THE INJURY CHART BOOK

A graphical overview of the global burden of injuries

Department of Injuries and Violence Prevention
Noncommunicable Diseases and Mental Health Cluster
World Health Organization

Geneva

2002

Copies of this document are available from:
Department of Injuries and Violence Prevention
World Health Organization
20 Avenue Appia
1211 Geneva 27
Switzerland
Fax: 0041 22 791 4332
Email: vip@who.int

Suggested citation:
Peden M, McGee K, Sharma G. *The injury chart book: a graphical overview of the global burden of injuries*. Geneva, World Health Organization, 2002.

WHO Library Cataloguing-in-Publication Data

The injury chart book : a graphical overview of the global burden of injuries.

1.Wounds and injuries - epidemiology 2.Cost of illness
3.Forecasting 4. Charts

ISBN 92 4 156220 X (NLM classification: WO 700)

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Contents

Abbreviations

AFR	African Region
AMR	Region of the Americas
BTL	Basic tabulation list
DALY	Disability-adjusted life year
EMR	Eastern Mediterranean Region
EUR	European Region
GBD	Global burden of disease
HIC	High-income countries
ICD	International Classification of Disease
IPV	Interpersonal violence
LMIC	Low- and middle-income countries
RTI	Road traffic injuries
SEAR	South-East Asia Region
WHO	World Health Organization
WPR	Western Pacific Region

Acknowledgements

The authors wish to thank staff of the Department of Injuries and Violence Prevention, WHO and the numerous reviewers from around the world for their assistance in the preparation of this document. The contribution of the Evidence and Information for Policy Cluster, WHO which provided the data on which the tables and graphs in this document are based is also gratefully acknowledged.

Summary of results

- An estimated 5 million people worldwide died from injuries in 2000 — a mortality rate of 83.7 per 100 000 population.

- Injuries accounted for 9% of the world's deaths in 2000 and 12% of the world's burden of disease.

- The burden of disease related to injuries, particularly road traffic injuries, interpersonal violence, war and self-inflicted injuries is expected to rise dramatically by the year 2020.

- Road traffic injuries are the leading cause of injury-related deaths worldwide.

Injuries by region

- More than 90% of the world's deaths from injuries occur in low- and middle-income countries.

- The low- and middle-income countries of Europe have the highest injury mortality rates.

- The South-East Asia and Western Pacific Regions account for the highest number of injury deaths worldwide.

Injuries by sex and age group

- Globally, injury mortality among men is twice that among women. In some regions, however, mortality rates for suicide and burns in females are as high or even higher than in males.

- Males in Africa and Europe have the highest injury-related mortality rates.

- Young people between the ages of 15 and 44 years account for almost 50% of the world's injury-related mortality.

- Mortality from road traffic injuries and interpersonal violence in males is almost 3 times higher than that in females.

- Children under 5 years of age account for approximately 25% of drowning deaths and a little over 15% of fire-related deaths worldwide.

Introduction

Background

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 lead to the development of preventative strategies and, consequently, a decrease in the human death toll due to injuries in some countries.

Based on the premise that access to accurate, reliable information is the key to sound policy-making, this publication seeks to provide a global overview of the nature and extent of injury mortality and morbidity in the form of user-friendly tables and charts. It is hoped that the graphical representation of the main patterns of the burden of disease due to injury will raise awareness of the importance of injuries as a public health issue and facilitate the implementation of effective prevention programmes.

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 (*1*). 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 (*2*). The countries comprising each of the WHO regions and economic grouping within these regions are given in Appendix 1.

Deaths and health states are categorically attributed to one underlying cause using the rules and conventions of the International Classification of Diseases (*3,4*). 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.

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, drowning, and "other unintentional injuries". The latter category includes, for example, exposure to animate and inanimate mechanical forces (including firearms); exposure to electric current, radiation and extreme ambient temperature and pressure, and to forces of nature; and contact with heat and hot substances, and venomous plants and animals. Intentional injuries are subdivided into self-inflicted injuries (i.e. suicide), interpersonal violence (e.g. homicide), war-related injuries, and "other intentional injuries" (Table 1). The latter includes injuries due to legal intervention.

While mortality is an important indicator of the magnitude of a health problem, it is important to realize that for each injury death, there are several thousand injury survivors who are left with permanent disabling sequelae. These non-fatal outcomes must also be measured in order to describe accurately the burden of disease due to injury. The indicator used to quantify the loss of healthy life due to disease is the disability-adjusted life year or DALY, a measure that accounts not only for the years of life lost from premature death but also for the years of life lived with disability.

Table 1
External causes of injury and their corresponding ICD codes

Type of external cause of injury		ICD-9 code	ICD-9 BTL code	ICD-10 code
All injuries		E800–E999	B47–B56	V01–Y98
Unintentional injuries		E800–E949	B47–B53	V01–X59, Y40–Y86, Y88, Y89
1	Road traffic injuries	E810–E819, E826–E829, E929	B471–B472	V01–V89, V99, Y850
2	Poisoning	E850–E869	B48	X40–X49
3	Falls	E880–E888	B50	W00–W19
4	Fires	E890–E899	B51	X00–X09
5	Drowning	E910	B521	W65–W74
6	Other unintentional injuries	E800–E807, E820–E848, E870–E879, E900–E909, E911–E949	B49, B52 (minus B521), B53, B47 (minus B471)	V90–V98, W20–W64, W75–W99, X10–X39, X50–X59, Y40–Y86, Y88, Y89
Intentional injuries		E950–E978, E990–E999	B54–B55, B56 (minus B560)	X60–Y09, Y35–Y36, Y870–Y871
1	Self-inflicted	E950–E959	B54	X60–X84, Y870
2	Interpersonal violence	E960–E969	B55	X85–Y09, Y871
3	War	E990–E999	B561	Y36
4	Other intentional injuries	E970–E978	B569	Y35

ICD, International Classification of Disease; BTL, basic tabulation list.

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) is defined as one lost year of
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this document is organized into
s an overview of the global injury
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number of limitations. The first is
ration systems capture around 17 million deaths annually, this represents just under three-quarters of the total estimated global mortality. Some regions of the world are especially poorly represented in this regard; for example, national vital registration data were only available for 19% of the countries in the African Region. In countries where such data are missing, information from other sources (e.g. survey data) coupled with indirect demographic techniques are used to estimate mortality and disability. However, extrapolations of this type should be interpreted with caution.

Secondly, the GBD estimates for 2000 were extrapolated from information compiled to estimate the burden of disease in 1990. The situation in some countries or whole regions may have changed significantly since 1990. Although adjustments for such changes could be made in some cases, in others, the information needed to perform the necessary adjustments was lacking.

Thirdly, the DALY measure does not reflect all the health consequences associated with injuries. Although DALYs include premature death, injury and physical disability, they do not, for example, account for the mental health consequences of violence and war, nor do they take into consideration conditions such as sexually transmitted diseases resulting from rape or the effects of infectious diseases and malnutrition following war.