

Pattern of paediatric injuries in Jos, Nigeria*

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1. Introduction

About 685 000 children under the age of 15 years were killed by unintentional injuries in 2001 with up to 80% of these from developing countries (World Health Organization 2003). The aim of this study was to determine the pattern of childhood injuries in Jos, Nigeria and identify areas for prevention.

2. Patients and method

Hospital records of all children aged 16 years and under managed for trauma in the Accident and Emergency Department (A&E) and those admitted to Jos University Teaching Hospital, Jos, Nigeria between January 1993 and December 1997 were retrospectively reviewed. Jos University Teaching Hospital is a 700-bed hospital. It manages about 1000 major traumas annually. It is the only acute trauma centre in Plateau State, which has a population of 2.5 million people.

Approval was obtained from the Ethical committee of the Jos University Teaching Hospital, PMB 2076, Jos, Nigeria.

3. Results

A total of 1332 children (835 males, 454 females) presented to A&E with trauma during the period. The ages of 75 children were not stated and these were not further

analysed. The male to female ratio in this study was 1.8:1. The age groups most affected in this study were the preschool 0–4 (34.3%) and 5–8 (31.5%) ages compared to 18.3% and 15.9% in age groups 9–12 and 13–16 respectively ($X = 249.7$; $p < 0.0001$).

The commonest mechanisms of injury were road traffic injuries (RTI) in 517 (41%), burns in 261 (20.8%), falls in 238 (19%) and foreign body in 65 (5.2%) patients (see table 1).

Of those injuries resulting from RTI, 450 (87%) were pedestrian related. Scald injuries from hot beverages, water and frying oil accounted for 63.6% (166) while flame burns accounted for 20.3% (53) of the burns injuries.

The age group 0–4 years was significantly more likely to sustain burn injuries compared to the other age groups ($X = 218.9$; $p < 0.0001$), while the age group 5–12 years were significantly more likely to sustain injuries from RTI ($X = 52.2$; $p < 0.0001$) (see table 1). The younger age groups (0–8 years) were more prone to falls (78.2%) and foreign body ingestion/aspiration (84.6%).

Injuries most commonly occurred on the street/roadside in 517 (41%) patients, at home in 477 patients (37%) and on the playground/field in 123 patients (9.3%). About 3% and 2% occurred in the workplace and school respectively. Of the 47 children injured while working 10, 5 and 32 were in the age groups 5–8, 9–12 and 13–16 years, respectively. The older age group worked as bus conductors and mechanics, as well as grinding and rice mill machine operators.

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The pattern of trauma varied throughout the year with more burns injuries during the cold season and falls during the warm season. There were two peak periods of injuries between February and May and between September and December (see figure 1).

An analysis of the 238 patients with falls in this study showed that 100 (42%) were from trees, 98 (41.2%) in the home (from beds, storey buildings, staircases and baths), 20 (12.2%) at school and 20 (12.2%) were falls into a ditch or well.

When compared to the road, the home was not significantly different as a site of trauma in children ($X = 2.5$; $p = 0.1116$).

Four deaths were from injuries sustained at home, while 28 were from motor vehicle crashes.

4. Discussion

Road traffic crashes involving pedestrians were the commonest cause of injuries in this series. The highest rate of paediatric pedestrian injury was seen in the age group 5–12 years. Children within this age bracket in Nigeria often hawk goods by the roadside and go to school unaccompanied. Pedestrian injuries have been associated with poor roadway-crossing techniques employed by children, obstacles obscuring during crossing and times of high pedestrian activity in developed countries (Nance *et al.* 2004). But in low-income countries, poor road signs, lack of pedestrian safety measures and overcrowding in shanty towns may be contributory factors. This represents a key point for government intervention.

Table 1. Mechanism of paediatric injuries seen in Jos, Nigeria by age groups.

Injury mechanism	0–4 years (%)	5–8 years (%)	9–12 years (%)	13–16 years (%)	Total (%)
Road traffic injuries	87 (16.8)	199 (38.5)	122 (23.6)	109 (21.1)	517 (41.1)
Burns	191 (73.2)	40 (15.3)	25 (9.6)	5 (1.9)	261 (20.8)
Falls	95 (40%)	91 (38.2)	37 (15.5)	15 (6.3)	238 (19)
Foreign bodies	20 (30.8)	35 (53.8)	10 (15.4)	0	65 (8.2)
Gunshot	0	0	0	5 (100)	5 (0.4)
Assault	0	0	15 (30.4)	34 (69.4)	49 (3.9)
Injury at work (child labour)	0	10 (21.3)	5 (10.6)	32 (68.1)	47 (3.7)
Child abuse	11 (64.7)	4 (23.5)	2 (11.8)	0	17 (1.4)
Others	27 (46.6)	17 (29.3)	14 (24.1)	0	58 (4.6)
Total	431 (34.3)	396 (31.5)	230 (18.3)	200 (15.9)	1257 (100)

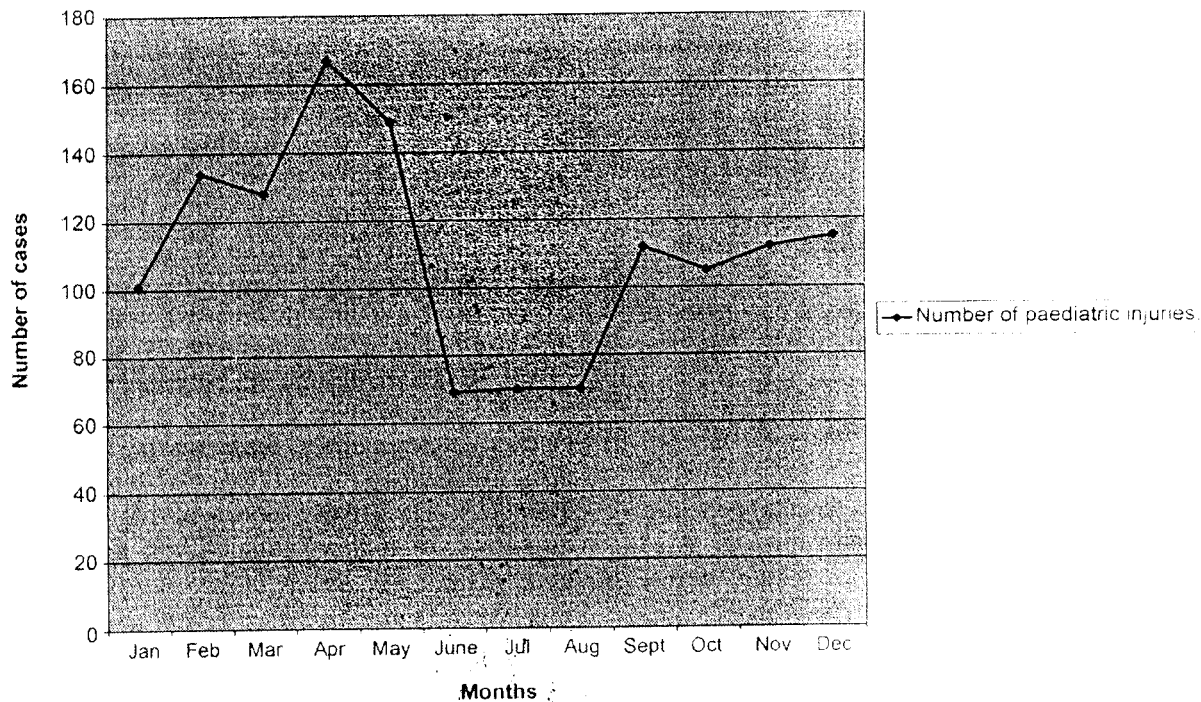


Figure 1. Paediatric injuries during the two peak periods, February to May and September to December.

Burns injuries were the second commonest cause of injuries in this series. The 0–4 year age group was most commonly affected. This is similar to the findings in other developing countries (Mukerji *et al.* 2001), but much higher than the case in developed countries (Nance *et al.* 2004). This may suggest a poorer level of child supervision around thermal sources of injury. The high incidence of the burn injuries in the cold season is attributed to the use of fire to keep warm, increased indoor activities, increased consumption of hot drinks and use of hot water for bathing (Mukerji *et al.* 2001). The construction of guardrails and use of elevated platforms for cooking will guide against injuries from burns. The incidence of burns among older children in Nigeria has also been associated with the practice of hawking petrol by the roadside by this age group (Gali *et al.* 2004).

Falls accounted for 19% of injuries in this study, being highest in preschool children. In developed countries, falls are the leading cause of injuries in childhood (Chan *et al.* 2000). In this society, children climb seasonal fruit-bearing trees such as mangoes, which ripen between April and May. This is also the warm season, which may be associated with increased unsupervised outdoor activities by children. This may be responsible for the first peak period of injuries. The second period may be associated with the Christmas festivities in December. Awareness programmes should stress the need for greater parental supervision of children at such periods.

It is estimated that one out of three children below the age of 15 years is engaged in economic activity in sub-Saharan Africa (UNICEF 2005). Legislation prohibiting

under-aged children from work may be an effective preventive measure. This requires sustained pressure on governments in developing countries.

This study is limited by the fact that it was hospital based. Children with minor injuries treated and discharged at the general outpatient department of the Jos University Teaching hospital, other hospitals in the town and the rural areas were not included. However, most major childhood injuries tend to be referred to the teaching hospital from these centres. Despite these limitations, this study helps to define the enormity of the problem in the Jos environment and points to areas for intervention.

References

- CHAN, C.C., CHENG, J.C.Y., WONG, T.W., CHOW, C.B., LUIS, B.P.K. and CHEUNG, W.L., 2000. An international comparison of childhood injuries in Hongkong. *Injury Prevention*, **6**, 20–23.
- GALI, B.M., MADZIGA, A.G. and NAAYA, H.U., 2004. Epidemiology of childhood burns in Maiduguri north-eastern Nigeria. *Nigerian Journal of Medicine*, **13**, 144–147.
- MUKERJI, G., CHAMANIA, S., PATIDAR, G.P. and GUPTA, S., 2002. Epidemiology of paediatric burns in Indore, India. *Burns*, **27**, 35–38.
- NANCE, M.L., HAWKINS, L.A., BRANAS, C.C. and VIVARIELI-ONELLI, C.W., 2004. Optimal driving conditions are the most common injury conditions for child pedestrians. *Pediatric Emergency Care*, **20**, 569–573.
- UNICEF, 2005. Child labour. Available online at www.unicef.org/protection/index_childlabour.html (accessed 15 January 2005).
- WORLD HEALTH ORGANIZATION, 2003. What happens when children live in unhealthy environments? Available online at <http://www.who.int/mediacentre/factsheets/fs272/en/> (accessed 20 October 2004).