Fast Facts

Fast Facts:
Obesity

David Haslam and Gary Wittert

HEALTH PRESS

Fast Facts

Fast Facts: Obesity

David Haslam **MB BS DGM**
Chair, National Obesity Forum
Senior Partner, Watton Place Clinic
Watton-at-Stone, Hertfordshire, UK
Physician in Obesity Medicine
Luton & Dunstable Hospital, Luton, UK

Gary Wittert **MBBch MD FRACP**
Mortlock Professor of Medicine
Head, School of Medicine
University of Adelaide
Senior Consultant Endocrinologist
Royal Adelaide Hospital
South Australia, Australia

Declaration of Independence
This book is as balanced and as practical as we can make it.
Ideas for improvement are always welcome: feedback@fastfacts.com

HEALTH PRESS

Fast Facts: Obesity
First published September 2009

Health Press Limited, Elizabeth House, Queen Street, Abingdon,
Oxford OX14 3LN, UK
Tel: +44 (0)1235 523233
Fax: +44 (0)1235 523238

Book orders can be placed by telephone or via the website.
For regional distributors or to order via the website, please go to:
www.fastfacts.com
For telephone orders, please call +44 (0)1752 202301 (UK and Europe),
1 800 247 6553 (USA, toll free), +1 419 281 1802 (Americas) or
+61 (0)2 9698 7755 (Asia–Pacific).

A CIP record for this title is available from the British Library.

Cover photograph printed with permission of Ian Hooton / Science Photo Library.

ISBN 978-1-905832-04-0

Haslam D (David)
Fast Facts: Obesity/
David Haslam, Gary Wittert

Medical illustrations by Dee McLean, London, UK.
Typesetting and page layout by Zed, Oxford, UK.
Printed by Latimer Trend & Company Ltd, Plymouth, UK.

Text printed on biodegradable and recyclable paper
manufactured using elemental chlorine free (ECF)
wood pulp from well-managed forests.

Introduction

Obesity, particularly severe obesity, is highly prevalent in both adults and children.

As well as being a disease in its own right, obesity is a key risk factor for serious chronic conditions – notably type 2 diabetes mellitus, cardiovascular disease and many cancers – and also leads to a plethora of non-fatal but debilitating health problems, including musculoskeletal problems (e.g. osteoarthritis), respiratory problems, obstructive sleep apnea, and lower urinary tract and reproductive problems.

This new *Fast Facts* title has been written for people working at the coal face of primary care, who can play a key role in both preventing and treating obesity. It will also be useful to medical students and junior doctors who want to understand the causes and consequences of obesity. It describes the management of obesity, the three cornerstones of which are diet, physical activity and behavioral management, and also details the pharmacological and surgical approaches. Behavioral management, although something of a mystery to many clinicians, is critical to the success of obesity management, as it provides the key to changing patients' habits and attitudes to food and physical activity, and their ability to deal with stress, which are important for health and wellbeing irrespective of weight change.

1 Epidemiology

A global problem

The average body mass index (BMI) has been rising steadily since around 1900 as public health and nutrition have improved, but an even more rapid response in the last three decades has led to staggering rates of obesity worldwide, such that globally in 2005:

- approximately 1.6 billion adults (aged 15 years and over) were overweight (BMI > 25 kg/m^2)
- at least 400 million adults were obese (> 30 kg/m^2)
- at least 20 million children under 5 years of age were overweight.

The latest data from the US National Center for Health Statistics show that 30% of US adults (20 years of age and older) are obese – over 60 million people.

Although levels of obesity vary in different populations and are generally higher in developed countries (Figure 1.1), no region in the world is free from obesity and its related problems. Rates range from less than 5% in China, Japan and certain African nations to over 75% in urban Samoa. However, even in countries with a relatively low prevalence such as China, rates are still as high as 20% in some cities.

It is becoming clear that waist (abdominal) circumference is a more accurate predictor than BMI of an individual's risk of obesity-related cardiovascular and metabolic complications (see Chapter 2). Table 1.1 gives the prevalence of obesity measured by waist circumference in various countries and shows that the true prevalence of high-risk obesity is being significantly underestimated by reliance on BMI.

A growing problem

The prevalence of obesity in England (as measured by BMI) was about 24% in both men and women in 2007, and is expected to rise to 26% and 28%, respectively, by 2010. Figure 1.2 shows the striking increase in obesity across the USA between 1990 and 2007. Parallel increases are being seen in England, demonstrating the fate in store for the UK over the next decade or so unless the management of obesity improves.

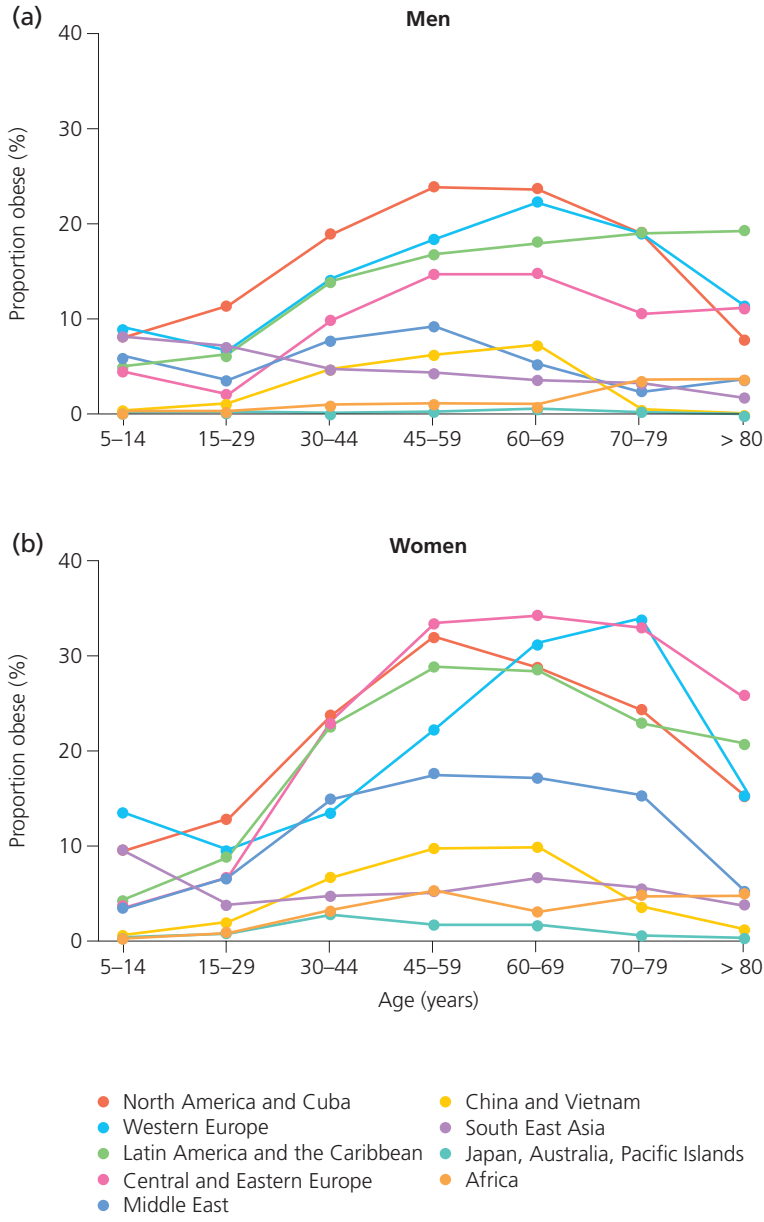

Figure 1.1 Prevalence of obesity worldwide by age and sex. Reprinted from Haslam and James 2005 with permission from Elsevier.

4 Cardiometabolic consequences

Overweight/obesity as a whole predisposes to, or is associated with, numerous cardiac complications such as coronary heart disease (CHD), heart failure and sudden cardiac death as a result of abnormalities in blood glucose, lipids, blood pressure, coagulation and inflammation. Independent of any of the other known cardiometabolic risk factors, obesity is associated with hypertension, tachycardia, left ventricular hypertrophy, increased collagen deposition, reduced cardiac contractility and increased end-diastolic pressure. The major circulatory complications are increased total and pulmonary blood volume, high cardiac output and elevated left ventricular end-diastolic pressure.

Metabolic syndrome

'Metabolic syndrome' describes the clustering in an individual of the most dangerous risk factors for myocardial infarction, namely poor glycemic control, abdominal obesity (Figure 4.1), dyslipidemia and hypertension.

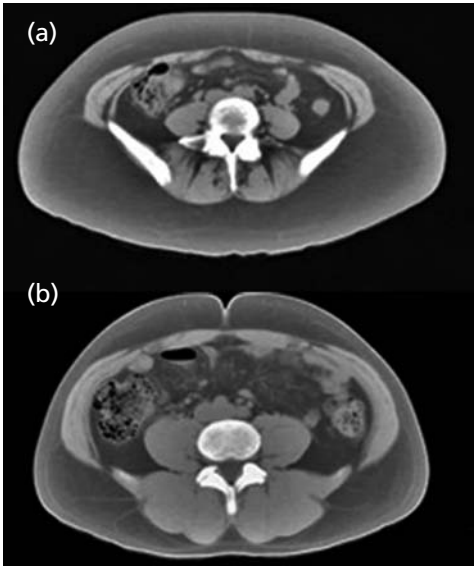

Figure 4.1 CT scans showing cross-sections of the abdomens of two individuals. In (a) the fat is predominantly located subcutaneously. In (b) a large amount of fat is present in the omentum and around the viscera.

The International Diabetes Federation (IDF) updated the definition of metabolic syndrome in 2005, making abdominal obesity a requirement for a diagnosis of the metabolic syndrome, and providing different obesity cut-off points for different ethnic groups. This definition takes account of the fact that central adiposity is common to each component of the metabolic syndrome. The criteria are summarized in Table 4.1.

TABLE 4.1

International Diabetes Federation definition of the metabolic syndrome

A person must have:

Central obesity (waist circumference ≥ 94 cm for Europid men and ≥ 80 cm for Europid women)

plus any *two* of the following four factors:

- **raised TG level**: ≥ 150 mg/dL (1.7 mmol/L), or specific treatment for this lipid abnormality
- **reduced HDL cholesterol**: < 40 mg/dL (1.03 mmol/L) in men and < 50 mg/dL (1.29 mmol/L) in women, or specific treatment for this lipid abnormality
- **raised blood pressure**: systolic BP ≥ 130 or diastolic BP ≥ 85 mmHg, or treatment of previously diagnosed hypertension
- **raised fasting plasma glucose** ≥ 100 mg/dL (5.6 mmol/L), or previously diagnosed type 2 diabetes

Waist circumference for South Asians/Chinese/Japanese

Male	*≥ 90 cm*
Female	*≥ 80 cm*

For ethnic South and Central Americans use South Asian data until more specific data are available. For Sub-Saharan Africans, Eastern Mediterranean and Middle East (Arab) populations use Europid data until more specific data are available.

BP, blood pressure; HDL, high-density lipoprotein; TG, triglyceride.