GLOBAL HEALTH RISKS Mortality and burden of disease attributable to selected major risks



GLOBAL HEALTH RISKS

Mortality and burden of disease attributable to selected major risks

WHO Library Cataloguing-in-Publication Data

Global health risks: mortality and burden of disease attributable to selected major risks.

1. Risk factors. 2. World health. 3. Epidemiology. 4. Risk assessment. 5. Mortality - trends. 6. Morbidity - trends. 7. Data analysis, Statistical. I. World Health Organization.

ISBN 978 92 4 156387 1 (NLM classification: WA 105)

© World Health Organization 2009

All rights reserved. Publications of the World Health Organization can be obtained from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). Requests for permission to reproduce or translate WHO publications - whether for sale or for noncommercial distribution - should be addressed to WHO Press, at the above address (fax: +41 22 791 4806; e-mail: permissions@who.int).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use. Printed in France.

Acknowledgements

This publication was produced by the Department of Health Statistics and Informatics in the Information, Evidence and Research Cluster of the World Health Organization (WHO). The analyses were primarily carried out by Colin Mathers, Gretchen Stevens and Maya Mascarenhas, in collaboration with other WHO staff, WHO technical programmes and the Joint United Nations Programme on HIV/AIDS (UNAIDS). The report was written by Colin Mathers, Gretchen Stevens and Maya Mascarenhas.

We wish to particularly thank Majid Ezzati, Goodarz Danaei, Stephen Vander Hoorn, Steve Begg and Theo Vos for valuable advice and information relating to other international and national comparative risk assessment studies. Valuable inputs were provided by WHO staff from many departments and by experts outside WHO. Although it is not possible to name all those who contributed to this effort, we would like to particularly note the assistance and inputs provided by Bob Black, Ties Boerma, Sophie Bonjour, Fiona Bull, Diarmid Campbell-Lendrum, Mercedes de Onis, Regina Guthold, Mie Inoue, Doris Ma Fat, Annette Prüss-Ustün, Jürgen Rehm, George Schmid and Petra Schuster.

Figures were prepared by Florence Rusciano, and design and layout were by Reto Schürch.

Contents

Tab	les	iv
Figu	ires	iv
Sun	1mary	V
Abb	reviations	vi
1	Introduction	1
1.1	Purpose of this report	1
1.2	Understanding the nature of health risks	1
1.3	The risk transition	2
1.4	Measuring impact of risk	4
1.5	Risk factors in the update for 2004	5
1.6	Regional estimates for 2004	7
2	Results	9
2.1	Global patterns of health risk	9
2.2	Childhood and maternal undernutrition	
2.3	Other diet-related risk factors and physical inactivity	
2.4	Sexual and reproductive health	
2.5	Addictive substances	21
2.6	Environmental risks	
2.7	Occupational and other risks	
3	Joint effects of risk factors	28
3.1	Joint contribution of risk factors to specific diseases	
3.2	Potential health gains from reducing multiple risk factors	
3.3	Conclusions	
An	nex A: Data and methods	32
A1.	1 Estimating population attributable fractions	
A1.2	2 Risk factors	
Tab	e A1: Definitions, theoretical minima, disease outcomes and data sources for the selected global risk factors	
Tab	le A2: Summary prevalence of selected risk factors by income group in WHO regions, 2004	
Tab	le A3: Attributable mortality by risk factor and income group in WHO regions, estimates for 2004	
Tab	le A4: Attributable DALYs by risk factor and income group in WHO regions, estimates for 2004	
Tab	le A5: Countries grouped by WHO region and income per capita in 2004	54
References		55

Tables

Table 1: Ranking of selected risk factors: 10 leading risk factor causes of death by income group, 2004	11
Table 2: Ranking of selected risk factors: 10 leading risk factor causes of DALYs by income group, 2004	12
Table 3: Deaths and DALYs attributable to six risk factors	
for child and maternal undernutrition, and to six risks combined; countries grouped by income, 2004	14
Table 4: Deaths and DALYs attributable to six diet-related risks and physical inactivity, and to all six risks combined, by region, 2004	17
Table 5: Deaths and DALYs attributable to alcohol, tobacco and illicit drug use, and to all three	
risks together, by region, 2004	22
Table 6: Deaths and DALYs attributable to five environmental risks, and to all five risks combined by region, 2004	24
Table 7: Percentage of total disease burden due to 5 and 10 leading risks and all 24 risks in this report, world, 2004	30
Table 8: Percentage of total disease burden due to 10 leading risks, by region and income group, 2004	30
Table A1: Definitions, theoretical minima, disease outcomes and data sources for the selected global risk factors	41
Table A2: Summary prevalence of selected risk factors by income group in WHO regions, 2004	46
Table A3: Attributable mortality by risk factor and income group in WHO regions, estimates for 2004	50
Table A4: Attributable DALYs by risk factor and income group in WHO regions, estimates for 2004	52
Table A5: Countries grouped by WHO region and income per capita in 2004	54

Figures

Figure 1: The causal chain	2
Figure 2: The risk transition	3
Figure 3: An observed population distribution of average systolic blood pressure	
and the ideal population distribution of average systolic blood pressure	4
Figure 4: Counterfactual attribution	6
Figure 5: Low- and middle-income countries grouped by WHO region, 2004	7
Figure 6: Deaths attributed to 19 leading risk factors, by country income level, 2004.	10
Figure 7: Percentage of disability-adjusted life years (DALYs) attributed to 19 leading risk factors, by country income level, 2004	10
Figure 8: Major causes of death in children under 5 years old with disease-specific contribution of undernutrition, 2004	14
Figure 9: Attributable DALY rates for selected diet-related risk factors, and all six risks together,	
by WHO region and income level, 2004	18
Figure 10: Burden of disease attributable to lack of contraception, by WHO region, 2004.	20
Figure 11: Percentage of deaths over age 30 years caused by tobacco, 2004	22
Figure 12: Disease burden attributable to 24 global risk factors, by income and WHO region, 2004	29
Figure 13: Potential gain in life expectancy in the absence of selected risks to health, world, 2004	30

Summary

The leading global risks for mortality in the world are high blood pressure (responsible for 13% of deaths globally), tobacco use (9%), high blood glucose (6%), physical inactivity (6%), and overweight and obesity (5%). These risks are responsible for raising the risk of chronic diseases such as heart disease, diabetes and cancers. They affect countries across all income groups: high, middle and low.

The leading global risks for burden of disease as measured in disability-adjusted life years (DALYs) are underweight (6% of global DALYs) and unsafe sex (5%), followed by alcohol use (5%) and unsafe water, sanitation and hygiene (4%). Three of these risks particularly affect populations in low-income countries, especially in the regions of South-East Asia and sub-Saharan Africa. The fourth risk – alcohol use – shows a unique geographic and sex pattern, with its burden highest for men in Africa, in middle-income countries in the Americas and in some high-income countries.

This report uses a comprehensive framework for studying health risks developed for *The world health report 2002*, which presented estimates for the year 2000. The report provides an update for the year 2004 for 24 global risk factors. It uses updated information from WHO programmes and scientific studies for both exposure data and the causal associations of risk exposure to disease and injury outcomes. The burden of disease attributable to risk factors is measured in terms of lost years of healthy life using the metric of the disability-adjusted life year. The DALY combines years of life lost due to premature death with years of healthy life lost due to illness and disability.

Although there are many possible definitions of "health risk", it is defined in this report as "a factor that raises the probability of adverse health outcomes". The number of such factors is countless and the report does not attempt to be comprehensive. For example, some important risks associated with exposure to infectious disease agents or with antimicrobial resistance are not included. The report focuses on selected risk factors which have global spread, for which data are available to estimate population exposures or distributions, and for which the means to reduce them are known. Five leading risk factors identified in this report (childhood underweight, unsafe sex, alcohol use, unsafe water and sanitation, and high blood pressure) are responsible for one quarter of all deaths in the world, and one fifth of all DALYs. Reducing exposure to these risk factors would increase global life expectancy by nearly 5 years.

Eight risk factors (alcohol use, tobacco use, high blood pressure, high body mass index, high cholesterol, high blood glucose, low fruit and vegetable intake, and physical inactivity) account for 61% of cardiovascular deaths. Combined, these same risk factors account for over three quarters of ischaemic heart disease: the leading cause of death worldwide. Although these major risk factors are usually associated with high-income countries, over 84% of the total global burden of disease they cause occurs in low- and middle-income countries. Reducing exposure to these eight risk factors would increase global life expectancy by almost 5 years.

A total of 10.4 million children died in 2004, mostly in low- and middle-income countries. An estimated 39% of these deaths (4.1 million) were caused by micronutrient deficiencies, underweight, suboptimal breastfeeding and preventable environmental risks. Most of these preventable deaths occurred in the WHO African Region (39%) and the South-East Asia Region (43%).

Nine environmental and behavioural risks, together with seven infectious causes, are responsible for 45% of cancer deaths worldwide. For specific cancers, the proportion is higher: for example, tobacco smoking alone causes 71% of lung cancer deaths worldwide. Tobacco accounted for 18% of deaths in high-income countries.

Health risks are in transition: populations are ageing owing to successes against infectious diseases; at the same time, patterns of physical activity and food, alcohol and tobacco consumption are changing. Low- and middle-income countries now face a double burden of increasing chronic, noncommunicable conditions, as well as the communicable diseases that traditionally affect the poor. Understanding the role of these risk factors is important for developing clear and effective strategies for improving global health.

Abbreviations

AIDSacquired immunodeficiency syndrome
BMIbody mass index
CRA comparative risk assessment
DALY disability-adjusted life year
GBD global burden of disease
HIV human immunodeficiency virus
IUGR intrauterine growth restriction
MET metabolic equivalent (energy expenditure measured in units of resting energy expenditure)
PAF population attributable fraction
UNAIDS Joint United Nations Programme on HIV/AIDS
UNICEF United Nations Children's Fund
WH0 World Health Organization
YLD years lost due to disability
YLL years of life lost (due to premature mortality)

1 Introduction

1.1 Purpose of this report

A description of diseases and injuries and the risk factors that cause them is vital for health decisionmaking and planning. Data on the health of populations and the risks they face are often fragmentary and sometimes inconsistent. A comprehensive framework is needed to pull together information and facilitate comparisons of the relative importance of health risks across different populations globally.

Most scientific and health resources go towards treatment. However, understanding the risks to health is key to preventing disease and injuries. A particular disease or injury is often caused by more than one risk factor, which means that multiple interventions are available to target each of these risks. For example, the infectious agent Mycobacterium tuberculosis is the direct cause of tuberculosis; however, crowded housing and poor nutrition also increase the risk, which presents multiple paths for preventing the disease. In turn, most risk factors are associated with more than one disease, and targeting those factors can reduce multiple causes of disease. For example, reducing smoking will result in fewer deaths and less disease from lung cancer, heart disease, stroke, chronic respiratory disease and other conditions. By quantifying the impact of risk factors on diseases, evidence-based choices can be made about the most effective interventions to improve global health.

This document – the *Global health risks* report – provides an update for the year 2004 of the compara-

1.2 Understanding the nature of health risks

To prevent disease and injury, it is necessary to identify and deal with their causes – the health risks that underlie them. Each risk has its own causes too, and many have their roots in a complex chain of events over time, consisting of socioeconomic factors, environmental and community conditions, and individual behaviour. The causal chain offers many entry points for intervention.

As can be seen from the example of ischaemic heart disease (Figure 1), some elements in the chain, such as high blood pressure or cholesterol, act as a relatively direct cause of the disease. Some risks located further back in the causal chain act indirectly through intermediary factors. These risks include physical inactivity, alcohol, smoking or fat intake. For the most distal risk factors, such as education and income, less causal certainty can be attributed to each risk. However, modifying these background causes is more likely to have amplifying effects, by influencing multiple proximal causes; such modifications therefore have the potential to yield fundamental and sustained improvements to health (*3*).

In addition to multiple points of intervention along the causal chain, there are many ways that populations can be targeted. The two major approaches to reducing risk are:

- targeting high-risk people, who are most likely to benefit from the intervention
- targeting risk in the entire population, regardless of each individual's risk and potential benefit.

预览已结束, 完整报告链接和二维码如下:

https://www.yunbaogao.cn/report/index/report?reportId=5 29327



Annex A

1

2

3