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Mechanisms of childhood injury: A novel approach to the terminology

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Introduction

Children have the right to a safe environment and to protection from violence and injury. In addition, state authorities should safeguard the child's well-being considering the rights and duties of his or her parents, legal guardian, or other legally responsible individuals. Institutions, facilities and services that are responsible for the care of children should observe standards of safety, health, staff suitability and competent supervision. This is enshrined in article 3 of the Convention on the Rights of the Child, the most widely ratified convention worldwide with 194 signatory states (Jamal, 2014; United Nations [UN], 1989). The WHO-Lancet Commission report released in February 2020 shows that very few countries have attained the Sustainable Development Goals (SGDs) set out 5 years ago.

It has been 30 years since the Convention was ratified, and yet few countries have realised its four core principles (UN, 1989):

1. Children have rights, regardless of race, colour, sex, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
2. The best interests of the child must be a primary consideration in all decisions affecting him or her.
3. Children have the right to life, survival and development to their full potential – physically, mentally, spiritually, morally, psychologically and socially.
4. Children have the right to express themselves freely on matters that affect them, and to have these views taken seriously.

In this article, we discuss whether nomenclature with regard to paediatric trauma is hindering the realisation of children's basic rights in many countries, particularly with reference to the core principles of devotion to the best interests of the child and the right to life, survival and development to their full potential.

We discuss the misclassification of injuries and its impact on intentional and unintentional injuries in children under the age of 8 years. We focus on this group specifically, because young children are neuro-developmentally immature and unable to protect themselves. We are of the opinion that for this age group, a different approach to developing interventions that protect children, is required from those discussed in the existing literature (Peden et al., 2008). We also propose a new terminology to refer to injuries that impact young children.

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Paediatric Trauma

Paediatric trauma is a major cause of death and disability globally. One million of the 5.8 million trauma related deaths impact children annually (Peden et al., 2008). Millions more children require hospital care for non-fatal injuries, many of whom are left with a permanent form of disability, often with life-long consequences. The burden of these injuries is unequal: it has been estimated that 95% of childhood injury deaths occur in low- and middle-income countries (LMICs). Although the child injury death rate is much lower among children in high income countries, here injuries are still one of the major causes of death between the ages of 1 and 18 years (40% of childhood deaths). (Peden et al., 2008; World Health Organization [WHO], 2006)

Child injuries are broadly categorised into unintentional injuries (accidental injuries) and intentional injuries (non-accidental injuries) (WHO, 2006). Unintentional injuries refer to injuries that result from unforeseen circumstances that are not intended to cause harm. Typically, these injuries comprise road traffic injuries, drowning, burns, poisoning and falls. Intentional injuries result from deliberate action on the part of someone with the purpose of inflicting physical or even emotional harm. In this paper we will discuss unintentional injuries.

While these categories assist in our understanding of injuries, there are conceptual and practical problems with maintaining this categorisation. In developing countries, socioeconomic factors, high levels of drug and alcohol abuse, together with aspects of the built environment, product design and family/individual risk-taking behaviour, increase the exposure of children to both intentional and unintentional injuries (du Toit, van Niekerk & van As, 2006; Peden et al., 2008; WHO, 2006). Often the injury is caused by a multitude of factors with both intentional and unintentional causes. A straightforward example would be the case of a 3-year-old child who runs into a busy road and is knocked over by a vehicle. This is usually classified as an accident; neither the child nor the driver is responsible, although both caused it. However, if the child had been left unsupervised with free access to the road, the question of neglect or abuse arises. It is in the grey area between the two classifications, where young children tend to fall.

Preventing Child Injuries

The majority of, if not all, child injuries are preventable. Too often there is a misconception that unintentional injuries, for instance, are an unavoidable threat and the word "accident" is used to define them, which embodies the idea of both chance and inevitability (Haddon, 1972; Peden et al., 2008; WHO, 2006).

The Haddon matrix has been widely adopted in the literature to develop ideas to prevent all types of injuries, including child injuries (Runyan, 1998). This matrix consists of 12 cells, with four columns relating to the host, agent/vehicle, physical environment and sociocultural environment and three rows to the three phases of an injury, i.e. before, during and after the injury.

From the Haddon matrix, one can infer that there are mainly three causes of any injury; the first is the child itself, the second is the agent and the third is the environment. With regard to childhood injuries, the first cause is the child, with factors such as their age and gender making them more or less susceptible to injuries. It is reported that the road traffic death rate for male children is twice that of female children globally, secondary to male children being more prone to taking risks on the road (WHO, 2006).

Children's neurological development is gradual and only by the age of 8 has the child matured sufficiently to engage independently with the dangers of his/her environment (WHO, 2006). For injuries that impact young children (under the age of 8), the child cannot reasonably be regarded as a potential agent of harm, nor can the injury be caused by the child: adequate measures should have been in place to protect the child through the provision of an adequate environment (bringing into light the second and third core principles of the Convention). An adequate environment relates either to the parent providing adequate supervision or the environment being free from potential harms.

Supervision is crucial here. There are a number of challenges when defining supervision (du Toit, van Niekerk & van As, 2006; Peden et al., 2008; WHO, 2006). However, a reasonable definition suggested by the WHO is that "supervision refers to behaviours that are related to *attention* (watching and listening) and to *proximity* (touching or being within reach). Furthermore, these behaviours are judged by how *continuous* they are (whether constant, intermittent or not at all)" (Peden et al., 2008:11).

We propose, therefore, that injuries that impact children under the age of 8 be termed *preventable* injuries. In such injuries, the child is impacted by either inadequate supervision or the lack of a safe environment . This new model of preventable injuries in young children is not meant to determine legal culpability but is merely aimed at developing appropriate prevention strategies. If this model is adopted, the onus will be on creating an adequate environment and/or adequate supervision for the protection of children.

Within this proposed model, we recommend a subclassification together with a grading for each active agent in a young child injury i.e. a subclassification for the environment and for the level of supervision that was present at the time of injury to the child (Table 1). The environmental grade ranges from poor environment to non-accidental injuries, while the level of supervision ranges from present but lapsed at the moment of injury, to completely absent supervision.

Table 1: Proposed classification of two active agents in young child injuries, the environment and supervision by the caregiver/parent

	Environment	**Supervision**
Grade 1	Risk arising from dangers in physical environment (Including socio-economic factors)	Supervision hiatus (Supervision generally good but a temporarily lapse occurred)
Grade 2	Risk arising from dangers in social environment (Child caught up in violence between adults; not the intended target)	Supervision poor (Supervision generally insufficient)
Grade 3	Risk arising from non-accidental intentional violence (Violence against the child, with the child as the intended target; violence can be from a known or an unknown assailant).	Supervision absent (Supervision generally lacking)

If the subclassification is taken into consideration, childhood injury prevention can be targeted at either improving living conditions or environment (both from the caregiver point of view and from a governmental point of view) or improving supervision of the child within the home environment or within the care facility environment (such as a school). Improved supervision could be achieved through home visits by nursing or social workers, or enabling professionals to intervene when safety is of concern within the supervision classification (Bilukha et al., 2005; Kendrick et al., 2000; Lyons et al., 2003).

In the Implementation Handbook for the Convention of the Rights of the Child (Hodgkin & Newell, 2007:93), it is reiterated that the state should ensure that children have an "adequate standard of living, education, and leisure and play relevant to ensuring maximum development of the child". Part of the checklist includes the question of whether appropriate measures have been taken to reduce and prevent accidents of children, including traffic accidents (Hodgkin & Newell, 2007; WHO, 2006). We are of the view that this is currently not the case and that our proposed new terminology will be able to implement safety measures in a more constructive manner.

Conclusion

Childhood injury is preventable. By reclassifying "accidental" or "unintentional" injury as "preventable" and including subclassifications with regard to environmental and supervision factors, new preventative measures can be developed to promote the protection and safety of children.

Author contributions

MLL, SC, MK and ABvA were part of a discussion after a session at an international conference on paediatric trauma (EUPSA 2019 in Belgrade, Serbia) and were responsible for the conceptualisation and design of the manuscript. CZZ contributed to writing and finalisation. AB reviewed the manuscript and made essential intellectual contributions.

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