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Patterns and Causes of Child Deaths in Medicolegal Cases: A Cross-Sectional Review from Two Tertiary Hospitals in Dhaka

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ABSTRACT: ***Background:*** Child mortality is a significant public health concern, particularly in low- and middle-income countries. Understanding the patterns and causes of child deaths from a medicolegal perspective is vital for prevention and policymaking. ***Objective*****:** To explore the patterns, manners, and causes of child deaths reported for medicolegal examination in two tertiary hospitals in Dhaka, Bangladesh. ***Methods*****:** A cross-sectional retrospective review was conducted using 112 medicolegal records of deceased children (aged 0–18 years) from Dhaka Medical College and Sir Salimullah Medical College between January and December 2024. Data were extracted from autopsy registers and postmortem reports, including age, sex, manner of death, and cause of death. ***Results*****:** Most deaths occurred in the 11–15 years age group (24.1%), with a male predominance (58.9%). Accidental deaths were the most common (38.4%), followed by undetermined (23.2%), natural (15.2%), suicidal (13.4%), and homicidal (9.8%) deaths. Leading causes included road traffic accidents (18.8%), drowning (15.2%), blunt trauma (13.4%), and hanging (9.8%). Suicides were mainly observed in adolescents, while homicides were more frequent in children under 10 years. ***Conclusion*****:** The majority of child deaths reviewed were preventable and associated with external causes. Adolescents are particularly vulnerable to suicide, while younger children face risks of homicide and accidents. The findings underscore the need for child protection policies, mental health support, injury prevention strategies, and improved forensic investigation systems in Bangladesh.

Keywords: Child Mortality, Medicolegal Autopsy, Accidental Death, Suicide, Homicide, Bangladesh, Forensic Pathology.

INTRODUCTION

Over 10 million children under the age of five die each year across the world.[1] The death of a child—especially a sudden and unexpected one—is a profoundly tragic experience for parents, caregivers, and the broader community. Bereaved families rightfully expect thorough, compassionate, and appropriate investigations to determine the medical causes behind such losses. In many cases, the death of even a single child can spark public outcry and lead to widespread calls for reform in child welfare systems.[2, 3] Significant global progress has been made in reducing childhood mortality over the past three decades. The total number of under-5 deaths worldwide

has decreased from 12.8 million in 1990 to 4.8 million in 2023, reflecting a remarkable improvement in child survival. During this same period, the global under-5 mortality rate fell by 59%, from 93 to 37 deaths per 1,000 live births. Neonatal deaths also experienced a notable decline—from 5.2 million in 1990 to 2.3 million in 2023. However, the rate of reduction in neonatal mortality has been slower compared to that of post-neonatal under-5 deaths, highlighting ongoing challenges in perinatal and early infant care.[4, 5] In Bangladesh, tertiary medical college hospitals serve as referral centers where most medicolegal autopsies are performed, offering a valuable opportunity to analyze patterns of child mortality from a forensic perspective. However, research focusing specifically on pediatric medicolegal deaths in the country remains sparse. This study aims to explore the patterns, causes, and characteristics of child deaths (aged 0–18 years) reported for medicolegal examination in Dhaka Medical College and Sir Salimullah Medical College, two major tertiary hospitals in Bangladesh. By identifying trends in age, sex, manner of death, and underlying causes, this study seeks to inform public health policy, injury prevention efforts, and child protection strategies.

METHODOLOGY

This cross-sectional study was conducted to analyze patterns, causes, and characteristics of child deaths reported for medicolegal examination. Data were retrospectively collected from the records of Dhaka Medical College and Sir Salimullah Medical College, two major tertiary-level government hospitals in Dhaka, Bangladesh. The study covered 12 months, from January to December 2024. 112 medicolegal cases involving deceased children aged 0–18 years were included. Cases were selected based on availability in official autopsy registers and forensic documentation. Only cases with complete records and confirmed age under 18 years were included in the analysis. A structured data extraction form was used to collect information on age, sex, manner of death (natural, accidental, suicidal, homicidal, or undetermined), cause of death, and any notable forensic findings. Data were obtained solely from hospital medicolegal registers and postmortem reports. The collected data were coded and entered into SPSS version 26.0 for analysis. Descriptive statistics, including frequencies and percentages, were used to present the distribution of variables. Strict confidentiality and data protection measures were maintained throughout the process.

RESULTS

Table 1: Age and Sex Distribution of Deceased Children (n = 112)

Age Group	Male (n)	Female (n)	Total (n)	Percentage (%)
<1 year (Infants)	10	8	18	16.1%
1–5 years	14	10	24	21.4%
6–10 years	12	9	21	18.8%
11–15 years	16	11	27	24.1%
16–18 years	14	8	22	19.6%
Total	**66**	**46**	**112**	**100%**

In Table 1, Most deaths occurred in the 11–15 years age group (24.1%), followed by 1–5 years (21.4%). Males (58.9%) were more frequently affected than females (41.1%).

Table 2: Manner of Death in Medicolegal Cases (n = 112)

Manner of Death	Frequency (n)	Percentage (%)
Accidental	43	38.4%
Homicidal	11	9.8%
Natural	17	15.2%
Suicidal	15	13.4%
Undetermined	26	23.2%
Total	**112**	**100%**

In Table 2, Accidental deaths were most common (38.4%), followed by undetermined causes (23.2%). Homicidal deaths accounted for 9.8%, and suicidal deaths were observed in 13.4% of cases. Natural deaths made up 15.2% of the total.

Table 3: Causes of Death Identified During Postmortem (n = 112)

Cause of Death	Frequency (n)	Percentage (%)
Road traffic accidents	21	18.8%
Drowning	17	15.2%
Blunt force trauma	15	13.4%
Hanging	11	9.8%
Poisoning	10	8.9%
Suffocation/strangulation	7	6.3%
Burn injury	8	7.1%
Infections (e.g., pneumonia)	7	6.3%
Fall from height	6	5.4%
Others/Unspecified	10	8.9%
Total	**112**	**100%**

In Table 3, The most frequent cause of death was road traffic accidents (18.8%), followed by drowning (15.2%) and blunt trauma (13.4%). Hanging (9.8%) and poisoning (8.9%) were major contributors to suicidal deaths. Suffocation and burns were common in accidental or homicidal cases. A small percentage (6.3%) died from natural causes such as infections.

Table 4: Distribution of Suicidal and Homicidal Deaths by Age Group (n = 26)

Age Group	Suicidal (n)	Homicidal (n)
<1 year	0	2
1–5 years	0	3
6–10 years	1	2
11–15 years	6	2
16–18 years	8	2
Total	**15**	**11**

Suicidal deaths predominantly occurred among older children (11–18 years), often due to hanging or poisoning. In contrast, homicidal deaths were more common in younger children, particularly under the age of 10, suggesting vulnerability and possible abuse or neglect.

DISCUSSION

This study provides an important medicolegal perspective on the patterns and causes of child deaths reported in two prominent tertiary hospitals in Dhaka, Bangladesh. By analyzing 112 medicolegal cases of children aged 0–18 years, it sheds light on the distribution by age, sex, manner of death, and underlying causes—crucial for informing prevention strategies, public health policies, and child protection systems. The study found that the 11–15 years age group accounted for the highest proportion of child deaths (24.1%), followed by the 1–5 years group (21.4%). These findings reflect two key vulnerable populations: young children who are physically dependent and susceptible to accidental harm or neglect, and adolescents who may face increasing psychosocial stressors, risk-taking behaviors, or mental health crises. A consistent male predominance (58.9%) was observed across all age groups, which aligns with national and global patterns in child mortality, especially in unintentional injuries and external causes.[6, 7] This disparity may be due to increased exposure of boys to risky environments, greater outdoor activity, and sociocultural factors that influence behavior and parental supervision.

Among all cases, accidental deaths were the most frequently reported (38.4%), a trend seen in many developing countries where safety regulations and childproofing are limited.[8] Undetermined deaths formed a substantial portion (23.2%), indicating the challenges in postmortem classification, especially when evidence is insufficient or families are uncooperative.

Importantly, suicidal deaths (13.4%) among children—particularly adolescents—reflect an alarming mental health burden. Adolescents aged 11–18 years made up the majority of suicide cases, often through hanging and poisoning. This reinforces the growing global concern over youth mental health, digital stress, academic pressure, and lack of accessible counseling services.[9] Homicidal deaths (9.8%), though fewer, were more prevalent in younger children (<10 years), suggesting possible child abuse, neglect, or infanticide. These cases often involved suffocation, blunt trauma, or burns, and highlight the urgent need for community awareness, protective surveillance, and legal enforcement to prevent violence against children.[10] The leading cause of death was road traffic accidents (18.8%), reflecting urban hazards, poor traffic control, lack of pedestrian safety, and limited enforcement of child safety laws (e.g., helmets, seatbelts). Drowning (15.2%), predominantly in children aged 1–10 years, is a major but preventable cause, particularly in low-income settings with open water bodies and limited supervision. Blunt trauma (13.4%) burns (7.1%), and falls (5.4%) were also common in accidental or inflicted injuries, underscoring the need for community-level injury prevention programs. Additionally, natural causes (e.g., infections) were responsible for only a small portion (6.3%), suggesting that the majority of medicolegal deaths were injury-related rather than disease-related.[11]

Implications

The study highlights the multifactorial nature of child mortality in medicolegal contexts. Many of these deaths are preventable through appropriate interventions, such as:

Road and home safety regulations

Early mental health screening in schools

Parental education and community support systems

Strengthening child protection laws

Improving forensic death investigations to reduce "undetermined" classifications

Limitations

This study was retrospective and based solely on hospital medicolegal records, which may not capture contextual or psychosocial factors (e.g., family background, intent). Also, the findings are limited to urban tertiary hospitals and may not reflect patterns in rural or underreported cases. Furthermore, underreporting child abuse or suicide due to stigma and social pressure may have led to classification bias.

CONCLUSION

This study emphasizes the urgent need to address accidental, suicidal, and homicidal deaths in Bangladeshi children. Most cases stemmed from preventable external causes, with distinct age-related vulnerabilities. The findings can inform public health strategies, legal reform, and intersectoral collaboration to improve child safety and well-being in Bangladesh.

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