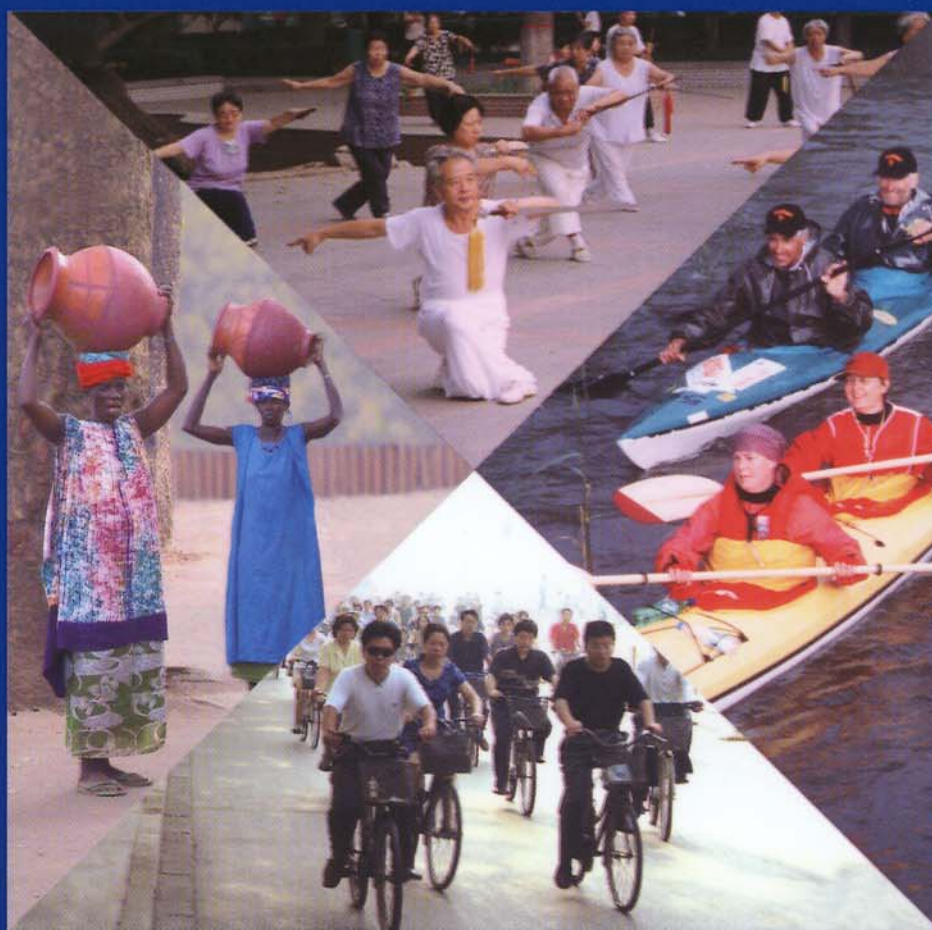


IARC Handbooks of Cancer Prevention



International Agency for Research on Cancer
World Health Organization

Weight Control and Physical Activity



Volume 6

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Volume 6

Weight Control and Physical Activity

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Programme Head: Harri Vainio

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Editors: Harri Vainio, M.D., Ph.D.
Franca Bianchini, Ph.D.

Technical editor: John Cheney, Ph.D.

Bibliographic assistance: Agnès Meneghel

Photographic assistance: Georges Mollon

Layout: Josephine Thévenoux

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International Agency for Research on Cancer
150 cours Albert Thomas, 69372, Lyon, France
Tel. +33 4 72 73 84 85
Fax. +33 4 72 73 83 19



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Volume 6

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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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List of participants

R. Ballard-Barbash

Applied Research Program
National Cancer Institute
EPN 4005
6130 Executive Blvd - MSC 7344
Bethesda, MD 20892-7344
USA

F. Berrino

Divisione di Epidemiologia
Istituto Nazionale per lo Studio e la
Cura dei Tumori
Via Venezian
20133 Milan
Italy

D. Birt

Department of Food Science and
Human Nutrition
2312 Food Sciences Building
Iowa State University
Ames, IA 50011-1061
USA

H. Boeing

German Institute of Human Nutrition
Department of Epidemiology
Arthur Scheunert Allee 114-116
14558 Potsdam Rehbrücke
Germany

P. Buffler (Vice-Chairman)

University of California
School of Public Health Division of
Epidemiology
140 Warren Hall
Berkeley
CA 94720
USA

T. Byers

Department of Preventive Medicine &
Biometrics
University of Colorado, School of
Medicine
Box C245
4200 East Ninth Avenue
Denver, CO 80262
USA

C. Caspersen

Division of Diabetes Translation
National Center for Chronic Disease
Prevention and Health Promotion
Centers for Disease Control and
Prevention
(mailstop K-10)
4770 Buford Highway NE
Atlanta GA 30341-3717
USA

M. Fogelholm

UKK Institute for Health Promotion
Research
Kaupinpuistonkatu 1
P.O. Box 30
FIN-33501
Tampere
Finland

C. Friedenreich

Division of Epidemiology
Prevention and Screening
Alberta Cancer Board
1331-29 St. N.W.
Calgary AB T2N 4N2
Canada

A. Hardman

Department of Physical Education
Sports Science, and Recreation
Management
Loughborough University
Ashby Road
Loughborough
Leicestershire LE11 3TU
United Kingdom

J. Kaukua

Helsinki Medical Center
Bulevardi 22 AH krs
00100 Helsinki
Finland

L. Le Marchand

Etiology Program
Cancer Research Center of Hawaii
University of Hawaii
1236 Lauhala St., Suite 407
Honolulu HI 96813
USA

A. McTiernan

Cancer Prevention Research
Program
Fred Hutchinson Cancer Research
Center
1100 Fairview Avenue N
MP 900
Seattle, WA 98109-1024
USA

J. E. Fulton, of the National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, USA, also contributed to the preparation of chapters 1 and 2.

N. Owen

Associate Dean
Faculty of Health and Behavioural
Sciences
University of Wollongong
Wollongong NSW 2522
Australia

P. Pietinen*

Department of Nutrition
National Public Health Institute
Mannerheimintie 166
00300 Helsinki
Finland

J. Seidell

Department for Chronic Diseases
Epidemiology
National Institute of Public Health and
the Environment
Postbus 1
NL 3720 BA Bilthoven
The Netherlands

M. Slattery

Health Research Center
Department of Family and Preventive
Medicine
University of Utah
391 Chipeta Way, Suite G
Salt Lake City
UT 84108
USA

H. Thompson

Center for Nutrition in Disease
Prevention
AMC Cancer Research Center
1600 Pierce Street
Lakewood,
CO 80214
USA

I. Thune

Norwegian Cancer Society
Faculty of Medicine
University of Tromsø
N 9037 Tromsø
Norway

A. Tjønneland

Institute of Cancer Epidemiology
Danish Cancer Society
Strandboulevarden 49
DK 2100 Copenhagen
Denmark

H. Tsuda

Experimental Pathology and
Chemotherapy Division
National Cancer Center Research
Institute
5-1-1 Tsukiji
Chuo-ku
Tokyo 104-0045
Japan

A. Turturro

Division of Biometry and Risk
Assessment
National Center for Toxicological
Research
HFT-20
3900 N.C.T.R. Rd
Jefferson
AR 72209
USA

W. Willett (Chairman)

Department of Nutrition
Harvard School of Public Health and
Channing Laboratory
Boston
MA 02115
USA

Secretariat

R. Baan
F. Bianchini
P. Brennan
J. Cheney
S. Franceschi
Y. Grosse
R. Kaaks
S. Lewis
A. Lukanova
E. Lund
M. Friesen
A.B. Miller
H. Ohshima
N. Slimani
E. Suonio
H. Vainio
E. Weiderpass

Technical assistance

S. Egraz
A. Meneghel
J. Mitchell
E. Perez
J. Thévenoux

* Current address: NCD Prevention and Health Promotion, World Health Organization, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland

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.

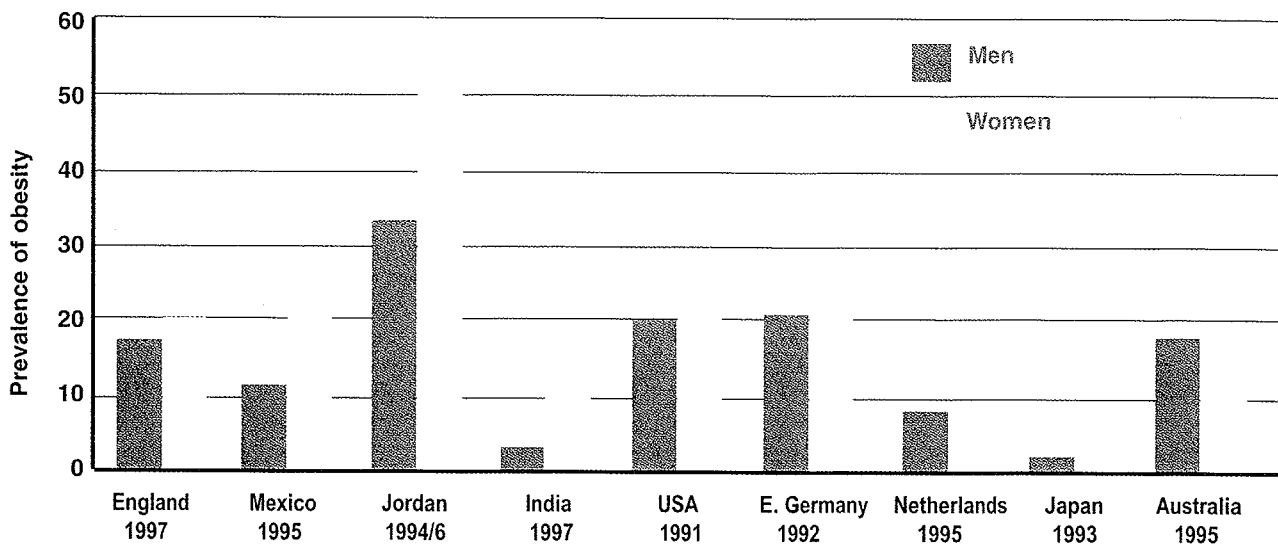


Figure 1 Prevalence of obesity in various parts of the world
Adapted from Seidell & Rissanen (2002)

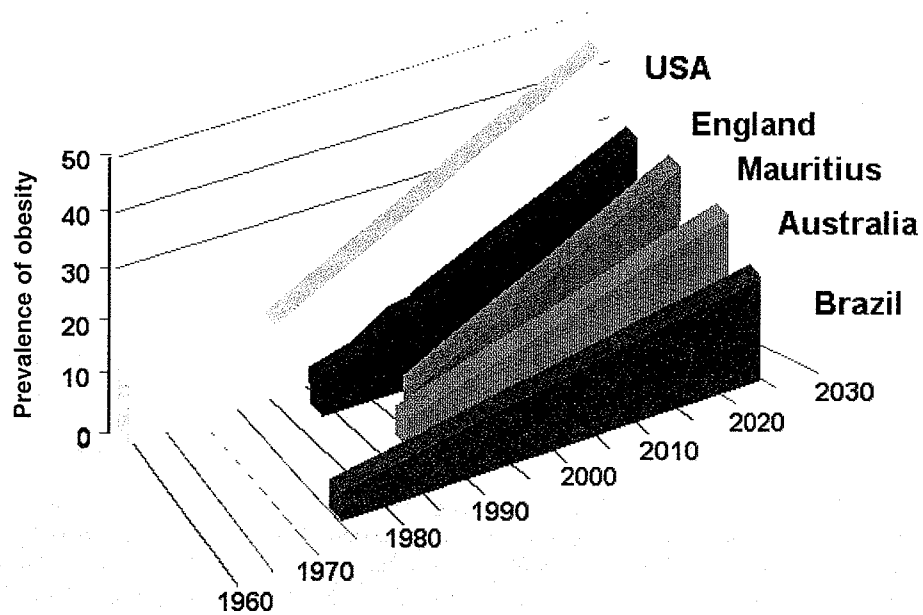


Figure 2 Obesity rates: current and projected