

Pattern of Childhood Injury in a Tertiary Centre

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Abstract

Introduction: Childhood injury and death have been projected to be a disease of public health significance, however, the trend in many developing countries of which Nigeria is one is still unknown. We, therefore, examine the pattern of childhood traumatic injury in our institution. **Materials and Methods:** The information of patients aged 16 years and below who presented with trauma was extracted from the trauma registry of the emergency units of University College Hospital, Ibadan, from 2015 to 2020. Data were analysed using the SPSS version 20. **Results:** A total of 3146 children were managed for trauma in the accident and emergency departments of the hospital. Most of them were males (61.2%) and within the under-five age group (36.4%). The majority of the injuries were secondary to fall (41.8%). Male child was more likely to be involved in any mechanism of injury and children between 11 and 16 years were commonly involved in machine hand injury (80%). Following intervention in the accident and emergency department, 44.1% were discharged in the emergency units, 21.5% required admission into the specialist ward, 6.0% died, 5.0% discharged against medical advice and 2.6% were referred. **Conclusion:** The burden of childhood injury is becoming significant thus demands more attention.

Keywords: Childhood, epidemiology, injury, pattern, trauma

INTRODUCTION

For many years, programmes related to child survival targeted infectious diseases and nutritional deficiencies in infants and children. These campaigns focussed on breastfeeding, growth monitoring, immunisation and oral rehydration therapy. As these produced astonishing results by improving the health and saving millions of lives and without dismissing the importance of such gains, other causes of death and disability then become more apparent in childhood. Physical damage or injury, which occurs when the body is suddenly subjected to energy from mechanical, thermal, chemical or radiation in amounts that exceed the threshold of physiological tolerance,^[1] is fast becoming a global health issue in childhood.^[2] Several people have reported it as the leading cause of death in children older than 1 year.^[3,4] Injuries are more than often not random rather they follow a predictable pattern of event. These trends of the injuries in many developing countries are still not known. We, therefore, examine the pattern of childhood injury that presented to our institution.

MATERIALS AND METHODS

We retrospectively reviewed the trauma registry of the emergency units of University College Hospital, Ibadan, from 2015 to 2020. The information of patients aged 16 years and below who presented with trauma were extracted. The demography including the age and sex, mechanism of injury, the primary specialty involved in care and patients' outcome of care within the emergency department were recorded on IBM SPSS Statistics version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp). Data were analysed using Chi-square analysis and ANOVA with significance defined as $P < 0.05$ and summarised using percentages and diagrams.

RESULTS

A total of 3146 children were managed for trauma in both accident and emergency department and Otunba Tuwase

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Children Emergency Unit of the hospital within the 5-year period, representing 5.1% of the total visit. Most of them, 1925 patients (61.2%), were males and the age ranged between 0 and 16 years with a mean age of 7.31 ± 4.84 years.

We had 1145 patients under-fives which accounted for 36.4%, 1089 patients (34.6%) were aged 5–10 years and 912 patients (29.0%) were aged 11–16 years [Figure 1]. A significant number of these injuries (41.8%) were secondary to fall, followed by road traffic accident (RTA) (22.9%), burn (20.4%), hit (7.3%), cut (7.2%) and machine hand injury (0.3%) [Figure 2].

Most injuries resulting from fall, occurred in the home environment (70.6%, 928 patients), whereas 387 patients (29.4%) fell in the school. Similarly, of those involved in RTA, 423 patients (58.7%) had motor vehicle crash, 257 patients (35.5%) had motorbike crash and 36 patients (5%) had tricycle crash.

Table 1 shows that the sex of the patient was significantly associated with the mechanism of injury ($x = 47.224$, $P < 0.001$). Male child was more likely to be affected by these mechanisms of injury. Furthermore, there was a significant association between the age and mechanism of injury. Burn injury (53.2%) and fall (40.9%) mostly occurred in children under 5 years compared with other age groups. Hit was common amongst children between 5 and 10 years (37.6%), whereas older children between 11 and 16 years were commonly involved in machine hand injury (80%) and RTA (38.4%).

More than half (52.4%) of the patients were managed primarily by orthopaedic surgery having sustained fractures involving different bones. Other specialities involved in the care and the common injury managed include neurosurgery 23.2% with skull fractures, intracranial haemorrhages and concussion, plastic surgery 9.8% with burns, machine hand injury, avulsion injury, paediatric surgery 3.1% with abdominal injury, ophthalmology 2.7% with ocular hematoma, eyelid lacerations, cornea laceration, foreign body removal, oral and maxillofacial surgery 1.7% with tongue laceration, avulsion of the incisors, tooth eruption, oral roof laceration and facial bone fracture, whereas ear nose and throat had 1.5% with foreign-body removal from the nose and the ear, nose bridge

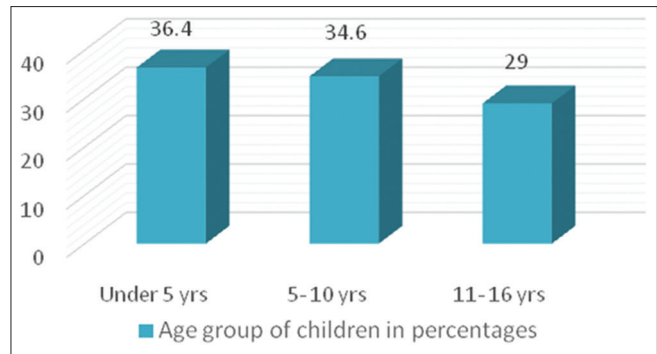


Figure 1: Frequency of injury across age group

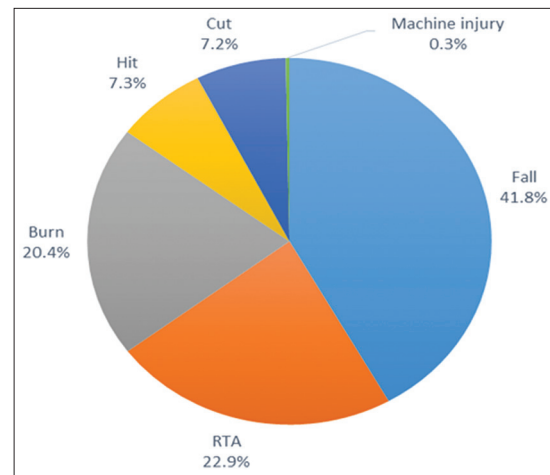


Figure 2: Mechanism of injury

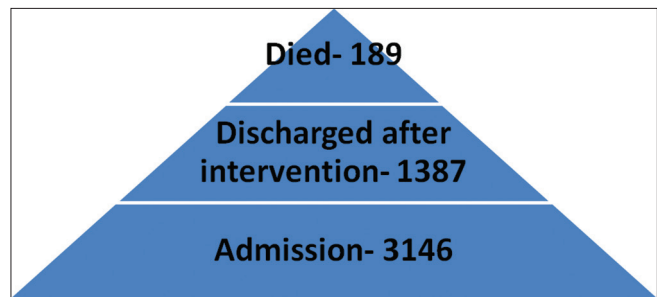


Figure 3: Outcome of childhood injury

Table 1: Association of sex and age with mechanism of injury

Variables	RTA (%)	Fall (%)	Cut (%)	Hit (%)	Burn (%)	Machine (%)	χ^2	P
Sex								
Male	367 (55.4)	811 (67.2)	130 (62.5)	144 (68.6)	320 (54.4)	9 (90.0)	47.224	<0.001
Female	295 (44.6)	396 (32.6)	78 (37.5)	66 (31.4)	268 (45.6)	1 (10.0)		
Total	662 (100.0)	1207 (100.0)	208 (100.0)	210 (100.0)	558 (100.0)	10 (100.0)		
Age (years)								
<5	181 (27.3)	494 (40.9)	48 (23.1)	61 (29.0)	313 (53.2)	1 (10.0)	214.733	<0.001*
5-10	227 (34.3)	481 (39.9)	66 (31.7)	79 (37.6)	176 (29.9)	1 (10.0)		
11-16	254 (38.4)	232 (19.2)	94 (45.2)	70 (33.3)	99 (16.8)	8 (80.0)		
Total	662 (100.0)	1207 (100.0)	208 (100.0)	210 (100.0)	558 (100.0)	10 (100.0)		

RTA: Road traffic accident

fracture and laceration being some of the conditions they were managed for.

Of the children treated, 44.1% were discharged after intervention in the emergency units, 21.5% required admission into the specialist ward, 6.0% died, 5.0% discharged against medical advice and 2.6% were referred [Figure 3].

DISCUSSION

The World Health Organization and United Nation International Children Fund Report on Child Injury Prevention showed that childhood injury, and death is a major public health problem and it is projected to be the number one disease by the year 2020 as such requiring urgent attention. Childhood injury and violence are estimated to be the cause of about 1 million deaths of children under the age of 18 years.^[5]

At present, the estimated population of Nigeria for the year 2020 is about 206,139,589, out of which those below 15 years accounted for 42.45%.^[6] As such, the number of individuals exposed to such injuries are many. Consequently, there is a burgeoning interest in injury epidemiology. The incidence of childhood injuries observed from two previous studies done at the Obafemi Awolowo University reported 9% and 10%, respectively, of the studied population that presented to the emergency room as a result of injury from traumatic events.^[7,8] In this study, an average of two children visited the emergency unit per day on account of trauma. Most of the patients were male with a male: female ratio of 1.6:1. This is similar to the findings from Ghana with a male: female ratio of 1.5:1.^[9] Other studies also showed that male children are more prone to be involved in a traumatic injury.^[7,10] Hyperactivity of male children, active behaviour, higher exposure level and tendency for male children to be involved in more physical activities may be accountable.^[11-13]

Mechanisms of childhood injuries include RTAs, falls, cuts, bites and burns.^[8] Others are injuries from assault and misplacement of foreign bodies' fireworks, poisoning and firearms.^[4,10] As observed in this study, the three most common mechanisms of injury were fall, RTA and burn in the descending order of frequency with fall alone accounting for nearly half of the total mechanism of trauma. Similar observation had been previously observed in this centre^[7] and a study done in Hong Kong.

Against what may be thought that children will be better protected at home within the guide of their parents, most of the children who fell sustained their injury at home whereas only a few occurred in the school, perhaps reflecting the effort the teachers were putting into caring for these children while in their custody. Furthermore, children spend less time of the day in the school than at home. These reasons may be accountable for the higher rate of fall at home rather than in the school. Other factors which may expose children to injury at home include the lack of safe play space, overcrowded homes, caregiver's fatigue which allow the children to play

unsupervised, outright carelessness, maternal depression, alcohol abuse as well as non-observance of home safety measures.^[14-16]

Similarly, more than half of the children involved in RTA had motor vehicle crash. Others had motorbike and tricycle crash. The non-usage or in appropriate use of vehicular restraint for passengers, children's poor judgment of safety while attempting to cross the road as well as indiscriminate use of motorbike as a means of transportation may account for the high incidence from RTA. This highlights the need to address road traffic injuries as a public health priority.

The largest group of patients observed in this study was below 5 years of age, they sustained more of burns followed by fall, whereas the older children were largely involved in machine hand injury. Most children tend to explore their environment within this age group as such being exposed to these dangers.

The orthopaedic surgery and neurosurgery unit were the greatest contributor to the management of childhood injury in this study 52.4% and 23.2%, respectively. Other specialities involved in the care were plastic surgery, paediatric surgery, ophthalmology, oral and maxillofacial surgery as well as otolaryngology surgery. Findings from the Obafemi Awolowo University showed that 16% of their patients had bony fractures whereas 8.5% had head injury.^[7] The high energy impact from falls and RTAs makes this type of injury inevitable in this population group.

Almost half of the children who received care at the emergency unit were subsequently discharge home, whereas about one-fifth required further care necessitating admission into the ward. For every 17 children that visited the hospital on account of trauma, one dies (childhood injury fatality rate is 6%).

The pattern and outcome are useful in describing the epidemiology of childhood injuries and can be used as indices for priority setting and monitoring of trends, it only represents the very tip of the injury iceberg. Both short- and long-term non-fatal effect of injury on these children are often not considered.

CONCLUSION

Childhood injury is a burden that should not be neglected. Notably, describing the epidemiology is only a first step, understanding the risk factors and developing injury prevention and control programs must also be a central part of any initiative to improve the general well-being of the child.

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Conflicts of interest

There are no conflicts of interest.

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