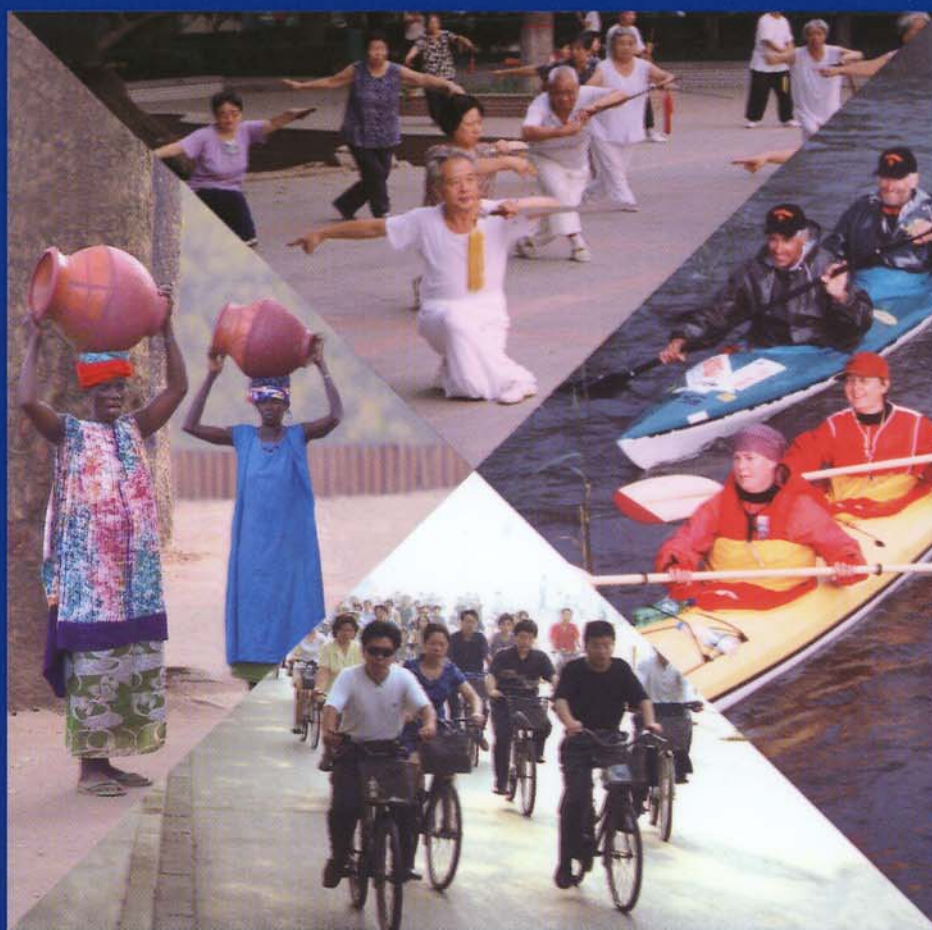


# IARC Handbooks of Cancer Prevention



International Agency for Research on Cancer  
World Health Organization

## Weight Control and Physical Activity



Volume 6

IARC Press  
2002

IARC Handbooks of Cancer Prevention

**Volume 6**

**Weight Control and Physical Activity**

**IARC Handbooks of Cancer Prevention**  
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**Volume 6**

## **Weight Control and Physical Activity**

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## **International Agency For Research On Cancer**

The International Agency for Research on Cancer (IARC) was established in 1965 by the World Health Assembly, as an independently financed organization within the framework of the World Health Organization. The headquarters of the Agency are in Lyon, France.

The Agency conducts a programme of research concentrating particularly on the epidemiology of cancer and the study of potential carcinogens in the human environment. Its field studies are supplemented by biological and chemical research carried out in the Agency's laboratories in Lyon and, through collaborative research agreements, in national research institutions in many countries. The Agency also conducts a programme for the education and training of personnel for cancer research.

The publications of the Agency contribute to the dissemination of authoritative information on different aspects of cancer research. Information about IARC publications, and how to order them, is available via the Internet at: <http://www.iarc.fr/>

This publication represents the views and opinions of an IARC Working Group on the Evaluation of Cancer-Preventive Strategies which met in Lyon, France, February 13–20, 2001

## **Note to the Reader**

Anyone who is aware of published data that may influence any consideration in these *Handbooks* is encouraged to make the information available to the Unit of Chemoprevention, International Agency for Research on Cancer, 150 Cours Albert Thomas, 69372 Lyon Cedex 08, France

Although all efforts are made to prepare the *Handbooks* as accurately as possible, mistakes may occur. Readers are requested to communicate any errors to the Unit of Chemoprevention, so that corrections can be reported in future volumes.

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## Preface

# Why a Handbook on weight control and physical activity ?

Economic, social and technological developments in the second half of the 20th century have led to major changes in the lifestyle of large segments of the populations of industrialized and industrializing nations. Over the past two decades, significant gains in average weight among many human populations and within particular social groups have been observed. There are now high overall rates of overweight and obesity in the urbanized populations of industrially developed countries, in the affluent subgroups of developing nations and among socially disadvantaged groups in developed countries (Figure 1) (WHO Consultation on Obesity, 1998). For industrialized countries, it has been suggested that such increases in body weight have been caused primarily by reduced levels of physical activity, rather than by changes in food intake or by other factors (Jebb & Moore, 1999). The problem of obesity is now also becoming apparent in developing countries, due to changes in the food supply and decreasing physical activity (Zimmet, 2000).

The typical time sequence of emergence of chronic diseases following the increasing prevalence of obesity is important in public health planning for anticipation of future obesity-caused health problems (Figure 2). The first adverse effects of obesity to emerge in populations in transition are hypertension, hyperlipidaemia and glucose intolerance, while cardiovascular disease and the long-term complications of diabetes, such as renal failure, begin to

emerge several years (or decades) later. This sequence has already been observed in many developing countries (Popkin & Doak, 1998). Incidence of cancers associated in part with obesity typically increases over a longer timescale. Therefore, countries that are now seeing increasing obesity, and the sentinel events of diabetes and cardiovascular disease risk, but where rates of the obesity-related cancers are still low, should nonetheless consider prevention of future cancers as an important additional justification for controlling excess body weight in their populations.

In populations where weight gains are related to reductions in overall metabolic energy expenditure due to decreased physical activity, how does this come about? Is it due to reduced energy requirements of occupational and domestic tasks because of automation and computerization? Is it caused by reductions in leisure-time exercising and recreational energy expenditure? Are the most influential changes those in transport and commuting, with motor vehicle use replacing walking or cycling? Or is the most important influence the amount of time spent in sedentary occupations such as watching television and video, computer and Internet use? Currently, population prevalence and trend data are available primarily on leisure-time physical activity and are largely unavailable for several of these other physical activity domains, all of which can contribute to energy balance.

The expanding and strengthening evidence on the relationship between avoidance of overweight, physical activity and cancer prevention led to the initiation of this volume 6 of the *IARC Handbooks of Cancer Prevention*. Although the science of overweight, obesity and physical activity is complex and its relationship to cancer occurrence is a topic of intense research activity, much evidence already suggests that clear gains in public health can be achieved through adequate action and preventive strategies.

Current recommendations for the treatment and control of obesity and overweight are based on the recognition that this condition is a multifactorial chronic disease with strong environmental and genetic etiologies. Treatment of such a complex chronic condition requires multi-modal approaches that are maintained over years, with maintenance phases that should be continued over life. The bases of such approaches are diet, physical activity and behaviour modification. For some individuals, medication is added, most commonly for short periods of three months or less. Surgical treatment may be required for treatment of morbid obesity. The details of current recommendations for the treatment and control of obesity and overweight are summarized in the NHLBI Obesity Education Initiative Expert Panel Report (National Institutes of Health and National Heart, Lung, and Blood Institute, 1998) and are not reviewed in the present volume.

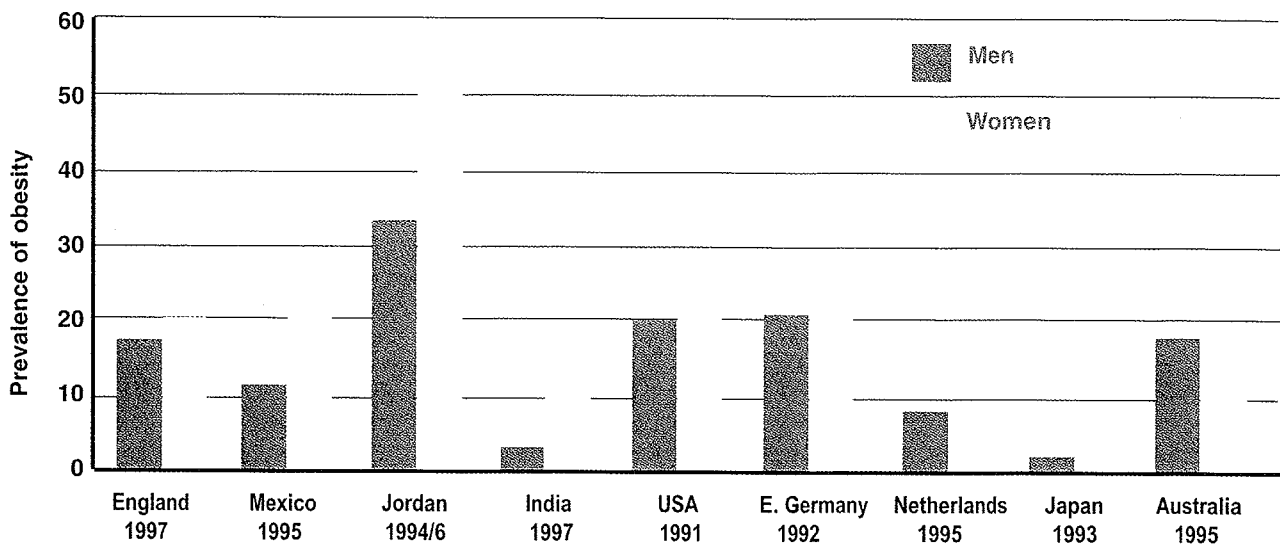


Figure 1 Prevalence of obesity in various parts of the world  
Adapted from Seidell & Rissanen (2002)

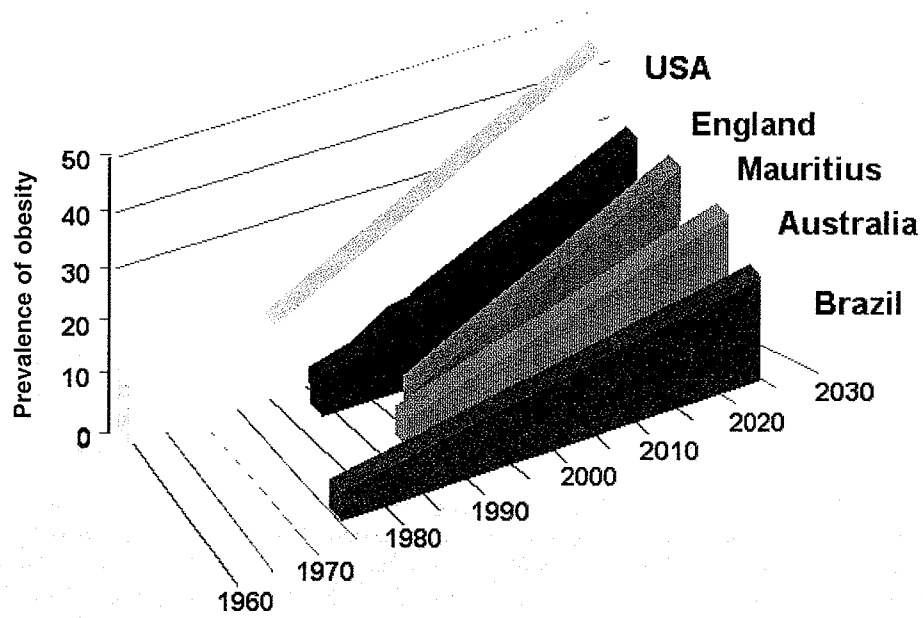


Figure 2 Obesity rates: current and projected