

## Original Article

### Paediatric Trauma at Kenyatta National Hospital, Nairobi Kenya.

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**Background:** Medical Literature identifies injuries as the most important preventable cause of death and disability in children beyond the first few months of life.

**Methods:** A descriptive prospective study undertaken between October 2003 and July 2004 at Kenyatta National Hospital on children below the age of 13 years.

**Results:** A total of 187 patients were admitted to KNH with trauma during that period. The age range was from 3 weeks to 12 years 4 months with a mean age of 3.9 years. There were 53.5% males and 46.5% females. Burns accounted for 34.8% falls 25.1%. Foreign bodies 17.6% while 8% were a result of road traffic accidents.

**Conclusions:** Traumatic burns accounted for the highest single cause of trauma at 34.8% (n = 65). 92.3% of those burnt were aged 5 years and below. Most of these burns occurred in homes and were preventable.

### Introduction

Trauma is the leading cause of childhood morbidity, and mortality in industrialized countries while causing an increasing loss of life in developing countries<sup>1</sup>. Injuries accounted for only 4.8% of 7055 paediatric hospital admissions during a period of 5 years in a teaching hospital in north-western Ethiopia<sup>2</sup> with increasingly sophistication and the attendant increase in motor vehicle traffic and social violence, however, both in urban and semi-urban tropical communities, trauma is becoming a significant causal factor of childhood disability and death<sup>3</sup>. For every child that dies 4 are disabled permanently. The costs of childhood injury and estimated at more than 7.5 billion dollars each year and estimates of from productivity losses alone amount to 78 billion dollars<sup>4</sup>.

A review of childhood injuries at the Wesley Guild Hospital, a component of Obafemi Awolowo University teaching Hospital, complex, Ile-Ife, Nigeria revealed that 1471 patients in the children's emergency room during a period of 4 years were there as a result of trauma representing 9% of all patients seen<sup>5</sup>. In South Africa injury is the major cause of death and disability between the ages of 5 and

34 years. As in the case of many developing countries data on paediatric trauma in South Africa, especially morbidity is not readily available. In a study carried out at the Red Cross children's (RXH) Hospital trauma unit from Jan 1986 to Dec 1987, 24,099 children presented with a total of 24,964 injuries<sup>6</sup>. In addition, 287 children were managed for acute poisoning and near drowning.

### Patterns of Injury

Certain types of injuries are commonly seen in paediatric patients. Waddell's triad occurs when a child pedestrian is hit by a car. The injuries suffered include a fractured femur secondary to the leg striking the bumper of the car a chest or upper abdominal injury and contralateral head injury when the child is thrown clear off the automobile and lands on the pavement<sup>7</sup>. Bicycle injuries range from minor abrasions and contusions to major abdominal contusions suffered from a child's contact over the bicycle handle bar when he or she is thrown over the bicycle<sup>8</sup>. Head injuries are very common in those who do not wear helmets and may be severe. Spoke injuries to the extremities can precipitate a compartment syndrome<sup>9</sup>.

Motor vehicle occupant injuries are the most

common types of major injuries seen in the paediatric patient without restraint devices; head and neck injuries are common, as are penetrating injuries from ejection through automobile windows. With lap belt restraints only, contusions and penetrations of intra-abdominal organs as well as flexion-extension injuries of the spinal cord may occur<sup>10</sup>.

Sexual abuse affects one of every ten children in the United States. New Techniques for examination including colposcopy, are important for documentation of findings<sup>7</sup>. Scald burns are the most common type of burn injuries suffered by children<sup>11</sup>. Drowning is more common in locations with areas of warm water or backyard swimming pools. A child can drown in a bath tub or bucket if not supervised<sup>12</sup>. Firearm injuries have always been a problem particularly with children who play with a weapon kept at home<sup>13</sup>.

### Patients and Methods

A descriptive prospective epidemiological study of paediatric trauma was undertaken at Kenyatta National Hospital (KNH). A total of consecutive 187 patients were recruited. All paediatric patients aged 13 years and below admitted to KNH between October 2003 and July 2004 inclusive were studied. Precoded questionnaires were used to collect data of the patients, which included demographics, cause of injury and events surrounding the injury. To identify the causes of most traumas to within 5% of the true value with 95% confidence a minimum sample of 186 children were included in the study using the formula below.

$$N = \frac{Z^2 \cdot P \cdot (1-P)}{D^2}$$

Where:

n = sample size

Z = 1.96

P = Probability

d = Prevalence

The data was processed using SPSS/PC for windows version 11 and involved descriptive statistics like means, standard deviations, median, frequency distribution and cross tabulations.

### Results

Causes of injuries are presented in the Table 1. Burns accounted for 34.9% of the cases. Children below the age of 5 years comprised 92.3% of burn cases. Falls accounted for a total of 25.3% of all trauma of these 14.4% had fallen from a height with M: F ratio of 1:1; 10.8% had fallen on level ground while running at play M:F of 1:4. Motor vehicle accidents accounted for 8.1% of all trauma cases in this study duration of these, pedestrians being hit by vehicles accounted for the highest number at 6.5% most of whom (83.3%) were 5-10 years (Table 2).

Blunt trauma involved 5.8% of the study population various causes of this trauma were noted including being hit by metallic gates, logs, building blocks and doors. More males (77.8%) were involved in this type of trauma (Table 3). Foreign bodies accounted for 17.7% of all trauma cases studied. These were encountered more in females (54.5%). Most occurred in those less than 5 years old (78.8%) while 18.2% in those 5-10 years and in 3% of those above 10 years. As seen in the Table 4, 33% of the foreign body trauma occurred due to swallowed nails, caps, plastic pen tops and coins. This was followed by cooked cereals at 27.3%. Other areas where foreign bodies were removed from were ears, hypopharynx, bronchus and oesopharynx.

Other causes of injury accounted for 8.1% of the trauma. These included poisoning, sexual assault, injury and assault. The sexual assaults were both on females while poisoning occurred with equal frequency in both sexes.

### Discussion

Children have a unique profile of risks for injuries because they are unable to recognize and avoid many potential risks on their own. The pattern of childhood injuries appears to be similar with regards to causal factors with slight variations based on socio-economic and patient factors<sup>2, 5, 15</sup>. There is a preponderance of males over females in most reports<sup>2, 5, 15</sup>. This male preponderance was also noted in this study.

Burns accounted for most of the trauma in my study. This is unlike in other studies where firearms<sup>2</sup> and MVAs<sup>5</sup> accounted for the highest number of trauma cases. This could be because of the methods of cooking in our environment. In Ethiopia<sup>2</sup> the study was done during a time of war hence explaining the role of firearms in causing the great amount of trauma. Most of the burns occur in homes and are due to scalding with hot fluids or food thus this form of injury is amenable to preventive measures through adult health education in ways to handle and keep hot fluids. Insulation of other heat sources such as hot plates, stoves and fire places could be increased. In more affluent societies, the sprinkler system and smoke detectors could be used and these would reduce the amount of injuries to children<sup>16</sup>. Burn injuries are known to occur in higher frequency among children aged 0-4 years<sup>17</sup>. This ties well with this study where 92.3% of the burns occurred in the same age group.

Foreign body misplacement into body orifices occurred in 17.7% of the children in this study and accounted for the second commonest cause of trauma in cases studied. A foreign body in the oesophagus accounted for the greatest number (33.3%) compared to those in the nose (27.3%) and ears 12.1%. In another study<sup>5</sup>, 60% of the foreign bodies were found in the ears.

Falls from height had a contribution of 14.5% of the total trauma. Patients fell from trees and buildings. Falls on level ground accounted for 10.8% of the trauma. In combination, falls accounted for 25.3% of all traumas and this would put falls as the second commonest cause of injuries which is comparable with other studies<sup>5</sup>. Motor vehicle accidents did not account for much trauma, 8.1% of all traumas. This is unlike in other studies where motor vehicle accidents were the main cause of trauma<sup>3</sup>. No major factors came up to explain this, but the enforcement of traffic laws and regulations at the beginning of 2004 could have contributed to this.

## References

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