

# The obesity epidemic: can we turn the tide?

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Obesity has reached epidemic proportions in the UK. It is important because of the associated co-morbidities, which include cardiovascular disease, type 2 diabetes, and osteoarthritis. The prevalence of obesity has increased because of a combination of excessive calorific intake (for example, from increased intake of energy dense foods) and insufficient energy expenditure (associated with a sedentary lifestyle). Weight loss of 5–10%, which can be achieved in primary care, is associated with significant health benefits. Obesity treatment in primary care includes lifestyle modification and drug treatment. The prevention and treatment of obesity cannot, however, be left solely to health professionals. Action is needed by government, the food industry, and society as a whole.



Before considering the scale of the obesity problem in the UK, it is instructive to consider the trend in the development of obesity in the USA. In 1985, few states collected prevalence data as obesity was not seen to be an issue of interest. But over the years the problem developed and by 2000 about 20% of the US adult population was obese, defined as a body mass index (BMI) of  $\geq 30 \text{ kg/m}^2$ .<sup>1</sup> There is now great concern in the USA about the current level of obesity as it is now widely accepted that obesity is a disease in its own right and that it causes serious co-morbidities.

The UK is following a similar pattern and is now not far behind the USA. Obesity is already a disease of epidemic proportion, with the UK being known as the “fat man of Europe”. In 1980, 8% of women and 6% of men in England were classified as obese. By 1998, the prevalence of obesity had nearly trebled to 21% of women and 17% of men. Currently, over half of women and about two thirds of men are either overweight (BMI  $\geq 25 \text{ kg/m}^2$ ) or obese.<sup>2</sup>

The problem of obesity is also becoming apparent in children, although there is as yet no consensus on how to define overweight and obesity in childhood. A population based study in

Liverpool<sup>3</sup> analysed routinely collected data from over 64 000 children under the age of 4 years and defined overweight as a standard deviation score  $> 1.04$  for BMI ( $> 85$ th centile) and obese as an SD of  $> 1.64$  (95th centile). They found that between 1989 and 1998 there was a highly significant increase in weight and BMI. The proportion of overweight children increased from 15% to 24% and the proportion of obese children from 5% to 9%.

## CONSEQUENCES OF OBESITY

Obesity is important because it substantially raises an individual's health risk (table 1), particularly from hypertension, dyslipidaemia, type 2 diabetes, coronary heart disease, stroke, gallbladder disease, osteoarthritis, sleep apnoea and respiratory problems, and endometrial, breast, prostate, and colon cancers (fig 1).<sup>4,5</sup> Higher body weights are also associated with increases in all cause mortality. In addition, obese individuals may suffer from social stigmatisation and discrimination.

The relative risk of non-fatal myocardial infarction, fatal coronary heart disease,<sup>6</sup> and type 2 diabetes increases as BMI increases.<sup>7</sup> Figure 2 shows the effect of BMI on relative risk of cardiovascular disease in women. A man with a BMI of  $32 \text{ kg/m}^2$  has an 11-fold increased risk of type 2 diabetes compared with a man of normal weight, and a man with a BMI  $\geq 35 \text{ kg/m}^2$  has a 40-fold increased risk (fig 3).<sup>7</sup> The relative risk associated with obesity is even higher in women. The association between body weight and diabetes is explained by the effects of fat on insulin resistance. It is now known that central (abdominal) obesity is the most dangerous form of obesity in terms of cardiovascular and metabolic risk. In addition to calculating BMI, it is therefore useful to measure waist circumference: a measurement of  $\geq 88 \text{ cm}$  in women and  $\geq 102 \text{ cm}$  in men is associated with increased risk of ill health.<sup>8</sup>

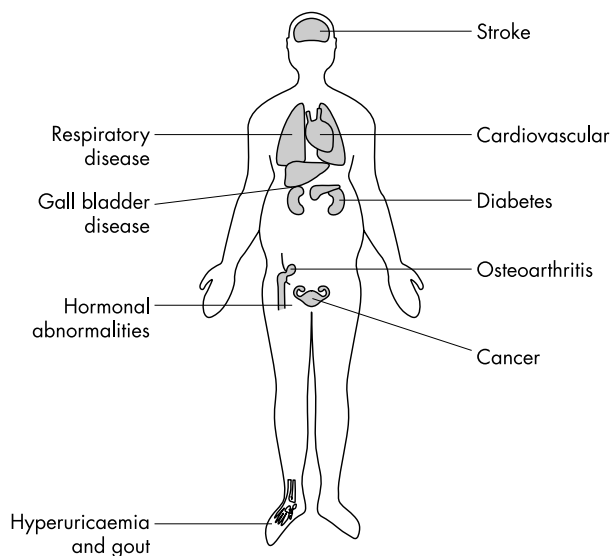
The cause of obesity is complex: genetic, biochemical, environmental, neurological, physiological, cultural, and socioeconomic factors can all be involved. As many as 250 genes are currently under investigation for their influence on obesity. It is thought that through evolution human beings have become “pre-programmed” to retain

**Table 1** World Health Organization classification of overweight and obesity (BMI = weight(kg)/height(m)<sup>2</sup>)

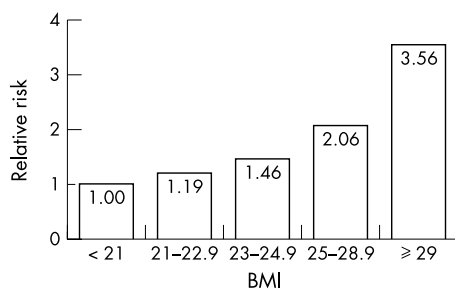
Class	BMI (kg/m <sup>2</sup> )	Risk of comorbidity
Underweight	<18.5	Low
Normal range	18.5–24.9	Average
Overweight (grade 1 obesity)	25.0–29.9	Mild increase
Obese (grade 2 obesity)	30.0–39.9	Moderate/severe
Morbid/severe obesity (grade 3)	$\geq 40.0$	Very severe

Based on World Health Organization. *Obesity: preventing and managing the global epidemic*. Geneva: WHO, 1997.

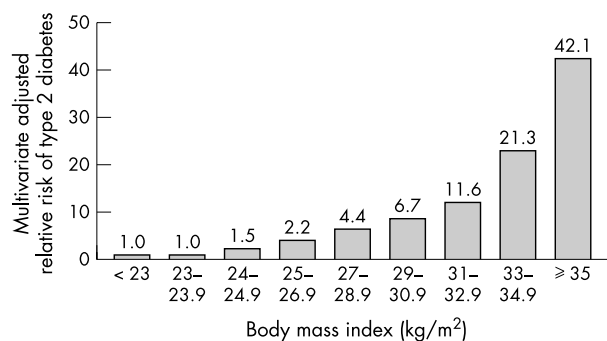
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**Figure 1** Physical effects of obesity.



**Figure 2** Relative risk of non-fatal myocardial infarction and fatal coronary heart disease (combined) versus body mass index (BMI) in women with no previous coronary heart disease. Adapted from Willett *et al.*<sup>6</sup> with permission.



**Figure 3** Relative risk of type 2 diabetes in men. Adapted from Chan *et al.*<sup>7</sup> with permission.

fat: in times of hardship, those who survived the longest are likely to have been those who had extra weight. In the current times of plenty in the western world people are reacting normally to an abnormal environment. Obesity occurs because of excessive calorific intake (associated with increased access to energy dense foods and increased alcohol intake) and insufficient energy expenditure (associated with sedentary lifestyle).

### MANAGEMENT OF OBESITY

The National Obesity Forum is a network for health care workers that promotes awareness of obesity, motivates and educates clinicians, and produces management guidelines ([www.nationalobesityforum.org.uk](http://www.nationalobesityforum.org.uk)). Tackling obesity is not,

**Table 2** Benefits of 10 kg weight loss. Adapted from Jung,<sup>9</sup> with permission

Mortality	20–25% fall in total mortality 30–40% fall in diabetes related deaths 40–50% fall in obesity related cancer deaths
Blood pressure	Fall of 10 mm Hg systolic pressure Fall of 20 mm Hg diastolic pressure
Diabetes	30–50% fall in fasting glucose
Lipids	10% decrease in total cholesterol 15% decrease in LDL 30% decrease in triglycerides 8% increase in HDL

HDL, high density lipoprotein; LDL, low density lipoprotein.

however, something that can be managed solely by health professionals. The prevention and treatment of obesity requires action by government, the food industry, and society as a whole. The problem has now been recognised by the government: the importance of managing obesity is recognised in the national service frameworks for both coronary heart disease and diabetes, and the National Institute of Clinical Excellence has published assessments of the anti-obesity drugs orlistat and sibutramine, and of weight reducing surgery. There is also now an all party parliamentary group on obesity and reports on obesity have been produced by the National Audit Office<sup>2</sup> and the Public Accounts Committee. These reports are welcome as they indicate that increased attention is being paid to obesity and that the disease is likely to gain higher priority.

Obesity is a chronic disease with serious health consequences. Many overweight and obese patients are likely to have some form of cardiovascular disease, and weight management should form the first line of treatment. Lifestyle modification (dietary, physical activity, behaviour modification) is the key to management of obesity. However, anti-obesity medication also has a significant role to play in selected patients, as does surgery, although this is underfunded in the UK. A team approach to the management of obesity is required, and this should involve a wide range of health care staff, including doctors, nurses, dietitians, pharmacists, and psychologists. It is important to motivate the obese person, working with them to achieve and maintain weight loss. Blaming the individual is inappropriate and does not produce positive outcomes.

A general practitioner with an average list of 2000 patients is likely to have around 800 overweight adults (BMI ≥ 25 kg/m<sup>2</sup>), 320 obese adults (BMI ≥ 30 kg/m<sup>2</sup>), and 16 morbidly obese adults (BMI ≥ 40 kg/m<sup>2</sup>). Ninety five per cent of these patients will see their general practitioner at least once every five years. Weight loss of 10 kg, which can be achieved in primary care, is associated with significant health benefits (table 2).<sup>4</sup> Success in weight management helps people to reduce their risk of disease and to improve the level of co-morbidity they already have. Even moderate weight loss (5–10%), if it can be maintained, can improve co-morbid disease control, improve disease markers for cardiovascular disease, and lead to improved well being and self esteem, less breathlessness, less pain, and more energy.

### CONCLUSION

Obesity is now a disease of epidemic proportions in the UK. It is a disease that has multiple causes and is not the patient's "fault". Obesity is one of the major risk factors for cardiovascular disease. It is preventable and treatable, and treatment is integral to the management of coronary heart disease and diabetes. Successful weight loss delivers substantial clinical benefit.

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