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Unintentional Injuries in Children: A Hospital-Based Study in Trivandrum

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ABSTRACT

Unintentional injuries are a major cause of morbidity and mortality in children around the world.
A hospital based retrospective descriptive study was done in the Department of Pediatric Surgery of a tertiary care hospital in Trivandrum, to find out the pattern of unintentional injuries in children. The study population constituted; all children admitted with unintentional injuries for a period of 5years from 2016 to 2020. Mechanical Trauma (44.2%) was the most common reason for admission followed by Burns (37.9%) and foreign body (17.1%). Major reason for trauma was fall from height, and head injury was the most common type of injury. Preschool children were affected most. Large proportion of these children belonged to low socioeconomic group (85.6%). Injuries occurred commonly at homes and surroundings (91%), compared to other places. Majority of the injuries were moderate (88.46%) and remaining (10.05%) was severe requiring ICU care. The study highlights the different types of unintentional injuries requiring hospitalization; this will help to devise strategies aimed at prevention of unintentional injuries in children especially preschool children and those living below poverty line.

Key Words: Unintentional Injuries, Children, Trauma

INTRODUCTION

Unintentional injury is defined as damage caused to a person due to an acute transfer of energy for which there is no predetermined intent. Unintentional injuries are a major cause of morbidity and mortality in children around the world. Children being very active, and curious by nature to explore, makes them vulnerable to injuries. Houses, home appliances and carelessness of the caregiver may result in numerous injuries. These injuries may not result in death, but may cause lifelong disability.

About 2270 children die each day as a result of unintentional injuries [1]. In India the number of deaths due to unintentional injuries in children is 2.1 per 1000 live births contributing to 4% of total mortality [2]. In high-income countries, safety measures for prevention of child injuries are already established and are yielding results. In the case of low-income countries, due to the burden of other diseases they do not have the resources to tackle this problem. There is a paucity of research in this area in our country. Existing literature shows a variation in pattern of injuries region wise and over a period of time. A region wise data regarding the magnitude and pattern of the injuries is essential to plan preventive measures.

METHOD

This is a hospital based, retrospective, descriptive study conducted in the Department of Pediatric Surgery, Government Medical College Trivandrum, a tertiary care centre in Trivandrum district of Kerala. The study sample included all patients in the age group below 12 years,

admitted in the Department of Pediatric Surgery with unintentional injuries during a period of 5 years from January 2016 to December2020. Minor injuries treated in outpatient department, Road traffic accidents, drowning and poisoning were excluded from the study. The data was collected from the hospital records using a proforma. Factors like age, sex, socioeconomic status, type of injury, place of injury, severity of injury, were recorded using KoBo Toolbox. All analyses were performed using R Statistical Software (v4.1.2; R Core Team 2021)

RESULT

Out of the total admissions of 4641 children, 676 (14.56%) children were admitted with unintentional injuries during the period of 5 years from January 2016 to December 2020. Mean age of these children were 3.30 years. Among them male children were more compared to female (2:1). Majority of these children 530(85.6%) belonged to low socioeconomic group. Home and surroundings 607(91%) were the most common place of injury, followed by 48(7.2%) in other places like park, canal, roads etc. Injury was least at school 12(2%). Most of the injuries were moderate 598(88.46%) and only 68(10.05%) were severe. Trauma was the leading cause of unintentional injuries, followed by burns and foreign body in aero digestive tract. Table.1

Table 1. Reasons for admissions of children with unintentional injuries. (n=676)

Reason for admission	frequency	percent
Trauma	299	44.2
Burns	256	37.9
Foreign Body (aero digestive tract& soft tissue)	116	17.1
Animal Bite	5	0.74

Out of 299 patients with history of trauma, 237(79.26%) patients had history of fall from height, and remaining 62(20.73%) had trauma due to other causes like heavy objects falling over the child, blunt and penetrating injuries, fall from bicycle etc. Head injury was most common type of trauma injury followed by soft tissue injuries, abdomen injuries, fracture long bones and chest injury as seen in Table 2. Out of the 218 children with head injury 105(48.1%) had fracture skull, 30(13.76%) had extradural hematoma, 40(18.34%) had subdural hematoma and 43(19.72%) had concussion or contusion injury.

Table 2. Types of Trauma injuries. (n=299)

Injuries	Frequency	Percent
Head injury	218	73
Soft tissue injury	46	15.38
Abdomen injury	20	6.68
Fracture long bones	12	4.01
Chest injury	3	1%

Out of 256 patients with burns injury Scalds were most common cause of thermal burns followed by flame burns. Table 3.

195(86.6%) of scalds involved less than 20% of total body surface area, while 30(13.3%) of scalds involved more than 20% of total body surface area

Table 3. Types of Burns injury. (n=256)

Burns	Frequency	Percent
Scalds	225	88
Flame burns	26	10.15
Fire cracker burns	4	1.56
Electric burns	1	0.4

Aero digestive tract was the commonest site of foreign body in children. Bronchus was the main site of impaction followed by Cricopharynx and Esophagus. Table 4.

Table 4. Foreign body aero digestive tract and soft tissue. (n=116)

Foreign body	Frequency	Percent
Bronchus	54	46.55
Cricopharynx	37	32
Esophagus	20	17.24
Soft tissue	5	4.31

In 37(68.5%) children right bronchus was involved compared to 17(31.5%) children where left bronchus was the site of impaction

DISCUSSION

According to our study almost 15% of total admissions in a pediatric surgical ward are due to unintentional injuries which are a sizable number; hence there is a need

for measures to prevent these injuries which are largely preventable.

As in many similar studies [3] in our study also unintentional injuries were more in preschool children. It is seen that preschool children above2.5 years are at high risk of unintentional injuries than young toddlers [4]. The inherent curiosity and desire to explore is more in young children but the ability to understand or respond to danger is less. The finding that unintentional injuries are more in males than females (2:1) is interesting, further studies on behavioral pattern of children and socio-cultural factors are required.

Unintentional injuries were seen to be more in children belonging to low socioeconomic group. Socioeconomic status influences housing and living conditions. Poor housing and living conditions increase hazards and injuries. Most of the unintentional injuries in children occur in and around the house; this is also seen in other similar studies [4, 5]. Houses may not have parapets, proper roofing, and railings for staircases. Stoves and utensils may be within the reach of children. There may be an issue of supervision, mother may be forced to leave the children at home and go for work. Injuries were least at school; this may be due to better supervision at school.

Majority of unintentional injuries in our study (88.46%) were moderate injuries and could be managed in ward, while in 10.05% children the injuries were severe requiring ICU care. The burden of severe injuries in some studies was as high as 27% whereas in other studies it was 2-10% [6-8].

Fall from height i.e. from terrace, stairs, ladders; bed etc. was found to be the major reason for trauma (79.26%), this finding is similar in studies done in many developing countries.[9,10] Most common type of injury due to trauma was head injury. Fracture of skull was seen in almost half of these children with head injury.

Second leading cause of unintentional injury was burns, mainly due to scalds. This finding concurs with many studies reporting scalds as the main form of burns [11]. Flame burns are much less these days, as the use of kerosene lamps as source of light is very minimal. Younger children are at risk from playing near hot liquids at home and older children from unsupervised cooking.

Children have the habit of mouthing objects. Coins, toys with button battery, peanuts and seeds are the common foreign bodies causing impaction in the aero digestive tract. In our study, bronchus was the most common site of impaction, followed by cricopharynx and esophagus. This finding is also seen in similar studies [12].

CONCLUSION

The burden of unintentional injuries is high in children, especially children of preschool age group and those belonging to low socioeconomic strata. Provision of safe homes and other places visited by children and supervision of children at these places is needed for prevention of these injuries. Educating mothers and caregivers on precautions to be taken while rearing children is needed. Classes should be conducted by health care workers on child safety measures for mothers attending immunization clinics for vaccination of their children. Similar sessions may be conducted at Anganwadi too. Policy decision by Government to implement child friendly homes, appliances and furniture is required. Child injury surveillance method to track injuries and their risk factors, injury prevention programmes at community level, periodic house visits by social and healthcare workers are all likely to be effective in reducing the frequency of injuries.

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