

The **obesity** campaign view of *diabetes prevention*

✎ Neville Rigby and Philip James

Obesity is an epidemic accelerating out of control. It is the driving force behind an equally dramatic explosion of Type 2 diabetes, both in adults and now alarmingly among children. Clearly, strategies aimed at improving the prevention and management of obesity must be developed.

Not confined to affluent nations, the obesity epidemic imposes a double burden on countries where people are still struggling to overcome generations of chronic undernutrition. Economic progress in developing countries heralds changes in lifestyle. People migrate to the cities, where urban planning stifles opportunities for everyday activity and where fresh foods are scarcer and more expensive. As a result, people tend to eat more fat and sugar and less fresh fruit and vegetables. All of this is conspiring against sustainable health.¹



Measuring fatness

The International Obesity Task Force (IOTF) estimates that more than 1.1 billion people are overweight, including 320 million who are obese. These figures will be even higher (up to 1.7 billion overweight) if the varied but vulnerable populations of Asia are included. There is now convincing evidence that many Asian populations are particularly prone to the health risks of

central obesity – a category defined by excess fat in the abdominal region regardless of **body mass index (BMI)**.² Increasingly, waist circumference rather than BMI is being used to provide a more accurate assessment of individual risk. World Health Organization (WHO) recommendations put obesity-related risks at waist measurements of above 102 cm in men and 88 cm in women.

However, this is based on Western waistlines. It is high for Asians. More appropriate waist-circumference action levels are now being sought in an effort to specify risk levels relating to diabetes, high blood pressure, cholesterol abnormalities and heart disease.

Taking into account these new perspectives, and given that diabetes is already reaching pandemic proportions (up by 50% in the last decade), the IDF and WHO estimate of 194 million people affected by diabetes looks conservative.

New World obesity

A generation ago, the obesity epidemic began sweeping through the populations of North America and many parts of Europe. The escalation of both obesity and diabetes rates has been mapped out by the US Centers for Disease Control (CDC), providing a graphic illustration of the parallel trends over the past 15 years.³ Obesity now affects one in three adults in the US, more than double the rate of 20 years ago. What is more, as the data in Figure 1 show, ethnic minorities are affected disproportionately. Forty percent of Mexican-American women and 50% of black American women have a BMI above 30 kg/m².⁴

A disturbing feature of this epidemic is the rise of morbid or extreme obesity (a BMI of above 40 kg/m²), which represents the threshold for

considering surgical intervention when conventional therapeutic approaches have failed. These extreme cases are increasing in number. Noticeably, they have doubled among black American women to 15% over the last decade. Women are particularly vulnerable; their rates of morbid obesity escalate as the average weight of the population increases.

Old World (and beyond) catches up

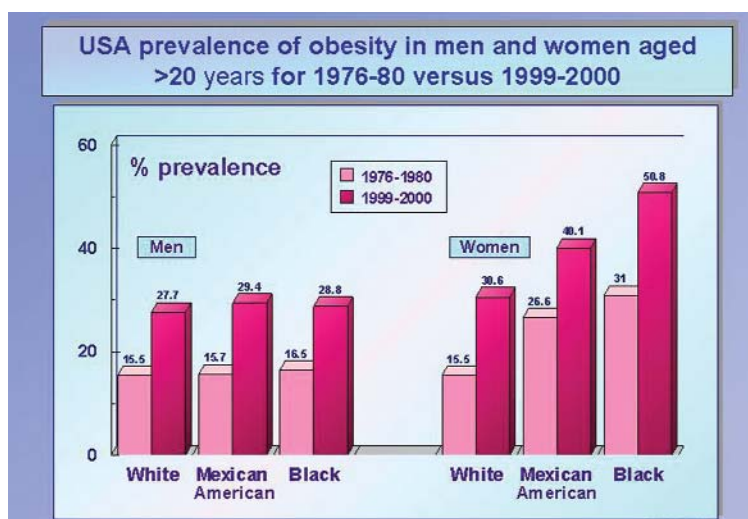
Most of Europe is rapidly catching up with the US. According to data from the recent 2001 Health Survey of England, the adult obesity rate in England has tripled over the last 20 years to a level at which 21% of men and 23.5% of women are obese. This means that 1 in 40 English women have a BMI of 40 kg/m² or more.

Elsewhere in Europe, countries such as Finland and Germany have obesity rates comparable to the UK. Even higher levels can be found in Greece and Eastern Europe, particularly in the older population. Rates of overweight and obesity in parts of the Middle East have risen to more than 50% of the adult population. A recent attempt to reclassify obesity for the Japanese with lower BMI cut-off points suggests a prevalence of obesity of 20% in those with BMIs over 25 kg/m².⁵

The Pacific, China and South Asia

The intrinsic link between high levels of obesity and Type 2 diabetes is tragically manifest in the Pacific Islands, which are afflicted by some of the highest levels of adult obesity in the world. Prevalence rates of 60-80% among men and women are

Figure 1: Changing prevalence of obesity in the USA by ethnic group using US National Health and Examination Survey (NHANES) data



found in many islands. Stephen Colagiuri, from the Australian Centre for Diabetes Strategies, reported last year that 60% of the adult population of Tonga was now obese and that 12% of men and nearly 18% of women were found to have diabetes. A further 20% were found to be at risk of developing Type 2 diabetes due to elevated blood sugar levels.⁶

Billions of people may be susceptible to diabetes with surprisingly modest increases in weight.

The problem is magnified across Asia. In India, more than 35.5 million people now have diabetes. It is the 'diabetes capital of the world'. This figure could rise to 73.5 million by 2025. Diabetes levels in the sub-continent exceed the numbers in China, affecting 12% of adults in Indian cities, with a further 14%

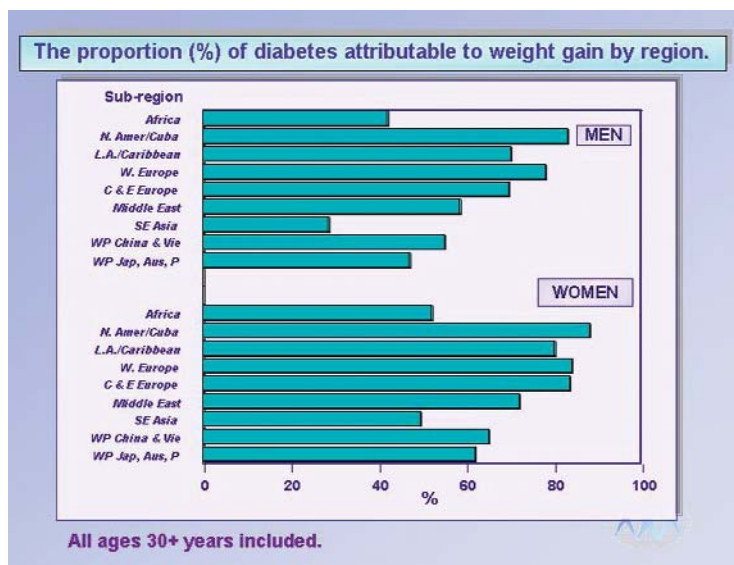
glucose intolerant. Indians also have a marked tendency to abdominal obesity with high waist measurements even among those with a normal or modestly elevated BMI.

Evidence suggests that this tendency to store abdominal fat is linked to early programming because of poor maternal diets and infant malnutrition (see article by Chittaranjan Yajnik in this issue). Billions of people may therefore be susceptible to diabetes and the other complications of weight gain with surprisingly modest increases in weight.

Health costs are high

In the Middle East, where adult obesity rates of 30% are not untypical, diabetes rates are already as high as 17-20% with astonishingly high rates of high blood pressure and heart disease. Latin Americans are also more susceptible to abdominal obesity and Type 2 diabetes. In the Caribbean, the island of Barbados >>

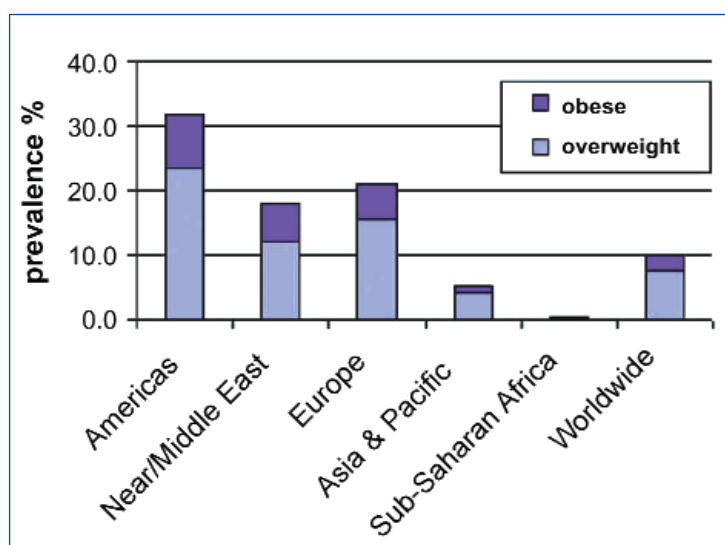
Figure 2: The percentage of diabetes attributable to weight gain by WHO-defined sub-regions



has gained the unfortunate reputation of being the 'amputation centre of the world' because of the surgical burden imposed by rampant diabetes due to high levels of obesity. The cost of obesity itself is soaring. Anne Wolf at the

University of Virginia has estimated the combined direct and indirect costs to the USA at 123 billion USD in 2001, attributing 61% of diabetes costs to obesity. This astronomical expenditure overshadows smaller countries such as

Figure 3: The prevalence of overweight and obesity (using IOTF definition) among children age 5-17 in five regions



England, where the government's National Audit Office has put the cost of obesity at around 3 billion GBP (4.7 billion USD). Despite this, relatively little is spent on obesity treatment or prevention.

Obesity and diabetes

In Western countries, around 90% of Type 2 diabetes is attributable to weight gain (see figure 2). Childhood excess weight is a hazardous condition. Once established, childhood Type 2 diabetes is particularly difficult to manage.

Among adults, there is now clear evidence that weight loss can reverse the progression of Type 2 diabetes and modest weight reductions can halve the risk of developing diabetes, if not prevent it completely. The US National Institute of Diabetes and Digestive and Kidney Diseases Diabetes Prevention Program is a remarkable demonstration of the effect of weight loss through diet and increased physical activity. The programme benefited people over 60 yr in particular – nearly three quarters of new cases of diabetes in the over 60s were prevented.⁷ It is time to rethink the long-held belief that it is too late for us to change once we reach middle age!

This and several other studies have brought hope to overweight people with impaired glucose tolerance (IGT), who are therefore particularly susceptible to diabetes. Lifestyle changes which resulted in a 5-7% weight loss successfully reduced diabetes. Reductions in fat and calorie intake accompanied by half an hour's extra walking or other exercise each day lowered the incidence by 58%. The biggest success

Body mass index (BMI) is an index for assessing body weight in relation to someone's height. BMI can be calculated by dividing a person's weight in kilograms (kg) by their height in metres squared (m²). Overweight is a BMI is above 25.0 kg/m², obese is above 30.0 kg/m², and severely obese above 35.0 kg/m². In Asia the recently recommended corresponding BMIs are 23.0, 25.0 and 30.0 kg/m² respectively.

was among people over 60 yr, reducing the development of diabetes in this high-risk age group by 71% per cent. Similar data have emerged from studies in China and European countries (see article by Leena Etu Seppälä in this issue).

Time for action

Given the benefits of lifestyle interventions and the significant costs in both human and financial terms of not taking action, it is surprising that so little has been done worldwide to attack the root causes of the twin epidemics of obesity and Type 2 diabetes. It is even more surprising that so little has been done to address the emergence of obesity and Type 2 diabetes in children. Childhood overweight and obesity rates are double the global average in Europe and three fold in the Americas (see Figure 3).

The IOTF is calling for action, not just from the WHO, but from a wide spectrum of stakeholders who will

need to work together to find immediate solutions. (See the report, *Childhood Obesity – The New Crisis In Public Health*, to be published summer 2003.⁸)

Prevention strategies addressed to children can also benefit adults who find themselves in what has been termed the 'obesogenic environment' – a world where subtle but significant influences lead whole populations towards weight gain and its unhealthy consequences. The WHO report, *Diet, Nutrition and the Prevention of Chronic Disease*, published in April 2003, lays the foundation for a global strategy to transform the obesity-promoting environment into a more health-sustaining one.⁹

The time to act is now. If we continue our 'gorge now, pay later' approach to health, a new generation will fall victim to Type 2 diabetes and other diet-induced chronic diseases.

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The IOTF collaborates with IDF, WHO and other international partners to encourage action to address the challenge of the global epidemic of obesity. For more information contact IOTF at obesity@iotf.org

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