

# Injury

A Leading Cause of the  
Global Burden of Disease

**2000**



World Health Organization  
Geneva



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## INTRODUCTION

### Background

In 1999, WHO published the first volume (1) of this document to inform policy-makers, health officials, researchers and the general public about the magnitude and ranking of injuries to facilitate informed decision-making and increase attention to this significant public health problem. With more attention and resources being allocated to injury prevention and control, it is important to provide up-to-date and accurate data about the magnitude of this problem. Therefore, we have updated the ranking tables presented here with the most recent data we have available. As previously, this document is intended to serve as a reference document on the ranking of injuries among other leading causes of the burden of disease.

Injuries have traditionally been regarded as random, unavoidable “accidents”. Within the last few decades, however, a better understanding of the nature of injuries has changed these old attitudes, and today both unintentional and intentional injuries are viewed as largely preventable events. As a result of this shift in perception, injuries and their health implications have demanded the attention of decision-makers worldwide and injury policy has been firmly placed in the public health arena. Furthermore, the growing acceptance of injuries as a preventable public health problem over the past decade or so has led to the development of preventative strategies and, consequently, a decrease in the human death toll due to injuries in some countries.

However, injuries continue to rank among the leading causes of death and burden of disease and occur in all regions and countries, affecting people in all age and income groups. The magnitude of the problem however varies considerably by age, sex, region and income group. For example, in the low- and middle-income countries in the Western Pacific the leading injury-related causes of death are road traffic injuries and interpersonal violence, while in the low- and middle-income countries of Europe they are suicide and poisoning. In the high-income countries of the Americas, the leading cause of death among people aged 15–29 years is traffic injuries, while in the low- and middle-income countries of the same region it is interpersonal violence.

### Methods

The data presented here are taken from the Global Burden of Disease 2000 database, version 1 (GBD 2000 project). The GBD 2000 project database combines mortality data derived from national vital registration systems with information obtained from surveys, censuses, epidemiological studies and health service data and as such represents the most comprehensive view of global mortality and morbidity available today (2). The global burden of disease data are disaggregated geographically into six WHO regions, the African Region (AFR), the Region of the Americas (AMR), the South-East Asia Region (SEAR), the European Region (EUR), the Eastern Mediterranean Region (EMR) and the Western Pacific Region (WPR). Countries within each geographical region have been further subdivided by

income level, according to the divisions developed by the World Bank (3). The countries comprising each of the WHO regions and economic grouping within these regions are given in Appendix 2.

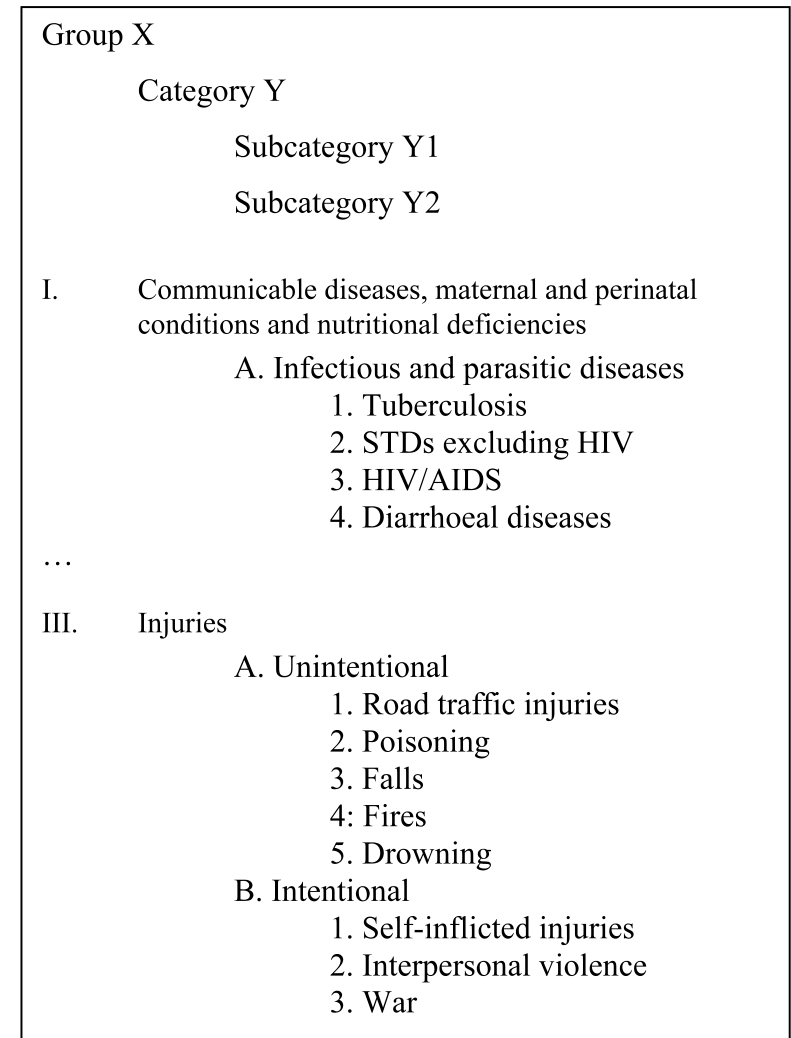
The information provided includes both mortality and morbidity data. Mortality is a very important indicator of the magnitude of a health problem. However, it is important to realize that for each death from injury there are many more injuries that result in hospitalisation, treatment in emergency departments or by general practitioners, and treatment outside hospitals. Non-fatal outcomes must also therefore be measured to characterize the burden of injury accurately. Disability-adjusted life years (DALYs) take account of this by combining the number of years of life lost from premature death with the loss of health from disability. One disability-adjusted life year (DALY) is defined as one lost year of healthy life, either due to premature death or disability.

In order to create the tables presented here we followed the World Health Report procedure for creating death and disability rankings (Figure 1). Deaths and health states are categorically attributed to one underlying cause using the rules and conventions of the International Classification of Diseases (4,5). The cause list used in the GBD 2000 project has four levels of disaggregation and includes 135 specific diseases and injuries. Overall mortality is divided into three broad groups of causes, as follows:

- ◆ Group I: communicable diseases, maternal causes, conditions arising in the perinatal period and nutritional deficiencies;
- ◆ Group II: noncommunicable diseases;

- ◆ Group III: intentional and unintentional injuries.

**Figure 1: Ranking method**



Next, deaths and disabilities within each of these groups are divided into categories. The two main injury categories, intentional and unintentional injuries, are defined in terms of a series of external cause codes; unintentional injuries are subdivided into road traffic injuries, poisoning, falls, fires, and drowning. Intentional injuries are subdivided into self-inflicted injuries (i.e. suicide), interpersonal violence (e.g. homicide), and war-related injuries. The same procedure is followed for the other two broad groups of deaths and disabilities.

The 15 leading causes of death/burden of disease are presented in tables by geographical region and income levels, by age and sex. All injury-related groups or categories are highlighted in each table for illustration. The numbers listed below for each subcategory represent either the total number of deaths or DALYs. It is important to realize that these are a measure of magnitude and are not directly comparable to another region, sex or income group. A table describing the population is provided to allow the calculation of rates of disease or injury which may then be more accurately compared between tables (Appendix 1).

### **Summary of results**

- ◆ Injury is a leading cause of death and disability for all age groups except persons 60 years of age or older.
- ◆ Road traffic and self-inflicted injuries are the leading causes of injury-related deaths worldwide.
- ◆ Road traffic injuries, self-inflicted injuries, interpersonal violence, war injuries, drowning, poisoning and injuries resulting from exposure to fire are all among the 10 leading causes of death for persons aged 15–29 years.

- ◆ The leading injury-related causes of death among youths 5-14 years are traffic injuries and drowning.
- ◆ Although falls do not appear among the leading causes of death in the world, they are a leading cause of burden of disease for children aged 5–14 years.
- ◆ Worldwide, road traffic injuries are the leading injury-related cause of death and burden of disease in males.
- ◆ In high-income countries, road traffic injuries, self-inflicted injuries and interpersonal violence are the three leading causes of death among people aged 15–29 years.
- ◆ In most of the regions, road traffic injuries are the leading cause of injury-related deaths except in Europe and the low- and middle-income countries of the Americas where self-inflicted injuries and interpersonal violence are the leading injury-related causes of death, respectively.
- ◆ China is the only region to show drowning among the 15 leading causes of death and burden of disease.
- ◆ The low- and middle-income countries of Europe is the only region
- ◆ to show poisoning as a leading cause of death.

Since the publication of the first version of this document in 1998, there have been a number of changes in the rankings – some encouraging and some disappointing. These include:

- ◆ War as a leading cause of death has dropped in almost all regions and age groups since 1998.

- ◆ Interpersonal violence as a leading cause of death among males has declined slightly and the rank of suicide deaths among females has decreased since 1998.
- ◆ Road traffic injuries have risen to the 9<sup>th</sup> leading cause of death worldwide since 1998.
- ◆ Injury as a cause of death has increased among children in many regions. For example, among children 0-4 years in high income countries road traffic injuries, drowning, and interpersonal violence have all risen in the rankings of leading causes of death.

### Conclusion

The goal of this publication is to provide the most recent and updated estimates on the magnitude of injuries in the world and compare the burden of injuries to other leading public health problems. Such information is the basis for informed priority setting and decision-making. Injuries have been shown to account for a significant health burden on all populations regardless of their age, sex, income or geographical region.

Injuries are preventable non-random events. While some progress has been made since

The content of this publication is available on the WHO web site at: [http://www5.who.int/violence\\_injury\\_prevention](http://www5.who.int/violence_injury_prevention). Users are invited to use the tables included therein, when and where appropriate, to advocate for more attention to this important public health problem.

### References

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