

Diet another day: What can we do to stop the obesity epidemic?

Brian Karet

Coronary heart disease (CHD) and stroke are the main causes of death in the UK (DoH, 1999). However, death rates from CHD have been falling more slowly in the UK compared with other industrialised countries; this is especially true in those aged under 65 years (Office for National Statistics, 2006). An explanation could be the metabolic risk factors linked to CHD that are on the rise: most notably, obesity. As obesity levels have risen, the rate that CHD mortality has fallen has decreased. This may indicate that while some of our efforts in improving modifiable risk factors (smoking, raised cholesterol and raised blood pressure) are having an impact on decreasing CHD, obesity may well be a rate-limiting factor. Thus, we will need to stem the tide of obesity if we are to continue to tackle the leading cause of death in the UK population.

With the rate of decline in CHD and stroke mortality falling in the UK, it should come as a warning that in recent years in the US there has been no decrease in CHD mortality. This levelling-out of the mortality curve could be due to any mortality improvements from other modifiable risk factors being cancelled-out by the rising levels of obesity (Cooper et al, 2000). Furthermore, in countries where Westernised diets have replaced traditional diets, for example in China, CHD mortality is increasing as levels of obesity rise (Critchley et

al, 2004).

In the author's opinion, the prime contributor to these deaths is the presence of components of metabolic syndrome. Regardless of which definition of metabolic syndrome is used, the predominant characteristic is obesity (Bauduceau et al, 2007).

Data from the Framingham Offspring Study (Wilson et al, 1999; *Figure 1*) indicate that the risk of CHD over a 16-year period in men and women was directly related to the number of CHD risk factors (high cholesterol, low HDL-c, high BMI, high

Article points

1. Globally, the proportion of seriously overweight people (BMI > 30kg/m²) has increased from 12% to 18% in seven years.
2. When lots of risk factors surrounding obesity such as cholesterol and blood pressure, as well as smoking, are improved it results in marked reductions in cardiovascular risk.
3. Those of us at the fore of diabetes care must lead by example. We must do what we can in our clinics and with our local populations.

Key words

- Obesity
- CHD
- Interventions

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Page points

1. Over two thirds of adults in the UK are now overweight or obese (BMI >25 kg/m²), compared to just a quarter 20 years ago.
2. A gain in weight of just 2.25 kg or more over 16 years significantly increased the sum of risk factors for CHD by 20 % in men and 37 % in women.
3. Even in people without diabetes, there is a strong association between higher random blood glucose levels and cardiovascular mortality with no evidence of a lower threshold.

systolic blood pressure, high triglyceride levels and high blood glucose). Each of these risk factors is also associated with obesity. Even the WHO has now stated that obesity is now a bigger threat to health than smoking (WHO, 2007).

Over two thirds of adults in the UK are now overweight or obese (BMI >25 kg/m²), compared to just a quarter 20 years ago. One in five people are obese (BMI >30kg/m²; DoH, 2003). Globally, the proportion of people described as obese has increased from 12 % to 18 % in 7 years (International Council of Nurses, 2003).

Even small gains in weight are dangerous – data from the Framingham Offspring Study demonstrate that small changes in body weight are associated with significant changes in the sum of CHD risk factors (Wilson et al, 1999). A gain in weight of just 2.25 kg or more over 16 years significantly increased the sum of risk factors for CHD by 20 % in men and 37 % in women. Conversely, a reduction in weight by 2.25 kg or more significantly decreased the risk factor sum by 48 % in men and 40 % in

women.

Why are we all getting so fat?

It has been shown that overweight and obese children increase the amount of food they eat by more than 130 % after watching food adverts on television (Halford et al, 2007) In the author’s opinion, for decades children have been gorging on high fat, energy-rich foods while doing less and less exercise, for example, fewer children are walking to school today than in the past. We have a modern deadly triad of TV, computers and fridges.

Some areas of our society seem to attract particular blame and the term ‘McDonaldisation’ has been coined to emphasise how rapidly changes in the fat and sugar content of a diet can be introduced into emerging economies around the world (Ritzer, 2007).

Obesity itself is associated with CHD, diabetes, cancer and many other conditions. We know that the prevalence of diabetes is rising rapidly in the UK and around the world and this in turn carries with it not just reduced life expectancy but also increased morbidity associated with the microvascular complications of end-stage renal disease, neuropathy and blindness. Even in people without diabetes, there is a strong association between higher random blood glucose levels and cardiovascular mortality with no evidence of a lower threshold (Port et al, 2005).

Will anything help?

How effective have our interventions to reverse this trend been so far? Judging by the increasing numbers and younger ages of obese individuals and those newly diagnosed with diabetes coming through our surgery doors, the answer is ‘not very’. Campaigns driven nationally and on a local level to encourage healthy eating and physical activity seem to meet resistance at every turn. However, there is a lot of information out there to encourage healthcare professionals to keep promoting

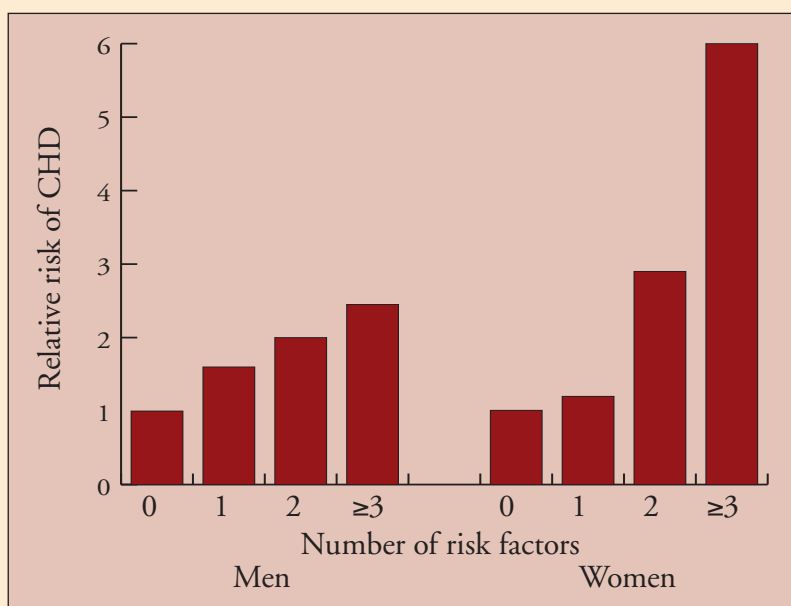


Figure 1. Risk Factor Sum† and 16-Year Coronary Heart Disease Risk: Framingham Offspring Study (Adapted from Wilson et al, 1999). † High cholesterol, low HDL-c, high BMI, high systolic BP, high triglyceride levels, and high blood glucose levels.

these messages, some of which are explained below.

When multiple risk factors surrounding obesity, such as cholesterol, blood pressure and smoking, are improved we see marked reductions in cardiovascular risk (Neaton and Wentworth, 1992). More recently, the use of intensive goal-oriented interventions, including the use of pharmacotherapy, have been shown to reduce cardiovascular events by half (Pedersen and Gaede, 2003). However, it is still not clear which interventions are most effective and in which groups.

In order to get quick and significant results, most of the large-scale trials investigating reducing the incidence of heart attacks and stroke are done in high-risk groups who are not the people we see every day in primary care. Thus, there are very few trial data in low-risk populations to guide us. One large British trial of over 24 000 people in Norfolk was published last year (Simmons et al, 2006). It matched the attainment of five different healthy behaviour goals (BMI, saturated and total fat content of diet, fibre intake and physical activity) against the likelihood of developing diabetes over 5 years. Not surprisingly, there was a direct inverse correlation between the number of goals attained and the risk of developing diabetes to the extent that no individual participant who met all five goals developed diabetes (Simmons et al, 2006). It was suggested that if the whole population could meet just one of these goals, the incidence of diabetes could fall by 20 %.

In populations at moderate risk, such as those with impaired fasting glucose or impaired glucose tolerance, intensive lifestyle programmes reduce the progression to diabetes by over 50 % – consistently better than pharmacological interventions including metformin, acarbose, glitazones or orlistat (Yamaoka and Tango, 2005). Moreover, recently reported follow-up data from the Finnish Diabetes Prevention Study show that the benefit of lifestyle programmes in reducing the incidence of

diabetes persisted for at least 4 years after the programme had finished (Lindström et al, 2006). This is in stark contrast to the follow up data from the DREAM (Diabetes Reduction Assessment with Ramipril and Rosiglitazone Medication) trial data presented at the 2006 IDF meeting. The wash-out data from this trial suggested that a slower progression to diabetes in individuals with either impaired glucose tolerance or impaired fasting glucose treated with a glitazone was not sustained after cessation of therapy (Holman, 2006).

While evidence has shown that lifestyle interventions can work, we still lack clear data on which out of diet and physical activity will be most effective in stemming the obesity epidemic. Certainly, in the Finnish Diabetes Prevention Study, although diet and exercise were used as a single intervention, it seems that those who undertook regular physical activity without weight-loss did as well as those who lost 5 % of their body weight (Lindström et al, 2006).

This would suggest that exercise is the key intervention we should be promoting in diabetes prevention. There is an abundance of evidence from populations all over the world that higher levels of physical activity are associated with lower levels of cardiovascular disease and death. In the UK, we promote 30 minutes of physical activity 5 days per week. However, we do not have enough evidence to know whether or not exercising for 5 minutes six times per day or 2.5 hours once a week gives the same protective benefits.

It is clear that healthcare professionals working in isolation cannot promote and enforce population lifestyle changes alone. Communities need to work with schools and work places to promote exercise and a healthy diet. The food industry needs to alter production and promote healthier foods and increased activity.

As far back as 1987, the government of Mauritius, faced with rising rates of heart disease, initiated a programme to

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3. In populations at moderate risk, such as those with impaired fasting glucose or impaired glucose tolerance, intensive lifestyle programmes reduced progression to diabetes by over 50 %.
4. While evidence has shown that lifestyle interventions can work, we still lack clear data on which out of diet and physical activity will be most effective in stemming this obesity epidemic.
5. Communities need to work with schools and work places to promote exercise and a healthy diet. The food industry needs to alter production and promote healthier foods and increased activity.

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1. In the UK, at both the individual and governmental level there is an emerging realisation that something must be done to defuse the obesity time-bomb before it is too late and we are hit with the long term social and economical consequences.
2. With the growing frequency of obesity, soon we may no longer be able to control and reduce the proportion of our population dying from CHD.

target obesity and smoking by focusing on diet, physical activity, blood pressure, cholesterol and diabetes. This involved advertising, positive taxation and a huge and health-education programme resulting in significant falls in blood pressure, cholesterol levels and cardiovascular risk scores fell.

Conclusion

In the UK, at both the individual and governmental level there is an emerging realisation that something must be done to defuse the obesity time-bomb before it is too late and we are hit with the long term social and economical consequences. Like the US, with the growing frequency of obesity, soon we may no longer be able to control and reduce the proportion of our population dying from CHD.

There are already food labelling schemes underway that aim to make consumers more aware of the fat and salt content of foods, but, in the author's opinion, it is becoming clear that without legislation such initiatives will fail to have the necessary impact. The Government seem willing, at last, to tackle the powerful food and transportation industries; and healthy diet and exercise programmes in schools are becoming widespread. Those of us at the fore of diabetes care and primary care must lead by example. We must do what we can in our clinics and with our local populations and not be afraid to stand as individual leaders of innovation in this area. ■

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