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CHILDHOOD INJURIES IN MAIDUGURI, NORTH EASTERN NIGRIA

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ABSTRACT

Background: Injury is a global problem, although its threats on children in the developing countries are over shadowed by infectious diseases and malnutrition. Our ordinary environment (home, road/street, playground) represent various kind of risks where injuries are sustained, which contribute to childhood morbidity and mortality.

OBJECTIVES: The aim of the study was to ascertain the pattern of injuries sustained in our environment and proffer preventive measures.

Methods: The case notes of children admitted and managed for injuries in the University of Maiduguri Teaching Hospital between June 2002 and May 2007 were retrospectively studied.

Results: A total of 393 patients were studied, 165(42%) of the children were below 4years of age. There were more males than females in the ratio of 2.2:1, home192 (48.9%) and the road/street 150(38.2%) were the commonest places of injury. Road traffic accidents 138(35.1%) and burns 135(34.4%) were the main cause of injuries, while the extremities were the commonest sites.

Conclusion: Home safety education for parents and care givers about child hazards will go a long way in reducing accidents in the home, while adequate measures to prevent road traffic accidents is desirable.

KEYWORDS: Paediatric, injuries, pattern, prevention

INTRODUCTION

Childhood injuries are common and on the increase in developing countries, including Nigeria.[1-4] This is known to be the leading cause of childhood mortality and morbidity in the industrialized countries, however its contribution to mortality and morbidity in the developing countries is overshadowed by communicable diseases and malnutrition.[1,3] The increase in incidence is partly due to rapid growth of motorized transport, and to increasing communal conflicts in which children and women often become victims.[1,4] A

large proportion of the injuries are caused by road traffic accidents, burns, falls, gun/arrow shots and animal related injuries.[1, 3, 4]

Our ordinary environment, the street/ road, home, school and the play ground represent various kinds of risk where injuries are sustained which contribute significant proportion of disabilities and deaths in children below fifteen years.[4] It is pertinent therefore to develop a safer and friendlier living environment where ordinary people (children) can live and move around safely.

The aim of the study was to highlight the pattern of childhood trauma in our environment, proffer preventive measures and contribute to national data on injuries in this age group.

MATERIALS AND METHOD

A retrospective study was undertaken of all cases of injuries in children 15 years and below admitted and managed at the University of Maiduguri Teaching Hospital between June 2002 and May 2007. For the purpose of this study all patients within paediatric age bracket, 0-15years were considered as children.

The data of interest included age, sex, aetiology, place, and type of injury were retrieved from the theatre register, medical records department and supplemented by admission and discharge records. Within the period 415 children were admitted and treated for various forms of injuries, out of this number 23 were excluded from the study due to inadequate information or missing case notes (retrieval rate of 94.7%).Injuries involving two or more regions of the body was regarded as multiple injuries. Data obtained were analysed and the results presented in form of tables.

RESULT

A total of 393 patients were studied; the age ranged from, one day to 15 years with a mean age 4.8 years (±1.6) One hundred and sixty five (42%) patients were less than 4 years and 153 (39%) were between the ages 4 – 9 years.

There were 270 (68.7%) males and 123 (32.3%) females, giving a ratio of 2.2:1 as detailed in table I. Regarding place of injury, 192 (48.9%) patients sustained injury at home, 150 (38.2%) on the road and play ground accounted for injuries in 26 (6.5%) patients; Other places where injuries were sustained included school 13 (3.3%) as shown in table II.

There were 15(3.8%) cases of birth trauma, 12(80%) of the babies were delivered in various hospitals and rest 3(20%) were brought from home.

Break down of the types of birth trauma showed that humeral fracture constitutes 6(40%), nerve palsy 4(26.7%) ; while fracture femur 3(20%) and fracture clavicle 2(1.3%) accounted for the rest of the birth injuries admitted within the period.

Road traffic accident caused injuries in 138 (35.1%) patients, 114 of these patients (82.6%) were pedestrian, out of these 95 patients (68.8%) were knocked down by motorcycles, while 19 (13.8%) were knocked down by motor-vehicles. Eighteen (13.0%) were automobile passengers. Crashes on bicycles occurred in 6 (4.4%) patients.

Burns caused injuries in 135 (34.4%) patients, out of this number 98(24.9%) of patients had scald burns (13.7% arising from hot water/tea, 7.6% from hot cooking oil/stew, and hot pap 3.6%); While 34(8.7%) had flame burns out of which 19(4.3%) and 15(3.8%) sustained injuries from kerosene explosion and cooking fire respectively, while the remaining 3 (0.8%) patient had electric burns. Burns was the commonest cause of injury in 1-3years age group accounting for 72(69.9%) all injuries in this group as depicted in table III.

Eighty nine (22.6%) patients had falls, 54(13.7%) of these patients fell at ground level, 28(7.1%) fell from height (tree 4.5%, fence 1.9% and storey building 0.7%), while 1.3%

and 0.5% of them fell into well and gutter respectively. Sports caused injury in 41(10.4%) patients.

Among other injuries 16 (4.1%) were violence associated; 9(2.3%) had gunshot injuries arising from armed robbery attack and communal clash; while the rest 7(1.8%) of the patients had arrow shot injury as depicted in table III.

With regard to regional distribution of injuries, musculo-skeletal system was the must commonly affected. A total of 470 injuries were recorded in 393 patients, multiple injuries occurred in 30 (7.6%) patients and were counted separately. Break down of the injury distribution as depicted in table IV revealed that, there were 178(37.9%) injuries of the upper limb, 130(27.6%) of the lower limb and 62(13.2%) head injuries; while injuries around the abdomen, chest and spine were 10(2.1%), 9(1.9%) and 4(0.9%) respectively. Additional 77(16.4%) of the injuries arose from multiple injuries.

DISCUSSION

Trauma in childhood is a common problem world wide, it is a leading cause of death in the developed Countries.[1,2] In developing countries, injuries are increasingly becoming an important cause of childhood morbidity and mortality as a result of rapid industrialization and urbanization,[3,4] though the enormity of the problem has been over shadowed by the dominance of infectious diseases and malnutrition with little attention given to trauma.[1] The pattern of childhood injuries seems to be similar with regard to causal factors, with slight variations based on socio-economic and political factors.[3]

Although injuries can occur at any age, in our series 39% of the patients were between the ages of 4and 9 years. This is comparable to similar studies by other authors, [3, 5] in which 40% of the patients in their study were in this group. This is school age, a period of transition between total parental care and adequate education of the child for self protection[6]. This factor might play a significant role in childhood injuries in our environment where many children in this age bracket are sent away from their homes for religious discipleship (almajiri) in different towns and cities of Northern Nigeria, with no parental care or formal boarding house. They have to fain for themselves through street begging and hence are trauma prone.

Most childhood injury reports from both advanced and developing world showed male preponderance.[3,5-7] This is corroborated by our study in which more males were affected than females in the ratio of 2.2:1. The males are believed to be more prone to injuries because they are more active and engaged in more dangerous games, and are often sent on errand outside the homes compared to the female counterpart.[6]

The home and the road were the commonest place of injury accounting for 192 patients (48.8%) and 150(38.2%) respectively, while the school was the least common place of injury. This could be attributed to dearth or non functional sports facilities in most schools in our study area and most of them are day schools; where parents often drop and pick their ward, thereby giving the pupils little or no free time for other activities in schools.

Road traffic accidents (RTA) and burns stand out as leading causes of childhood trauma in this study. Road traffic crashes have been implicated by several studies locally[5,7] and from other countries.[2,8-10] It is responsible for 40 to 60% of childhood injuries in the developed countries,[11,12] Adesunkanmi et al reported 26.5% from Ilesha, Western Nigeria; while it is responsible for 35.1% in the present study. The difference in the studies within Nigeria could be attributed to more vehicular density in Maiduguri, a cosmopolitan state capital compared to Ilesha a suburban setting; similarly the higher incidence RTA in the developed compared to the developing countries is adduced to higher ratio of vehicle to persons in the industrialized countries, often described as highly motorized society[13,14]. Majority 114 (82.6%) of the RTA victims in this study were pedestrians, this is similar to what is obtainable in most Nigerian cities where older children 5years and above parade busy roads hawking wares to supplement family income;[3,6,15] but peculiar to our environment is the significant population of almajiri that roam around begging for alms from motorists, which expose them to risk of road accidents. The recent introduction of hybrid of religious and western education (sangaya) program under the Universal basic

education (UBE) by the Federal government of Nigeria is a noble idea that might weed out these children from the streets.

Like in other reports[2, 3] injuries involving motorcycles constituted a significant proportion of the trauma in our series, this is not unexpected, because motorcycles are becoming popular alternative means of transport in our community, being made readily available by politicians who settle their supporters and sometimes distributed by Government agencies for poverty alleviation.

As reported in most of the previous studies our study confirms that home is one of leading places where accidents occur in children. This finding agrees with what is obtained locally[3,5,6] and other countries[16,17,18]. Burns was the commonest injury sustained in the home environment accounting for significant proportion of all injuries in the present study, though a separate entity of injury, it was included in this study for comparison with similar studies on trauma pattern in children.[1,3] Majority of these cases occurred in the kitchen and commonly from hot liquid, with most of the burns victims being children under 3 years of age; this buttresses earlier report from the same centre[5] where 32.4% of the burns victims were toddlers. This was also the findings of Chadiva, et al[18] where children 1 – 4 years old were the most of frequent victims of burns accident. This might be due to busy schedules of parents especially mothers, since this is the period of total parental protection while the child is yet to acquire adequate education about harmful agents and self protection, when exploring its environments[6]. The fact that most burns occurs in the home makes burn injuries amenable to preventive measures through home safety education.[4,5,19]

Falls featured prominently in this study; these occurred at ground level during play or learning to walk among toddlers, while falls from height occurred mostly from fruit bearing trees. This comparable to recent studies from Lagos and Ilesha[3,6] in which 63 – 75% of the falls were at ground level and 25 – 37% from height.

Birth injuries were sustained in 3.8% of the patients in this study, this compares favorably with recent report of 4.2% from Lagos, Nigeria[6]. More than a quarter of birth traumas were brought from home, following home deliveries; while most of the rest were sent in from health centres and the peripheral hospitals. This might be attributed to paucity of trained personnel in most of rural health centres; the recent introduction midwifery scheme under the millennium development goals (MDG) for rural hospital and health centres is a step in right direction for improvement.

Gunshot injury among other causes of childhood injuries was the least (1%) common cause of childhood trauma; the children in this category sustained their injuries from armed robbery attack and communal (ethno-religious) conflicts. Most of the injuries in this group were unintentional, as children were caught up in cross fire in this violence. Similar pattern was reported from Southern part of Nigeria[3], but in sharp contrast with reports of studies from other parts of Africa where child soldiers recruited for prosecution civil strive or wars were direct targets.[1, 21]

The extremity were the most commonly affected region in this study, this is in agreement with most trauma reports in children,[3,5,6] the frequency of the upper limb involvement in these patients is attributed to the tendency of the victims to protect themselves from falls,[6] while the lower limbs most of the time bears the direct blows in pedestrian injuries during road traffic accident[7] which is the most common cause of injury in this study.

It is concluded that trauma is a major health hazard in our environment, this study affirms that the road and home were main places where accidents occur; home safety education for parents, guardians and other adults about child hazards and how to avoid injuries in children will go a long way in reducing accidents in homes. These could include the use of appropriate barriers for kitchens to prevent toddlers from entering the kitchen, balconies and staircases in buildings should be appropriately protected to prevent falls; while bicycle ridding by children should be restricted to less busy areas and play ground instead of the busy roads. Deliberate steps should be taken to demarcate bicycle and pedestrian paths from the busy vehicular traffic in future planning of township roads similar to those in the developed countries. It is also suggested that legislation on street-

trading, hawking of wares and street begging from motorist by children be enacted and enforced, while driver education should be intensified and traffic offenders appropriately punished.

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TABLE I: AGE AND SEX DISTRIBUTION

Age (years)	Sex		Total (%)
	M	F	

< 1	38	30	68 (17.3)
1 – 3	61	36	97 (24.7)
4 – 6	45	24	69 (17.6)
7 – 9	60	24	84 (21.4)
10 – 12	7	2	9 (2.2)
> 12	59	7	66 (16.8)
Total	270	123	393 100%

TABLE II: PLACE OF INJURY

Place	**Number of Patients**	**Percentage (%)**
Home	192	48.8
Road	150	38.3

Playground	15	3.7
School	13	3.3
Others	23	5.9
Total	393	100%

Others: farm, stream, bread bakery, grinding mill and mechanic's workshop

TABLEIII: DISTRIBUTION OF AGE AND CAUSAL FACTORS OF INJURIES

Age (years)	RTA	Burns	Falls	Sports	*B.Trauma	Others	Total (%)

<1	6	14	2	-	15	-	37(9.4)
1-3	18	72	11	-	-	2	103(26.2)
4-6	27	27	8	-	-	1	63(16)
7-9	15	15	7	4	-	1	72(18.3)
10-12	21	4	16	11	-	4	56(14.2)
>12	21	3	4	26	-	8	62(15.9)
Total	138	135	48	41	15	16	393(100)
(%)	(35.1)	(34.4)	(12.2)	(10.4)	(4.1)	(3.8)	(100)

*B. Trauma = Birth Trauma

Others: Gunshots, arrow shots, animal bites/animal inflicted injuries.

TABLE IV: DISTRIBUTION OF INJURIES

Region	**Frequency**	**Percentage**
Upper limb	178	37.9

Lower limb	130	27.6
Head	62	13.2
Abdomen	10	2.1
Chest	9	1.9
Spine	4	0.9
Multiple injuries	77	16.4
Total	470	100%