

## Epidemiology of Childhood Trauma among Under 05 Years Age Group in South-East Part of Bangladesh

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### Abstract

**Background:** The prevention of injuries to children remains a high priority for society. Injury is an important cause of childhood mortality in Bangladesh. Here we described the epidemiology, types and trends of injury-related deaths of children <5 years of age in south-east part of Bangladesh, and discussed several policy implications. The ultimate aims of this research study were to find out the incidence rate, urban-rural distribution, mortality rate, pattern, types and trends of childhood injury in south-east portion of Khulna division, Bangladesh.

**Methodology:** A cross sectional study was conducted in Gazi Medical College Hospital, Khulna, Bangladesh in collaboration with private chambers and NGOs, with a total number of 1032 children (age <05 years) with trauma from January 2016 to January 2020. All data was collected and analyzed prospectively. Convenient purposive sampling was the sampling method.

**Results:** The frequency of childhood trauma found in this study was 5.9% (1032 cases out of total 17,590 children). Trauma was more common in 03-04 years of age group (30.3%). Most of the injuries were occurred in rural area (56%). In 83.1% cases, trauma was due to accidental injury. Sexual abuse was associated in 6.3% children of childhood trauma. Road traffic accident (RTA) was the most common form of injury (27.6%). Peak incidence was observed in between March to May.

**Conclusion:** The incidence and mortality rates among the under 5 years children were found relatively high in this study. Establishment of local policy, guideline and legislation are the key success to reduce the magnitude of childhood injuries, especially in rural area in Bangladesh.

**Keywords:** Childhood trauma, incidence, pattern, trends, mortality rate.

### INTRODUCTION

A traumatic event is a frightening, dangerous, or violent event that poses a threat to a child's life or bodily integrity. Witnessing a traumatic event that threatens life or physical security of a loved one can also be traumatic<sup>1</sup>. Understanding the epidemiology of traumatic experiences in childhood is critical to conducting meaningful trauma research, developing effective trauma services and service delivery systems, and efficiently allocating resources for both activities.

Without an understanding of the basic topography of these events in the lives of youth, there is a danger of over focusing on extraordinary, emotionally gripping, or highly visible types of events and overlooking less obvious or dramatic, but perhaps highly significant forms of trauma<sup>2,3</sup>. From a public health viewpoint, knowing the prevalence and incidence of trauma types can help increase the reach of interventions, programs, and services. Obtaining even a relatively modest effect with either prevention or intervention services can

result in a large public health impact when applied to a highly prevalent form of trauma<sup>2</sup>.

Childhood injury is a global health problem, especially for low- and middle-income countries<sup>4,5</sup>. The rate of childhood injury-related deaths is 3.4 times higher in low- and middle income countries than in high-income countries<sup>6,7</sup>. Accidental injuries were estimated to cause 324,000 deaths in children 1±59 months of age worldwide in 2013<sup>8</sup>. It is estimated that 11,000 infants and 20,000 children of 1±4 years age die each year in China based on the analysis of 2010 data. In 2014, injury-related deaths accounted for nearly 50% of all deaths in children <5 years of age in China<sup>9</sup>. The China National Program for Child Development (2010±2020) demands that injury-related mortality be reduced by one sixth of the 2010 level<sup>10</sup>. In Asian sub-continent, we apparently have less number of authentic and reliable data regarding this. We should make every effort to achieve this requirement to control and reduce childhood injury-related mortality.

Sweden considers childhood injury as a public health problem that society as a whole must control, and implemented a societal approach to the promotion of safety beginning in the 1950s. The program includes development of injury surveillance, public information and education, environmental improvements, and product safety development. It is widely believed that injury surveillance is a crucial prerequisite for effective injury prevention and control<sup>11,12</sup>.

Estimates of the frequency of physical abuse of children vary from country to country and from study to study, but the report found that even the best case scenario suggests that 1 in 10 children experience physical abuse, while the worst case finds that 30.3 per cent of children suffer from abuse. The prevalence of severe physical abuse ranges from nine per cent to nearly one in four children in the region of south-east Asia, according to the studies<sup>13,14</sup>. Severe physical abuse includes beatings, including those inflicted by fists or implements, which result in physical injury<sup>15</sup>. The damage to children caused by sexual and physical abuse is often very serious and lifelong. Children who are abused, neglected, exploited or experience violence are more likely to be depressed and experience other types of mental health problems, to think about or attempt suicide, to have more physical symptoms (both medically explained and unexplained), and to engage in more high-risk behaviours than their non-abused

counterparts, the report finds<sup>16</sup>. The East Asia–Pacific region, with 580 million children or over one quarter of the world's children, includes some of the most densely populated and culturally diverse places in the world. It is doubly distressing, therefore, that this review of all the research on the prevalence, incidence and consequences of child maltreatment revealed a consistently high prevalence of child maltreatment throughout the region<sup>17</sup>.

The research goal of this study were to determine the incidence, mortality rate, urban-rural distribution, pattern, types, trends and relevant statistics of childhood injury in south-east portion of Khulna division, Bangladesh.

### METHODOLOGY

This research was conducted as a cross sectional study in Dept. of Paediatrics in a corporate private hospital of south-east zone of Bangladesh, Gazi Medical College Hospital, Khulna, and Dept. of Paediatric Surgery, Khulna Medical College Hospital, Bangladesh, in collaboration with private chambers and with the children referred and reported by NGOs. A total number of 1032 children (age <05 years) with trauma (frightening, dangerous, or violent event that poses a threat to a child's life or bodily integrity) were the population of this research from a period of January 2016 to January 2020, based on inclusion (1. Children of respective age group with accidental or homicidal fall, trauma, road traffic accident, 2. Victim of sexual abuse and physical violence) & exclusion criteria (1. Children with congenital anomaly, 2. Refusal of legal guardians regarding consent in appropriate circumstances). All data was collected and analyzed prospectively- such as patient details history, clinical & investigative findings etc. Convenient purposive sampling was used as a method of selecting study sample. In this clinical study, both manual and computer based statistical analysis of the data were done. Data were analyzed manually and then rechecked with SPSS (Statistic package for social science) computer package programmer. The survey data were usually be analyzed using both analytic as well as descriptive statistic. Such as; mean, SD, percentage etc. Ethical clearance was taken individually from patient's legal guardians and from the ethical review committee of Gazi Medical College Hospital, Bangladesh.

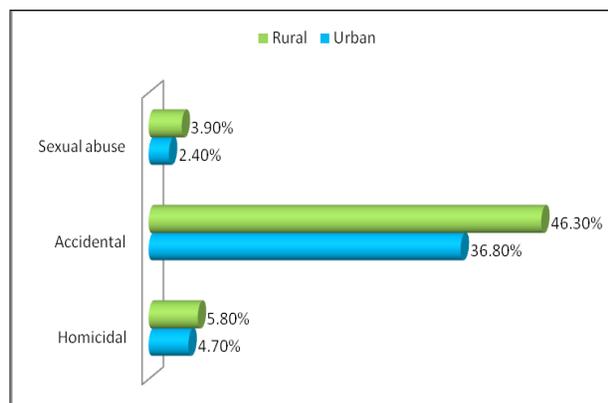
**RESULTS**

During the study period, approximately a total number of 17,590 children (age <05 years) were seen in different study places as both in-patient and out-patients basis. Among them, 1032 (5.9%) cases were found to have trauma in different form. Age and sex distribution of the study population is seen in table 1.

**Table1.** Age and sex distribution of the study population

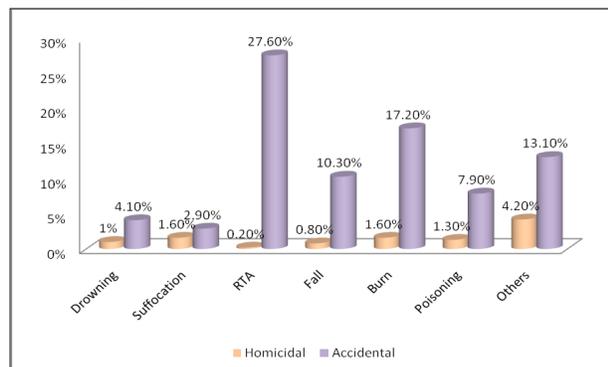
Age distribution	Male	%	Female	%
Neonate	05	0.5	18	1.7
Infant	10	1.0	25	2.4
01-02 years	74	7.2	77	7.4
02-03 years	138	13.4	121	11.7
03-04 years	177	17.2	135	13.1
04-05 years	152	14.7	100	9.7
<b>Total</b>	<b>556</b>	<b>53.9</b>	<b>476</b>	<b>46.1</b>

Most of the occurrence happened in rural area (578 cases, 56%) than in urban area (454 cases, 44%). The nature & motive of trauma is presented in figure 1.



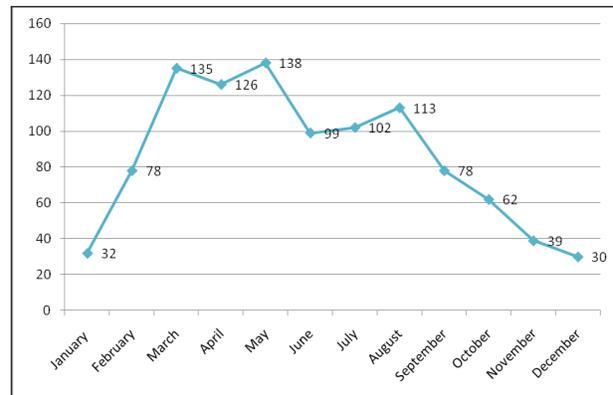
**Figure1.** Nature of childhood trauma

Different modes of childhood trauma have been depicted in figure 2. Road traffic accident is the most common type of this form of trauma.



**Figure2.** Different forms of childhood trauma

Out of the total 1032 cases, the overall mortality rate was 10.9% (112 cases). The monthly distribution and patter of childhood trauma is described in figure 3.



**Figure3.** Trend and monthly distribution of childhood injury

**DISCUSSION**

In this study, the overall incidence of childhood trauma was found as 5.9%. Most of them (30.3%), were in 03-04 years of age group. Approximately 53.9% were male children. Most of the incidence (56%), occurred in rural area. In 83.1% cases, trauma was due to accidental injury followed by 10.5% was due to homicidal injury. Sexual abuse occurred in approximately in 6.3% cases (more common in rural area). In 27.6% cases, injury occurred from road traffic accident (RTA), followed by in 17.2% cases accidental burn was the leading cause. Most commonly incidences were more common in summer season. Peak incidence was observed in between March to May. Mortality rate was approximately 10.9%. Different initiatives have been already started at different local and national levels to reduce the magnitude of the incidence.

**CONCLUSION**

Childhood trauma is one of the leading causes of childhood mortality in Bangladesh. The overall incidence and mortality rates were 5.9% and 10.9% respectively, found in this study. Domestic care, education, training and health programme must be conducted on regular basis. Moreover, local policy, guideline and legislation are essential to prevent the magnitude of the problem.

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