

Review Article**Children deserve to live in a safer world – Unintentional injuries in children****Nayana Liyanarachchi¹**¹*Department of Paediatrics, Faculty of Medicine, University of Ruhuna, Galle, Sri Lanka.***Abstract**

Improvement in the health status of children over the last 50 – 100 years has been spectacular. This was because of targeted interventions carried out to combat infectious diseases and nutritional deficiencies. However, injury remains a threat to the health and wellbeing of children and is recognised as a major killer of children worldwide.

There are factors that make children particularly susceptible to injuries. The fact that child injuries are predictable and preventable is not well understood by many. Awareness building is therefore vital. Prevention of child injury requires the involvement and commitment of a broad group of agencies.

Keywords

Child, Injury, prevention, environment, unintentional,

Introduction

The health of children has improved significantly during the past years. Widespread immunisation programmes, breastfeeding, growth monitoring, and oral rehydration therapy have increased child survival worldwide. However, injury is a significant public health problem that continues to threaten the health of children of all age groups every day. [1] Around 2000 children under 14 years die due to injuries worldwide. [1] According to the World Health Organisation (WHO) statistics in 2016, injury has killed over 644,855 children under 15 years. [2] In addition to deaths, millions of children sustain non-fatal injuries, leading to some form of disability, often with lifelong consequences. [3]

The injury is defined as “the physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance or else the result of a lack of one or more vital elements, such as oxygen”. [2] The energy in question can be mechanical, thermal, chemical, or radiation.

Childhood injuries can be classified by intent (unintentional or intentional), mechanism or cause. Falls, road traffic injuries, poisoning, drowning, and burns are common causes of unintentional injuries. Intentional injuries include self-inflicted and interpersonal acts of violence intended to cause harm to a child under 18 by a parent, caregiver, or another person.

Unintentional injuries account for almost 90% of child injuries. [2] The injury outcome can be graphically demonstrated as a pyramid; death at the top, hospitalised in the middle, and large group non-hospitalised injury at the base. [1] Research data has shown that, for each death, there are 12 children admitted to hospital or permanently disabled and 34 children who needed medical care or missed school or work because of an injury. [4]

This review will elaborate on why injuries are common among kids, injury prevention, and principles of injury prevention.

Why are injuries common among kids?

Children are more susceptible to injuries than adults. There are factors that make children

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particularly susceptible to injuries.[2] A child is not just a small adult. Their physical and cognitive abilities, degree of dependence, activities, and risk behaviours contribute to the high risk of injuries. [2] Children's curiosity and ambition to experiment are not always matched by their capacity to understand or respond to danger. Thus, children are more prone to meet certain types of injuries according to their age ranges.

The stage of the child's development is highly associated with particular injuries. [2] A young child starts crawling around nine months and learns to walk by one year. Therefore falls are expected more during this age. Objects are reached, grasped, and put into their mouth by ten months leading to foreign body aspiration. At 18 months, they are ambulatory and are exploring the world. The reaching, grasping, and drinking behaviour of children aged 1–3 years is associated with the risk of poisoning.

The physical characteristics make children vulnerable to injuries. The small built of children makes them less visible than adults on the road. If they are hit by a vehicle, they sustain severe head or neck injuries due to proportionally large unstable head on the neck. [2] Entrapment of body parts is a common injury among children, most dangerously the head through the railing; because the outside world is not built for children.

Children's cognitive abilities may not match their physical skills during young age. Studies on road traffic accidents among children have shown that young children may lack the knowledge, skills, and concentration needed to manage the road environment. [2] Moreover, children cannot judge the speed of oncoming vehicles. A young child might fall from a height as his climbing skill is not matched by his ability to balance. [2]

Socioeconomic factors are also related to the risk of injury in children. In poor economic backgrounds,

parents might not be in a position to supervise their children, who may have to be left alone or within the care of siblings. They might not be able to afford safety equipment. Children whose parents live in poverty are also exposed to hazardous environments like living near roads of fast-moving traffic or lack of facilities for safe play.

It is clear that unintentional injuries to children do not occur in isolation. [1] Multiple factors determine them; the choices of children and their families; the quality and design of their environment; the rules and regulations in their society; and peer interactions and dynamics at school and home. Additionally, the quality of housing, vehicle safety standards, the condition of roads, the social and cultural norms of the community also contribute to injuries.

The Injury prevention

Traditionally injuries are considered as “accidents” or random, unpredictable events due to fate. This belief has resulted in giving less priority to designing and implementing injury prevention measures. It is widely known now that injuries are not accidents; they are predictable, preventable and controllable. [2] The availability of reliable data is a prerequisite in understanding risks to children and beginning to develop actions to prevent or reduce injury. [4] With the limited data, it is hard to convince policymakers regarding the extent of the injury problem. Data is most limited in the countries most affected by the injury burden. In Sri Lanka, there is no adequate quality data on childhood injuries. In 2003, the injury was the fourth leading cause of death among children less than five years of age. [4] Child injury prevention should be incorporated into every maternal and child health programmes. Furthermore, multisectoral involvement in the prevention of injuries is of utmost importance.

The principles of injury prevention.

For each area of child injury, there are proven ways to reduce both the likelihood and the severity of the injury. The most popular public health principles of primary, secondary, and tertiary prevention approaches could be used to prevent child injury.

[2] Primary prevention aims to stop new injuries; secondary prevention aims to reduce the severity of injuries, and tertiary prevention targets to decrease the severity of disability after an injury. Furthermore, programmes are needed to improve hospitals' pre-hospital care and emergency services to minimise injury complications. Strengthening physical and psychological rehabilitation programmes is vital to reduce the disabilities following injuries. [1]

Programmes designed to prevent child injury have traditionally been described as "three E's": Education, Enforcement, and Engineering. [5]

The main aim of *education* is to alter the behaviour of youngsters and caregivers. The general public, policymakers and medical personnel do not understand that child injuries are predictable and preventable. Therefore, awareness building is vital among them. Educational programmes' value in child injury prevention has been subjected to debate.[1] Education on pedestrian safety may improve children's knowledge and may change observed behaviour of crossing roads. However, education underpins many other strategies – like legislation and promotion of safety devices.

Engineering uses environmental and product design strategies, to reduce the chance of an injury event or to reduce the amount of energy someone is exposed to. This has become an integral approach in injury prevention. Some examples are manufacturing staircase railings with the gaps sufficiently narrow to stop young children from putting their heads through, child-resistant bottle lids, and soft floors in the child playing areas.

Enforcement uses the legal system to influence behaviour and the environment. Enforcement of law or legislation could be a powerful tool in

the prevention of injury. There is evidence that legislation has increased the uptake of preventive measures and reduced childhood injuries. [2] Regulation on packaging poisonous substances, encouraging seat belts on motor cars, and helmet use by motorcyclists could be cited as examples.

Good child supervision is probably going to be a vital intervention to shield young children from injury. Some studies have found that 90% of injuries to young children occur in or around their home once a caregiver is supposedly supervising them. [2] It is known that caregivers exhibit a spectrum of patterns of supervision – starting from almost total neglect to extreme vigilance. There is no agreed-upon supervisory style that's uniformly protective in child injury. [2]

Home visiting by a public health care worker to supervise families at high risk of injury has been practised in some countries with promising results. [6] This will help to boost the house environment, stop the problems of kid behaviour and explain safety equipment.

Experience from countries with the most effective safety records shows that positive leadership and widespread, multisectoral efforts to supply safer physical and social environments can produce sustained reductions in injury mortality and morbidity. [2] Sweden was the first country to acknowledge the importance of injuries as a threat to child health and tackle injury prevention effectively.[2]

Reducing the risk of injury for children requires the involvement and commitment of a broad group ranging from international agencies, the government and non-governmental organisations, the private sector, the media, doctors, engineers, teachers, community leaders, and parents. However, awareness of the problem and its preventability and political commitment to prevent child injury remains unacceptably low, especially in developing countries.

Over the decades, maternal and child health care investments such as immunisation and nutrition are fruitless unless injury prevention is included in such programmes, as these children are subjected to injuries.

What better future can we provide the kids than creating an environment for them to live without the threat of injury?

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