals that victims commonly sustained injuries in multiple anatomical regions, with the head being the most frequently targeted area (44.17%). Other widely affected regions included the chest (25%), abdomen (17.5%), neck (6.67%), and limbs (upper and lower, 3.33% each). These findings are consistent with the research conducted by Patel and Mada et al.<sup>16,17</sup> Stab wounds and ICH emerged

as the predominant types of injuries, observed in 32.39% and 35.80% of cases, respectively. Other notable injuries included fractures, abrasions, and bruises. This pattern is in line with the findings of previous studies by Mishra et al and Taware et al.<sup>18,19</sup> Conversely, Buchade et al reported a higher prevalence of neck injuries in their research.<sup>20</sup> ICH was identified as the leading cause of death, responsible for 48.33% of the fatalities, followed closely by stab wounds, which accounted for 43.33%. This observation is consistent with studies conducted by Mada et al, Mishra et al and Sashikanth all of which highlighted hemorrhage as a primary cause of death.<sup>18,19,21</sup> In contrast, Buchade et al found that shock and hemorrhage were the most common causes of death in their study.<sup>20</sup> Regarding the intent behind the homicides, the study found that a significant majority, 60%, were non-intentional, while 35.83% were the result of deliberate acts. This finding contrasts with the study by Qasim et al which reported only 18.89% of cases as accidental.<sup>22</sup> On the other hand, Kumari documented a higher rate of intentional cases, with 97.5% being deliberate and only 2.5% classified as non-intentional.<sup>23</sup> The limitations of this study include its retrospective design, which may lead to incomplete data and reliance on police inquest reports, potentially introducing bias. Also, the study does not explore the socio-economic or psychological factors that could further explain the observed patterns in homicidal deaths.

## CONCLUSION

The study highlights the prevalence of homicidal deaths in Dhaka, Bangladesh, emphasizing the demographic patterns, weapon types, and injury locations associated with these incidents. The majority of victims were young males, with knives and blunt objects being the most common weapons used. Head injuries, particularly ICH, were the leading cause of death. These findings align with similar studies in the region, underscoring the need for targeted interventions to address violence. The high rate of non-intentional homicides suggests a complex interplay of factors behind these deaths, requiring further investigation and public health strategies.

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