# Obesity Teaching and Learning Pack

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Date last updated: 12/10/08  By: Helen Barratt

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Original Author: Jo-Anne Alner  Last Updated: 12/10/08
OBESITY – THE HEALTH TIME BOMB

The World Health Organisation (WHO) describes obesity as ‘a global public health epidemic’. The WHO predicts that globally there will be a one-third increase in the loss of healthy life because of obesity or being overweight over the next 20 years, with the number of deaths rising from three million to five million each year.¹

In 2005, approximately 1.6 billion adults (age 15+) across the world were overweight and at least 400 million were obese. It is anticipated that by 2015, approximately 2.3 billion adults will be overweight and more than 700 million obese. At least 20 million children under the age of 5 were also overweight in 2005. Contrary to conventional wisdom, the obesity epidemic is not restricted to industrialized societies: in developing countries, it is estimated that over 115 million people suffer from obesity-related problems, paradoxically co-existing alongside malnutrition in some cases.²

In South Africa, obesity levels equal those in the US, with one in three men and more than one in two adult women being overweight or obese. In Morocco 40% of the population are overweight, while in Kenya it is 12%. In Nigeria between 6-8% are obese.³

Studies have shown that some migrant groups who move to the UK become more overweight than the general population. This may be because of a combination of poor social conditions, low levels of physical activity and a sudden increase in the amount of fat in their diet.⁴

Evidence suggests that obesity is increasing more rapidly in England than in other areas of Europe. The proportion of the population who are obese has grown by 400% in the last 25 years. In 2006, Health Survey for England (HSE) data revealed that 38% of adults in England were overweight and 24% were classified as obese. Should this trend continue, the recent positive trends in combating heart disease will be reversed, obesity will soon surpass smoking as the greatest cause of premature loss of life and this will be the first generation where children die before their parents because of obesity.⁵

As well as being a debilitating condition in itself, obesity predisposes people to type 2 diabetes, heart disease, high blood pressure, some types of cancer (especially cancers of the breast or colon) and mental health problems.⁴ Consequently, rising levels of obesity could put enormous strains on the health services, perhaps even making a publicly funded health service unsustainable.⁵ The Tackling Obesity in England strategy³ estimated that more than 30,000 deaths were attributable to obesity in 1998, equivalent to 9 years of lost life for each individual affected.


**Economic aspects**

Obesity also has serious economic costs. It has been estimated that the cost of obesity to the NHS is approximately £4.2 billion and Foresight forecast this will more than double by 2050. This includes:

- Days lost through certified sickness or invalidity
- Costs to the NHS of providing in-patient care
- Visits to the GP each year Costs of NHS prescriptions

**Definition**

The Faculty of Public Health defines obesity as ‘an excess of body fat frequently resulting in a significant impairment of health and longevity.’ Virtually, all obese people develop some associated physical symptoms by the age of 40; the majority will require medical intervention as a consequence of their obesity before they are 60.5

Body fatness is most commonly assessed using Body Mass Index (BMI), calculated by dividing an individual’s weight in kilograms by their height in metres squared.2

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI (kg/m²)</th>
<th>Risk of Co-morbidities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
<td>Low (but increased risk of other clinical problems)</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5-24.9</td>
<td>Average</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0-29.9</td>
<td>Mildly Increased</td>
</tr>
<tr>
<td>Obese</td>
<td>≥30.0</td>
<td></td>
</tr>
<tr>
<td>• Class I</td>
<td>30.0-34.9</td>
<td>Moderate</td>
</tr>
<tr>
<td>• Class II</td>
<td>35.0-39.9</td>
<td>Severe</td>
</tr>
<tr>
<td>• Class III (morbid obesity)</td>
<td>&gt;40.0</td>
<td>Very severe</td>
</tr>
</tbody>
</table>

Central Obesity is another useful measurement and is defined as a high waist: hip ratio - > 0.95 in men and > 0.85 in women. The WHO uses a simpler indicator, which relates to the waist circumference. Increased risk is considered present when the waist exceeds 37 inches for men and 32 inches for women.2

Current guidelines for obesity management do not take into account the increased risks of different ethnic groups. For example, individuals of South Asian descent have an increased risk of obesity-related disorders, triggered at lower BMI ratios than those in figure 1.
Epidemiology

In 1999, the Health of the Nation report set a target that by 2005, fewer than 6% of men and 8% of women should be obese, with the aim of reducing the prevalence of obesity to lower than 1980 levels. The reality is that, within Great Britain, the prevalence of obesity is three times greater than it was twenty years ago, and 24% of the population are now obese. In 2006, it was estimated that 67% of men and 56% of women were either overweight or obese.

The Foresight Report, published in 2007, predicted that by 2010, around 6,659,000 men will be obese, increasing from around 4,302,000 in 2003. The figure in women will also be 1,230,000 higher than that in 2003.

Children

Worldwide over 22 million children under the age of 5 and 122 million school-aged children are classified as overweight. In the European Union, there 14 million who are overweight and a further 3 million school-aged children who are obese. The number of overweight children in the EU is rising by 400,000 per annum.

In 2006 in the UK, approximately 30% of children aged 2 to 15 were classed as overweight or obese. Figures for boys and girls among this age group were 30.6% and 28.7% respectively. Childhood obesity in the UK has increased significantly since 1995 and continues to do so.

Figure 2: Research evidence of the benefits of healthy eating.

- Reduces overall mortality
- Reduces sudden cardiac arrest
- Reduces the risk of CHD and stroke
- Reduces the risk of diabetes
- Reduces the risk of cancer
- Reduces arthritis and osteoporosis
- Improves sense of well being
- Improves mental health

Clinical aspects of obesity

There are a number of physical and mental health risks associated with being obese and inactive.

- **Metabolic Syndrome**
  Metabolic Syndrome is a complex risk factor and denotes a cluster of conditions, that include high levels of blood pressure, blood sugar and cholesterol, and central obesity.
• Diabetes
Type 2 diabetes was previously a disease of adults but is now increasingly being seen in children, representing one of the consequences of the obesity epidemic. The onset of diabetes in youth increases the risk of advanced complications of the disorder in early adulthood, for example cardiovascular disease, kidney failure, visual impairment and the need for limb amputations. Health agencies in the United States have coined the term ‘diabesity’ to reflect the fact that many patients with diabetes are also obese. 9

• Coronary Heart Disease
Obesity is also associated with an increase in risk factors for cardiovascular disease. The Bogalusa Heart study9 associated being overweight as an adolescent with:
  o 8.5 fold increase in hypertension
  o 2.4 fold increase in the prevalence of high total serum cholesterol levels
  o 3 fold increase in LDL serum cholesterol levels
  o 8 fold increase in low HDL serum cholesterol levels in adults aged 27-31 years.

• Psychological Consequences of Obesity
Psychological and social consequences of obesity include low self-esteem, depression, and body dissatisfaction. Psychological consequences appear to effect girls more than boys. In a study carried out in 1961, children between the ages of 10 and 11 were presented with pictures of other children with varying disabilities and asked to rank who they would like to be friends with. The obese child was always ranked last, irrespective of gender, race, socio-economic status, living environment, or disability. This study was repeated in 2001 and the results indicate that the social reaction to obesity has worsened.

Obese children are consequently at increased risk of discrimination. Being overweight or obese is more likely to impact girls than boys. This may be because girls are judged on body shape more than boys. Adolescent girls who are obese are less likely to get offered a place at university, less likely to marry or be economically well off. 9
Figure 3: Other health problems associated with obesity

<table>
<thead>
<tr>
<th>Greatly increased (Relative Risk &gt; 3)</th>
<th>Moderately increased (Relative Risk 2-3)</th>
<th>Slightly increased (Relative Risk 1-2)</th>
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<tr>
<td>Type 2 diabetes</td>
<td>Coronary Heart Disease</td>
<td>Cancer (Breast cancer in postmenopausal women, endometrial cancer, colon cancer)</td>
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<td>Hypertension</td>
<td>Reproductive hormone abnormalities</td>
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<td>Dyslipidaemia</td>
<td>Osteoarthritis (Knees)</td>
<td>Polycystic ovary syndrome</td>
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<td>Insulin resistance</td>
<td>Hyperuricaemia and gout</td>
<td>Impaired fertility</td>
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<td>Breathlessness</td>
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<td>Low back pain</td>
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<td>Sleep apnoea</td>
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<td>Anaesthetic risk</td>
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<td></td>
<td></td>
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**Ethnic and racial variation**

The obesity epidemic is not restricted to industrialised societies: 115 million people suffer from obesity-related problems in the non-industrialised world. For example, over three quarters of men living in Samoa are obese, there are as many overweight as underweight adults in Ghana, 44% of women in the Cape Peninsula of South Africa are obese.

Pakistani, Indian and Bangladeshi men have relatively low levels of obesity measured by BMI. However, 41% of Indian men in the UK are classed as centrally obese compared to 28% of men in the general population. In 2004, Black Caribbean and Irish men had the highest prevalence of obesity (25% each). For women, obesity prevalence was higher amongst Black African (38%), Black Caribbean (32%) and Pakistani ethnic groups (28%) and lower for Chinese women (8%), than for women in the general population. Children who are Asian are four times more likely to be obese than those who are white.
Health inequalities

Diet related ill-health displays a marked socio-economic gradient. For example, the death rate for coronary heart disease is now three times higher amongst unskilled men of working age than amongst professionals. The picture in relation to dietary consumption is less clear, although there are some differences. For example, children from disadvantaged households eat half as much fruit and vegetables as those from high-income households.12

The National Food Survey and the National Diet and Nutrition Survey12 shows that poorer households consume:

- Less fruits and vegetables; wholemeal bread and whole grain and high fibre cereals; oily fish
- More white bread, full fat milk; table sugar; processed meat, products high in saturated fats such as burgers, kebabs, meat pies and pasties.

There are a number of reasons for this:

1. **Cost** - People on low incomes consistently say that the main influence on the food they buy is cost. They want food that is going to fill their families up, be acceptable to others and not spoil quickly. Fruit and vegetables are therefore considered as a risky purchase; they deteriorate quickly, result in waste and are not regarded as filling. Fruit in seen as expensive and vegetables are more likely to be rejected – especially by children.11

2. **Transport** - Many people on low incomes do not have access to a car, so bulky items of shopping have to be carried on public transport or bought at local shops. Smaller shops may offer convenience, but basic foodstuffs can cost almost 25% more than in big supermarkets because of higher operating margins. If supermarket ‘own brands’ and value lines are taken into account, the difference could be as much as 60%.11

3. **Pre-packed Food** - People on low incomes are generally more reluctant to experiment, as well as being less confident about cooking with new food and keen to avoid waste. Buying pre-packed food can avoid these concerns as little preparation is required and food can easily be divided into portions.11

Prevention

The rise in obesity has been too rapid to support the theory that genetic factors are the primary cause.5 The epidemic instead reflects changes in eating patterns and levels of physical activity.

The genes that predispose for obesity are thought to be commonplace, with only a small proportion of the population able to resist gaining weight in the current environment. This emphasises the need for a population approach to tackling this epidemic, which is reinforced by health professionals.
Obesity is a complex condition with contributing factors at many different levels. Interventions to tackle obesity should therefore be conducted at four different levels.

- Individual – e.g. Food consumption
- Inter-personal – e.g. Parental beliefs and behaviours
- Organisational – e.g. School dinners
- Governmental – e.g. Food labelling

The Department of Health White Paper, *Choosing Health*, outlined what action is expected from these different stakeholders.\(^\text{13}\)

**Interventions**

Dietary interventions should focus on reducing the intake of fat, saturated fat, salt, and sugar and increasing the consumption of fruit and vegetables. Interventions for physical activity should focus on raising awareness of the benefits of being active and how these can be built into daily life.

The Department of Health has produced the action plans, *Choosing a Better Diet*\(^\text{11}\) and *Choosing Activity*,\(^\text{14}\) which together make the following recommendations with regard to diet and physical activity levels.

**Nutritional Balance:**

- Increase the average consumption of a variety of fruits and vegetables to at least five portions a day. (Currently 2.8 per day)
- Increase the average intake of dietary fibre to 18 grams per day (Currently 13.8 grams per day)
- Reduce the average intake of salt to 6 grams per day by 2010. (Currently 9.5 grams per day)
- Reduce the average intake of saturated fat to 11% of food energy. (Currently 13.3%)
- Maintain the current trend in the total intake of fat at 35% of food energy. (Currently 35.3%)
- Reduce the average intake of added sugar to food energy (Currently 12.7%)

**Physical Activity:**

- Children and young people should achieve a total of at least 60 minutes of moderate-intensity physical activity each day. At least twice a week this should include activities that improve bone health.
- For general health benefits, adults should achieve a total of at least 30 minutes a day of moderate-intensity physical activity on five or more days a week.
• Older adults should take particular care to keep moving and retain their mobility through daily activity.

**Pharmacological Intervention**

Pharmacological therapies may help some suitable high-risk patients. However, medication should be used only in the context of a treatment programme that includes the elements described above – diet, physical activity, and behaviour change.

In 2006, the National Institute for Health and Clinical Excellence published comprehensive guidelines about the prevention, identification, assessment and management of overweight and obesity in adults and children.
For further information/Resources

The National Diet and Nutrition Survey (Department of Health & Food Standards Agency)
Cross-sectional study of dietary habits and linked data on markers of nutritional status of the population of Great Britain including socio-economic, demographic and lifestyle characteristics. Surveys adults, young people and children. Uses participant provided weighed dietary record provided over a four or seven day period, physical measurements and assessment of oral health, blood and urine samples.

The Expenditure and Food Survey (Office National Statistics and Department Environment Food Rural Agriculture)
Continuous survey of households in UK and provides information about food purchases and expenditure, food consumption and nutrient intakes. Data collected on a household basis averaged across the members of the household. Food consumption by age is therefore restricted.
http://www.statistics.gov.uk/ssd/surveys/expenditure_food_survey.asp

The Health Survey for England (DH)
Series of annual surveys using a structured questionnaire, about various aspects of health of people living in England.
http://www.dh.gov.uk/en/Publicationsandstatistics/PublishedSurvey/HealthSurveyForEngland/index.htm

Low Income Diet and Nutrition Survey. (Food Safety Agency)
A survey is being conducted which will provide robust, nationally representative, baseline data on food consumption, nutrient intakes, nutritional status and factors affecting these in low income/materially deprived consumers.
http://www.foodstandards.gov.uk/science/dietarysurveys/lidnsbranch/
References

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OBESITY – TUTORIAL

Raising the topic of weight

1. Why would you want to weigh a patient?
2. In what circumstances might you weigh patient?
3. How would you decide if a patient is overweight or obese?
4. How would you calculate their body mass index (BMI)?

\[
\text{BMI} = \frac{\text{weight (kg)}}{\text{height}^2 (\text{m}^2)}
\]

5. A female patient, Mrs A, comes to see you, and her BMI is 31. How would you initiate a conversation about losing weight?

6. What illnesses might she be at risk of, as a consequence of her weight?
   - CHD
   - Diabetes
   - CVD
   - Hyper-tension

7. Which social groups are more at risk of being overweight or obese?
   - Children
   - Ethnicity
   - Lower socio-economic Groups
Assessing the patient’s motivation to change

8. Having raised the topic with Mrs A, what questions might you ask to assess her readiness to try and lose weight?

- Do they have concerns about their weight?
- Do they believe weight loss is possible?
- How important is losing weight now?
- What elements of their lives would need to change in order to tackle the problem?
- What changes would you suggest for someone to make to their diet, if they were overweight or if they were obese?
- What changes would you suggest for someone to make to their levels of exercise if they were overweight or obese?

9. What social factors can contribute to patients becoming overweight or obese?

- Diet
- Exercise
- Levels of sedentary behaviour

- Alcohol
- Social norms of eating

10. As well as BMI, what other basic assessments would you undertake initially?

- Diet
- Physical activity levels
- Family history
  - Any underlying causes
  - Associated co-morbidities
11. Mrs A admits that she is busy looking after two small children and seldom has time to exercise. How could you help her weigh up the pros and cons of changing her behaviour?

12. What barriers might be stopping her from making a change?

13. What questions could you ask to help her explore this further?

14. Mrs A admits she would like to lose some weight, and will consider both improving her diet and exercising regularly. What support could be offered to help her stick to this plan?
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OBESITY – TUTORIAL

_Raising the topic of weight_

15. Why would you want to weigh a patient?

16. In what circumstances might you weigh patient?

17. How would you decide if a patient is overweight or obese?

18. How would you calculate their body mass index (BMI)?

19. A female patient, Mrs A, comes to see you, and her BMI is 31. How would you initiate a conversation about losing weight?

20. What illnesses might she be at risk of, as a consequence of her weight?

21. Which social groups are more at risk of being overweight or obese?
**Assessing the patient’s motivation to change**

22. Having raised the topic with Mrs A, what questions might you ask to assess her readiness to try and lose weight?

23. What social factors can contribute to patients becoming overweight or obese?

24. As well as BMI, what other basic assessments would you undertake initially?

25. Mrs A admits that she is busy looking after two small children and seldom has time to exercise. How could you help her weigh up the pros and cons of changing her behaviour?

26. What barriers might be stopping her from making a change?

27. What questions could you ask to help her explore this further?

28. Mrs A admits she would like to lose some weight, and will consider both improving her diet and exercising regularly. What support could be offered to help her stick to this plan?
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OBESITY – KEY FACTS

1. There are over 1 billion overweight or obese people globally – ‘Globesity’.
2. Nearly 1 in 4 (24%) adults in England are obese.
3. 2/3 of men and 1/2 of women in England are overweight or obese.
4. Boys are more likely than girls to be obese (17% compared to 15%)
5. It has been estimated that about 28% of women and 33% of men in the UK will be obese by 2010.
6. If the number of obese children continues to rise, children will have a shorter life expectancy than their parents.
7. For adults, overweight is a BMI between $\geq 25 \leq 30$
8. For adults, obese is a BMI of 30 or greater.
9. Being obese or overweight increase the risk of the biggest killer diseases, such as heart disease, cancer and diabetes.
10. Obesity is a leading cause of cancer, second only to smoking.
11. A reduction of weight by 5-10% has clinical benefits.
12. Major modifiable determinants of obesity are excessive calorie intake and physical inactivity.
13. The cost of obesity is estimated at up to £3.7 billion per year; the cost of obesity plus overweight is estimated at up to £7.4 billion per year.