

# OBESITY

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## Introduction

The World Health Organisation defines obesity in terms of a body mass index (BMI). BMI is weight in kilograms divided by height in metres squared. A BMI over 30kg/m<sup>2</sup> defines obesity. This, in turn, is further subdivided into three grades: Grade 1: BMI 30-35kg/m<sup>2</sup>; Grade 2: BMI 35-40kg/m<sup>2</sup>; and Grade 3: BMI >40kg/m<sup>2</sup>.

Obesity occurs when energy intake exceeds energy expenditure.

The prevalence of obesity has more than doubled in the last 10 years in Ireland to its current level of 18% of the population. However, energy intake has remained quite stable over the last 20 years, so obviously a reduction in energy output is a key explanation for the increasing prevalence of obesity in this country. This is not surprising when you consider how much our lifestyles have changed in recent years. The advent of computers, cellular phones and remote controls, coupled with a decline in physical exercise, has led to a predominantly sedentary lifestyle.

There is a strong genetic predisposition to obesity (stronger than atherosclerosis, schizophrenia or alcoholism) and over 360 genes have been identified that are linked to obesity.

## Prevalence

The overall prevalence of obesity in Ireland in 2001 is estimated at 20% of men and 16% of women. If the trend continues this gives an estimated prevalence for the year 2010 of 31% men and 20% women. It is important to note the 'apple' versus the 'pear' idea of fat distribution. Men tend to have a fat distribution which is largely central (apple) as opposed to their female counterparts whose fat is largely distributed more peripherally (pear). Central (male distribution) adiposity is associated with increased insulin resistance and confers a higher morbidity and mortality rate than is seen in females with the more peripheral distribution of adiposity.

## Cost of obesity

The cost of obesity must be considered in terms of both human and financial cost.

### Physical cost

Obesity results in an increased prevalence of common diseases: diabetes mellitus (DM), heart disease, stroke, cancer and osteoarthritis.

### Psychological cost

- Low self-esteem
- Less employment prospects
- Less marital prospects

The Framingham heart study, which appeared in the *New England Journal of Medicine* in August 2002, looked at the risk of death due to obesity in subjects over the age of 26. The results were quite startling and showed a direct correlation between weight gain and mortality risk. For every pound gained there is an increased mortality risk of 1% between the ages of 30 and 42, and 2% between the ages of 50 and 62.

### Financial cost

This is broadly divided into direct and indirect costs. Direct costs are those due to obesity-related diseases and are estimated at €53 million per year. Indirect costs are based on sick days and loss of working years due to premature death and are estimated to cost €286 million per year.

## Benefits of weight reduction

There are clear benefits to weight reduction and these cannot be overemphasised. A 10% reduction on presenting body weight will have the following effects: a 20% reduction in all-cause mortality; a 40% reduction in DM-related mortality; a 37% reduction in cancer deaths; and a 10mmHg decrease in systolic blood pressure.

## Management

Management of obesity has two main aims — prevention of the ongoing epidemic and treatment. Prevention involves education on diet and exercise and this must start in primary school. Treatment can be divided into primary (diet and exercise) and secondary (drugs and surgery).

## Drug treatment

There are two categories of drugs available at present. These are those acting on the gastrointestinal tract (GIT) and those acting centrally.

### Drugs acting on the GIT

#### *Orlistat (Xenical)*

This is a potent pancreatic lipase inhibitor that reduces the absorption of fat. The overall results of studies with orlistat show the placebo group with a 4-6% weight loss compared with an 8-12% weight loss in the orlistat group.

## Centrally-acting drugs

These act as appetite suppressants. Close monitoring of these patients is required for an increase in blood pressure. They cannot be used in patients with coronary heart disease.

## Sibutramine (Reductil)

Sibutramine (Reductil) is the only centrally acting drug currently available. It acts by inhibiting reuptake of serotonin and noradrenaline within the brain, thus increasing their exposure to receptors. The overall results in the studies show a 1% weight loss in the placebo group and a 3-9% weight loss in the treated group. The initial response is a good predictor of overall outcome. In those with over 2kg weight loss in the first four weeks of treatment there is a 50% chance of achieving a weight loss of 10%.

## Overall strategy

There is a stepwise protocol for the management of obese patients:

- (1) Initial assessment and trial of diet and exercise for three to six months.
- (2) Failure to lose 10% of body weight — proceed to drug treatment.
- (3) Non-responder — consider surgery (this is discussed by Mr Justin Geoghegan in this issue of the journal).

## Conclusion

The prevalence of obesity is increasing in Ireland and at a much greater rate in men than in women. Our sedentary lifestyles are a major contributing factor for this. The impact of obesity from both a health and an economic viewpoint cannot be overemphasised. There are treatment options available for those who are obese and these should

be used. However, in the long term, the key to managing the epidemic of obesity is prevention.

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