

Childhood Injury an Iceberg of Phenomenon

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Abstract: Children are the wealth of tomorrow. Nationally unintentional injuries take away the lives of more than 2000 children every day. The lifelong disabilities in children will increase the financial burden on family, community and nation. India as a developing country is experiencing a similar burden. The major areas identified in childhood injury in India are burns, falls, poisoning and drowning. This article calls the public attention on major childhood injuries of the country. The country need to pay attention on education, rehabilitation, care, legislation and article modification, for the reduction of childhood injury. This paper emphasizes the need for more researches in the community to increase the community participation in the care of children and thereby to reduce the incidence of injuries in the vulnerable pediatric population.

Key words: Burns, Childhood, Drowning, Evidence, Fall, Injury, Poisoning.

I. Introduction

Children are the wealth for tomorrow. Each child is a unique individual; he or she is not a miniature adult. It is the nature of young children to explore the world around them; the curiosity in them can lead to major serious injuries. All parents in this world want to safe guard their children from harm and injuries. Parents don't want their children to suffer even a minor disturbance from a common cold or a little severe break bone(1).

Nationally unintentional injuries take away the life of more than 2000 children every day. According to WHO and UNICEF (2) report every year tens of millions or more children all over the world are hospitalized with injuries and many of them leave with lifelong disabilities.

Children all around the world are very prone for injuries of various kinds. Immediate attention is needed to take care of our children. A lot of changes happen in the epidemiological pattern of child health, an appreciable change happens in the prevention of infectious and communicable diseases. Nutritional deficiencies are decreasing in its number. These changes are highly promising but the children who are saved from diseases of yesterday are the targets of large number of hazards and injuries in and around their houses (3).

India is the home for 1.21 billion people (2011 Census). Among them nearly 11 million falls within 5 years of age which consist of 10.7% of total Indian population. Since the time of independence, the continuous untiring efforts of past 67 years, improved the living conditions of Indian children to a certain extent. In order to achieve the Millennium Development Goals, the International focus was given to reduce the mortality of children of less than 5 years. If we consider across the world the issues regarding childhood injuries are not considered as a major issue for policymaking and in discussions of health professionals(3).

WHO reports around 950,000 children die as a result of injury each year in the world(4). National crime record bureau data and other study reports show that almost 15-20% of death among children are due to injury (5). When a childhood injury death occur, there will be a minimum of 18 hospital admissions 233 trauma department visits, many visits to other care facilities and a much higher frequency of home treatments are also associated to it(6). It is also remarkable that when one child death occur around 30 – 40 children are admitted in the hospital and discharged with minor or severe disabilities (7). The minor injuries in children are not reported at all because we consider that as negligible, but in reality it is a huge phenomenon and not coming into light.

Whenever there is a gathering of injury control professional it will not take long time for the interaction to fix on one topic: "Why the childhood injuries – the leading cause of morbidity and mortality among children - is not given enough attention?" Through this paper the reviewer is trying to explore the seriousness of childhood injury, and the suggestive ways to manage the issues.

II. Why Children Are Vulnerable To Injuries?

- Intellectual immaturity to understand the risk situation
- The stage of growth and development and the milestones of the age, will make children prone for various kinds of injuries.
- The lifestyles of people changing rapidly.
- The motorization increased in the developing world .But it was not in consideration with the children's needs and issues.

- During the developmental phase the body parts of children are very soft and the vulnerability to the impact of trauma is high.
- The developmental characteristics of children like poor perception of risk, small body size, visual and hearing development increase the chance of injuries related to burns, poisoning and drowning.
- The psychological development increase the curiosity of knowing things trying out various new aspects (experimentation) at the same time the lack of ability to make the judgment on distance and speed leads to large number of injuries in children.
- The change from the caring hands of parents/ elders to the world of independent life that increase the risk of injury (8).

III. Incidence of Childhood Injury World Wide

Unintentional and intentional injuries taken the lives away for more than 950,000 children below 18 years in 2004 itself (9). Other than death this leads to temporary and permanent disability, which increases the individual, family and community burden. Children who overcome injury may be highly dependent in their needs and their education and livelihood will be a major concern for their family. The limited resources to address the problem of childhood injuries increase the burden of issue to the low and middle income countries. Low and middle income countries constitute 80% of injury deaths in the world (10), and the injury death rate among children is 3.4 times higher in low – and middle income countries. India, Nigeria, Democratic Republic of Congo, Pakistan and China together cover the 50% of world’s childhood injury deaths (11).

In December 2008, WHO and the United Nations Children’s Fund published the first *World report on child injury prevention* (4). This report was seeking the immediate attention of childhood injury internationally. The leading five reasons of childhood injury deaths – road traffic injuries, drowning, poisoning, burns and falls were focused in this report – and it also emphasizes how to prevent these injuries.

3.1. What is an injury?

An injury is defined as “a body lesion at the organic level, resulting from an acute exposure to energy (mechanical, thermal, electrical, chemical or radiant) in amounts that exceed the threshold of physiological tolerance. In some cases (e.g. drowning, strangulation, freezing), the injury results from an insufficiency of a vital element” (12).

3.2. Why Childhood injury is Important?

World report on child Injury Prevention reports injury as the a most important reason of disability and death in children from infancy and the number just add on and become the most significant cause of mortality in children between 10 to 19 years (4) (Fig. 1). Nearly 90% of childhood deaths – about 830 000 – are because of unintentional injuries – an equal number of children die from measles, diphtheria, polio, whooping cough and tetanus together (3).

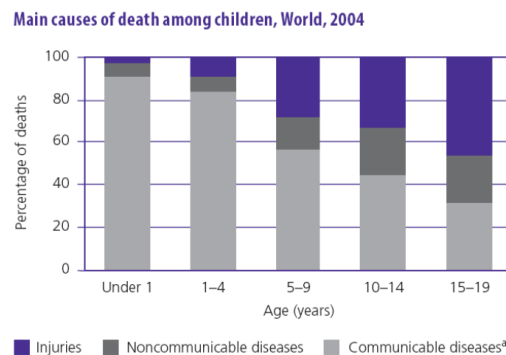


Fig:1 Major reasons of childhood injury deaths in children world wide (2)

In many of the countries injury deaths are underreported and childhood mortality is reported only on the basis of perinatal causes, respiratory and diarrheal diseases, nutritional deficiencies, measles and malaria. Childhood injury is having a big influence on survival of children aged less than five years. The countries where childhood deaths were reduced from other causes found childhood injuries as a major reason for death. High income countries are having reasonably low child deaths comparing to low- middle income countries, but still they constitute around 40% of all deaths (3).

IV. Indian Scenario of Childhood Injuries

The report from the United Nations Children's Fund, says childhood injuries in high – income countries has reduced to 50% but the same report express a reverse trend in low – income countries. South- East Asia (SEA) alone contributes to 31% of world burden and 27% of injury related mortality (13). The surveillance system to monitor the occurrence of childhood injuries is poor in India. Though the data from hospital and emergency departments are available, they are not an ideal source to study epidemiological features of childhood injuries owing to their poor quality (14).

The National Crime and Records Bureau (NCRB), which is the only national agency of India collects injury data in India, announced in 2005,that 3.2% of unintentional injury deaths in the country occurred from fall(15). The two surveys of India: the Medically Certified Causes of Death (MCCD) survey and the Survey of Cause of Death (SCD) are considered as national reference of cause-specific mortality in India. The data from urban hospitals were reported through MCCD. As per this survey report, falls accounts 2% of all unintentional injury deaths registered in 2004 (16). The SCD reports the injuries reported in the primary health centers of selected rural settings, and reported fall related death as 8% in 1998 in those areas(17). The MCCD, SCD and NCRB are not representative of India’s all population. The limitations of these surveys are the small sample size, data were not collected from the most reliable sources and the classification of death was not done in a systematic way(18).

V. Common Causes of Childhood Injury in India

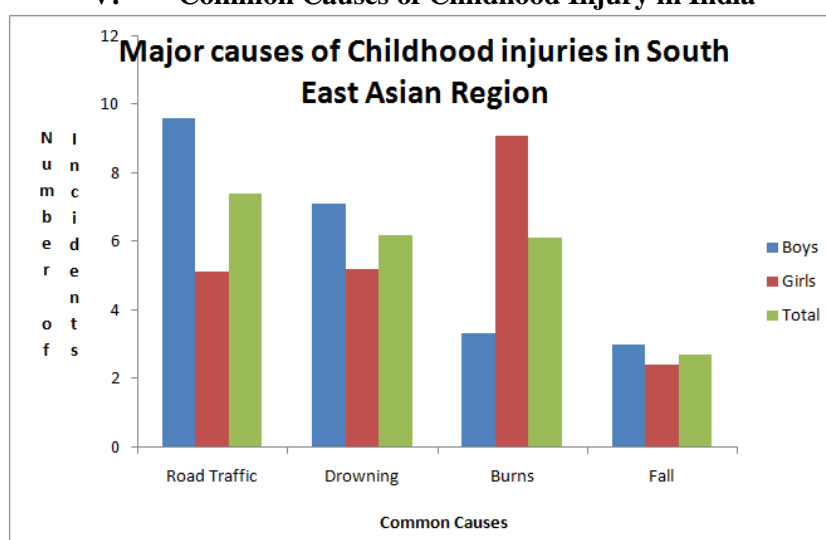


Fig:II Common causes of childhood injuries in developing countries (Source: World report on child injury prevention, Geneva,WHO 2008)(4).

The national level study conducted on the basis of verbal autopsy has directly identified a total of 82,000 unintentional injury deaths in India in 2005. This includes a representation of 9% of death among the age of 1-4 years, 3% of deaths among children below the age of 5 years, 1% of death among children of the age below 1 year. The National Survey on cause of Death identified the four major causes of death in children India. They are **Drowning, Falls, Poisoning and Burns**(19).

5.1. Falls

In India the major risk factors for injuries are age of the child (0–6 years), gender of male and low socioeconomic status. Shenassa *et al*(2004) used a “determinants of health” or “population health” framework to identify the individual and community level factors on injury occurrence. This study identified that the children living in low socioeconomic status families have a high risk related to falls(21).

5.2. Drowning

In India drowning is a major reason for death among children. More than 26000 children died due to drowning in 2005 only India which accounts 30% of childhood injury deaths in the country. Drowning deaths are three times higher among rural children than urban children and the incidence is more among boys than girls. This study reports that the prevalence of drowning deaths among under five children is much higher comparing to any other age including adults (22).

5.3. Poisoning

Poisoning is a major problem in the paediatric population. The offending substances can vary from place to place. Information on poisoning trends in India is meager and there is an impression among clinicians that there has been a change in the commonly used poisons over the years. Childhood poisoning constituted 2.1 % of the total paediatric admissions and 1.2% of total deaths. The retrospective hospital record review identified that the trends in pediatric poisoning is a major issue even today. Kerosene (27.9%), drugs (19.8%) and insecticides (11.7%) are the most frequently identified poisoning agents in children (23).

5.4. Burns

Childhood is a vulnerable age for burns and scalds. Burns in children is the 11th serious issue of death of children between one and nine years and are the fifth most common cause of non-fatal childhood injuries. In India, children of 0-5 year account for 50% of all childhood burns (24). If a comparison of various kinds of trauma, are made- burn cases have the maximum period of hospital bed occupancy. The financial burden of hospitalized burn management is very high for the family and nation.

VI. What Are We Expected To Do?

- Evidence based childhood injury prevention to be given more focus in low and middle income countries.
- Develop an epidemiological triad approach for the management of childhood injuries.
- A multipillar approach focusing the reduction of new risk injury, reduction in the seriousness of present injury and minimize the gravity of disability.
- Initiate a community-led approach for childhood injury prevention with a link with other health promotional activities

The worldwide implementation of interventions on drowning, poisoning, falls and burns will rescue the lives of an additional 1000 children in a day (25).

VII. Approaches for Preventing Childhood Injuries

7.1. Education

As a program for childhood injury prevention, training on injury prevention measures, ways to handle the safety equipment and behavioral modification sessions for parents and children should be included in the multi pillar injury prevention program. This education to be included in the curriculum of Anganwadies, Play schools and Preschools for children. The mother should be educated in the parental meetings and in women's meetings

7.2. Care and rehabilitation

Immediate access to the trauma care facility is an integral part in the reduction of life long disability. Proper care and rehabilitation will help in the reduction of seriousness of injury and the post injury sequelae.

7.3. Safety devices

Encouraging the use of safety measures like helmets, smoke alarms and seat belts for children. The encouragement on the use of these items can be carried out through counseling, campaigns and through electronic media.

7.4. Environment

Environmental alteration is an important plan for reducing various injuries. Encouraging children to use safety devices and parental education on safe environment for children play a very big role.

7.5. Home visits

Home visiting by a trained personnel will increase the family's confidence. The trained personnel can make suggestions for the modification needed for the house in terms of child safety, and she/he can educate and train the family members.

7.6. Law formulation:

Legislation on fencing around pond and pools. Pedestrian lines on roads. Child resistant containers for medicines will decrease the incidence. There should be minimum standards for various services and products like equipment used for play grounds, toys furniture, packing for medicines. This will increase the parental awareness on child care and safety. A law will be effective when it is with regulations and enforcement.

7.7. Commodity reconstruction

Reconstruction and modification of fire places, electric plugs, play areas and furniture (eg. Cribs, stairs, doors and windows). The packing and storing of hazardous things to be taken into consideration. Denying access to hazard environment delay the chance of injury.

VIII. Getting Serious About Child-Injury Prevention

World report on child injury preventions show the importance received for child safety as a public health concern. This report emphasizes the need for integrating the knowledge and practice of childhood injury prevention strategies in the child care initiatives. The child care angle is demanding the need for an attention on childhood injuries, at the same time child safety angle demands the need for overcoming the obstacle of childhood injury prevention. Injury prevention should be taken as an agenda for the child health policy and also for the childhood research.

Childhood injury is a visible indicator for child health. Child health policy covering local and national level should include the finding of childhood injury assessment. The magnitude of the problem will be seen only after community based surveys, because our country doesn't have a proper surveillance system in its place. One of the traditional myth on childhood injury is that - injuries are unpreventable – is not accepted by scientific community. A second belief is that children should have injuries during their development.

Success of any program highly depend on the knowledge and perception of people as how they see it and how it influence the behavior change. One of the major research agenda in unintentional injuries are involving policy makers to understand the intersectorial nature of injury prevention and to find out the means by which we can reduce the burden of injuries. This paper emphasize the need of more local, national and international researches in the specific areas like falls, drowning and burns in children. This article also identify the need for more interventions on these areas.

IX. Conclusion

Childhood injury is a major threat throughout the world. This paper presented the evidence of the burden in low and middle income countries and in India. Many of our countries are not identifying injury prevention especially childhood injury prevention as a major public health issue. The maximum world population that is more than 90% lives in low- and – middle income countries. This paper explored the burden of childhood injuries world wide and India specifically. We are trying to suggest the need for more research in terms of exploration and intervention to reduce the burden on individual family and community that occur due to childhood injuries. After recognizing and appreciating the existing facilities we are recommending the need for more action research especially in the developing world like India.

“Ignoring a warning can cause much mourning.

Losing a child unexpectedly leaves families and communities with emotional wounds that take decades to heal and many parents never do.” Unknown

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