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Original Article

Forensic Insights into Unnatural Deaths in Khulna Region: A Demographic Analysis of Autopsy Findings

Rumana Kabir[1], Nazmun Nahar Nahida[2], Rowshon Ara Begum[3], Farhan Tanvir[4], Tanvira Haque[5], Rony Kumar Brahma[6]

[1]Assistant Professor, Department of Forensic Medicine & Toxicology, Ad-din Akij Medical College, Khulna, Bangladesh; [2]Associate Professor, Department of Forensic Medicine & Toxicology, Monno Medical College, Manikganj, Bangladesh; [3]Assistant Professor, Department of Forensic Medicine & Toxicology, Khwaja Yunus Ali Medical College, Sirajganj, Bangladesh; [4]Assistant Professor, Department of Forensic Medicine & Toxicology, Ad-din Akij Medical College, Khulna, Bangladesh; [5]Assistant Professor, Department of Biochemistry, Ad-din Akij Medical College, Khulna, Bangladesh; [6]Lecturer, Department of Forensic Medicine & Toxicology, Khulna Medical College and Hospital, Khulna, Bangladesh

Abstract

Background: The number of unnatural deaths has been steadily climbing up over the years. There is a clear absence of effective intervention, despite the growing body of empirical evidence showing an increase in violent crimes, accidents, and mental health disorders that result in fatalities. Such incidents are become more concerning, especially in Khulna, a district in southwest Bangladesh, where high fatality rates are made worse by environmental stresses, socioeconomic difficulties, and rapid urbanization. ***Objective:*** The aim of the current study is to conduct a statistical examination of unnatural deaths occurred in the Khulna region and provide an analysis of demographic characteristics of the deceased. ***Methodology:*** This study has applied a quantitative research method, utilising secondary data for statistical analysis. The dataset comprises findings of 519 preliminary autopsy reports from Khulna Medical College Hospital for the year of 2022, starting from 1st January till 21st December. **Results:** This study offers a thorough demographic and epidemiological summary of unnatural fatalities in the Khulna area in 2022. Though the predominance of male decedents (53.56%) and a considerable female proportion (46.44%) suggest a rather balanced but gender-sensitive vulnerability to unnatural mortality. Leading causes—hanging (39.11%) and poisoning (28.32%)—suggest major public health issues with suicide and self-harm that call for improved mental health services and suicide prevention initiatives. Additionally, significant rates of murder (10.98%) and road traffic accidents (9.06%) expose the ongoing toll accidents and violence carry. ***Conclusion:*** Future public health campaigns, law enforcement tactics, and community education initiatives could all be built on the results of this study. Understanding the factors and demographic groups most impacted by unnatural deaths helps policymakers and healthcare professionals to better focus their resources and efforts toward prevention.safety.

Keywords: Unnatural death; Autopsy finding; Demographic analysis; Forensic medicine; Suicide, Khulna; Bangladesh.
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Correspondence: Dr. Rumana Kabir, Assistant Professor, Department of Forensic Medicine & Toxicology, Ad-din Akij Medical College, Khulna, Bangladesh, Email: rumanakabir123@gmail.com, ORCID: 0009-0004-9541-7550, Contact no.- 01913078156
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Introduction

The study of unnatural deaths focuses on a critical aspect of forensic science and provides deep insights into causes and patterns of mortality. From a legal perspective, the term "unnatural death" can be defined as the category of death that has not occurred due to any natural cause such as illness, disease, or natural aging[1]. Unnatural death includes deaths resulting from different external factors including but not limited to accidents, homicide, violence, suicide, and drug or substance overdose[2-4]. In any legal proceeding, the determination whether a death has occurred naturally or it is a result of aforementioned external factors often plays the most critical role.

In the Khulna division of Bangladesh, analysing the trends of unnatural death can help to identify public health challenges, social factors, and regional disparities that are directly responsible for influencing these outcomes. Unnatural deaths such as homicides, suicides, accidents, and other preventable causes, have visible implications for law enforcement, public policy, and healthcare systems. Autopsy reports are critical components of forensic investigations and serve as an indispensable data source, providing unique and significant insights into causes and patterns of deaths and criminal activities.

Various types of unnatural deaths such as homicides, suicides, road traffic accidents (RTAs), drownings, and poisonings pose a major burden on global public health systems. In Bangladesh, these deaths have long been a significant concern, further straining the country's already under-resourced forensic departments. Beside homicidal deaths, existing data highlights suicide as highly prevalent cause of death as well, with the rate of more than 130 per 100,000 deaths by suicide per annum[5].

Over the years, the frequency of unnatural deaths has only increased. The existing stream of empirical evidence indicates that violent crimes, accidents, and mental health issues leading to deaths are on the rise, and lack of effective intervention is evident[6-9]. Particularly in Khulna, a district in southwestern Bangladesh, such occurrences are becoming increasingly worrisome as rapid urbanization, socio-economic challenges, and environmental stressors all aggravate already high death rates.

The aim of the current study is to conduct a statistical examination of unnatural deaths occurred in the Khulna region and provide an analysis of demographic characterises of the deceased. Using autopsy data, the study identifies causes and manners of death, age distribution, gender develop targeted interventions and enhance forensic investigations. Through this analysis and evidence-based insights, the study aims to contribute to the broader field of forensic science. The study also discusses sociocultural and environmental factors that are correlated with unnatural deaths.

The study explores in detail the interactions of age, cause of death, and gender in the Khulna area and the variations in these deaths among different demographic groups. Concentrating on these elements will help the study to present a more complete picture of the most exposed groups and the most common causes of unnatural deaths, therefore directing policy-making and public health campaigns.

Methodology

Data source and Population: This study has applied a quantitative research method, utilising secondary data for statistical analysis. The dataset comprises findings of preliminary autopsy reports from Khulna Medical College Hospital for the year of 2022, starting from 1st January till 21st December. In 2022, the total number of 519 autopsies were conducted in Khulna Medical College Hospital and the study includes each of these cases. The autopsy cases included bodies referred from surrounding 12 districts including Khulna, Gopalganj, Satkhira, Chuadanga, Narail, Bagerhat, Jessore, Magura, Rangpur, Bhola, Pirojpur, and Jhenaidah.

Study Procedure: The cases were analysed at Khulna Medical College Hospital, Khulna, Bangladesh as part of their routine forensic procedure. Under Bangladesh's medico-legal system, cases of unnatural death such possible homicide, suicide, accidental death, or any death under suspicious circumstances—are legally investigated and must be autopsied[9]. In areas with insufficient forensic facilities, the bodies are sent to nearby medical facilities with autopsy capabilities when such fatalities happen. Major forensic centre for the southwestern part of Bangladesh, Khulna Medical College Hospital often receives referral cases from twelve neighbouring districts. Law enforcement agencies consult local health officials to ensure that the medico-legal examination is carried out by competent forensic practitioners. Standardized documentation is made possible by this centralized approach, which also helps to depend on forensic data applied in public health study and legal cases.

Statistical Analysis: The study implemented a range of statistical analyses for identifying trends and examining the

demographic traits of the cases for possible insights. The analysis was carried out using Statistical Package for Social Science (SPSS version 20.0).

Ethical Clearance: The study was conducted using the dataset of preliminary autopsy finding reports of Khulna Medical Hospital for the year of 2022. Given the nature of the data and for ensuring confidentiality, the dataset was anonymised and no information that could identify the victims was included in the study. Upon analysis, the data were destroyed from ensuring absolute privacy protection. Appropriate ethical clearances were obtained from relevant authorities prior to data collection.

Results

Table 1 presents the gender distribution of the 519 autopsy cases analysed in this study. The data reveals that male decedents account for 53.56% (n = 278) of all unnatural death cases, while female decedents represent 46.44% (n = 241). This indicates a slight male predominance in the incidence of unnatural deaths in the Khulna region during the year 2022.

Table 1: Gender Distribution (n = 519)

Gender	Frequency	Percent
Female	241	46.4
Male	278	53.6
Total	**519**	**100.0**

Table 2 showed the age-wise distribution of unnatural deaths (n = 519), which revealed several notable patterns. The highest number of deaths occurred in the age group 21 to 30 years, accounting for 30.44% (n = 158) of the total cases. This is closely followed by the 11 to 20 years group, which represents 26.97% (n = 140). Together, these two age categories constitute over 57% of all recorded unnatural deaths, highlighting a disproportionately high vulnerability among adolescents and young adults. The 31 to 40 years (12.5%) and 41 to 50 years (12.1%) groups show a moderate number of cases, while individuals aged 60 and above comprise 9.1% of the total. The lowest representation is found in the 0 to 10 years age group, with only 1.9% (n = 10), and the 51 to 60 years group at 6.9% (n = 36).

The causes of unnatural deaths in the Khulna region for 2022 indicates that hanging is the most prevalent cause, accounting for 39.11% (n = 203) of the total 519 cases. This significant proportion highlights the prominence of suicide as a major public health concern in the region. The second most common cause is poisoning, responsible for 28.32% (n = 147) of deaths, which also frequently aligns with intentional self-harm or accidental overdose. Together, hanging and poisoning constitute over 67% of all unnatural deaths, underscoring the urgent need for mental health awareness and suicide prevention strategies. Murder ranks third, contributing to 10.98% (n = 57) of deaths, reflecting the impact of violent crime in the region. Road Traffic Accidents (RTAs) account for 9.06% (n = 47), indicating significant risks associated with transportation and mobility. Less frequent causes include drowning (3.47%), electrocution (1.93%), and clinical negligence (0.58%). A small portion of cases (6.17%) remain unconfirmed, indicating limitations in conclusive forensic determination (Table 3).

Table 2: Age Distribution (n = 519)

Age Category	Frequency	Percent
0 to 10 Years	10	1.9
11 to 20 Years	140	27.0
21 to 30 Years	158	30.4
31 to 40 Years	65	12.5
41 to 50Years	63	12.1
51 to 60 Years	36	6.
More than 60 Years	47	9.1
Total	**519**	**100.0**

Table 3: Cause of Death (n = 519)

Cause of Death	Frequency	Percent
Clinical Negligence	3	0.6
Drowning	18	3.5
Electrocution	10	1.9
Hanging	203	39.1
Head Injury	2	0.4
Murder	57	11.0
Poison	147	28.3
Rta	47	9.1
Unconfirmed	32	6.2
Total	**519**	**100.0**

The geographic spread of unnatural death cases shows a clear focus in the Khulna district, which represents 69.75% (n = 362) of all autopsies performed. Given that Khulna Medical College Hospital is the main forensic centre for the southwestern part and handles the majority of referral cases from nearby areas, this high percentage is anticipated (Table 4).

Table 4: District-Wise Distribution of Cases (n = 519)

District	Frequency	Percent
Bagerhat	40	7.7
Bhola	1	0.2
Chuadanga	5	1.0
Gaibandha	1	0.2
Gopalganj	9	1.7
Jessore	49	9.4
Jhenaidah	6	1.2
Khulna	362	69.8
Magura	2	0.4
Narail	20	3.9
Pirojpur	10	1.9
Rangpur	1	0.2
Satkhira	13	2.5
Total	**519**	**100.0**

Discussion

Earlier research conducted in Bangladesh has revealed that particularly among young men, road traffic accidents are among the main causes of unnatural death[10]. However, relatively little research concentrating on the interaction of demographic variables and unnatural deaths in certain areas—such as Khulna—exists. By offering a thorough examination of autopsy results from the area, this study explores the demographic distribution of unnatural fatalities in 2022 and fills a gap.

The data analysis illustrates that preventable causes such as suicide, poisoning, and accidents dominate the unnatural death profile in Khulna, emphasizing the need for strengthened forensic capabilities, improved public health interventions, and targeted policies to reduce these fatalities. The predominance of hanging (39.1%) and poisoning (28.3%) as leading causes of unnatural deaths in the Khulna region suggests a major public health concern focused on suicide and self-harm. These results fit national and regional patterns showing high suicide rates, which replicate underlying mental health problems, societal pressures, and constrained availability of psychological support services[11-14]. Further emphasizing the complicated interaction of violence and accidents causing premature mortality is the high burden of murder (11.0%) and road traffic accidents (9.1%).

The notable portion of unconfirmed cases demonstrate the gaps and barriers in forensic investigation and analysis and lack of resources available in the region and in the institution. The availability of modern equipment, capable personnel and technological support are all critical for creating a highly efficient and capable forensic unit which the Khulna region is currently lacking. The rapid growth of Khulna's urban population and its fast infrastructural development has also caused its rates of violence, accidents and road traffic accidents to increase. Moreover, the rural population of Khulna still lacks adequate awareness and resources to tackle these preventable deaths. The absence of emergency services and strong healthcare services in rural areas have also contributed to the unnatural death rate, like most of the other backward areas in Bangladesh[15].

Moreover, gender disparity analysis provides critical insight into the problem with many implications. Existing research have demonstrated that men are more prone to die violently homicides or suicides while women have higher rates of suicide by hanging or poison, particularly in relation to socioeconomic factors[16]. Nonetheless, not much research has been done on the particular gender relations in Khulna with regard to the kinds of unnatural fatalities.

While in this current data analysis indicates that the difference between male and female cases is not drastically wide, the findings suggest that males are marginally more vulnerable to unnatural causes of death in this setting. This may be attributed to greater exposure of males to high-risk environments, occupational hazards, or sociocultural factors such as mobility, engagement in external activities, or involvement in violence-related incidents. However, the substantial proportion of female deceased nearly half of the total also points to significant gender-based vulnerabilities, which could be linked to suicides, domestic violence, or limited access to mental health resources[17].

This gender-based breakdown provides an important demographic insight into the pattern of unnatural deaths in Khulna and highlights the necessity of considering gender-sensitive approaches in public health policies and forensic investigations. Another important demographic factor is age, which can offer analysis of the susceptibility of certain age groups to unnatural deaths. For instance, younger adults and teenagers are frequently more vulnerable to road traffic accidents and suicides; older persons may have higher death rates from falls, drowning, or other age-related hazards. This study draws attention to the most exposed age groups and propose suitable preventative actions by looking at the age distribution of unnatural fatalities in Khulna. The findings of the data analysis suggest that unnatural deaths predominantly affect individuals in their most active and productive life stages,

especially those between 11 and 30 years. This age-related trend may be associated with factors such as risk-taking behaviour, road traffic exposure, socio-economic stress, employment instability, interpersonal violence, and mental health issues that often peak during adolescence and early adulthood. The relatively low frequency in the youngest (0 to 10 years) and oldest (more than 60 years) age groups may reflect lower exposure to such external risk factors or underreporting.

Understanding these age-based patterns is crucial for designing targeted public health interventions, age-specific mental health support, and preventive forensic strategies that address the underlying causes contributing to early mortality in this region.

Conclusion

This study offers a thorough demographic and epidemiological summary of unnatural fatalities in the Khulna area in 2022. Though the predominance of male decedents and a considerable female proportion suggest a rather balanced but gender-sensitive vulnerability to unnatural mortality. Leading causes—hanging and poisoning —suggest major public health issues with suicide and self-harm that call for improved mental health services and suicide prevention initiatives. Additionally, significant rates of murder and road traffic accidents expose the ongoing toll accidents and violence carry. Future public health campaigns, law enforcement tactics, and community education initiatives could all be built on the results of this study. Understanding the factors and demographic groups most impacted by unnatural deaths helps policymakers and healthcare professionals to better focus their resources and efforts toward prevention.

Conflict of interest

The author declares no conflict of interest

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References

1.Woudenberg-van den Broek CM, van der Velden K, Duijst-Heesters WL. What's in a name? A discussion on the definition of natural and unnatural causes of death. Philosophy, Ethics, and Humanities in Medicine. 2022 Nov 23;17(1):14.

2.McNeeley S, Clark VA, Duwe G. Risk factors for all-cause, natural, and unnatural deaths among individuals released from state prison. Journal of Criminal Justice. 2023 May 1;86:102059.

3.Junno JA, Pakanen L, Oura P. Unnatural-cause mortality patterns of Northern Finnish men and women diverge in adolescence–A 52-year follow-up. Preventive medicine reports. 2021 Jun 1;22:101337.

4.Mizuno S, Ono S, Yasunaga H, Iwase H. Factors associated with methamphetamine use in Japanese people who died of unnatural causes: analysis using forensic autopsy reports. Forensic Science International. 2021 Oct 1;327:110946.

5.Shuvo TA, Hossain K, Dey DR. Suicide Attempts in Bangladesh: Prevalence, Trends, and Disparities. Journal of Medicine, Surgery, and Public Health. 2024 Dec 13:100170.

6.Kumar S, Mundri S, Shubhendu K, Kumar A. Analysis of Autopsy Justifications by Medical Boards in Relation to the Manner and Cause of Death. Cureus. 2025 May 3;17(5).

7. Hossain AI, Karim SN, Biswas P, Eunus MF, Rawnuck T, Sharmin R, Saleh AF. Histopathological Findings of Liver Autopsy Cases: Study at a Tertiary Care Hospital. Mediscope. 2025 Mar 17;12(1):10-7.

8. Siddique MA, Robel IU, Khatun UF. Pattern of Pesticide and Herbicide Poisoning Among People Admitted to Medicine Wards of a Tertiary Care Hospital. Medicine Today. 2024 May 8;36(1):36-40.

9. Rashid MH. Medical Evidence in the Criminal Justice Delivery System in Bangladesh: Flaws and Fillers. Available at SSRN 4272177.

10. Rojy NN, Haidar R, Linda SR, Hossain MA, Saha S. A Retrospective Observational Study of Socio-Demographic Causes of Death Due to Hanging in Sir Salimullah Medical College Hospital, Dhaka, Bangladesh. The Journal of Ad-din Women's Medical College. 2025 Apr 28;13(1):14-7.

11. Arafat SY, Kar SK. Self-Harm and Suicidal Behavior Among Prisoners in South Asia: A Narrative Review. Health Science Reports. 2025 Apr;8(4):e70695.

12. Mowly RK. Social media can help: Social Media and Gender Violence in Melbourne's Bangladeshi community (Doctoral dissertation, La Trobe).

13. Pant PR, Sedain B, Cenderadewi M. A call for action to address the burden of drowning in Nepal. Europasian Journal of Medical Sciences. 2025 Apr 14;7:1-5.

14. Bhuiyanl MM, Hussain MZ, Karim T, Barua C, Islams D, Islam T. Tertiary Level Hospital in Bangladesh. children.;50:3.

15. Roy A. Effect of Climate-Related Disasters on Consumption: Theory and Evidence from Bangladesh. Asian Development Review. 2025 Jan 17:1-29.

16. Malik R, Chughtai BR, Khursheed R, Amanat M, Khan SP, Rizvi S. Pattern of Unnatural Deaths-An Audit of Autopsies. Journal of Rawalpindi Medical College. 2017 Jan 1;21(1).

17. Khan MB, Hossain MM. Study on unnatural death patterns in Dhaka City. Anwer Khan Modern Medical College Journal. 2011;2(2):18-20.