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Pattern of paediatric trauma in Sokoto, North West Nigeria

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ABSTRACT

Background: Paediatric trauma has become a major cause of mortality, disability and socioeconomic burden in developing countries and the World Health Organization (WHO) projects that by 2020 it will be the leading disease globally. This study described the pattern of paediatric injuries seen at a regional trauma center in North West, Nigeria. **Settings and Design:** Trauma centre of a tertiary hospital in North-Western Nigeria. **Materials and Methods:** A retrospective look at the trauma register for records of paediatric trauma from January to December 2010 was performed. Information obtained include age and sex, causes and pattern of injury. The limit of 16 years was set for paediatric in our centre. **Results:** The numbers of paediatric trauma seen over the 12-month period were 567 out of a total of 3984 trauma cases representing 14.2%. The number of males was 407(71.8%) and females were 160(28.2%) with M: F ratio of 2.5:1. The mean age was 7.77 and standard deviation of 0.19. Road Traffic Accidents (RTA) and Domestic injuries representing 44.8 and 42.0%, respectively, were the commonest causes of injuries. Laceration and bruises, head injuries including extremities were the commonest types of injuries seen. **Conclusion:** Road traffic accidents and domestic injuries as common causes of paediatric trauma need to be 'addressed by the authorities' so as to reduce the burden of trauma on the vulnerable children in our society.

Key words: Trauma, pattern, paediatrics

INTRODUCTION

Trauma is the leading cause of morbidity and mortality in persons less than 40 years and is the third commonest cause of death among all ages after cardiovascular disease and cancer.[1-3] In the developing countries of Africa, trauma is displacing nutritional diseases and infections as major causes of mortality.[4] According to the World Report on Child Injury Prevention in 2008 published by the World Health Organization (WHO) and UNICEF, child injury and death is a major public health problem requiring urgent attention. The report projects it to be the number 1 disease by 2020. Childhood injury and violence are the predominant killers of children throughout the world; it is estimated that they are responsible for approximately one million deaths of children under the age of 18 years.[5] Trauma has become a major public health concern for stakeholders in developing countries where injury prevention strategies are lacking and nonexistent. Various workers in our subregion have highlighted the importance of this as trauma continues to decimate the most vulnerable children in our society. Road traffic accident is a leading cause of trauma in most report and it accounts for 26-40% of trauma-related deaths.[6,7] Children in our society appears to be particularly vulnerable to maltreatment as defined by psychoanalyst as all manner of parenting that places the child at risk of injury.[8] Child abuse regarded by some workers as the inability of the child to assess the dangers in their environment adequately and respond to these dangers appropriately, is a major risk factor for injury.[8,9] The Almajiri system in northern Nigeria that allows children to roam the streets particularly makes them vulnerable to injuries and one report found a high prevalence rate of substance use of up to 66.2%.[10] The purpose of this study is to ascertain the causes and pattern of paediatric injuries seen at a regional trauma centre and to suggest injury preventive measures

MATERIALS AND METHODS

A retrospective look at the trauma register for records of paediatric trauma from January to December 2010 was done. Information obtained includes name, age,

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sex, causes and pattern of Injury of children 16 years and below. Data analysis was done using SPSS 16 and results presented as charts and tables with probability $P < 0.05$ considered as significant. The limit of 16 years was set for paediatric in the centre.

RESULTS

The numbers of paediatric trauma seen over the 12-month period were 567 out of a total of 3984 trauma cases representing 14.2%. Figure 1 shows the age range of affected children with 0-5 years being the most affected with 37.4% and 6-10years 33.3%.The mean age was 7.77 and standard deviation of 0.19. The number of males was 407(71.8%) and females 160(28.2%) with M: F ratio of 2.5:1. Figure 2 shows the causes of injury with road traffic accidents and domestic injuries representing 44.8 and 42.0%, respectively, as the commonest causes of injuries. Other causes of injury include human assault 4.6%, fall from height 2.3%, animal assault 1.9%, fall into well 1.9%, building collapse 1.2%. Table 1 shows the distribution of causes of injury according to sex. Road traffic accident was the commonest cause of injury in males with 47.2% and in females, domestic accidents was the commonest cause of injury with 49.4%.

Table 2 shows the distribution of causes of injury according to age. Domestic accident was the commonest cause of injury in 0-5 years with 54.2% followed by road traffic accident with 38.7%. Road traffic accident was the commonest cause of injury in children 11-15 year with 56%. Building collapsed was a significant cause of injury in children 0-5 years.

Table 3 shows the pattern of injury according to age. Burns injury was the commonest pattern of injury seen in children 0-5 years with 18.9% and head injury was the commonest pattern seen in children 6-10 years. Lacerations, bruises and extremity injuries were common in older age groups. The number of children brought in dead was six with three in those age 11-15 years and two in those age 0-5 years.

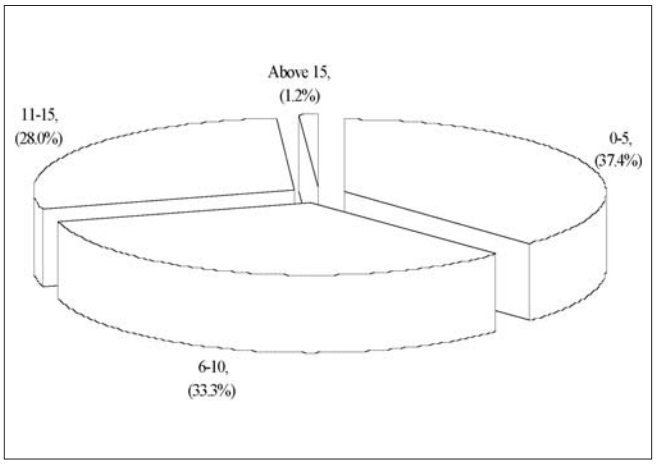


Figure 1: Distribution of patients according to age (years)

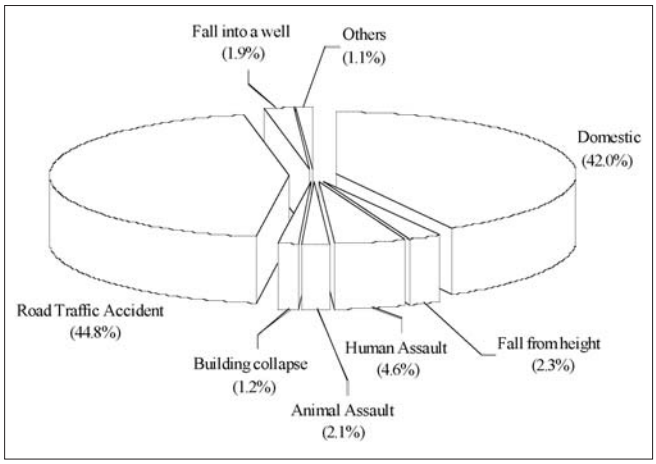


Figure 2: Distribution of patients according to cause of injury

Table 1: Distribution of causes of injury according to sex

Nature of Injury	Sex			
	Male		Female	
	Freq	%	Freq	%
Domestic	159	39.1	79	49.4
Road Traffic Accident	192	47.2	62	38.8
Human Assault	20	4.9	6	3.8
Animal Assault	7	1.7	5	3.1
Fall into a well	8	2.0	3	1.9
Fall from height	10	2.5	3	1.9
Building collapse	5	1.2	2	1.3
Others	6	1.5	0	0.0
Total	407	100.0	160	100.0

Chi-square (χ^2) value = 8.672, df = 7, P-value = 0.277 ($P > 0.05$)

Table 2: Distribution of causes of injury according to age

Cause of injury	Chi-square (χ^2) value = 79.965, df = 21, P-value = 0.000 ($P < 0.05$)			
	Values in parenthesis are percentages	6-10	11-15	Above 15
Domestic	115 (54.2)	79 (41.8)	42 (26.4)	2 (28.6)
Fall from height	3 (1.4)	8 (4.2)	1 (0.6)	1 (14.3)
RTA	82 (38.7)	82 (43.4)	89 (56.0)	1 (14.3)
Animal Assault	1 (0.5)	6 (3.2)	5 (3.1)	0 (0.0)
Human Assault	2 (0.9)	6 (3.2)	17 (10.7)	1 (14.3)
Building collapse	4 (1.9)	2 (1.1)	1 (0.6)	0 (0.0)
Fall into a well	3 (1.4)	4 (2.1)	3 (1.9)	1 (14.3)
Others	2 (0.9)	2 (1.1)	1 (0.6)	1 (14.3)
Total	212 (100.0)	189 (100.0)	159 (100.0)	7 (100.0)

Chi-square (χ^2) value = 79.965, df = 21, P-value = 0.000 ($P < 0.05$), Values in parenthesis are percentages

Table 3: Distribution of the pattern of injury according to age

	Age (Years)			
Type of Injury	0-5	6-10	11-15	Above 15
Laceration	58 (27.4)	74 (39.2)	52 (32.7)	4 (57.1)
Fracture (Upper Limb)	2 (0.9)	3 (1.6)	2 (1.3)	1 (14.3)
Fracture (Lower Limb)	12 (5.7)	10 (5.3)	9 (5.7)	1 (14.3)
Amputation	5 (2.4)	1 (0.5)	1 (0.6)	0 (0.0)
Injury (Head and Neck)	51 (24.1)	49 (25.9)	37 (23.3)	1 (14.3)
Injury (Abdominal)	1 (0.5)	2 (1.1)	1 (0.6)	0 (0.0)
Injury (Upper Limb)	1 (0.5)	0 (0.0)	1 (0.6)	0 (0.0)
Injury (Lower limb)	0 (0.0)	3 (1.6)	1 (0.6)	0 (0.0)
Bruises	27 (12.7)	24 (12.7)	35 (21.1)	0 (0.0)
Dog Bite	1 (0.5)	6 (3.2)	3 (1.9)	0 (0.0)
Burns	40 (18.9)	6 (3.2)	3 (1.9)	0 (0.0)
Dislocation	5 (2.4)	2 (1.1)	1 (0.6)	0 (0.0)
Polytraumatized	1 (0.5)	2 (1.1)	0 (0.0)	0 (0.0)
Brought in dead	2 (0.9)	1 (0.5)	3 (1.9)	0 (0.0)
Others	6 (2.8)	6 (3.2)	10 (6.3)	0 (0.0)
Total	212 (100.0)	189 (100.0)	159 (100.0)	7 (100.0)

Chi-square (χ^2) value = 86.947, df = 45, P-value = 0.000 (P < 0.05), Values in parenthesis are percentages

DISCUSSION

This hospital-based study from an urban centre in North West Nigeria found a much higher number of cases than a previous study in the same centre carried out 10 years earlier. This earlier study had a total of 403 cases and a male to female ratio of 1.8:1.[11] The rise in the number of cases is attributable to increased urbanization with many families being able to acquire some modes of transportation such as motor bikes and cars. The surge in political activities over the last decade has brought about politically motivated violence and assault and there is attendant increase in vehicular activities with many youths having access to motor bikes given as gratification.

Our study showed a higher male to female ratio than in the previous study in Sokoto and with a mean age of 7.8 years, it was different from the study in Malawi were the mean age was six years.[11,12] The higher male ratio is because the boy-child likes to explore the environment and play with the peers making them exposed to more danger. The Almajiri (informal religious school) system involves boys mainly unlike the girl child who stays at home to assist in household chores'.[10] Road traffic accident was the commonest cause of injury with rate as high as 44.8%. Previous study also showed that RTA was the commonest cause of injury but this finding was different from other regions of sub-Saharan Africa. In South Africa and Malawi, fall from height was the commonest cause of injury representing 43% and 42.9%, respectively.[12,13] Road traffic accident was common in the age groups of 6-10 and 11-15 year and in males. These are the average ages the boy either is on the streets as street urchins or is engaged in menial jobs as cart pushers or beggars'. This socioeconomic deprivation exposes the boy-child to myriads of hazards and injuries including RTA. A common means of transportation in our study environment is the motorcycle and it is common to see children carried unrestrained with such means of transportation. Children do cross-busy roads to and from school without supervision and even in places where zebra crossings are present; the average road user is mostly in a hurry to notice or obey such signs. Motorcycle accident was a higher contributor to RTA in this centre in a previous study highlighting trauma incidence.[14] Falls was not common in our study environment possibly because of the semiarid nature unlike in the southern part that has mangrove vegetation. Domestic accident was a common cause in females and those between 0 and 5 years because the female child was more likely to stay with the parents at home, so also the under five. They can be involved in unsupervised peer play and the hazards of the home environment like sharp objects, fire and trauma from older siblings. Some other risk factors for paediatric trauma include poverty, frequent family household moves, household crowding, child aggression, impulsiveness, and hyperactivity; poor maternal mental/physical health, marital discord and child abuse/neglect.[8,15] The pattern of injuries seen correlated with the causes as most injuries seen in the older paediatric ages were laceration and extremities injury while burns was common in the under five years as they are unlikely to be aware of the dangers of fire. Our study showed that those brought in dead was 1% of the total paediatric trauma cases and this is likely to be higher as some deaths are unreported but buried according to the custom of the people.

CONCLUSIONS

Paediatric trauma in our society is a public health issue and with road traffic accidents and domestic injuries identified as the common causes, measures to reduce the burden of road accidents and injury preventives strategies needed to be adopted. Efforts should be gear towards creating a trauma system in future and paediatric trauma care fully incorporated.

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