

ORIGINAL ARTICLE

Pattern and Causes of Death in Medicolegal Autopsies – A Descriptive Study from Dhaka Medical College Mortuary

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ABSTRACT

Background: Medicolegal deaths, often sudden or unnatural, are examined through autopsies to determine cause, manner, and circumstances. Young adult males are most affected, with road accidents, homicide, and suicide common. This study reviews such deaths at Dhaka Medical College Mortuary from January to October 2023 to inform legal and public health planning. **Methods & Materials:** A descriptive cross-sectional study was conducted at Dhaka Medical College Mortuary from January to October 2023, including all 135 medicolegal deaths. Data on demographics, cause of death, and residence were extracted from mortuary registers and analyzed using descriptive statistics. Ethical approval and anonymization ensured confidentiality, and charts were used to illustrate key findings. **Results:** Among 135 medicolegal autopsies, 88 (65.2%) were male and 47 (34.8%) females. Ages ranged from 0 days to 80 years, with a mean of 31.8 ± 16.2 years; most cases were in the 21–40-year age group. Leading causes of death were road traffic accidents, poisoning, burns, hanging, and unexplained sudden deaths. Young adult males were most affected, highlighting risks from accidents, violence, and self-harm, and emphasizing the need for traffic safety, mental health support, and strengthened forensic investigations. **Conclusion:** Between January and October 2023, most medicolegal autopsies at DMC involved unnatural deaths, predominantly among young adult males. Leading causes were road traffic accidents, poisoning, and hanging, reflecting environmental risks and psychosocial stressors. These findings highlight the need for stronger road safety measures, toxic substance regulation, expanded mental health services, and improved mortuary data systems to support prevention and public health planning.

Keywords: Medicolegal autopsy; Dhaka Medical College; road traffic accident; poisoning; hanging; forensic medicine

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INTRODUCTION

Unnatural or uncertain deaths undergo an inquest to determine if they were natural, accidental, suicidal, or homicidal. It is not a trial, and no judgment is passed. A Coroner conducts it in the English system, while other countries use systems like Medical Examiner (USA) or Procurator Fiscal (Scotland)^[1]. Medicolegal deaths are sudden or unexplained deaths. Forensic autopsies are conducted under legal authority to determine the exact cause, circumstances, identity, and manner of death. These autopsies are performed by expert forensic surgeons or pathologists, who can provide accurate evidence in court^[2].

Autopsies help public health by identifying mortality trends and potential health threats. They can reveal multiple causes of death, guide interventions, and validate or correct clinical diagnoses, highlighting misdiagnoses and improving medical practice^[3]. An autopsy, meaning the examination of a deceased body, is performed for both clinical and medicolegal

reasons. Clinical autopsies (or pathological autopsies) aim to identify the disease that caused death, especially when it was unclear before death. Even when the cause of death is known, clinical autopsies are often conducted to study the disease process directly in the body, providing valuable insights and advancing medical knowledge^[4].

Several studies worldwide have examined the patterns and cause of death in medicolegal autopsies, highlighting regional variations and common trends. In India, a retrospective study reported that accidental deaths, particularly road traffic accidents, accounted for the majority of cases, followed by homicidal and suicidal deaths, with males and young adults being the most affected group^[5]. A study from Nigeria found that homicides and road traffic accidents were predominant causes, and a notable number of deaths involved males aged 21–40 years^[6].

In Brazil, research indicated that accidental deaths were the leading cause, followed by violent deaths, and emphasized the

role of socioeconomic factors and urbanization in influencing mortality patterns^[7]. Meanwhile, studies from Europe and the United States suggest that natural deaths with uncertain causes also form a significant portion of medicolegal autopsies, highlighting the importance of autopsies in validating clinical diagnoses and public health monitoring^[8]. Collectively, these studies underscore that medicolegal autopsies are essential not only for legal investigations but also for identifying public health risks, guiding preventive measures, and improving healthcare policies globally.

Several studies worldwide have examined the patterns and cause of death in medicolegal autopsies. Research from Karachi, Pakistan, analyzing 2,090 autopsies, showed that violent asphyxia deaths — including hanging, drowning, strangulation, and smothering — accounted for a significant portion of cases, with the majority being male victims aged 15–35 years^[9]. A prospective study in Hyderabad, Pakistan, of 982 autopsies, found that road traffic accidents (~45.3%) were the leading cause of death, followed by firearm injuries, asphyxia, train accidents, and poisoning, with males comprising nearly 79% of cases^[10]. In India, a study from Karnataka reviewing 924 autopsies reported that the highest number of deaths occurred in the 21–30 years age group, with males accounting for ~82% of cases; the commonest causes were road traffic accidents, poisoning, natural deaths, asphyxia, railway-related deaths, and homicidal deaths^[11].

A study in Bangladesh on asphyxia deaths, including hanging and drowning, also indicate that males in the 30–39 years age group are commonly involved, with a majority being suicidal in nature^[12]. The study aims to analyze and describe the patterns and causes of deaths among cases undergoing medicolegal autopsies at Dhaka Medical College Mortuary between January and October 2023. Specifically, it seeks to determine the distribution of deaths by age, sex, manner of death (natural, accidental, suicidal, homicidal), and specific causes, thereby providing insight into mortality trends and contributing to both legal investigations and public health planning.

METHODS & MATERIALS

Study Design:

A descriptive cross-sectional study was conducted at the Dhaka Medical College Mortuary to assess patterns and causes of medicolegal deaths. The mortuary, which receives cases from Dhaka and surrounding areas, maintains detailed registers, allowing collection and analysis of demographic and cause-of-death data at a single point in time.

Study Period and population:

Data were collected over a 10-month period, from January 1 to October 31, 2023, and included all 135 medicolegal autopsies conducted during this time. The study population comprised deaths that were sudden, suspicious, unnatural, or of uncertain cause, all referred for legal investigation, providing a representative sample to reflect current trends in medicolegal mortality.

Data Collection tools:

Information for the study was extracted from the mortuary registers, including demographic data such as age, sex, and religion; clinical and medicolegal data such as the cause of death; and geographic data including the thana and city of residence. All data were carefully recorded to ensure completeness and accuracy, providing a reliable dataset for analysis.

Data Analysis:

The collected data were analyzed using descriptive statistics. Frequencies and percentages were calculated for categorical variables such as sex, religion, cause of death, and place of residence, while the mean $\pm$ standard deviation (SD) was determined for continuous variables such as age. Additionally, charts and graphs were prepared to visually present the distribution of deaths across different variables, facilitating easier interpretation of the results.

Ethical Considerations:

All data were anonymized to maintain confidentiality and protect the identity of the deceased. Formal permission for the use of mortuary records was obtained from the Department of Forensic Medicine prior to the start of the study. The study adhered to ethical principles, ensuring the respectful handling of sensitive information throughout the research process.

RESULTS

A total of 135 medicolegal autopsies were examined during the study period. Of these, 88 (65.2%) were male and 47 (34.8%) were female. The age ranged from 0 days (neonate) to 80 years; the mean age was 31.8 years (SD 16.2). The majority of cases were in the 21–40-year age group. The leading causes of death included road traffic accidents, poisoning, burns, hanging, and unexplained sudden deaths.

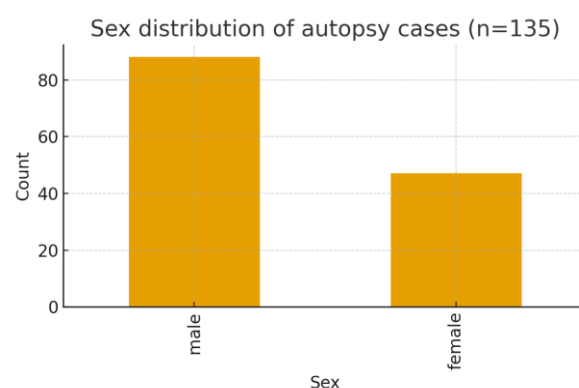


Figure – 1: Sex distribution of autopsy cases (n=135)

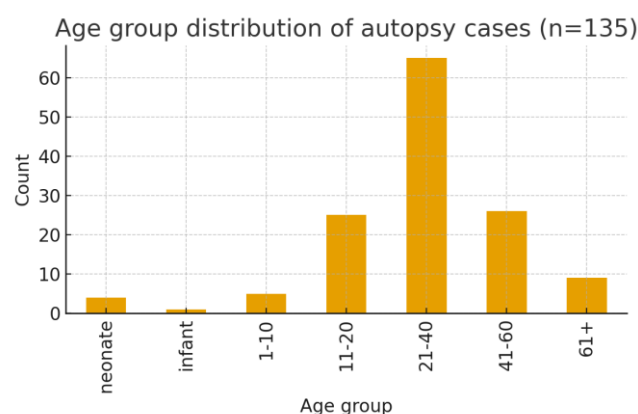


Figure – 2: Age group distribution of autopsy cases (n=135)

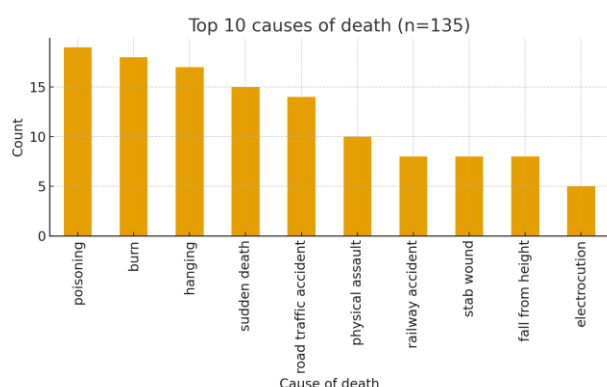


Figure – 3: Top 10 causes of death recorded at DMC mortuary (n=135)

DISCUSSION

In the present study of 135 medicolegal autopsies, males accounted for 88 cases (65.2%) whereas females accounted for 47 (34.8%). This male predominance among medico-legal autopsy victims is well in keeping with other studies. The male to female disparity is likely attributable to sociocultural and behavioral factors: in many settings males are more involved in high-risk activities (e.g. heavy manual work, driving, outdoor exposure), more likely to be victims of accidents, violence or self-harm, and generally more mobile outside home than females. This male preponderance is a recurrent observation in forensic autopsy profiles worldwide [13].

variation in the pattern of causes of death may contribute: in settings where non-traumatic causes such as poisoning, burns or hanging are relatively common (and these may affect females at higher rates in certain social contexts), the female share of autopsies tends to increase. For example, in a study of fatal poisoning in Bangladesh, males comprised 75% while females 25%; but because poisoning and suicidal deaths may disproportionately affect females in some circumstances, their representation in medicolegal autopsies can vary [14].

The age of decedents in our study ranged from 0 days (neonate) to 80 years, with a mean age of 31.8 years (SD 16.2). The majority belonged to the 21–40 years age group. This concentration in young adulthood is broadly consistent with earlier autopsy studies. For instance, in a forensic mortuary-based study, the most common age group was 21–30 years, followed by 31–40 years — together accounting for more than half of all cases [13]. Similarly, in a study of 647 autopsy cases at a tertiary care center, the 21–30 years age group constituted 31.5% of cases — the largest single age group [15].

The predominance of younger adults, particularly in the third and early fourth decades, likely reflects their greater social and economic activity, which increases exposure to risks such as road accidents, occupational hazards, violence, substance use, and self-harm, while such risks decrease with age as natural deaths become more common.

In our study, the leading causes of death were road traffic accidents (RTA), poisoning, burns, hanging, and unexplained sudden deaths. This pattern is broadly consistent with profiles observed in other autopsy-based studies — though relative frequencies vary across regions and over time. Multiple studies have highlighted RTAs as a major contributor to medicolegal deaths: in a tertiary-center study from Bangladesh, RTA fatalities predominated and most victims were young males in the 21–40 years age group [1]. The importance of poisoning and hanging (often representing

intentional self-harm) is also well-established. For example, in a study of suicide autopsies, hanging was the most common method, followed by poisoning [10].

The high rate of RTAs underscores traffic safety as a major public health concern, especially among young adults, highlighting the need for better road infrastructure, law enforcement, helmet/seat-belt use, awareness, and trauma care. Poisoning and hanging indicate a need for mental health support, regulation of toxic substances, and social interventions, while burn deaths point to domestic hazards requiring preventive measures. Unexplained sudden deaths suggest gaps in forensic investigations, emphasizing the need to strengthen medico-legal capabilities for accurate cause-of-death determination.

Conclusion

Between January and October 2023, the majority of medicolegal autopsies conducted at DMC were due to unnatural deaths, with young adult males representing the largest affected group. The most frequent causes of death were road traffic accidents, poisoning, and hanging, highlighting a combination of external environmental hazards and potential psychosocial stressors prevalent in this demographic. These findings emphasize the urgent need for comprehensive public health interventions, including the strengthening of road safety policies, enforcement of traffic regulations, regulation and safe storage of toxic substances, and expanded mental health services to identify and support at-risk individuals. Additionally, improving mortuary data recording and surveillance systems is crucial to ensure accurate documentation of causes of death, facilitate evidence-based prevention planning, and ultimately reduce the incidence of unnatural deaths within the community.

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