Introduction

Broadly speaking, injury is physical harm or damage to the body. It may be intentional or unintentional. If intentional, it may be self-inflicted (for example, suicide) or inflicted by another (for example, assault and homicide). The harm can be caused by any of the following things:

- an external force (such as a collision with an object)
- energy (heat, electricity, etc.)
- external or internal contact with a harmful substance (poisoning, etc.)
- the absence of an essential element (such as oxygen or heat) [1] [2] [3].

Normally, only harmful effects occurring over a short time are considered injury. (The term ‘injury’ is used generally in reference to those conditions classified within the ICD group ‘external causes of morbidity and mortality’ - V01 to Y98).

Assessment and classification

Assessing the total impact of injury is difficult. The vast majority of injuries do not result in hospitalisation or death and there are little systematic data on them other than those collected as part of large-scale population health surveys (such as the periodic National Health Surveys conducted by the Australian Bureau of Statistics). Thus, the vast majority of injuries are not recorded in routine data collections, and may not be brought to the attention of health policy-makers and program managers.

For injuries that are serious enough to be recorded in the routine data collections or are identified by specific studies, there are...
some issues with their classification. The classification of injury has generally followed the World Health Organization’s International Classification of Diseases (ICD), which includes particular attention to the external cause and intention of the injury.

**Classification of Injury**

The 10th revision of the World Health Organization’s International Classification of Diseases (ICD) is now applied in Australia to deaths and (in the somewhat more extensive ‘Australian Modification’) to hospitalisation [4]. The ICD-10 classification codes injuries in terms of their nature (for example, fracture of the vault of the skull) and the external cause of the injury (for example, assault by blunt instrument) [5]. Because it is more useful for preventive purposes, most reporting of injury is in terms of external causes, the broad categories of which are as follows:

- accidents - transport accidents (including motor-vehicle accidents) and other external causes of accidental injury (falls, burns, accidental poisoning, etc.)
- intentional self-harm (including suicide)
- assault (including homicide)
- events of undetermined intent
- legal interventions and operations of war
- complications of medical and surgical care
- sequela of external causes of morbidity and mortality
- supplementary factors related to causes of morbidity and mortality classified elsewhere.(this coding provides for factors like alcohol involvement, including blood alcohol levels if known).

**Applying the classification system to injury among Indigenous people**

The ICD categories are useful for broad epidemiological studies, but have serious limitations for detailed investigations for injury prevention. Many Indigenous injuries fall into categories in which there is little detail (for example, falls). In addition, it is apparent that culture affects the way in which information about an injury-causing event is described to investigators and clinicians, and the way this is interpreted through coding [6]. An example is the uncertainty over how traditional Indigenous punishment practices should be coded - depending upon the perspective taken, they could be recorded as an accident, a legal intervention, or violence.

The magnitude of a problem can be assessed, but a detailed understanding of the causes cannot be obtained using the ICD system [6]. Attempting to address these issues, Weeramanthri and Plumber [7] proposed an alternative system to the ICD for the classification of cause of death. Their system emphasises the underlying rather than the direct cause of death, and the ICD classifications were replaced with the following categories: Land (diseases of the physical environment), Body (so-called ‘lifestyle diseases’), Spirit (diseases of poverty and cultural dislocation, including injury deaths), and Smoking-related. The authors calculated proportional mortality ratios and presented the results of a mortality analysis based on these ratios at feedback sessions and a workshop. No formal evaluation of this process was conducted, but informal feedback suggested that health information presented in this way was relevant and useful to the participating communities, and resonated more with the participants’ world view.

**Factors contributing to injury**

The development of injury-prevention projects and programs depends on a solid understanding of the various factors contributing to specific injuries. Reflecting the great diversity of injuries - and the diversity of disciplines and backgrounds among involved in injury prevention - approaches investigating these factors range from the traditional epidemiological single-risk-factor approach to broad sociological methods.

The ecological model proposed in the World Report on Violence and Health provides one way of conceptualising the types of factors that need to be considered in the development of injury-prevention strategies [8]. With a particular focus on violence, this model involves four levels:

- individual - biological and biographical factors that may contribute to a person being a victim or perpetrator of violence; relevant biographical factors include things like low educational attainment, a history of aggression and/or abuse, and substance use
- proximal social relationships - those with family members, peers, and intimate partners
- community - the immediate context in which social relationships are embedded, such as schools, workplaces, and neighbourhoods
- societal - social, cultural, educational, health, and economic factors that influence levels and outcomes of violence [8].

There are, of course, other ways of conceptualising the factors contributing to injury. Regardless of which classification scheme is used, however, it is important that the scope is wide enough to ensure that the analysis of ‘causes’ will reveal most of the factors that need to be taken into account in the development of preventive strategies.

This broad ecological approach to seeking causal factors is well established in the field of justice, being a feature of the work of the Royal Commission into Aboriginal Deaths and Custody [9], and also...
in the area of self-inflicted injury. It is a feature also of an analysis of road injuries in South Australia [10], but does not appear to be as widely used in the more traditional injury-prevention literature.

Overall, however, the understanding of contributory factors is weak for most areas of injury, including injury among Indigenous people [4]. Information facilitating the analysis of risk factors and mechanisms of injury is relatively scarce and varies across the specific topic areas considered. Most studies that have sought to identify risk factors have failed to explore the interplay of risk factors (for example, young males’ alcohol consumption, risk-taking, and exposure to hazardous environments) [4]. If we are to understand how these factors influence each other, more longitudinal, in-depth research is required. Such research, with greater collaboration between fields of study, should also help us identify the point in the chain of events that can offer the greatest opportunity for intervention.

References


The Australian Indigenous HealthInfoNet is an innovative Internet resource that contributes to ‘closing the gap’ in health between Indigenous and other Australians by informing practice and policy in Indigenous health.

Two concepts underpin the HealthInfoNet’s work. The first is evidence-informed decision-making, whereby practitioners and policy-makers have access to the best available research and other information. This concept is linked with that of translational research (TR), which involves making research and other information available in a form that has immediate, practical utility. Implementation of these two concepts involves synthesis, exchange and ethical application of knowledge through ongoing interaction with key stakeholders.

The HealthInfoNet’s work in TR at a population-health level, in which it is at the forefront internationally, addresses the knowledge needs of a wide range of potential users, including policy-makers, health service providers, program managers, clinicians, Indigenous health workers, and other health professionals. The HealthInfoNet also provides easy-to-read and summarised material for students and the general community.

The HealthInfoNet encourages and supports information-sharing among practitioners, policy-makers and others working to improve Indigenous health – its free on line yarning places enable people across the country to share information, knowledge and experience. The HealthInfoNet is funded mainly by the Australian Department of Health and Ageing. Its award-winning web resource (www.healthinfonet.ecu.edu.au) is free and available to everyone.