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# Statistics on obesity, physical activity and diet: England, 2010



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# Executive Summary

This statistical report presents a range of information on obesity, physical activity and diet, drawn together from a variety of sources. The topics covered include:

- Overweight and obesity prevalence among adults and children;
- Physical activity levels among adults and children;
- Trends in purchases and consumption of food and drink and energy intake; and
- Health outcomes of being overweight or obese.

This report contains seven chapters which consist of the following:

Chapter 1: Introduction; this summarises Government plans and targets in this area, as well as providing sources of further information and links to relevant documents.

Chapters 2 to 6 covering obesity, physical activity and diet have been significantly reduced from last year's report in order to provide an overview of the key findings from these sources, whilst maintaining useful links to each section of the reports.

Chapter 7: Health Outcomes; presents a range of information about the health outcomes of being obese or overweight which includes information on health risks, hospital admissions and prescription drugs used for treatment of obesity. Figures presented in Chapter 7 have been obtained from a number of sources and presented in a user-friendly format. Most of the data contained in the chapter have been published previously by the National Audit Office or NHS Information Centre. Previously unpublished figures on obesity-related Finished Hospital Episodes and Finished Consultant Episodes for 2008/09 are presented using data from The NHS Information Centre's Hospital Episode Statistics as well as data from the Prescribing Unit at the NHS Information Centre on prescription items dispensed for treatment of obesity.

## Main findings:

### Obesity

- In 2008, almost a quarter of adults (24% of men and 25% of women aged 16 or over) in England were classified as obese (BMI 30kg/m<sup>2</sup> or over).
- A greater proportion of men than women (42% compared with 32%) in England were classified as overweight in 2008 (BMI 25 to less than 30kg/m<sup>2</sup>).
- Thirty-nine per cent of adults had a raised waist circumference in 2008 compared to 23% in 1993. Women were more likely than men (44% and 34% respectively) to have a raised waist circumference (over 88cm for women and over 102 cm for men).
- Using both BMI and waist circumference to assess risk of health problems, for men: 20% were estimated to be at increased risk; 14% at high risk and 21% at very high risk in 2008. Equivalent figures for women were: 15% at increased risk; 17% at high risk and 24% at very high risk.
- In 2008, 16.8% of boys aged 2 to 15, and 15.2% of girls were classed as obese, an increase from 11.1% and 12.2% respectively in 1995. Whilst there have been marked increases in the prevalence of obesity since 1995, the prevalence of overweight children aged 2 to 15 has remained largely unchanged (values were 14.6% in boys and 14.0% in girls in 2008).
- For boys, on weekdays, the proportion who spent 4 or more hours doing sedentary activities was 35% of those who were not overweight or obese, 44% of those classed as overweight and 47% of

those classed as obese in 2008. For girls, a comparable pattern was found; 37%, 43% and 51% respectively.

## Physical Activity

- Overall, according to self-reported measures, physical activity has increased among both men and women since 1997, with 39% of men and 29% of women meeting the recommended levels in 2008 (at least 30 minutes of at least moderate intensity activity at least 5 times a week) compared with 32% and 21% respectively in 1997.
- Accelerometers are devices capable of providing an objective measure of physical activity. Accelerometry data for adults shows that in 2008, those who were not overweight or obese spent fewer minutes on average in sedentary time (591 minutes for men, 577 minutes for women) than those who were obese (612 minutes for men, 585 minutes for women).
- In 2008, boys aged 2 to 15 were more likely than girls to meet the recommended levels of physical activity with 32% of boys and 24% of girls reporting taking part in 60 minutes or more of physical activity on each of the seven days in the previous week.
- Almost two thirds of children who had attended school, nursery or playgroup in the last week had walked to or from school on at least one day in the last week (63% of boys and 65% of girls) in 2008.
- Among boys aged 2 to 10, more met the physical activity recommendations for children if their parents did so for adults. Among girls, the activity level of parents made relatively little difference to the proportion meeting recommendations, but those who had parents with low activity levels were considerably more likely to be in the low activity category themselves.

## Diet

- In 2008, 25% of men and 29% of women reported meeting the government '5 a day' guidelines of consuming five or more portions of fruit and vegetables a day.
- In 2008, around 1 in 5 children aged 5 to 15 consumed five or more portions of fruit and vegetables a day (19% of boys and 20% of girls).
- In 2008, in the UK, there was a reduction in the quantities purchased in most major food groups. For example, purchases of fresh fruit fell by 7.7% between 2007 and 2008 and fresh green vegetables fell by 9.6%.
- Energy intake is on a downward trend; total energy intake for 2008 was 2,276 kcal per person per day, a decrease of 1.9% from the previous year.

## Health Outcomes

- In 2007, among adults aged 16 and over, overweight or obese men and women were more likely to have high blood pressure than those in the normal weight group; high blood pressure was recorded in 47% of men and 44% of women in the obese group, compared with 32% of overweight men and women and 16% of men and women in the normal weight group.
- The number of Finished Admission Episodes (FAEs) in NHS hospitals with a primary diagnosis of obesity among people of all ages was 7,988 in 2008/09. This is over eight times as high as the number in 1998/99 (954) and nearly 60% higher than in 2007/08 (5,018).
- The number of Finished Consultant Episodes (FCEs) with a primary diagnosis of obesity and a main or secondary procedure of 'bariatric surgery' among people of all ages in 2008/09 was 4,221, more than double the number in 2006/07 (1,951) and 55% higher than in 2007/08 (2,724).
- In 2008, the number of prescription items dispensed for the treatment of obesity was 1.28 million; this is ten times the number in 1999 (127 thousand).

# 1 Introduction

This annual statistical report presents a range of information on obesity, physical activity and diet, drawn together from a variety of sources.

*The Health Survey for England (HSE)* is the major source of information for this report. The HSE is a series of annual surveys designed to measure health and health-related behaviours in adults and children living in private households in England. The survey was commissioned originally by the Department of Health and, from April 2005 by The NHS Information Centre for health and social care. The HSE has been designed and carried out since 1994 by the Joint Health Surveys Unit of the National Centre for Social Research (NatCen) and the Department of Epidemiology and Public Health at the University College London Medical School (UCL). Wherever possible, the most recent information available from the HSE is presented. See [Appendix A](#) for further detail on the HSE.

The data in this report relate to England unless otherwise specified. Where figures for England are not available, figures for Great Britain or the United Kingdom have been provided. Where relevant, links to the Scottish, Welsh and Irish health surveys have been provided.

## 1.1 Obesity

Overweight and obesity are terms that refer to an excess of body fat and they usually relate to increased weight-for-height. The most common method of measuring obesity is the Body Mass Index (BMI). BMI is calculated by dividing a person's weight measurement (in kilograms) by the square of their height (in metres).

In adults, a BMI of 25 to 29.9kg/m<sup>2</sup> means that person is considered to be overweight, and a BMI of 30kg/m<sup>2</sup> or above means that person is considered to be obese.

In children and adolescents BMI categorisation varies with age and sex, for this reason, the BMI score for children and adolescents is related to the UK 1990 BMI growth reference charts in order to determine a child's weight status.

BMI is the best way we have to measure the prevalence of obesity at the population level. No specialised equipment is needed and therefore it is easy to measure accurately and consistently across large populations. BMI is also widely used around the world, not just in England, which enables comparisons between countries, regions and population sub-groups. Height and weight data have been collected in each year of the Health Survey series, and waist circumference in most years. Height and weight data has been used to calculate Body Mass Index (BMI); waist circumference has been used to assess central obesity.

In 2006, the National Institute for Health and Clinical Excellence (NICE) produced guidelines on the prevention, identification, assessment and management of overweight and obesity in adults and children.<sup>1</sup>

In October 2007, the government announced a long-term ambition to reverse the rising tide of obesity and overweight in the population. As part of this, a Public Service Agreement (PSA12)<sup>2</sup> to improve the health and wellbeing of children and young people was established. The PSA aims to reduce the proportion of obese and overweight children to 2000 levels by 2020. Currently, national progress on meeting the target is being monitored through the HSE. Following on from this, the Department of Health (DH) published a cross-government strategy, *Healthy Weight, Healthy Lives: A Cross Government Strategy for England*<sup>3</sup> in January 2008 to deliver the PSA ambition.

As part of the Healthy Weight, Healthy Lives strategy, the government launched the *Change4Life* campaign<sup>4</sup> in January

2009, which aims to prevent people from becoming overweight by encouraging them to eat healthily and move more. The campaign is targeting young families in its initial stage.

Chapter 2 on Obesity among adults in this report presents the key obesity measurements and trends among adults. The relationship between obesity and various factors such as gender, socio-economic variables and lifestyle habits are also explored. Chapter 3 on Obesity among children focuses upon key obesity measurements and trends for children, and explores the relationship between obesity and various factors.

## 1.2 Physical activity

Physical activity guidelines for children are different to those for adults. The Chief Medical Officer (CMO) of England recommends that adults should achieve at least 30 minutes a day of at least moderate intensity physical activity on five or more days of the week. The CMO also recommends that children and young people should achieve a total of at least 60 minutes of at least moderate intensity physical activity each day.<sup>5</sup> These recommendations and their evidence build on those published by the Health Education Authority in 1998.<sup>6</sup> The four home countries are currently reviewing the CMO guidelines in light of new and emerging evidence.

A Joint Department for Children, Schools and Families (DCSF) and Department for Culture, Media and Sport (DCMS) Public Service Agreement (PSA) indicator was set up in 2004, to enhance the take-up of sporting opportunities by 5 to 16 year olds so that the percentage of school children in England who spend a minimum of two hours each week on high quality Physical Education (PE) and school sport within and beyond the curriculum increases from 25% in 2002 to 75% by 2006 and to 85% by 2008. The target was exceeded a year early, and in 2007/08, 90% of pupils participated in at least two hours of high

quality PE and out-of-hours school sport in a typical week. The new PSA 22 indicator<sup>7</sup> is to deliver a successful Olympic and Paralympic Games with a sustainable legacy and to get more children and young people taking part in high quality PE and sport – through the creation of a world-class system for PE and sport. This will be delivered through the five hour offer that will enable every young person aged 5 to 16 to have access to five hours of PE and sport (three hours for 16-19 year olds) each week.

The Taking Part Survey (TPS) was used to monitor the Department for Culture, Media and Sport, Public Services Agreement 3 (PSA3) from the 2004 Spending Review. Part of this PSA was by 2008, to increase the numbers who participate in active sport at least twelve times a year by 3% among those in priority groups (black and minority ethnic, limiting disability, lower socio-economic groups and women). The TPS is to look at participation in active sport by a range of other demographic factors and to monitor the old PSA3. The 2009 TPS<sup>8</sup> will be used to set the baselines for the new PSA target set during the 2007 Comprehensive Spending Review (PSA21: indicator 6) – “Build more cohesive, empowered and active communities”.

Children’s play and informal exercise have been recognised by the government as making an important contribution for children to achieve their recommended 60 minutes a day of physical activity. In 2008, the government launched its first *National Play Strategy*,<sup>9</sup> with the aim to deliver 3,500 new or refurbished play spaces and 30 new staffed adventure playgrounds for children throughout the country.

In 2009, the government published a new framework *Be active, be healthy: A plan for getting the nation moving*,<sup>10</sup> this outlines current and future policies for the delivery of physical activity leading up to the London 2012 Olympic Games and Paralympic games and beyond. For children and young people, this included initiatives that would take effect both in and

out of school. The PE and Sports Strategy for Young People supports the delivery of PSA22 and aims to give all children aged 5 to 16 the opportunity to take part in five hours of PE or sport during the school week. In order to tackle physical inactivity outside school, initiatives such as the Change4Life have been driven forward.

[Chapter 4](#) on physical activity among adults and [Chapter 5](#) on physical activity among children cover information on self reported activity and accelerometry data. Physical activity levels, according to physical activity guidelines, and types of physical activity are considered. Also relationships between participation in physical activity and factors such as income and BMI are described. These chapters also cover information on adults' and children's knowledge and attitudes towards exercise and physical activity.

Other than the HSE, other sources of information on physical activity include the latest *Taking Part Survey (TPS)*, *The National Travel Survey*, *The Active People Survey* and other fitness surveys.

The Active People Survey<sup>11</sup>, published by Sport England, provides information on participation in sport and recreation. It provides the measurements for National Indicator 8 (NI8) – adult participation in sport and active recreation, as well as providing measurements for the cultural indicators NI9, NI10 and NI11.

## 1.3 Diet

Current government recommendations are that everyone should eat at least 5 portions of a variety fruit and vegetables each day,<sup>12</sup> to reduce the risks of cancer and coronary heart disease and many other chronic diseases.

[Chapter 6](#) on Diet covers purchases and consumption of food and drink and related intake of energy and nutrients. Also covered are adults' and children's consumption and knowledge of the recommended number of portions of fruit and vegetables a day plus attitudes towards a healthy diet.

Other than the HSE, other sources of information on diet include the latest *Living Cost and Food Survey*, *the National Diet and Nutrition Survey*, *The Low Income Diet and Nutrition Survey* and other Food Standards Agency sources.

## 1.4 Health Outcomes

[Chapter 7](#) on Health Outcomes focuses on outcomes related to being overweight or obese, in particular blood pressure. The risks of diseases linked to obesity are discussed in this chapter, as well as information on hospital episodes with a primary or secondary diagnosis of obesity, 'bariatric surgery' and prescriptions for the treatment of obesity.

Throughout the report, references are given to sources for further information which are provided at the end of each chapter.

The report also contains five appendices: [Appendix A](#) describes the key sources used in more detail; [Appendix B](#) provides further details on measurements, classifications and definitions used in the various sources; [Appendix C](#) covers government targets and NHS plans related to obesity; [Appendix D](#) gives editorial notes regarding the conventions used in presenting information; [Appendix E](#) lists sources of further information and useful contacts.

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# 2 Obesity among adults

## 2.1 Introduction

The main source of data on the prevalence of overweight and obesity is the Health Survey for England (HSE). The HSE is an annual survey designed to monitor the health of the population of England. The report is written by the National Centre of Social Research (NatCen) and published by the NHS Information Centre. Most of the information presented in this chapter is taken from the recently published *Health Survey for England (HSE) 2008*.<sup>1</sup>

This chapter focuses on the prevalence of overweight and obesity in adults, presented by Body Mass Index (BMI) and waist circumference. Trends in the prevalence of being overweight or being obese are presented and relationships between various economic and lifestyle variables and obesity are discussed. Local, regional and international comparisons have been provided as well as comparisons against the Quality and Outcomes Framework (QOF) obesity prevalence rates.

The final part of this chapter focuses on future predictions of adult obesity, which refers to other research reports.

### 2.1.1 Measurement of overweight and obesity

The calculation of BMI is a widely accepted method used to define overweight and obesity. Guidance published by the National Institute for Health and Clinical Excellence (NICE)<sup>2</sup> postulates that within the management of overweight and obesity in adults, BMI should be used to classify the degree of obesity and to determine the health risks. However, this needs to be interpreted with caution as BMI is not a direct measure of adiposity. NICE recommends the use of BMI in conjunction with waist circumference as the method of measuring overweight and obesity and determining health risks, specifically, the

guidance currently states that assessment of health risks associated with overweight and obesity should be based on both BMI and waist circumference for those with a BMI of less than 35 kg/m<sup>2</sup>. Hence this chapter focuses on using BMI and waist circumference in order to define overweight and obesity in adults.

### 2.1.2 Measurement of BMI

BMI is defined as weight in kilograms divided by the square of the height in metres (kg/m<sup>2</sup>). [Figure 2.1](#) presents the various BMI ranges used to define BMI status.

**Figure 2.1 BMI definitions**

Definition	BMI range (kg/m <sup>2</sup> )
Underweight	Under 18.5
Normal	18.5 to less than 25
Overweight	25 to less than 30
Obese	30 to less than 40
Obese I	30 to less than 35
Obese II	35 to less than 40
Morbidly obese	40 and over
Overweight including obese	25 and over
Obese including morbidly obese	30 and over

Where the prevalence of obesity is referred to in this chapter it is referring to those who are obese or morbidly obese (i.e. with a BMI of 30kg/m<sup>2</sup> or over) unless otherwise stated.

### 2.1.3 Waist circumference

Although BMI allows for differences in height, it does not distinguish between mass due to body fat and mass due to muscular physique, or for the distribution of fat. Therefore, waist circumference is also a widely recognised measure used to identify those with a health risk from being overweight. A raised waist circumference is defined as greater than

102cm in men and greater than 88cm in women.

### 2.1.4 NICE risk categories

NICE guidelines on prevention, identification, assessment and management of overweight and obesity highlight their impact on risk factors for developing long-term health problems. It states that the risk of these health problems should be identified using both BMI and waist circumference for those with a BMI less than 35kg/m<sup>2</sup>. For adults with a BMI of 35kg/m<sup>2</sup> or more, risks are assumed to be very high with any waist circumference (see [Figure 2.2](#)).

**Figure 2.2: NICE risk categories**

BMI classification	Waist circumference		
	Low	High	Very high
	Male < 94cm Female < 80cm	94cm - 102cm 80cm - 88cm	> 102cm > 88cm
Normal weight	No increased risk	No increased risk	Increased risk
Overweight (25 to less than 30 kg/m <sup>2</sup> )	No increased risk	Increased risk	High risk
Obesity I (30 to less than 35 kg/m <sup>2</sup> )	Increased risk	High risk	Very high risk

## 2.2 Overweight and obesity prevalence

### 2.2.1 BMI

Chapter 7 on pages 181 to 205 of the HSE 2008 report provides information on anthropometric measures, overweight and obesity. In particular, Table 7.2 on page 193 shows BMI among adults by age and gender for 2008.

The key findings show that in 2008, almost a quarter of adults (24% of men and 25% of women) were obese, and 66% of men and 57% of women were overweight including obese. By comparison 33% of men and 41% of women had a BMI in the normal range. A greater proportion of men than women were overweight (42% compared with 32%).

Overall, mean BMI in men was similar to women (27.2kg/m<sup>2</sup> and 26.9kg/m<sup>2</sup> respectively) and as with the prevalence of overweight including obesity, was higher in older age groups.

Prevalence of overweight including obese varied by age, being lowest in the 16–24 age group, and higher in the older age groups among both men and women. Figure 7A on page 186 of the HSE 2008 report shows prevalence of overweight and obesity by age and gender for 2008.

### 2.2.2 Waist circumference

Table 7.6 on page 198 of the HSE 2008 report shows the distribution of mean waist circumference and prevalence of raised waist circumference by age and gender for 2008.

In 2008, women were significantly more likely than men to have a raised waist circumference (44% and 34% respectively). Again both mean waist circumference and the prevalence of a raised waist circumference were generally higher in older age groups.

### 2.2.3 Health risk associated with BMI and waist circumference

Table 7.10 on page 201 in HSE 2008 shows the increased health risks associated with high and very high waist circumference, when combined with BMI to classify the risks (see [Figure 2.2](#) for definition of high and very high waist circumference).

Using combined categories of BMI and waist circumference to assess overall health risk: 20% of men were at increased risk; 14% at high risk and 21% at very high risk. The equivalent proportions for women were: 15% at increased risk; 17% at high risk; and 24% at very high risk.

## 2.3 Trends in obesity and overweight

### 2.3.1 BMI

Table 4 from the HSE 2008 Adult Trend tables<sup>3</sup> shows that in England the proportion of adults with a normal BMI decreased between 1993 and 2008, from 41% to 33% among men and from 50% to 41% among women. Among men, the proportion that were overweight decreased over the same period from 44% to 42%. There was however a marked increase in the proportion that were obese, a proportion that has gradually increased over the period examined from 13% in 1993 to 24% in 2008 for men and from 16% to 25% for women. This increase is also shown in Figure 7D on page 189 of the HSE 2008 report (based on a 3 year moving average).

### 2.3.2 Waist circumference

Table 5 from the HSE 2008 Adult Trend, show that between 1993 and 2008, the proportion of adults with a raised waist circumference also increased, from 23% to 39% (from 20% to 34% among men and from 26% to 44% among women).

## 2.4 Obesity and demographic characteristics

The HSE 2008 uses equivalised household income (a measure of household income that takes account of the number of people in the household – see [Appendix B](#) for more details) to help identify patterns in obesity and raised waist circumference.

Table 7.4 on page 196 of the HSE 2008 report shows that there are no differences in mean BMI by equivalised household income for men; however in women those in the lower income quintiles had a higher mean BMI than women in the highest quintile. Among women, the proportions who were obese were higher in the lowest two income quintiles (ranging from 29%-31%) than women in the highest quintile

(ranging from 20%-26%). There were no clear relationships for men between BMI and income.

Table 7.8 on page 200 of the HSE 2008 report shows that the proportion of women with a raised waist circumference was also lowest in the highest income quintile (37%) and highest in the lowest income quintile (51%). There was no observed relationship between waist circumference and equivalised household income for men.

Other socio-economic and demographic variables have been identified to have relationships with obesity. These include an Index of Multiple Deprivation (IMD), National Statistics Socio-Economic Classification (NS-SEC), urbanisation, ethnicity and marital status. Information on these variables is not collected every year in the HSE and so an overview of these relationships using the most recent available data is reported on in the publication *Statistics on Obesity, Physical Activity and Diet: England, January 2008*.<sup>4</sup>

## 2.5 Obesity and lifestyle habits

Previous years' HSE reports have included more detailed exploration of the lifestyle factors associated with obesity measures. The HSE 2007 report<sup>5</sup> included a regression analysis of the risk factors for those classified as 'most at risk' according to the NICE categories using BMI and waist circumference criteria; the HSE 2006 report<sup>6</sup> included a regression analysis exploring the risk factors associated with a raised waist circumference; and the HSE 2003 report<sup>7</sup> included a regression analysis of risk factors associated with overweight and obesity.

The HSE 2007 report used logistic regression (see Section 3.3.7 on pages 44 to 46 of HSE 2007 and [Appendix B](#) of this report for more details) to identify the risk factors associated with being in the 'most at risk' categories (high or very high risk see [Section 1.1.4](#) for details). For both men and women, being 'most at risk' was positively associated with: age; being an ex-cigarette smoker; self perceptions of not eating healthily; not being physically active;

and hypertension. Income was also associated with being 'most at risk', with a positive association for men and a negative association for women. Additionally, among women only, moderate alcohol consumption was negatively associated with being 'most at risk.'

## 2.6 Obesity and physical activity

Figure 2C and Table 2.5 on pages 31 and 47 of the HSE 2008 report show self reported activity levels by BMI category. Both men and women who were overweight (BMI 25 to less than 30 kg/m<sup>2</sup>) or obese (BMI 30 kg/m<sup>2</sup> or more) were less likely to meet the recommendations compared with men and women who were not overweight or obese (BMI less than 25 kg/m<sup>2</sup>). Forty-six per cent of men who were not overweight or obese met the recommendations, compared with 41% of overweight men and 32% of obese men. A similar pattern emerged for women, with 36% of women who were not overweight or obese in category meeting recommendations, compared with 31% of overweight and 19% of obese women. Given these findings, it is not surprising that obese men and women had the highest rates of low activity (36% and 46% respectively).

Table 3.6 on page 84 of the HSE 2008 report shows the average number of minutes per day in sedentary time and all moderate to vigorous physical activity (MVPA) by BMI category based on accelerometry data (an objective measure of physical activity), and Figure 3C on page 69 shows the data for MVPA time. Those who were not overweight or obese spent fewer minutes on average in sedentary time (591 minutes for men, 577 minutes for women) than those who were obese (612 minutes for men, 585 minutes for women). Similarly, those not overweight or obese spent more MVPA minutes than those who were overweight or obese.

Further information on adult physical activity linked to obesity can be found in [Chapter 4](#) of this report.

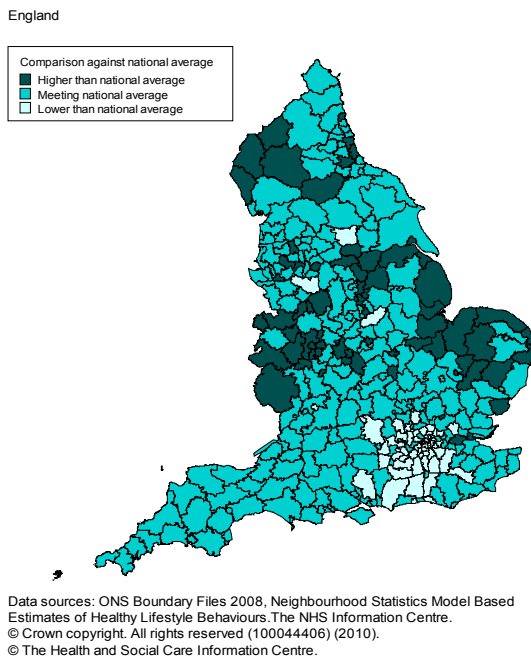
## 2.7 Geographical patterns in obesity

### 2.7.1 Obesity and local level comparisons

While survey estimates can provide information on regional variation by Strategic Health Authority (SHA) or Government Office Region (GOR), it is not possible to look at prevalence at a smaller geographical level due to small sample sizes. To address this information gap, the National Centre for Social Research was commissioned by The NHS Information Centre, to test and produce model-based estimates for a range of healthy lifestyle behaviours. Estimates based on 2003-05 data by Local Authority (LA), Primary Care Organisation (PCO) and Medium Super Output Area (MSOA) are available on the NHS Information Centre website<sup>8</sup> and include estimates of obesity prevalence. Results for the whole range of healthy lifestyle behaviours considered are published on the Office for National Statistics, Neighbourhood Statistics website.<sup>9</sup>

Just under a fifth (19%) of LAs had an obesity rate significantly higher than the national average, and 17% of LAs were estimated to have a significantly lower obesity rate than the national estimate<sup>8</sup>. The majority of these were concentrated in the South of England (See [Figure 2.3](#)).

**Figure 2.3: Comparison of estimated obesity rates of Local Authorities to the national average, 2003-05**



### 2.7.2 Obesity and waist circumference by Strategic Health Authority

Table 7.3 on page 194 of the HSE 2008 report shows that among the different SHAs in England, no significant statistical differences were observed in men or women in mean BMI or prevalence of overweight and obesity.

Table 7.7 on page 199 of the HSE 2008 report also shows there was no significant variation in the distribution of mean waist circumference by SHA. Similarly, there was no significant variation in the prevalence of raised waist circumference by SHA in women, but this varied significantly by SHA in men.

### 2.7.3 Quality and Outcomes Framework

The Quality and Outcomes Framework (QOF) for 2008/09<sup>10</sup> includes an indicator which rewards GP practices for maintaining an obesity register of patients (aged 16 and over) with a BMI greater than or equal to 30, recorded in the previous 15 months. The recording of BMI for the register takes place in

the practice as part of routine care. The underlying data includes the number of patients on the obesity register and the number of obese patients registered as a proportion of the practice list size. See **Appendix A** for more information on QOF.

In England in 2008/09, it was calculated that the prevalence rate based on GP obesity registers was 9.9%; much lower than the 24.5% for adults reported in HSE 2008. This could be due to a number of reasons. Not all patients will be measured and there may be some obese people who have not recently visited their GP. While perhaps not able to demonstrate the complete extent of obesity prevalence, QOF can be a useful indicator of the number of people whose health is being monitored due to their obesity. To be included in the QOF obesity register a patient must be 16 or over and have a record of a BMI of 30 or higher in the previous 15 months. This requirement results in the prevalence of obesity in QOF being much lower than the prevalence found in the Health Survey for England and other surveys.

At a regional level prevalence rates based on the QOF ranged from 12.3% in North East SHA to 8.5% in South East Coast SHA in 2008/09. **Figure 2.4** shows the differences in obesity prevalence rates between QOF and HSE for each SHA and England in 2008/09.

**Figure 2.4: Differences in obesity prevalence rates between QOF and HSE, 2008/09**

SHA	Obesity prevalence (%)		
	QOF	HSE - men	HSE - women
North East	12.3	23	28
North West	10.8	23	24
Yorkshire and The Humber	10.7	26	26
East Midlands	10.2	22	25
West Midlands	10.9	26	28
East of England	9.3	23	24
London	9.0	21	22
South East Coast	8.5	26	25
South Central	9.4	25	25
South West	9.3	27	23
<b>England</b>	<b>9.9</b>	<b>24.1</b>	<b>24.9</b>

Note: HSE figures are rounded to nearest whole percentage at SHA level.

## 2.7.4 National and international comparisons

Scotland and Wales carry out their own health surveys. Adult BMI information for Scotland can be found in Section 7.5 on pages 198 to 199 and Tables 7.4 and 7.5 on pages 216 to 218 of the *Scottish Health Survey 2008*.<sup>11</sup> Similarly, adult BMI information for Wales can be found in Section 4.7 on pages 54 to 56 and Table 4.8 on page 68 of the *Welsh Health Survey 2008*.<sup>12</sup>

The Organisation for Economic Co-operation and Development (OECD) in 2009<sup>13</sup> published comparable 2007 data on overweight and obese populations across different countries. [Figure 2.5](#) shows that Switzerland has the least overweight or obese population (37.3%) out of the 12 nations listed whilst New Zealand has the most overweight or obese population (62.6%). It is important to note that data for Luxembourg, New Zealand, Slovak Republic and the United Kingdom are based on actual height and weight measurements rather than self-reported data. Notes on the methodology and definitions used for the OECD data can be found in [Appendix A](#).

**Figure 2.5: Overweight or obese population, % of total population**

	2007
New Zealand	62.6
United Kingdom	61.0
Iceland	60.2
Luxembourg	54.8
Ireland	51.0
Finland	48.9
Canada	46.8
Slovak Republic	46.2
Italy	45.5
Netherlands	45.5
Sweden	44.0
Switzerland	37.3

Notes:

1. Source: Organisation for Economic Co-operation and Development (OECD) Health Data 2009 - Frequently Requested Data
2. Overweight is defined as a BMI between 25 and 30 kg/m<sup>2</sup> (25 ≤ BMI < 30 kg/m<sup>2</sup>) which is same as the HSE.
3. Obesity is defined as a BMI of 30 kg/m<sup>2</sup> or more (BMI ≥ 30 kg/m<sup>2</sup>).

## 2.8 The future

There are various research reports and journal articles available that use HSE data to predict future obesity trends in adults. The report by Foresight at The Government Office for Science produced the *Tackling Obesities: Future Choices* report<sup>14</sup> provides a long-term vision of how we can deliver a sustainable response to obesity in the UK over the next 40 years. HSE data from 1994 to 2004 were used as a basis of modelling obesity prevalence up to 2050.

By 2015, the Foresight report estimates that 36% of males and 28% of females (aged between 21 and 60) will be obese. By 2025 it is estimated that 47% of men and 36% of women will be obese.

Another research report published in 2008 by the British Medical Journal Group, *Trends in obesity among adults in England from 1993 to 2004 by age and social class and projections of prevalence to 2012*<sup>15</sup> reveals that the prevalence of obesity increased considerably from 1993 to 2004 from 13.6% to 24.0% among men and 16.9% to 24.4% among women. If obesity prevalence continues to increase at the same rate, it is predicted that the prevalence of obesity in 2012 will be 32.1% men and 31.0% in women. The predicted 2012 prevalence for adults in manual social classes is higher (34%) than adults in non-manual social classes (29%). The report concludes that if recent trends in adult obesity continue, about a third of all adults in England (almost 13 million adults) would be obese by 2012, of which around 34% are from the manual social class.

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# 3 Obesity among children

## 3.1 Introduction

This chapter presents key information about the prevalence of overweight and obesity in children aged 2 to 15 living in England, using data from the Health Survey for England (HSE) 2008.<sup>1</sup> As described in [Chapter 1](#), this is an annual survey and has provided information about the health of children since 1995. Information is presented showing relationships between obesity prevalence and income, parental Body Mass Index (BMI) and children's physical activity levels, and also provides regional comparisons. Information on children's attitudes to physical activity and obesity are also included.

This chapter also presents recent 2008/09 data from the National Child Measurement Programme for England (NCMP)<sup>2</sup> which provides the most comprehensive data on obesity and being overweight among children, generally aged 4-5 and 10-11 years, based on Reception class and school year 6. The findings are used to inform local planning and delivery of services for children and gather population-level surveillance data to allow analysis of trends in weight.

The final part of this chapter focuses on future predictions of childhood obesity, which refers to other research reports.

### 3.1.1 Measurement of overweight and obesity among children

As with adults, the HSE collects height and weight measurements to calculate BMI for each child. BMI (adjusted for age and gender) is recommended as a practical estimate of overweight and obesity in children. The measurement of obesity and overweight among children needs to take account of the different growth patterns among boys and girls at each age, therefore a universal categorisation cannot be used to define childhood obesity as is the case with adults. Each sex and age group needs its own level of classification for overweight and obesity. The

data presented in this chapter uses the UK National BMI percentile classification to describe childhood overweight and obesity. This uses a BMI threshold for each age above which a child is considered overweight or obese. The classification estimates were produced by calculating the percentage of boys and girls who were over the 85<sup>th</sup> (overweight) or 95<sup>th</sup> (obese) BMI percentiles based on the 1990 UK reference population.

## 3.2 Trends in overweight and obesity

Table 13.2 on page 326 of the HSE 2008 report shows that around three in ten boys and girls aged 2 to 15 were classed as either overweight or obese (31% and 29% respectively), which is very similar to the HSE 2007 findings (31% for both boys and girls).

However, mean BMI was higher overall among girls than boys aged 2-15 (a difference of 0.3kg/m<sup>2</sup>). Mean BMI was similar among younger boys and girls, but from the age of 9 a gap between the sexes was apparent.

Table 4 of the HSE 2008 Child Trend Tables<sup>3</sup> show that among boys and girls aged 2 to 15, the proportion who were obese increased overall between 1995 and 2008, from 11.1% to 16.8% among boys, and from 12.2% to 15.2% among girls. Whilst there have been marked increases in the prevalence of obesity since 1995, the prevalence of overweight children aged 2 to 15 has remained largely unchanged and in 2008 this was 14.6% for boys and 14.0% for girls. (Note: data for 1995 to 2007 in Table 4 were revised in order to correct a slight error).

The same overall obesity increase was apparent among both younger children aged 2 to 10 and boys aged 11 to 15. For those aged 2 to 10, the prevalence of obesity increased overall from 9.7% to 14.4% among boys and from 10.6% to 13.3% among girls between 1995 and 2008. In the 11 to 15 age group,

obesity increased from 13.9% to 20.6% among boys and from 15.5% to 18.3% among girls between 1995 and 2008.

Figure 13D on page 318 of the HSE 2008 report shows the obesity trend as a 3 year moving average. This suggests that the trend in obesity now appears to be flattening out, and future HSE data will be important in confirming whether this is a continuing pattern, or whether this is a plateau within the longer term trend which is still gradually increasing.

In 2008/09 the NCMP data shows that around one in ten pupils in Reception class were classified as obese (9.6%). This compares to around a fifth of pupils in Year 6 (18.3%). Boys were more likely to be obese than girls for both groups. In 2008/09, 13.2% of pupils in Reception class and 14.3% of pupils in Year 6 were reported as being overweight.

Between 2007/08 and 2008/09, there was little or no difference in the prevalence of overweight and obese children for both Reception class and Year 6.

Section 13.5 on page 318 of the HSE 2008 report includes a comparison of NCMP and HSE data, outlining any differences between results and methods of collection.

### 3.3 Relationship between obesity and income

Figure 13C on page 317 of the HSE 2008 report shows the proportion of children who were overweight or obese in each equivalised household income quintile. Reflecting the pattern with mean BMI, those in the highest income quintile were the least likely to be obese (12% of both boys and girls).

### 3.4 Obesity and overweight prevalence by parental BMI

Overweight and obesity prevalence among children varied by parental BMI status. The HSE 2007<sup>4</sup> found that obesity prevalence rates among children were higher in households where both natural parents or lone natural

parent were classed as either overweight or obese.

Table 8.5 on page 239 of the HSE 2007 report shows how mean BMI, overweight and obesity prevalence varied by parental BMI status. Obesity prevalence rates were higher in households where both natural parents or the lone natural parent were classed as either overweight or obese. Twenty-four per cent of boys aged 2-15 living in overweight/obese households were classed as obese compared with 11% in normal/underweight households. Equivalent figures for girls classed as obese were 21% and 10%.

### 3.5 Obesity and physical activity

Table 5.20 on page 157 of the HSE 2008 report shows the proportion of children who were sedentary for more than four hours on a typical weekday or weekend day according to BMI categories. Among both boys and girls there was a relationship between sedentary time and BMI category, which is also shown in Figure 5I on page 132 of the HSE report. For boys, on weekdays, the proportion who spent 4 or more hours doing sedentary activities was 35% of those who were not overweight or obese, 44% of those classed as overweight and 47% of those classed as obese. For girls, a comparable pattern was found; 37%, 43% and 51% respectively. For boys, the relationship between weekend sedentary behaviour and BMI was very similar to that of weekday sedentary behaviour. For girls, similar proportions of those who were overweight and obese were sedentary for four or more hours on weekend days (62% and 60% respectively).

Table 6.6 on page 177 of the HSE 2008 report shows average daily physical activity profile, by BMI category based on accelerometry data (an objective measure of physical activity). This shows that there is no difference in the activity profile according to whether participants were overweight or obese. However, it should be noted that the small base sizes for some of these categories limits the scope for detailed analysis.

Further information on children's physical activity linked to obesity can be found in [Chapter 5](#) of this report.

### 3.6 Regional and national comparisons

Maps in Figures 11 and 12 on pages 25 and 26 of the 2008/09 NCMP report show child obesity prevalence rates in Reception class (aged 4–5 years) and Year 6 (aged 10–11 years) by Primary Care Trust (PCT).

Table 13.3 on page 327 of the HSE 2008 report shows obesity prevalence by Strategic Health Authority (SHA). As with earlier years, no significant regional variations were apparent. There was significant variation in mean BMI by Strategic Health Authority (SHA), with lower means in South East Coast, South Central and the South West than in most other regions.

Scotland and Wales carry out their own health surveys. Child BMI information can be found in Section 7.6 on page 201 and Tables 7.6 and 7.7 on pages 219 to 220 of the *Scottish Health Survey 2008*.<sup>5</sup> Similarly, child BMI information for Wales can be found in Section 6.6 on pages 94 to 95 and Table 6.4 on page 99 of the *Welsh Health Survey 2008*.<sup>6</sup>

### 3.7 Attitudes to and knowledge of physical activity by BMI status

The government recommends that children should do at least 60 minutes of moderate physical activity everyday of the week. In order to assess awareness of the recommended guidelines for physical activity for their age group, children aged 11 to 15 were asked in the HSE 2007 how many days a week and how many minutes a day young people should spend doing physical activity. Table 8.7 on page 240 of the HSE 2007 report shows children's knowledge (those aged 11–15) of the number of days and minutes a day they should do physical activity. In 2007, 73% of boys who were classed as obese said that children should spend a minimum of five days

a week doing physical activity, compared to 62% of those who had a normal BMI. There were no significant differences found amongst girls.

When looking at the number of minutes per day children should be spending doing physical activity, 64% of boys in the normal weight group thought that children should spend at least 60 minutes a day doing physical activity, compared with 53% of those in the overweight group. Among girls, the proportion who thought that children should spend at least 60 minutes a day doing physical activity was higher in the overweight group: 62% among those classed as overweight compared with 50% in the normal weight group.

Children aged 11 to 15 were also asked how they perceived their own level of physical activity compared with other children of their own age, and to state whether they would like to do more physical activity than at present.

Figure 8D on page 228 of the HSE 2007 report show that 46% of boys in the normal weight group believed that they were very physically active. This compares with 37% of those in the overweight group and 27% in the obese group. Among girls, 32% in the normal weight group believed that they were very physically active compared with 21% of those in the obese group.

Table 8.8 on page 241 of the HSE 2007 report shows the proportion of children stating they would like to do more physical activity than at present was higher in the obese group than in the normal weight group: 71% and 57% respectively for boys, 84% and 71% for girls.

In HSE 2006,<sup>7</sup> children aged 8 to 15 were asked 'Given your age and height, would you say that you are about the right weight, too heavy, or too light?' Perceptions of weight were found to vary by BMI status. Among girls aged 8 to 15, classed as obese, two thirds believed that they were too heavy while a third said their weight was about right. The equivalent figures for boys were 60% and 40%.

## 3.8 The future

There are various research reports and journal articles available that use HSE data to predict future obesity trends in children.

The report by Foresight at the Government Office for Science, *Tackling Obesities: Future Choices*<sup>8</sup> includes some predictions for the future prevalence of obesity among young people under the age of 20. This report uses the International Obesity Task Force (IOTF) definition of obesity. More information on the IOTF can be found in [Appendix B](#). The report's predictions suggest a growth in the prevalence of obesity among people under 20 to 10% by 2015 and to 14% by 2025 based on HSE 2004 data. However, these figures should be viewed

with caution due to the widening confidence intervals on the extrapolation.

Another research report published in the British Medical Journal Group in 2009, *Time trends in childhood and adolescent obesity in England from 1995 to 2007 and projections of prevalence to 2015*<sup>9</sup> reveals that the 2015 projected obesity prevalence is 10.1% in boys and 8.9% in girls, and 8.0% in male and 9.7% in female adolescents. Predicted prevalence in manual social classes is higher than in non-manual classes. The report concludes that if the trends in young obesity continue, the percentage and numbers of young obese people in England will increase noticeably by 2015 and the existing obesity gap between manual and non-manual classes will widen further.

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## 4 Physical activity among adults

### 4.1 Background

The health benefits of a physically active lifestyle are well documented and there is a large amount of evidence to suggest that regular activity is related to reduced incidence of many chronic conditions. Physical activity contributes to a wide range of health benefits and regular physical activity can improve health outcomes irrespective of whether individuals achieve weight loss.

Current physical activity recommendations for adults are that they should achieve a total of at least 30 minutes of at least moderate activity, either in one session or in multiple bouts of at least 10 minutes duration, on five or more days of the week.<sup>1</sup> Moderate activity can be achieved through walking, cycling, gardening and housework, as well as various sports and exercise (see [Appendix B](#) for further details).

The main source of data used for adults' physical activity is the *Health Survey for England (HSE)*. The HSE reports on adults' physical activity in the four weeks prior to interview by examining overall participation in activities and by describing frequency of participation and type of activity. The HSE is used as the primary source to measure progress towards achieving physical activity guidelines. The main focus of the HSE in 2008<sup>2</sup> was physical activity and fitness. In addition to the self-reported questionnaire, independent measures of physical activity were recorded in the week following the interview. Physical activity was recorded using accelerometry. Accelerometers measure the duration, intensity and frequency of physical activity for each minute they are worn by the participant, allowing an objective and accurate

estimation of activity to be recorded. Fitness levels were measured using a step test. The HSE 2008 did not include questions of people's perceptions and attitudes towards physical activity, therefore, results from the HSE 2007<sup>3</sup> are used.

*The Taking Part Survey (TPS)*<sup>4</sup> is a national survey of private households in England which began in mid-July 2005. It is a comprehensive study on how people enjoy their leisure time. Results from the survey include estimates on the prevalence of participation in active sport and reasons given for engagement and non-engagement in sporting activities.

*The National Travel Survey (NTS) 2008*<sup>5</sup> provides information on personal travel in Great Britain, published by the Department for Transport, and is used in this chapter to look at the frequency of trips made by bicycle and on foot.

*The Active People Survey*, published by Sport England, provides information on participation in sport and recreation. It provides the measurements for National Indicator 8 (NI8) – adult participation in sport and active recreation, as well as providing measurements for the cultural indicators NI9, NI10 and NI11. This is an annual survey, first undertaken in 2005/06 and the latest survey presents data for 2008/09.<sup>6</sup> Part of the Sport England Sport Strategy 2008-11 is a commitment to getting one million more people taking part in more sport by 2012/13.

## 4.2 Meeting physical activity guidelines

The latest information on whether physical activity guidelines are being met is derived by summarising different types of activity into a frequency-duration scale. It takes into account the time spent participating in physical activities and the number of active days in the last week. In the HSE, the summary levels are divided into three categories: Meets recommendations is defined as 20 or more occasions of moderate or vigorous activity of at least 30 minutes duration in the last four weeks (i.e. at least five occasions per week on average). This category corresponds to the minimum activity level required to gain general health benefits (e.g. reduction in the relative risk for cardiovascular morbidity). Some activity is defined as 4 to 19 occasions of moderate or vigorous activity of at least 30 minutes' duration in the last four weeks (i.e. at least one but fewer than five occasions per week on average). Low activity is defined as fewer than 4 occasions of moderate or vigorous activity of at least 30 minutes' duration in the last four weeks (i.e. less than once per week on average).

### 4.2.1 Self-reported physical activity

Self-reported physical activity in adults aged 16 and over is presented in Chapter 2: Self-reported physical activity in adults, pages 21 to 58 of the HSE 2008. Key findings from the chapter are:

- In 2008, 39% of men and 29% of women aged 16 and over met the government's recommendations for physical activity, compared with 32% and 21% respectively in 1997.
- There was a clear association between meeting the physical activity

recommendations and Body Mass Index (BMI) category. Forty six per cent of men and 36% of women who were neither overweight nor obese met the recommendations, followed by 41% of men and 31% of women who were overweight and only 32% of men and 19% of women who were obese.

Further information is available in Chapter 2: Self-reported physical activity in adults, of the HSE 2008 and includes information on the types of activities people carry out, the average number of hours of physical activity respondents have done in the past week and the proportion of people meeting recommended physical activity guidelines by equivalised household income (Table 2.3 on page 46), Strategic Health Authority (SHA) (Table 2.2 on page 45) and spearhead PCT status (Table 2.4 on page 46).

The Active People Survey 2008/09, measures the number of adults aged 16 and over in England who participate in at least 30 minutes of sport and active recreation at moderate intensity at least three times a week. This survey includes additional information on participation in sports by age, gender, ethnicity, socio-economic classification and region. It also presents information on the types of sports people participate in and how participation levels have changed since the start of this survey.

A key finding from this report is that in 2008/09, 6.9 million adults (4.2 million men and 2.7 million women) participated in sport and active recreation three times a week for 30 minutes.

The Taking Part Survey (TPS) 2008/09 is a national survey of private households in England which began in mid-July 2005. It is a comprehensive study on how people enjoy their leisure time. It includes

information on the number of respondents who report taking part in moderate intensity activity, for 30 minutes on at least 3 days in the last week.

The key finding is that in 2008/09, 23.8% of respondents reported that they had taken part in sport in for at least 30 minutes on at least 3 days in the past week.

The TPS 2008/09 report contains further information on the participation in sport on page 5 and Chart B and trends in participation in sport since 2005/06 are given on pages 8 and 9.

A discussion of physical activity and obesity is included within [Chapter 3](#) of this report.

#### 4.2.2 Objective measures of physical activity

Objective measures of physical activity in adults aged 16 and over are given in Chapter 3: Accelerometry in adults, in the HSE 2008. Accelerometers were used to independently measure physical activity over the seven day period following the completion of the self-reported physical activity questionnaire. The accelerometers record information on the frequency, intensity and duration of physical activity in one minute epochs. Full details are available in the HSE 2008 pages 62 to 66. Some key findings from the chapter are:

- Based on the results of the accelerometer study, 6% of men and 4% of women achieved the government's recommended physical activity level.
- Men and women aged 16 to 34 were most likely to reach the recommended physical activity level (11% and 8% respectively), the proportion of both men

and women meeting the recommendations fell in the older age groups.

- On average men spent 31 minutes in moderate or vigorous activity (MVPA) in total per day and women an average of 24 minutes. However, most of this was sporadic activity, and only about a third of this was accrued in bouts of 10 minutes or longer which count towards the government recommendations.

Full details of the objective measures of physical activity can be found in Chapter 3: Accelerometry in adults, of the HSE 2008 on pages 59 to 88. Included within this chapter is information on the activity patterns for adults on weekdays and weekend days, analyses by BMI (page 68 and Table 3.6), gender and age; as well as a comparison between the self-reported physical activity and the objective measures (pages 70 to 71 and Tables 3.10 to 3.12).

#### 4.3 Physical fitness

Low levels of cardiovascular fitness are associated with increased risk of many health conditions. Chapter 4: Physical fitness in adults, on pages 89 to 116 of the HSE 2008, presents information on cardiovascular fitness in adults aged 16 to 74 collected using a step test and monitoring participants' heart rate during and after the test. This test measured the maximal oxygen uptake ( $VO_{2max}$ ). Oxygen uptake increases rapidly on starting exercise; maximal oxygen uptake is achieved when the amount of oxygen uptake into the cells does not increase, despite a further increase in intensity of exercise. Full details of the step test, the measures of physical fitness and the definitions used in this section can be found in Chapter 4: Physical fitness in adults, on pages 91 to 95 of the HSE 2008.

Physical fitness has been measured only once before on a nationally-representative sample in England. In 1990, the *Allied Dunbar National Fitness Survey (ADNFS)*,<sup>7</sup> tested participants' fitness on a treadmill, by measuring  $VO_{2max}$ . The information in the HSE 2008 was analysed to allow comparisons to be made between the HSE 2008 and the ADNFS and this involved converting the results of the step test from the HSE to indicate the percentage of adults who could sustain walking at 3 miles per hour (mph) on the flat and on 5% incline. The key findings from this chapter are:

- Men had higher cardiovascular fitness levels than women, with an average level of  $VO_{2max}$  of 36.3 ml  $O_2$ /min/kg for men and 32.0 ml  $O_2$ /min/kg for women. In both sexes, the mean  $VO_{2max}$  decreased with age.
- Cardiovascular fitness was lower on average among those who were obese (32.3 ml  $O_2$ /min/kg among men and 28.1 ml  $O_2$ /min/kg among women) than among those who were neither overweight nor obese (38.8 ml  $O_2$ /min/kg and 33.9 ml  $O_2$ /min/kg respectively).
- Virtually all participants were deemed able to walk at 3 mph on the flat but 84% of men and 97% of women would require moderate exertion for this activity. Thirty two per cent of men and 60% of women were not fit enough to sustain walking at 3 mph up a 5% incline. Lack of fitness increased with age.
- Physical fitness was related to self-reported physical activity. Average  $VO_{2max}$  decreased, and the proportion classified as unfit increased, as self-reported physical activity level decreased.

Full details of the physical fitness in adults in 2008 can be found in the Chapter 4: Physical fitness in adults, of the HSE 2008. Details of physical fitness in adults in 1990 can be in the ADNFS report and the key findings are:

- Seven out of 10 men and 8 out of 10 women fell below their age appropriate activity level.
- One in 6 people reported having done no activities for 20 minutes or more at a moderate or vigorous level in the previous four weeks.

## 4.4 Participation in different activities

### 4.4.1 Occupational activity

Adults aged 16 to 74 who had worked (paid or voluntary) in the last four weeks were asked about their moderate intensity physical activity during work, as part of the HSE 2008. Respondents were asked about time spent sitting or standing, walking around, climbing stairs or ladders and lifting, carrying or moving heavy loads. Some of the key findings are:

- Men spent slightly more time than women sitting and/or standing, climbing stairs and/or ladders and carrying or moving heavy loads. Men and women spent similar amounts of time walking around.
- Twenty four per cent of men and 11% of women reported doing at least 30 minutes of moderate or vigorous activity whilst at work each day, thus meeting the government recommendations for physical activity solely from their work.

- Most men (62%) and women (59%) considered themselves to be very or fairly active at work.

Self-reported levels of physical activity during work hours are discussed in Chapter 2: Self-reported physical activity in adults, section 2.4.2 on page 33 and Table 2.9 on pages 53 and 54 of the HSE 2008, including age and gender breakdowns of the different types of occupational physical activity.

#### 4.4.2 Non-occupational activity

Participation in different activities, outside of work, was collected for all adults aged over 16, as part of the HSE 2008. Physical activities were grouped into four main categories: walking, heavy housework, heavy manual/ gardening/ DIY and sports and exercise. Some key findings are:

- The most common activity for men was sports and exercise (51% had participated in the past four weeks) and the least common was heavy manual/ gardening/ DIY (28% had participated in the past four weeks).
- The most common activity for women was heavy housework (59% had participated in the past four weeks) whilst the least common was heavy manual/ gardening/ DIY (12% had participated in the past four weeks).
- On average men had participated in non-occupational physical activity on 13.9 days in the past four weeks, compared with 12.2 days for women.

Full details of participation in non-occupational physical activity can be found in Chapter 2: Self-reported physical activity in adults, pages 21 to 58 and Tables 2.7 and 2.8 on pages 49 to 52 of the HSE 2008.

The National Travel Survey (NTS) 2008 reports on the frequency of travel by different modes of transport including walking and cycling. Respondents were asked how often they took walks of 20 minutes or more without stopping, for any reason. The NTS also asks respondents about cycling, access to bicycles, and frequency and length of cycle journeys. Some of the key findings from this report are:

- In 2008, 36% of respondents (aged 2+) said they made walks of 20 minutes or more at least 3 times a week and an additional 22% said they did so at least once or twice a week.
- Twenty five per cent of respondents reported that they took walks of at least 20 minutes “less than once a year or never”.
- In 2008, 14% of respondents said they ride a bicycle at least once a week and a further 8% said they did so at least once a month whilst 69% said they use a bicycle less than once a year or never.

Full details of walking and cycling can be found in Section 3: How people travel, pages 17 to 27 and Section 5: Travel by age and gender, pages 34 to 46 of the NTS 2008.

The Active People Survey 2008/09 monitors participation in 33 sports in England and tracks changes in the recorded levels of participation over time. In this survey participation is defined as the number of adults (aged 16 and over) who have taken part in the sport at moderate intensity for 30 minutes or more at least once in the last week. Some key findings from this report are:

- In 2008/09, the most common sports that people had participated in were swimming (3.2 million participants), football (2.1 million participants) and cycling (1.9 million participants).
- Between 2007/08 and 2008/09, four sports had seen a significant increase in the number of participants; these were athletics, cycling, canoeing and tennis. A further 10 sports had seen a significant decrease in participants including golf, gymnastics and trampolining and swimming.

Further details of the number of people participating in each of the 33 sports and how this has changed since 2007/08 can be found in the Active People Survey 2008/09.

The Taking Part Survey in 2005/06<sup>8</sup> and 2006/07<sup>9</sup> included information on the ten most popular activities that adults took part in at least once in the previous 4 weeks.

- In both 2005/06 and 2006/07, swimming was the most popular activity with 15.7% of respondents in 2005/06 and 14.5% of respondents in 2006/07 having participated in the previous 4 weeks.

Further details can be found in the TPS 2005/06 Chapter 8: Active Sport pages 75 to 83 and TPS 2006/07, section 2.7 on pages 7 and 8.

## 4.5 Geographical patterns in physical activity

### 4.5.1 Physical activity levels by Strategic Health Authority

The HSE 2008 contains information on self-reported physical activity by Strategic Health Authority (SHA) in Chapter 2: Self-reported physical activity in adults, Table 2.2 on page 45. The percentage of adults doing the recommended levels of physical activity varied by SHA, but no particular region stood out.

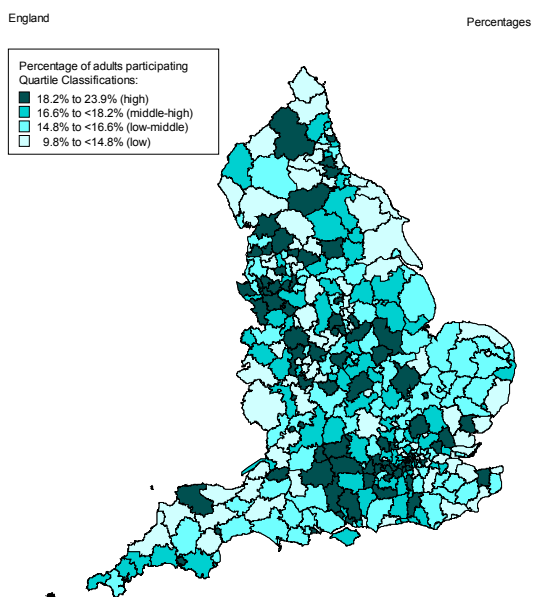
### 4.5.2 Sport and active recreation by Local Authority

Within the Active People Survey 2008/09, information is collected on Adult's participation in sport and active recreation at Local Authority (LA) level.

Figure 4.1 shows the proportion of adults who participated in moderate intensity activity for 30 minutes at least three times a week, in each LA.

Detailed results of activity levels by LA can be found within the Active People Survey 2008/09.

**Figure 4.1 Adults' participation in sport 2008/09**



1. The sports participation indicator measures the number of adults (aged 16 and over) participating in at least 30 minutes of sport at moderate intensity at least three times a week. It does not include recreational walking or infrequent recreational cycling but does include cycling if done at least once a week at moderate intensity and for at least 30 minutes. It also includes more intense/strenuous walking activities such as power walking, hill trekking, cliff walking and gorge walking.

Data sources: ONS Boundary Files 2008, The Active People Survey 08/09, Sport England  
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### 4.5.3 Physical Activity levels in Scotland and Wales

*The Scottish Health Survey 2008*<sup>10</sup> contains information on self-reported physical activity in adults in Scotland. The key finding regarding meeting government physical activity recommendations is that in 2008, 39% of adults aged 16 and over reported meeting the government's recommendations for physical activity in Scotland. Forty five per cent of men and 33% of women reported meeting the recommendations.

Full details of physical activity in Scotland can be found in the Scottish Health Survey 2008, Chapter 6: Physical Activity on pages 158 to 190 in the report.

*The Welsh Health Survey 2008*<sup>11</sup> contains information on the self-reported physical activity levels of adults in Wales. The key finding regarding meeting government physical activity recommendations is:

- In Wales, in 2008, 30% of adults reported meeting the recommended levels of physical activity. A higher proportion of men than women reported meeting the recommendations (38% and 22% respectively).

Further details of physical activity can be found in the Welsh Health Survey 2008, Chapter 4: Health-related lifestyle, section 4.6: Physical activity on pages 53 and 54 and Table 4.7 on page 67.

## 4.6 Sedentary time

Sedentary time is at least as important as moderate intensity physical activity as a disease risk factor. Sedentary behaviour is not merely the absence of physical activity; rather it is a class of behaviours that involve low levels of energy expenditure. Sedentary behaviours are associated with increased risk of obesity and cardiovascular disease independently of moderate to vigorous activity levels.<sup>12</sup> In England, in 2002, physical inactivity was estimated to cost at least £2 billion and maybe up to £8.2 billion a year.<sup>13</sup>

Chapters 2: Self-reported physical activity in adults, and 3: Accelerometry in adults of the HSE 2008 asked adults about the amount of time they spent in sedentary pursuits including time spent watching television, other screen time, reading and other sedentary activities. Some key findings from these chapters are:

- Average total sedentary time combines both time spent watching the television and other sedentary time. Similar proportions of men and women were sedentary for six or more hours on weekdays (32% and 33% respectively). However, on weekend days, men were more likely to be sedentary for six or more hours than women (44% of men and 39% of women).
- On average, both men and women spent 2.8 hours watching television per weekday. Men averaged 3.2 hours of watching television on weekend days and women averaged 3.0 hours.
- Average total sedentary time varied by BMI category. The proportion of women who spent more than four hours per weekday and weekend day increased as BMI category increased, this was also the case for men on weekend days.
- Accelerometry data for adults shows that in 2008, those who were not overweight or obese spent fewer minutes on average in sedentary time (591 minutes for men, 577 minutes for women) than those who were obese (612 minutes for men, 585 minutes for women).

Full details of the sedentary time of adults are available in Chapter 2: Self-reported physical activity in adults, sections 2.4.3 and 2.4.4 and Tables 2.10 and 2.11 of the HSE 2008. Objective measures of sedentary time were collected by the accelerometers and these results are discussed in Chapter 3: Accelerometry in adults, Tables 3.2 to 3.6 of the HSE 2008.

## 4.7 Knowledge and attitudes towards physical activity

In Chapter 4: Adult physical activity: knowledge and attitudes, on pages 69 to 106 of the HSE 2007, adults were asked about their perceptions and attitudes to physical activity including adults' awareness of recommended physical activity levels, whether respondents believe they are achieving recommended levels and barriers to partaking in physical activity. Some key findings from this chapter are:

- Around a quarter of adults (27% of men and 29% of women) thought they knew the current recommendations for physical activity in 2007. Fewer than 1 in 10 adults specified a level equivalent to the minimum target for physical activity.
- A high proportion of both men and women aged 16 to 64 perceived themselves to be either very or fairly physically active compared with other people their own age (75% of men and 67% of women).
- In 2007, women were slightly more likely than men to want to be more physically active than at present (69% and 66% respectively).
- Men and women were found to have different barriers to doing more activity. Men were most likely to cite work commitments as a barrier to increasing their physical activity (45%), while lack of leisure time was the barrier most cited by women (37%).

Further information can be found in Chapter 4: Adult physical activity: knowledge and attitudes, of the HSE 2007. This includes differences in attitudes and perception by gender and age (Tables 4.1 to 4.5, 4.8, 4.9, 4.12, 4.13 and 4.16), SHA (Tables 4.6, 4.10 and 4.14) and equivalised household income (Tables 4.7, 4.11 and 4.15).

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# 5 Physical activity among children

## 5.1 Introduction

The main source of data used in this chapter is the *Health Survey for England (HSE)*. Each year the HSE gathers information on the physical activity levels by children aged 2 to 15. In the Health Survey for England 2008 (HSE 2008),<sup>1</sup> in addition to self-reported physical activity, objective measures of physical activity were collected using accelerometers for children aged 4 to 15. The HSE gathers information on self-reported participation in physical activities excluding the time spent at school.

Other sources of data used in this chapter include the *Taking Part Survey (TPS)*,<sup>2</sup> *PE and Sport Survey*<sup>3</sup> and the *National Travel Survey*.<sup>4</sup> The *TPS* collects data about engagement and non-engagement in culture, leisure and sport, showing how people enjoy their leisure time. The *PE and Sport Survey* collects information about levels of school sport in schools taking part in the School Sport Partnership Programme in England, while the *National Travel Survey* is designed to provide a databank of personal travel information for Great Britain.

This chapter provides an overview of the published data on physical activity in children and links to the data sources.

## 5.2 Meeting physical activity guidelines

The Chief Medical Officer (CMO) of England recommends that children and

young people should do a minimum of 60 minutes of at least moderate intensity physical activity each day.

In the HSE 2008, the summary levels for activity for children and young people are divided into three levels: meets recommendations, some activity and low activity. Meets recommendations, formerly called 'high' in previous HSE reports, is defined as children doing at least 60 minutes of at least moderate intensity activity on all 7 days in the last week. Some activity, formerly 'medium activity' in previous HSE reports, is defined as 30 to 59 minutes of moderate or greater intensity activity on all 7 days in the last week. Low activity is defined as children who do fewer than 30 minutes of moderate activity on each day, or moderate activity of 60 minutes or more on fewer than 7 days in the last week.

### 5.2.1 Self-reported physical activity

Self-reported physical activity levels in children aged 2 to 15 are given in Chapter 5: Self-reported physical activity in children, pages 117 to 157 of the HSE 2008.

Overall, in 2008, a higher proportion of boys (32%) than girls (24%) were classified as meeting the government's recommendations for physical activity. Among girls the proportion meeting the recommendations generally decreased with age, ranging from 35% in girls aged 2 to 12% among those aged 14. There was a less consistent pattern with age among boys.

Chapter 5: Self-reported physical activity in children, Tables 5.1 to 5.5 on pages 138 to 140 of the HSE 2008 gives more detailed information on children's self-reported activity levels including activity levels by Strategic Health Authority (SHA), Body Mass Index (BMI), equivalised household income and Spearhead Primary Care Trust (PCT) Status.

A discussion of physical activity and obesity is included within [Chapter 3](#) of this report which covers Obesity among Children.

### 5.2.2 Objective measures of physical activity

Objective measures of physical activity in children aged 4 to 15 along with the methods of collection are given in Chapter 6: Accelerometry in children, pages 159 to 180 of the HSE 2008. Accelerometers were used to independently measure physical activity over a 7 day period by recording frequency, intensity and duration of physical activity in one minute epochs.

Based on the results of the accelerometer study, more boys than girls were classified as meeting the government's recommendations for physical activity (33% and 21% respectively). These objective findings are similar to those of the self-report study. However, the accelerometers showed that there was considerable variation by age. For boys aged 4 to 10, 51% met the government recommendations but only 7% of boys aged 11 to 15 had met these recommendations. For girls the pattern was similar, although fewer met the recommendations in either age group. Among girls aged 4 to 10, 34% had met the recommended target, whereas in this study none of the girls aged 11 to 15 had done so.

Full details of the objective measures of physical activity in children are provided in Chapter 6: Accelerometry in children, of the HSE 2008 including information on the activity patterns of children and young people for weekdays and weekend days (section 6.4.2, page 164 and Table 6.3), analyses by BMI category (Table 6.6), equivalised household income (Tables 6.4 and 6.8) and Spearhead PCT status (Section 6.5, page 166 and Tables 6.10 and 6.11). This chapter also contains further comparisons of the results observed in the self-reported and objective measures of activity.

The Taking Part Survey collects data on participation in culture, leisure and sport. From 2006 the survey was extended to survey children aged 11 to 15 and in 2008/09 the sample size was further increased to include children aged 5 to 10.

In 2008/09, 70% of 5 to 10 year olds had taken part in at least 30 minutes of sport activities outside of school time in the last week, of these 29% had participated on at least three days in the past week. Whereas 86% of 11 to 15 year olds have taken part in at least 30 minutes of sport in the past week, whilst of these nearly half (49%) had participated on three or more days in the past week.

Full details are presented in the Taking Part Survey, Headline findings from pages 12 and 13 of the 2008/09 Taking Part child survey. Information on the proportions of children taking part in sports in the past week is shown by gender, geography, disability and ethnicity, Table E, page 14.

## 5.3 Types of physical activity

### 5.3.1 Travel to / from school

In recent years, travelling to and from school has been recognised as an opportunity for children to achieve part of their recommended daily physical activity. For the first time, the HSE 2008 included questions on how children travel to and from school.

- Almost two thirds of children aged 2 to 15 who had attended school, nursery or playgroup in the last week had walked to or from school on at least one day in the last week (63% of boys and 65% of girls).
- More boys than girls cycled to or from school on at least one day in the last week (5% of boys compared to 2% of girls).

Further details are provided in Chapter 5: Self-reported physical activity in children, section 5.4.1 on page 126 and Tables 5.7 to 5.9 on pages 142 and 143 of the HSE 2008.

The National Travel Survey (NTS) 2008 presents data on travel to/from school for children aged 5 to 15. Pages 40 and 41 and Table 53 of the NTS 2008, present information on the modes of transport used to and from school. This includes information on the number of trips walking and cycling per child per year, for the years 1995/1997 to 2008.

### 5.3.2 Other types of physical activity

The HSE 2008 asks children about participation in formal sports, for example swimming, football, tennis and gymnastics and informal activities including kicking a ball around, running about and playing active games. Time spent in walking (excluding to and from school) was included as a separate category of activity.

- Ninety-five per cent of boys and girls had participated in any physical activity in the past week.
- More girls than boys had participated in walking in the last week (65% and 61% respectively).
- More boys than girls had participated in formal sports (49% and 38% respectively) and in informal activities (90% of boys and 86% of girls).

Chapter 5: Self-reported physical activity in children, of the HSE 2008 includes full details of the activities children participate in, including information on the number of days and hours of participation and analyses by age, gender (Tables 5.10 to 5.12 on pages 144 to 148), equivalised household income (Table 5.14 on page 150) and Spearhead PCT status (Table 5.15 on page 150).

The Taking Part Survey 2008/09 includes information on the top 10 sports activities carried out by children.

- The most popular sports activities carried out by children aged 5 to 10, outside school hours was swimming, diving or lifesaving with 43% participating in the previous four weeks, followed by football (including five-a-side) (37%) and cycling or riding a bike

(including BMX and mountain biking) (26%).

- For children aged 11 to 15 the most popular sports activities participated in the past four weeks both in and out of school were football (including five-a-side) (53%), basketball (including mini-basketball) (29%) and swimming, diving or lifesaving (28%).

Further details are provided in Tables C on page 13 and D on page 14 of the 2008/09 Taking Part Survey.

The National Travel Survey reports on the frequency of different types of travel including walking and cycling. This report shows that in Great Britain 2008, 59% of children aged 2 to 15, reported walking for 20 minutes or more, at least once a week.

Full details are available within the Transport Statistics Bulletin, National Travel Survey 2008. Section 5: Travel by age and gender on pages 28 to 33 of the NTS 2008 include further details of walking and cycling.

## 5.4 Participation in Physical Education and school sport

The PE and Sport Survey 2008/09 (which follows on from the 'School sports survey'), aims to collect information about the levels of participation in physical education (PE) and school sport in schools taking part in the School Sport Partnership programme in England. In total 21,464 schools and further education (FE) colleges took part in the survey between May and July 2009.

### 5.4.1 Participation in PE and school sport

The key findings from the survey show that in 2008/09, 50% of pupils in years 1-13 of participating schools took part in at least 3 hours of high quality PE and school sport in a typical week.

Among the three types of schools that were surveyed (primary, secondary and special), 57% of pupils in primary schools, 42% of pupils in secondary schools and 57% of pupils in special schools reported participating in at least three hours of high quality PE and school sport in a typical week.

### 5.4.2 Time spent on PE and school sport

The PE and Sport Survey covers physical activity both as part of the curriculum and activities that take place outside of school hours for example school sports clubs.

The key findings show that overall; pupils in years 1 to 13 in the partnership schools surveyed spent an average of 115 minutes in a typical week in 2008/09 on curriculum PE. Rates were similar across years 1 to 9, but were lower in years 10 and 11, then falling substantially in years 12 and 13 to just 31 minutes in year 12 and 27 minutes in year 13 of curriculum time per week.

The PE and Sport Survey 2008/09 includes full details of the amount of time children in partnership schools spend in PE and out of hours school sport including regional variations, the types of sports children participate in (Chapter 5, pages 23 to 25), participation in intra- and inter-school competitive activities (Chapter 4, pages 18 to 22) and links to other clubs and

organisations (Chapter 6, pages 26 and 27).

## 5.5 Parental participation

The HSE 2008 collected information on parental activity levels which allow analysis of children's physical activity by parental physical activity. Parental physical activity was classified in three categories, as with children's, though the definitions were different (see [Chapter 4](#) of this report for definitions). The key findings show that:

- A greater proportion of fathers than mothers reached the government physical activity recommendations based on self-reported data (46% and 38% respectively).
- Among boys aged 2 to 10, more met the physical activity recommendations for children if their parents did so for adults. Among boys aged 11 to 15 the same pattern was apparent for their fathers' activity levels but not for mothers'. Similarly, among both age groups, more boys were in the low activity category if their parents were also in this group.
- Among girls, the activity level of parents made relatively little difference to the proportion meeting recommendations, but those who had parents with low activity levels were considerably more likely to be in the low activity category themselves.

Further details of the influence of parental participation in physical activity on children's physical activity are given in Chapter 5: Self-reported physical activity in children, section 5.3.3, pages 125 and 126 and Table 5.6 on page 141 of the HSE 2008.

## 5.6 Sedentary behaviour

Sedentary time is at least as important as moderate physical activity as a disease factor. Sedentary behaviour is not merely the absence of physical activity; rather it is a class of behaviours that involve low levels of energy expenditure.

The HSE 2008 asked children about the amount of time spent in sedentary pursuits including time spent watching television, other screen time, reading and other sedentary pursuits.

In Chapter 5: Self-reported physical activity in children, of the HSE 2008, self-reported sedentary time is presented and the key findings show:

- The amount of time spent in sedentary pursuits was similar for boys and girls on weekdays (excluding time at school), with both boys and girls spending 3.4 hours in sedentary pursuits. Both boys and girls spent more time in sedentary pursuits on weekend days (4.1 hours for boys and 4.2 hours for girls).
- The pattern of sedentary behaviour differed with the age of children and between weekdays and weekend days. On weekdays, there was little variation among younger children, with fewer than 10% of those aged 2 to 9 years being sedentary for six or more hours, while the proportion rose steeply after this age. At weekends, the proportion that were sedentary for six or more hours generally increased across all age groups from 8% of boys and girls aged 2 to 40% of boys and 41% of girls aged 15.

Full details of the sedentary time of children and young people are available in Chapter 5: Self-reported physical activity in children, section 5.4.3, pages 130 to 132 of the HSE 2008. Details include analyses of sedentary time by Strategic Health Authority (SHA) (Table 5.17), BMI status (Table 5.20), equivalised household income (Table 5.18) and Spearhead PCT status (Table 5.19). Objective measures of sedentary were collected for children aged 4 to 15 by the accelerometers; these are discussed in Chapter 6: Accelerometry in children on pages 159 to 180 of the HSE 2008.

## 5.7 Attitudes and perceptions to physical activity

In the HSE 2007,<sup>5</sup> children aged 11 to 15 were asked about their knowledge and attitudes to physical activity. Information was collected on children's knowledge of how much physical activity they should do related to recommended physical activity targets, perception of their own physical activity levels and their desire to do more physical activity. The key findings from HSE 2007 showed that:

- When asked how much physical activity children should do, only one in 10 children aged 11 to 15 suggested that it should be 60 minutes or more each day and a further 8% of boys and 3% of girls overestimated the minimum recommendations.

- Most children perceive themselves as being either very or fairly physically active compared with children their own age (90% of boys and 84% of girls respectively).
- Girls were more likely than boys to want to do more physical activity (74% and 61% respectively). When asked about activities they would like to do more of in the future, boys most frequently mentioned ball sports (39%), riding a bike and swimming (both 35%), whereas girls were most likely to mention swimming (47%).

Full details on the behaviour, knowledge and attitudes towards physical activity are provided in Chapter 9: Children's physical activity, behaviour, knowledge and attitudes, pages 251 to 278 of the HSE 2007.

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# 6 Diet

## 6.1 Introduction

Poor diet and nutrition are recognised as major contributory risk factors for ill health and premature death. This chapter describes information available about purchases and consumption of food and drink among both adults and children. Most of this information comes from three major national surveys; the *Living Costs and Food Survey (LCF)*, the *National Diet and Nutrition Survey (NDNS)* and the *Health Survey for England (HSE)*.

The LCF collects information on the type and quantity of food and drink purchased in households. The LCF was previously known as the *Expenditure and Food Survey (EFS)*. It was renamed in 2008 when it became a module of the *Integrated Household Survey (IHS)*. Findings from the survey are published annually in the Family Food report, by the Department for Environment, Food and Rural Affairs (DEFRA), with *Family Food 2008*<sup>1</sup> being the most recent edition.

The NDNS collects data on consumption by individuals over a period of seven days. The most recent survey for which data are currently available was the NDNS of adults aged 19 to 64 living in Great Britain, which was conducted in 2000/01.<sup>2</sup> The NDNS has now moved to a rolling programme in which the survey will run continuously, covering both adults and children. At the time of writing no results from this new survey were available, but the year 1 results are expected to be published early in 2010, covering food consumption and nutrient intake.<sup>3</sup>

Data on fruit and vegetable consumption among both adults and children are taken from the HSE as this source is used to monitor the government's '5 a day' target, encouraging people to eat at least five portions of fruit and vegetables a day. Data presented in this chapter are taken from the HSE 2007<sup>4</sup> and the HSE 2008.<sup>5</sup>

## 6.2 Adults' diet

### 6.2.1 Trends in purchases and expenditure on food and drink

Estimates of expenditure and quantities of food and drink purchased and brought into the household have been collected since the mid 1970s by the National Food Survey (1974 to 2000), the Expenditure and Food Survey (EFS) (2001/02 to 2007) and subsequently the LCF (2008).

Family Food 2008 presents trends in purchases and expenditure on food and drink, based on the 2008 LCF. Table 1.1 on pages 4-5 of this report shows quantities of household purchases of food and drink in the UK between 2005/06 and 2008. Table 1.4 on page 7 shows expenditure on food and drink over the same period. Chapter 5 on pages 39 to 54 presents some analysis on how the rises in food prices in 2008 have affected spending patterns. Some key findings were:

- In 2008, in the UK, there has been a reduction in the quantities purchased in most major food groups compared with the previous year.
- Between 2007 and 2008, purchases of fresh fruit fell by 7.7% and fresh green vegetables by 9.6%. In 2008 fruit and

vegetables saw price rises of 7% and 8% respectively. Consumers spent almost the same amount as before on these foods; they bought less fruit and cheaper vegetables.

- In 2008 the average weekly expenditure on all food and drink was £36.83 per person. Between 2007 and 2008, most foods rose in price; on average there was a 9% rise in food prices. There have been significant upward trends in household expenditure on eggs, butter, bread and cereals.

Family Food 2008 also presents some regional analysis of food purchases, using data covering the combined years 2006-2008. Table 3.5 on pages 26-27 shows purchases of selected food groups by Government Office Region. Some findings were:

- Household purchases of vegetables were highest in the South West and lowest in the North West (1,282 and 1,001 grams per person per week respectively).
- Household purchases of fruit were highest in London and lowest in the North East (1,439 and 999 grams per person per week respectively).

## 6.2.2 Consumption of food and drink

The NDNS focuses on consumption of different food and drink types. The report of year 1 of the new NDNS, due to be published early in 2010, will provide data from 2008.<sup>3</sup>

Results from 2000/01 are available in National Diet and Nutrition Survey: Adults aged 19 to 64, Volume 5, 2004. Table 2.1 on pages 6 to 11 of this report shows quantities of food consumed in the previous

week for a variety of food types, by age and by gender. Some key findings were:

- In 2000/01, in Great Britain, milk, meat (including meat dishes and meat products), vegetables (including vegetable dishes but excluding potatoes) were consumed in the largest quantities (in grams). In terms of drinks, tea, coffee and water were consumed in the largest quantities.
- In 2000/01, younger people (aged 19 to 24) were more likely than older age groups to eat savoury snacks and to drink non-low calorie soft drinks. Those in the oldest age group surveyed (aged 50 to 64) were more likely to consume breakfast cereals, biscuits and cakes, puddings, yogurts, eggs, and fruit (excluding fruit juice) than those in other age groups.
- Men were more likely than women to consume fats and oils, meat and meat products, sugars and preserves, non-low calorie soft drinks and alcoholic drinks. Women were more likely to consume yogurt and fromage frais, fruit (excluding fruit juice) and low calorie soft drinks, and consumed larger quantities of fruit than men.

Between 2003 and 2005, the Food Standards Agency (FSA) carried out the Low Income Diet and Nutrition Survey (LIDNS), a survey similar to the NDNS, specifically covering people living in low income and materially deprived households. Table X2.1 on pages 11 to 12 of the Low Income Diet and Nutrition Survey: Executive Summary, 2007<sup>6</sup> shows daily consumption of a variety of food types for men and women in low income households, for the period 2003-2005.

A key comparison of data for adults (aged 19-64) from LIDNS with that from the NDNS suggests that the low income population consumes:

- fewer portions of wholemeal bread, fruit and vegetables than the general population.
- more fat spreads, non-diet soft drinks, meat and meat dishes (beef, veal, lamb and pork), pizza, processed meats, whole milk and table sugar than the general population.

### 6.2.3 Fruit and vegetable consumption

Data on the consumption of fruit and vegetables are given in Chapter 10 on pages 241 to 259 of the HSE 2008 report and in Table 10 of the HSE 2008 Adult Trend tables.<sup>7</sup> Tables 10.1 and 10.2 (pages 250 and 251) show daily consumption and types of fruit and vegetables consumed by age and gender, Tables 10.3 and 10.4 (pages 252 to 255) show these data by Strategic Health Authority (SHA) and Tables 10.5 and 10.6 (pages 256 and 257) by equivalised household income. Some key findings were:

- In 2008, 25% of men and 29% of women reported meeting the government '5 a day' guidelines for fruit and vegetable consumption.
- Fruit and vegetable consumption increased between 2001 and 2007, from 22% to 27% among men consuming 5 portions or more and from 25% to 31% among women, but has fallen in 2008 (25% for men and 29% for women). Further years' data are needed to see whether or not this fall represents an underlying trend in consumption.
- Those consuming five portions a day, varied by age group. For 16-24 year olds this was 18% of men and 21% of women and for 55-64 year olds this was 32% of men and 36% of women.

- Fresh fruit, vegetables, fruit juice, pulses and salad were the most commonly consumed types of fruit and vegetable.
- Women were more likely than men to consume most food types, with the exception of pulses. For example, fresh fruit was consumed by 69% of women and 61% of men, and salads by 36% of women and 29% of men.
- The proportion of adults meeting government recommendations of five portions per day was lowest in the North East (20% of men and 23% of women) and North West (20% of men and 25% of women) SHAs, and highest in London SHA (34% of men and 36% of women).
- Higher consumption was associated with higher income; 33% of men and 39% of women in the highest income quintile had consumed five or more portions, but only 20% of men and 21% of women in the lowest had done so.

### 6.2.4 Knowledge and attitudes

Chapter 5 on pages 107 to 147 of the HSE 2007 report asked respondents about their knowledge of and attitudes towards diet and healthy eating. Tables 5.7 and 5.8 (pages 133 and 134) present data on knowledge of fruit and vegetable guidelines, Tables 5.10 and 5.11 (pages 136 and 137) show data on perceptions of diet, Tables 5.12 to 5.16 (pages 138 to 143) on attitudes to healthy eating and Table 5.17 (page 144) on barriers to improving diet. Some key findings were:

- A higher proportion of women (78%) than men (62%) correctly stated that five portions of fruit and vegetables should be consumed per day.

- The majority of participants believed their own diet to be 'quite' healthy (71% for men and 72% for women). Women were more likely to consider that they had a 'very' healthy diet compared with men (19% and 16% respectively) and less likely to report their diet as being 'not very healthy/very unhealthy' (8% of women and 12% of men).
- The majority of men and women agreed with the statements 'Healthy foods are enjoyable' (66% of men and 80% of women) and 'I really care about what I eat' (64% of men and 74% women). Few agreed that 'Healthy eating is just another fad' (10% of men and 8% of women).

### 6.2.5 Energy and macronutrients from food and drink

Trends in energy and nutrient intake are available from Family Food 2008. Table 2.1 on pages 13-14 of this report shows estimated UK average energy and nutrient intakes between 2005/06 and 2008. Tables 2.3 and 2.4 on pages 16 and 17 show estimated energy intakes from different types of foods in 2008. Key findings were:

- Overall energy intake per person is on a downward trend. Total energy intake for 2008 was 2,276 kcal per person per day, a decrease of 1.9% on the previous year.
- A third of energy from household purchases is derived from a combination of bread, other cereal products and non-carcase meat and meat products.
- Intake of sodium is on a downward trend, with intake in 2008 being 9.9% lower than in 2005/06. Intakes of non-milk extrinsic sugars (NMES, sugars not derived from milk or whole fruit) are

also on a downward trend, falling 5.0% between 2005/06 and 2008.

Family Food 2008 also presents some regional analysis of energy intake, using data covering the combined years 2006-2008. Table 3.6 on pages 28-29 shows energy and nutrient intakes by Government Office Region. Some findings were:

- Total energy intake was highest in the South West (2,406 kcal per day) and lowest in the North West and North East (2,229 and 2,235 kcal per day respectively).
- London had the lowest percentage of energy intake from NMES (12.5% compared with 13.9%-14.7% in the other regions).

The forthcoming report of year 1 of the new NDNS will include findings on energy and macronutrient intakes. Table 3.4 on page 26 of National Diet and Nutrition Survey: Adults aged 19 to 64, Volume 5 2004<sup>2</sup> shows daily intake of energy and macronutrients compared with Dietary Reference Values (DRVs). Table 3.9 on page 48 shows energy and macronutrient intakes for adults, comparing 1986/87 with 2000/01. Some key findings were:

- In 2000/01, men had higher energy and macronutrient intakes than women in all age groups.
- For both men and women, the proportion of food energy derived from carbohydrate was just under the recommended minimum of 50% of energy intake. Energy from total fat was around the recommended maximum of 35% of energy intake. However, intake of NMES were 14% for men and 12% for women and intakes of saturated fats were 13% for both men and women, which exceeded the maximum recommendations of 11% of energy

intake for both NMES and saturated fats.

- Almost a third (31%) of total energy intake was derived from cereals and cereal products, 15% from meat and meat products, 10% from milk and milk products, 10% from drinks (including alcohol) and 9% from potatoes and savoury snacks.

## 6.3 Children's diet

### 6.3.1 Consumption of food and drink

The last National Diet and Nutrition Survey (NDNS) to include children was published in 2000.<sup>8</sup> The new NDNS covers both adults and children and results for 2008 will be available early in 2010.

A study on School Meals in Primary Schools in England,<sup>9</sup> was published in 2006. The aim of the study was to assess whether school lunches in maintained primary schools in England complied with statutory nutritional standards and associated guidance.

### 6.3.2 Fruit and vegetable consumption

Data on the consumption of fruit and vegetables among children aged 5 to 15 years are given in chapter 14 on pages 333 to 348 of volume 1 of the HSE 2008. Tables 14.1 to 14.3 (pages 342 to 345) show daily consumption and types of fruit and vegetables consumed by age and gender, Table 14.4 (page 346) shows daily consumption by Strategic Health Authority (SHA) and Table 14.5 (page 347) by equivalised household income. Some key findings were:

- In 2008, around one in five boys and girls met the government's recommended guidelines of five portions a day (19% of boys and 20% of girls). Overall, the mean number of portions consumed was 3.1 portions for boys and 3.3 portions for girls.
- Fresh fruit was the most commonly eaten item. More girls than boys reported eating fresh fruit the previous day (72% of girls and 68% of boys). The consumption of fresh fruit was related to age, with younger children consuming more fresh fruit than older children.
- A higher proportion of boys and girls living in the South Central SHA consumed five or more portions of fruit and vegetables per day than children in other regions (25% of boys compared with 15-23% in other regions and 33% of girls compared with 13-24% in other regions).
- Boys and girls living in households in the highest income quintile were the most likely to meet the '5 a day' recommendations (27% of boys and 30% of girls). There was little variation among those in the lower quintiles (from 16% to 19% of boys and 17% to 20% of girls).

### 6.3.3 Knowledge and attitudes

Chapter 10 on pages 279 to 308 of the HSE 2007 asked children aged between 11 and 15 about their knowledge of and attitudes towards diet and healthy eating. Tables 10.6 and 10.7 (page 300) show data on knowledge of fruit and vegetable consumption, Table 10.8 (page 301) on perception of diet, Tables 10.9 to 10.13 (pages 302 to 306) on attitudes to healthy eating and 10.14 and 10.15 (pages 307) on

factors affecting improvement in diet. Some key findings were:

- Around two in three boys and three in four girls accurately reported that five portions of fruit and vegetables should be consumed each day. However, only 22% of boys and 21% of girls could correctly identify what a portion was.
- More than four in five children regarded their diet as healthy with most saying it was 'quite healthy' (70% of boys and 72% of girls) rather than 'very healthy' (13% of both boys and girls). Only 1% thought that their diet was 'very unhealthy'.
- The majority of children aged 11-15 agreed that 'Healthy foods are enjoyable' (72% of girls and 64% of boys). There was a more even spread of agreement, disagreement and neutral views about the statement 'The tastiest foods are the ones that are bad for you'.

### 6.3.4 Children in low income families

The Low Income Diet and Nutrition Survey (LIDNS) covered children aged 2 to 18 as well as adults. Table X2.1 on page 11 of the Low Income Diet and Nutrition Survey: Executive Summary, 2007 shows daily consumption of a variety of food types for boys and girls in low income households, for the period 2003-2005. Some key findings were:

- Of the children in low income families surveyed, over 80% consumed white bread, chips (and other fried or roast potato products) and crisps and other

savoury snacks during the dietary recall periods.

- Boys were more likely to consume foods such as burgers, kebabs, meat pies and pastries than girls, whereas girls were more likely to eat foods such as rice, salad vegetables, fruit and fruit juice.
- Fruit and vegetable consumption among children in low income households was very low, with only 1% of boys and 4% of girls reporting consuming five or more portions a day.
- For both boys and girls, the proportion of food energy derived from carbohydrates (50.8% and 51.0% respectively) was just above the recommended minimum of 50%. Energy from total fat (36.1% and 35.7% respectively) was above the recommended maximum of 35%. Intakes NMES (17.1% and 16.5% respectively) and saturated fats (14.2% and 14.0% respectively) exceeded the maximum recommendation of 11% of energy intake for both macronutrients.

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## 7 Health outcomes

### 7.1 Introduction

The link between obesity and increased risk of many serious diseases and mortality is well documented and has led to the National Institute for Health and Clinical Excellence (NICE) developing guidelines on identifying and treating obesity.<sup>1</sup> This chapter focuses on the health outcomes related to being overweight and obese.

Information from the National Audit Office<sup>2</sup> (NAO) and a House of Commons Select Committee report,<sup>3</sup> is used to establish the broad risk of death and disease associated with obesity. Data from the Health Survey for England 2007 (HSE 2007)<sup>4</sup> are used to analyse the relationships between Body Mass Index (BMI) and waist circumference and the prevalence of selected diseases in the population.

Data on finished admissions and consultant episodes related to a diagnosis of obesity are presented using the *Hospital Episode Statistics (HES) databank*<sup>5</sup> produced by the NHS Information Centre for health and social care (NHS IC).

The final part presents information on prescription drugs used for the treatment of obesity from the Prescribing Unit at the NHS IC,<sup>6</sup> including data on the number of items prescribed and the net ingredient cost of drugs used in the treatment of obesity. [Tables 7.13](#) and [7.14](#) show information on the drug Sibutramine. From February 2010, prescribers have been advised not to issue any new prescriptions for Sibutramine and to review the treatment of patients taking the drug following evidence suggesting that there is an increased risk of non-fatal heart attacks

and strokes with this medicine that outweighs the benefits of weight loss, which is modest and may not be sustained in the long term after stopping treatment. Suspension of the drug has been recommended following a European-wide review.

### 7.2 Relative risks of diseases and death

Obesity is a major public health problem due to its association with serious chronic diseases such as type 2 diabetes, hypertension (high blood pressure), and hyperlipidaemia (high levels of fats in the blood that can lead to narrowing and blockages of blood vessels), which are major risk factors for cardiovascular disease and cardiovascular related mortality. Obesity is also associated with cancer, disability, reduced quality of life, and can lead to premature death.

[Figure 7.1](#) shows the extent to which obesity increases the risks of developing a number of diseases relative to the non-obese population. For example, it is estimated that an obese woman is almost 13 times more likely to develop type 2 diabetes than a woman who is not obese. These relative risks are based on a comprehensive review of international literature carried out by the NAO to provide the best estimates that could be applied to England (see [Appendix A](#) for more details). The basis of the estimates varies due to differences in the methodologies of the studies selected, but the table gives a broad indication of the strength of association between obesity and each of the diseases.

**Figure 7.1 Relative risk factors for obese people of developing selected diseases, by gender**

England	Numbers	
	Men	Women
Type 2 diabetes	5.2	12.7
Hypertension	2.6	4.2
Myocardial infarction	1.5	3.2
Cancer of the colon	3.0	2.7
Angina	1.8	1.8
Gall bladder diseases	1.8	1.8
Ovarian cancer	-	1.7
Osteoarthritis	1.9	1.4
Stroke	1.3	1.3

**Source:**

National Audit Office, NAO

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The NAO estimated that in 1998 over 30,000 deaths in England were attributable to obesity, approximately 6% of all deaths in that year. Around 9,000 of these were premature deaths (i.e. occurred before state retirement age). In 2004, research by a House of Commons Select Committee, estimated that 34,100 deaths were attributable to obesity. This equates to 6.8% of all deaths in England.

## 7.3 Relationships between obesity prevalence and selected diseases

Guidance published by the National Institute for Health and Clinical Excellence (NICE) recommends the use of waist circumference in conjunction with BMI for assessing the health risks associated with being overweight or obese. A raised waist circumference is defined as greater than 102cm in men and greater than 88cm in women.

This section looks at the relationship between having an increased BMI and selected diseases and also considers the effect of having a raised waist

circumference, using data from HSE 2007. For further information please see [Appendix B](#). In this section, where obese men and women or obesity is referred to it includes morbidly obese.

### 7.3.1 Blood pressure

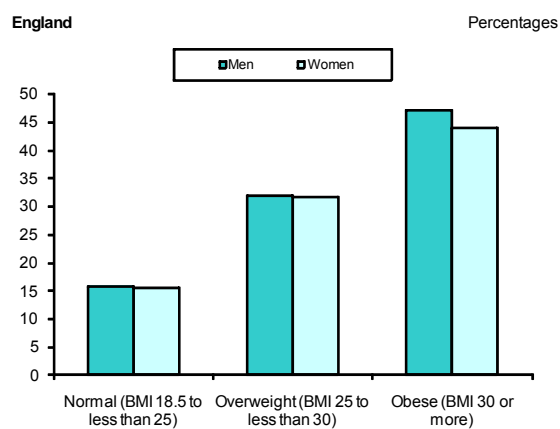
Table 1 from the HSE 2008 Adult Trend tables<sup>7</sup> shows the latest trend information on blood pressure levels by age and gender for 2003-2008.

Within this section, the latest information on blood pressure by BMI and waist circumference have been updated using data from HSE 2007.

Among adults aged 16 and over, the prevalence of high blood pressure (whether controlled with medication or not) was found to be affected by both increased BMI and raised waist circumference.

[Table 7.1](#) shows that overweight men and women were more likely to have high blood pressure than those in the normal weight group (32% compared to 16% in the normal weight group for both men and women), while obese men and women were most likely to have high blood pressure (47% and 44% respectively). This is also shown in [Figure 7.2](#).

**Figure 7.2 High blood pressure by Body Mass Index (BMI) and gender, 2007**



Source: Health Survey for England 2007. The NHS Information Centre

Table 7.2 shows that men with a raised waist circumference were more than twice as likely to have high blood pressure as those with a waist circumference of 102cm or less (50% compared with 22%). The pattern was similar for women; 43% of those with a raised waist circumference had high blood pressure, compared with 19% of those with a waist circumference of 88cm or less.

### 7.3.2 Longstanding illness

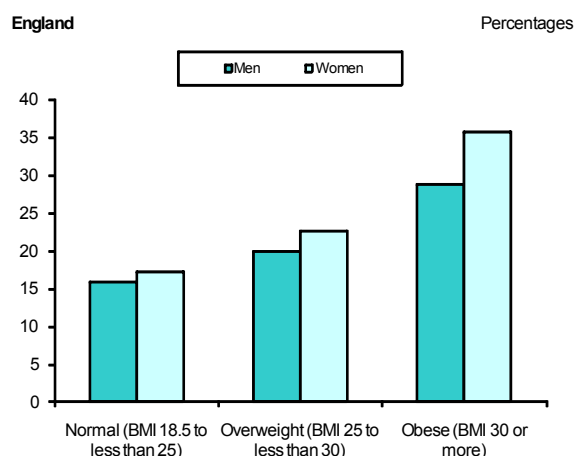
Table 11 from the HSE 2008 Adult Trend tables shows the latest trend information on general health, longstanding illness and acute sickness by gender for 1993-2008.

Within this section, the latest information on longstanding illness by BMI and waist circumference have been updated using data from HSE 2007.

Table 7.3 shows that the prevalence of limiting longstanding illness (whereby a longstanding illness limits the respondents' activity in some way) was higher among obese men and women (29% and 36% respectively) than those in the normal weight group (16% and 17% respectively).

Men and women who were obese were also more likely to report a non-limiting longstanding illness than men and women in the normal weight group. This is also shown in Figure 7.3.

**Figure 7.3 Limiting longstanding illness by Body Mass Index (BMI) and gender, 2007**



Source: Health Survey for England 2007. The NHS Information Centre

Table 7.4 shows that both men and women with a raised waist circumference were more likely to report having a limiting longstanding illness than those without a raised waist circumference.

### 7.3.3 Other conditions

Chapter 7 of *Statistics on obesity, physical activity and diet: England, 2009*<sup>8</sup> discusses cardiovascular disease, diabetes and general health and their relationships with BMI and waist circumference, using data from the HSE 2006.<sup>9</sup> The relevant data were not collected in the HSE 2007 so have not been updated in this report. The main findings from the HSE 2006 data were:

- Obese men and women were more likely to have a cardiovascular disease than those in the normal weight group.

The same was true for men and women with a raised waist circumference.

- The prevalence of doctor diagnosed diabetes was higher in men and women who were overweight or obese than in those of normal weight. The same was true for those with a raised waist circumference.

## 7.4 Hospital Episode Statistics

Data on Finished Admission Episodes (FAEs) and Finished Consultant Episodes (FCEs) are available from the *Hospital Episode Statistics (HES) databank*. This section presents FAEs in England where there was a primary or secondary diagnosis of obesity and FCEs in England for where there was a primary diagnosis of obesity and a main or secondary procedure of bariatric surgery. These data are based on the tenth revision of the International Classification of Diseases (ICD-10).<sup>10</sup> The FCE data for bariatric surgery are based on the Office for Population, Censuses and Surveys: Classification of Intervention and Procedures, 4<sup>th</sup> Revision (OPCS-4) codes.<sup>11</sup> The most recent data available are for the financial year 2008/09.

### 7.4.1 Finished admission episodes with a diagnosis of obesity

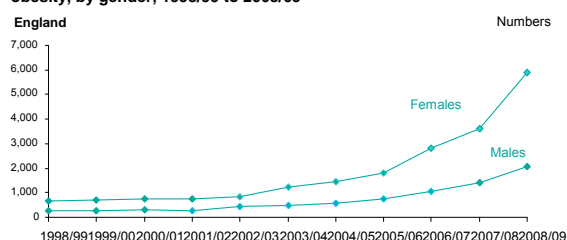
A Finished Admission Episode (FAE) is the first period of inpatient care under one consultant within one healthcare provider. It should be noted that admissions do not represent the number of inpatients, as a person may have more than one admission within the year. In this chapter an FAE is referred to as a 'hospital admission'.

Table 7.5 shows that in 2008/09 there were 7,988 hospital admissions with a primary

diagnosis of obesity among people of all ages. This is over eight times as high as the number in 1998/99 (954) and more than 50% higher than in 2007/08 (5,018).

Over the period 1998/99 to 2008/09, in almost every year, more than twice as many females were admitted to hospital than males, with a primary diagnosis of obesity (Figure 7.4).

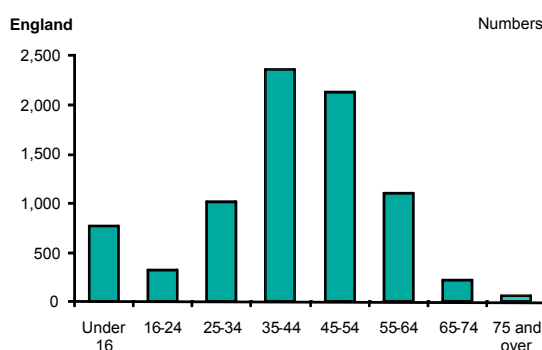
Figure 7.4 Finished Admission Episodes with a primary diagnosis of obesity, by gender, 1998/99 to 2008/09



Source: Hospital Episode Statistics, HES. The NHS Information Centre

In 2008/09, the age groups with the highest number of admissions with a primary diagnosis of obesity were those aged 35 to 44 (2,359) and those aged 45 to 54 (2,133). Together these two age groups accounted for more than half of all such admissions (Table 7.6, Figure 7.5).

Figure 7.5 Finished Admission Episodes with a primary diagnosis of obesity, by age, 2008/09

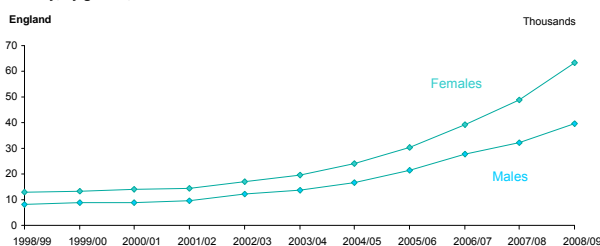


Source: Hospital Episode Statistics, HES. The NHS Information Centre

Among Strategic Health Authorities (SHAs) in 2008/09, almost a quarter of admissions with a primary diagnosis of obesity occurred in East Midlands SHA (1,916), with the next highest number in London SHA (1,334). East Midlands SHA had the highest rate of admissions per 100,000 of the population (43) and South Central SHA had the lowest (6). As with the national data, more females were admitted to hospital with a primary diagnosis of obesity than males in each of the SHAs. Note that admission figures cannot be used to compare prevalence of obesity between areas as people may travel for treatment and treatment may be concentrated in some areas. Also SHAs may adopt different treatment practices (Table 7.7).

In 2008/09, there were 102,987 admissions with a mention of obesity (i.e. a primary or a secondary diagnosis), compared with 80,914 in 2007/08. These data show that obesity is far more likely to be recorded as a secondary than a primary diagnosis. Females are more likely than males to be admitted to hospital with either a primary or secondary diagnosis of obesity (but not to the same extent as for primary diagnoses only) (Table 7.8, Figure 7.6).

Figure 7.6 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by gender, 1998/99 to 2008/09



Source: Hospital Episode Statistics, HES. The NHS Information Centre

Table 7.9 shows that in 2008/09, adults aged 55 to 64 had the highest number of hospital admissions with either a primary or secondary diagnosis of obesity (23,136), followed by those aged 45 to 54 years

(19,971) and 65 to 74 years (18,234). This pattern differs from that for admissions with a primary diagnosis only, where it was shown that the highest number of admissions occurred in those aged 35 to 44.

The North West SHA had both the largest number of admissions with either a primary or secondary diagnosis of obesity (19,184) and the highest admission rate (279 per 100,000 population). South Central SHA reported the least number of admissions (5,749) and the lowest admission rate (142 per 100,000 of the population). The consistency of reporting diagnoses may vary by SHA and needs to be considered when interpreting these data (Table 7.10).

## 7.4.2 Bariatric surgery

The term 'bariatric surgery' is used to define a group of procedures that can be performed to facilitate weight loss, although these procedures can also be performed for other conditions. It includes stomach stapling, gastric bypasses and sleeve gastrectomy, performed on the stomach and/or intestines to limit the amount of food an individual can consume. Such surgery is used in the treatment of obesity for people with a BMI above 40, or for those with a BMI between 35 and 40 who have health problems such as type 2 diabetes or heart disease.

Table 7.11 shows the number of Finished Consultant Episodes (FCEs) where there was a primary diagnosis of obesity and the main or secondary procedure was recorded as one of codes used to define bariatric surgery for the purpose of this report (see Appendix B for a full list of these procedure codes). An FCE is defined as a period of admitted patient care under one consultant within one healthcare provider. The figures do not represent the number of patients as a person may have more than one episode

of care within the same stay in hospital or in different stays in the same year.

Surgical procedures are recorded using the Office of Population, Censuses and Surveys: Classification of Interventions and Procedures, 4<sup>th</sup> Revision (OPCS-4) codes. An updated version of these codes was introduced in 2006/07 and again in 2007/08. Results based on the old coding system cannot be compared with results based on the revised systems so data for 2006/07 to 2008/09 are presented separately from previous years. See [Appendix B](#) for further details.

There was a year on year increase in the number of FCEs for bariatric surgery from 148 in 1996/97 to 1,038 in 2005/06. Annually the ratio of these FCEs between men and women remained relatively constant with around eight in ten FCEs involving female patients ([Table 7.11](#)).

Using the new classifications, in 2008/09 there were 4,221 FCEs for bariatric surgery. This is more than double the number in 2006/07 (1,951) and 55% more than the number in 2007/08 (2724). Females continue to account for the majority of these; in 2008/09 there were 969 such FCEs for males and 3,251 for females ([Table 7.12](#)).

London SHA had the highest number of FCEs for bariatric surgery in 2008/09 (909), while South Central SHA had the lowest (157). London and East Midlands SHAs had the highest numbers of FCEs per 100,000 of the population, this value being 12 for both of these regions. The SHAs with the lowest values were East of England and South Central SHAs, both with 4 FCEs per 100,000 of the population. Again, the fact that people may travel for treatment and that specialist treatment may be concentrated in some areas should be

considered when interpreting these figures ([Table 7.12](#)).

## 7.5 Prescribing

The two drugs most commonly prescribed for the treatment of obesity by GP practices in England are Orlistat (Xenical) and Sibutramine (Reductil). Orlistat is a capsule that prevents the absorption of some fat in the intestine, while Sibutramine works in the brain by altering the chemical messages that control how the person taking it feels and thinks about food. From February 2010, prescribers have been advised not to issue any new prescriptions for Sibutramine and to review the treatment of patients taking the drug following evidence suggesting that there is an increased risk of non-fatal heart attacks and strokes with this medicine that outweighs the benefits of weight loss, which is modest and may not be sustained in the long term after stopping treatment. Suspension of the drug has been recommended following a European-wide review.

In 2008, there were 1.28 million prescription items for drugs for the treatment of obesity. Overall, the number of prescription items in 2008 was ten times the number in 1999, when there were 127 thousand prescription items for drugs for the treatment of obesity. The Net Ingredient Cost (NIC) is the basic cost of a drug, not taking into account discounts, dispensing costs, fees or prescription charges income. The total NIC for drugs for the treatment of obesity increased from £4.9 million in 1999 to £51.6 million in 2007, but fell in 2008 to £44.8 million. Correspondingly, the NIC per item increased from £38 in 1999 to £42 in 2007, then fell to £35 in 2008 ([Table 7.13](#)).

Around two thirds (66%) of the total number of prescription items in 2008 for obesity drugs were for Orlistat and a quarter (25%) were for Sibutramine (Figure 7.7).

Figure 7.7 Number of prescription items for the main drugs used for the treatment of obesity dispensed in primary care, 1999 to 2008

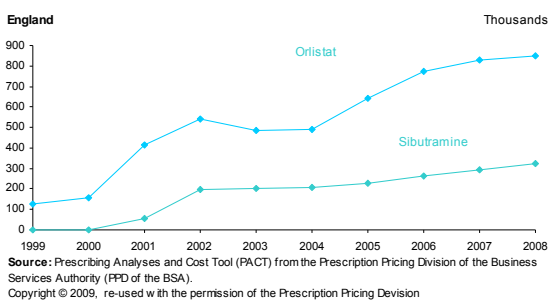
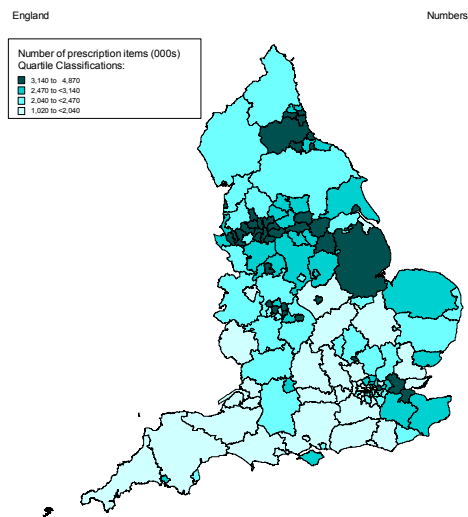


Table 7.14 shows prescription data for treatment of obesity by Strategic Health Authority. North West SHA had the greatest number of prescription items in total (227 thousand) and per head of population (3.3 thousand items per 100,000). South Central SHA had the lowest with 67 thousand items, equating to just over one thousand items per 100,000 population.

Figure 7.8 shows that the number of prescription items dispensed for the treatment of obesity per 100,000 of the population in each primary care trust (PCT) varies by PCT, with the lowest number of items prescribed being predominantly in the south west.

Figure 7.8 Number of prescription items dispensed for treatment of obesity per 100,000 of the population, by PCT, 2008



Data sources: ONS Boundary Files 2008, Prescribing Analyses and Cost (PACT) from the Prescription Services a division of the NHS Business Services Authority

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**Table 7.1 Blood pressure level by body mass index (BMI) and gender, 2007**

England	Percentages				
	Total	Underweight	Normal	Overweight	Obese (including morbidly obese)
<b>Men</b>					
Normotensive untreated	69	*	84	68	53
Hypertensive controlled	8	*	4	7	14
Hypertensive uncontrolled	6	*	2	7	9
Hypertensive untreated	17	*	10	18	24
<b>All with high blood pressure</b>	<b>31</b>	<b>*</b>	<b>16</b>	<b>32</b>	<b>47</b>
<b>Women</b>					
Normotensive untreated	71	[91]	84	68	56
Hypertensive controlled	8	[2]	4	8	14
Hypertensive uncontrolled	7	[0]	3	8	12
Hypertensive untreated	14	[7]	9	15	18
<b>All with high blood pressure</b>	<b>29</b>	<b>[9]</b>	<b>16</b>	<b>32</b>	<b>44</b>
<i>Unweighted bases</i>					
<i>Men</i>	1,880	20	520	760	450
<i>Women</i>	2,270	30	820	670	550
<i>Weighted bases</i>					
<i>Men</i>	2,021	20	605	786	466
<i>Women</i>	2,090	33	784	601	485

1. See Appendix B for explanations of blood pressure categories
  2. All figures are based on those with a valid blood pressure measurement
  3. BMI categories used for classifying levels of obesity are: underweight = BMI less than 18.5, normal = BMI 18.5 to less than 25, overweight = BMI 25 to less than 30, obese (including morbidly obese) = BMI 30 or more
  4. Total includes those without a valid BMI recorded
  5. Adults aged 16 and over
  6. Hypertensive controlled/uncontrolled are those who take drugs that were prescribed specifically to lower their blood pressure
  7. All with high blood pressure are those who are hypertensive (BP >= 140/90mmHg) or not hypertensive but on treatment that lowers blood pressure
  8. Unweighted bases have been rounded to the nearest 10
- \* Prevalence data not shown as base is less than 30  
 [ ] Results in brackets should be treated with caution because of the low base size (below 50)

**Source:**

Health Survey for England 2007, The NHS Information Centre for health and social care

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**Table 7.2 Blood pressure level by waist circumference and gender, 2007**

England	Percentages		
	Total	Non raised waist circumference	Raised waist circumference
<b>Men</b>			
Normotensive untreated	69	78	50
Hypertensive controlled	8	5	14
Hypertensive uncontrolled	6	4	11
Hypertensive untreated	17	13	25
<b>All with high blood pressure</b>	<b>31</b>	<b>22</b>	<b>50</b>
<b>Women</b>			
Normotensive untreated	71	81	57
Hypertensive controlled	8	5	14
Hypertensive uncontrolled	7	4	11
Hypertensive untreated	14	11	17
<b>All with high blood pressure</b>	<b>29</b>	<b>19</b>	<b>43</b>
<i>Unweighted bases</i>			
<i>Men</i>	<i>1,880</i>	<i>1,190</i>	<i>660</i>
<i>Women</i>	<i>2,270</i>	<i>1,260</i>	<i>960</i>
<i>Weighted bases</i>			
<i>Men</i>	<i>2,021</i>	<i>1,327</i>	<i>661</i>
<i>Women</i>	<i>2,090</i>	<i>1,207</i>	<i>837</i>

1. See Appendix B for explanations of blood pressure categories
2. All figures are based on those with a valid blood pressure measurement
3. A raised waist circumference is defined as greater than 102cm in men and greater than 88cm in women.
4. Total includes those without a valid waist circumference recorded
5. Adults aged 16 and over
6. Hypertensive controlled/uncontrolled are those who take drugs that were prescribed specifically to lower their blood pressure
7. All with high blood pressure are those who are hypertensive (BP  $\geq$  140/90mmHg) or not hypertensive but on treatment that lowers blood pressure
8. Unweighted bases have been rounded to the nearest 10

**Source:**

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**Table 7.3 Longstanding illness by body mass index (BMI) and gender, 2007**

England	Percentages				
	Total	Underweight	Normal	Overweight	Obese (including morbidly obese)
<b>Men</b>					
Limiting Longstanding Illness	22	*	16	20	29
Non limiting Longstanding Illness	20	*	17	22	23
No Longstanding Illness	58	*	67	58	48
<b>Women</b>					
Limiting Longstanding Illness	25	21	17	23	36
Non limiting Longstanding Illness	18	14	17	19	23
No Longstanding Illness	56	64	66	58	41
<i>Unweighted bases</i>					
<i>Men</i>	3,070	30	870	1,160	670
<i>Women</i>	3,810	60	1,290	1,050	810
<i>Weighted bases</i>					
<i>Men</i>	3,384	35	1,016	1,246	711
<i>Women</i>	3,554	59	1,241	955	728

1. BMI categories used for classifying levels of obesity are: underweight = BMI less than 18.5, normal = BMI 18.5 to less than 25, overweight = BMI 25 to less than 30, obese (including morbidly obese) = BMI 30 or more

2. Total includes those without a valid BMI recorded

3. Adults aged 16 and over

4. Unweighted bases have been rounded to the nearest 10

\* Prevalence data not shown as base is less than 30

**Source:**

Health Survey for England 2007, The NHS Information Centre for health and social care

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**Table 7.4 Longstanding illness by waist circumference and gender, 2007**

England	Percentages		
	Total	Non raised waist circumference	Raised waist circumference
<b>Men</b>			
Limiting Longstanding Illness	22	18	32
Non limiting Longstanding Illness	20	20	25
No Longstanding Illness	58	62	44
<b>Women</b>			
Limiting Longstanding Illness	25	19	35
Non limiting Longstanding Illness	18	17	23
No Longstanding Illness	56	64	42
<i>Unweighted bases</i>			
<i>Men</i>	<i>3,070</i>	<i>1,400</i>	<i>790</i>
<i>Women</i>	<i>3,810</i>	<i>1,490</i>	<i>1,140</i>
<i>Weighted bases</i>			
<i>Men</i>	<i>3,384</i>	<i>1,601</i>	<i>789</i>
<i>Women</i>	<i>3,554</i>	<i>1,439</i>	<i>1,010</i>

1. A raised waist circumference is defined as greater than 102cm in men and greater than 88cm in women.
2. Total includes those without a valid waist circumference recorded
3. Adults aged 16 and over
4. Unweighted bases have been rounded to the nearest 10

**Source:**

Health Survey for England 2007, The NHS Information Centre for health and social care

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**Table 7.5 Finished Admission Episodes with a primary diagnosis of obesity, by gender, 1998/99 to 2008/09**

England	Numbers		
	Total	Males	Females
1998/99	954	270	682
1999/00	979	275	704
2000/01	1,054	309	741
2001/02	1,019	284	731
2002/03	1,275	427	848
2003/04	1,711	498	1,213
2004/05	2,035	589	1,442
2005/06	2,564	746	1,786
2006/07	3,862	1,047	2,807
2007/08	5,018	1,405	3,613
2008/09	7,988	2,077	5,910

1. A finished admission episode (FAE) is the first period of inpatient care under one consultant within one healthcare provider. FAEs are counted against the year in which the admission episode finishes. Admissions do not represent the number of inpatients, as a person may have more than one admission within the year

2. The primary diagnosis is the first of up to 20 (14 from 2002-03 to 2006-07 and 7 prior to 2002-03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital

3. ICD-10 Codes: E66 - Obesity

4. Figures have not been adjusted for shortfalls in data

5. Counts include people resident in English Strategic Health Authorities (SHAs) only, including admissions where the SHA of residence was England but not further specified and excludes admissions where the SHA of residence was unknown

6. Total includes admissions where the gender was unknown

**Source:**

Hospital Episode Statistics (HES), The NHS Information Centre for health and social care

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**Table 7.6 Finished Admission Episodes with a primary diagnosis of obesity, by age group, 1998/99 to 2008/09**

England	Numbers								
	Total	Under 16	16-24	25-34	35-44	45-54	55-64	65-74	75 and over
1998/99	954	207	39	164	243	148	85	40	28
1999/00	979	220	33	171	226	167	87	49	26
2000/01	1,054	226	45	147	255	214	96	56	14
2001/02	1,019	237	39	134	240	199	97	48	21
2002/03	1,275	400	65	136	289	216	94	52	23
2003/04	1,711	579	67	174	391	273	151	52	24
2004/05	2,035	547	107	287	487	364	174	36	32
2005/06	2,564	583	96	341	637	554	258	72	20
2006/07	3,862	656	184	461	1,069	872	459	118	43
2007/08	5,018	747	228	564	1,469	1,198	598	157	53
2008/09	7,988	775	322	1,013	2,359	2,133	1,099	221	63

1. A finished admission episode (FAE) is the first period of inpatient care under one consultant within one healthcare provider. FAEs are counted against the year in which the admission episode finishes. Admissions do not represent the number of inpatients, as a person may have more than one admission within the year
2. The primary diagnosis is the first of up to 20 (14 from 2002-03 to 2006-07 and 7 prior to 2002-03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital
3. ICD-10 Codes: E66 - Obesity
4. Figures have not been adjusted for shortfalls in data
5. Counts include people resident in English Strategic Health Authorities (SHAs) only, including admissions where the SHA of residence was England but not further specified and excludes admissions where the SHA of residence was unknown
6. Total includes admissions where the age was unknown

**Source:**

Hospital Episode Statistics, HES. The NHS Information Centre for Health and Social Care

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**Table 7.7 Finished Admission Episodes with a primary diagnosis of obesity, by Strategic Health Authority (SHA) of residence and gender, 2008/09**

England	Numbers					
	Admissions			Admissions per 100,000 of population		
	Total	Male	Female	Total	Male	Female
England	7,988	2,077	5,910	16	8	23
North East SHA	487	126	361	19	10	27
North West SHA	757	249	508	11	7	15
Yorkshire and the Humber SHA	855	230	625	16	9	24
East Midlands SHA	1,916	363	1,553	43	17	69
West Midlands SHA	632	180	452	12	7	16
East of England SHA	582	183	399	10	6	14
London SHA	1,334	363	971	18	10	25
South East Coast SHA	563	137	426	13	7	19
South Central SHA	252	71	181	6	4	9
South West SHA	607	173	433	12	7	16

1. A finished admission episode (FAE) is the first period of inpatient care under one consultant within one healthcare provider. FAEs are counted against the year in which the admission episode finishes. Admissions do not represent the number of inpatients, as a person may have more than one admission within the year
2. The primary diagnosis is the first of up to 20 (14 from 2002-03 to 2006-07 and 7 prior to 2002-03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital
3. ICD-10 Codes: E66 - Obesity
4. Figures have not been adjusted for shortfalls in data
5. Counts include people resident in English Strategic Health Authorities (SHAs) only, including admissions where the SHA of residence was England but not further specified and excludes admissions where the SHA of residence was unknown
6. Office for National Statistics (ONS) estimated resident population mid-2008 figures have been used to calculate admissions per 100,000 population. Information on ONS population data is available at: <http://www.statistics.gov.uk/STATBASE/Product.asp?vlnk=601>
7. Totals include admissions where the gender was unknown

**Source:**

Hospital Episode Statistics (HES), The NHS Information Centre for health and social care

**Table 7.8 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by gender, 1998/99 to 2008/09**

England	Numbers		
	Total	Male	Female
1998/99	21,344	8,192	13,135
1999/00	21,900	8,716	13,172
2000/01	22,878	8,938	13,924
2001/02	23,777	9,448	14,320
2002/03	29,237	12,068	17,168
2003/04	33,546	13,804	19,736
2004/05	40,741	16,590	24,145
2005/06	52,019	21,432	30,552
2006/07	67,211	27,791	39,411
2007/08	80,914	32,080	48,829
2008/09	102,987	39,524	63,457

1. A finished admission episode (FAE) is the first period of inpatient care under one consultant within one healthcare provider. FAEs are counted against the year in which the admission episode finishes. Admissions do not represent the number of inpatients, as a person may have more than one admission within the year
2. The primary diagnosis is the first of up to 20 (14 from 2002/03 to 2006/07 and 7 prior to 2002/03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital. As well as the primary diagnosis, there are up to 19 (13 from 2002/03 to 2006/07 and 6 prior to 2002/03) secondary diagnosis fields in Hospital Episode Statistics (HES) that show other diagnoses relevant to the episode of care. These figures represent the number of episodes where the diagnosis was recorded in any of the 20 primary and secondary diagnosis fields in the record. Each episode is only counted once in each count, even if the diagnosis is recorded in more than one diagnosis field of the record
3. ICD-10 Codes: E66 - Obesity
4. Figures have not been adjusted for shortfalls in data
5. Counts include people resident in English Strategic Health Authorities (SHAs) only, including admissions where the SHA of residence was England but not further specified and excludes admissions where the SHA of residence was unknown.
6. Total includes admissions where the gender was unknown

**Source:**

Hospital Episode Statistics (HES), The NHS Information Centre for health and social care

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**Table 7.9 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by age group, 1998/99 to 2008/09**

England	Numbers								
	Total	Under 16	16 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 and over
1998/99	21,344	654	560	1,972	2,990	4,286	4,683	3,847	2,340
1999/00	21,900	726	612	2,046	3,278	4,538	4,540	3,903	2,249
2000/01	22,878	781	654	2,142	3,522	4,656	4,877	4,009	2,190
2001/02	23,777	856	715	2,129	3,512	4,878	5,217	4,226	2,222
2002/03	29,237	1,117	912	2,288	4,371	5,661	6,721	5,391	2,738
2003/04	33,546	1,355	1,026	2,449	4,845	6,452	7,790	6,432	3,175
2004/05	40,741	1,506	1,457	3,449	5,953	7,424	9,086	7,813	4,036
2005/06	52,019	1,727	1,717	4,252	7,401	9,858	12,146	10,056	4,840
2006/07	67,211	1,896	2,316	5,319	9,961	12,922	15,882	12,571	6,296
2007/08	80,914	2,104	3,169	7,218	12,101	15,683	18,489	14,496	7,512
2008/09	102,987	2,229	4,326	9,899	15,508	19,971	23,136	18,234	9,531

1. A finished admission episode (FAE) is the first period of inpatient care under one consultant within one healthcare provider. FAEs are counted against the year in which the admission episode finishes. Admissions do not represent the number of inpatients, as a person may have more than one admission within the year

2. The primary diagnosis is the first of up to 20 (14 from 2002/03 to 2006/07 and 7 prior to 2002/03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital. As well as the primary diagnosis, there are up to 19 (13 from 2002/03 to 2006/07 and 6 prior to 2002/03) secondary diagnosis fields in Hospital Episode Statistics (HES) that show other diagnoses relevant to the episode of care. These figures represent the number of episodes where the diagnosis was recorded in any of the 20 primary and secondary diagnosis fields in the record. Each episode is only counted once in each count, even if the diagnosis is recorded in more than one diagnosis field of the record

3. ICD-10 Codes: E66 - Obesity

4. Figures have not been adjusted for shortfalls in data

5. Counts include people resident in English Strategic Health Authorities (SHAs) only, including admissions where the SHA of residence was England but not further specified and excludes admissions where the SHA of residence was unknown

6. Total includes admissions where the age was unknown

**Source:**

Hospital Episode Statistics, HES. The NHS Information Centre for Health and Social Care

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**Table 7.10 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by Strategic Health Authority (SHA) of residence and gender, 2008/09**

England	Numbers					
	Admissions			Admissions per 100,000 of population		
	Total	Male	Female	Total <sup>7</sup>	Male	Female
England	102,987	39,524	63,457	200	156	243
North East SHA	5,901	2,428	3,473	229	193	264
North West SHA	19,184	7,486	11,698	279	222	334
Yorkshire and the Humber SHA	8,004	2,846	5,158	154	111	195
East Midlands SHA	10,213	3,564	6,649	230	162	297
West Midlands SHA	12,640	4,337	8,303	234	163	302
East of England SHA	12,184	5,121	7,063	213	182	243
London SHA	12,081	4,961	7,120	159	131	185
South East Coast SHA	7,748	3,272	4,472	179	156	201
South Central SHA	5,749	1,967	3,782	142	98	184
South West SHA	9,233	3,521	5,710	177	138	215

1. A finished admission episode (FAE) is the first period of inpatient care under one consultant within one healthcare provider. FAEs are counted against the year in which the admission episode finishes. Admissions do not represent the number of inpatients, as a person may have more than one admission within the year
2. The primary diagnosis is the first of up to 20 (14 from 2002/03 to 2006/07 and 7 prior to 2002/03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital. As well as the primary diagnosis, there are up to 19 (13 from 2002/03 to 2006/07 and 6 prior to 2002/03) secondary diagnosis fields in Hospital Episode Statistics (HES) that show other diagnoses relevant to the episode of care. These figures represent the number of episodes where the diagnosis was recorded in any of the 20 primary and secondary diagnosis fields in the record. Each episode is only counted once in each count, even if the diagnosis is recorded in more than one diagnosis field of the record
3. ICD-10 Codes: E66 - Obesity
4. Figures have not been adjusted for shortfalls in data
5. Counts include people resident in English Strategic Health Authorities (SHAs) only, including admissions where the SHA of residence was England but not further specified and excludes admissions where the SHA of residence was unknown
6. Office for National Statistics (ONS) estimated resident population mid-2008 figures have been used to calculate admissions per 100,000 population. Information on ONS population data is available at: <http://www.statistics.gov.uk/STATBASE/Product.asp?vlnk=601>
7. Totals include admissions where the gender was unknown

**Source:**

Hospital Episode Statistics (HES), The NHS Information Centre for health and social care

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**Table 7.11 Finished Consultant Episodes with a primary diagnosis of obesity and a main or secondary procedure of 'Bariatric Surgery' by gender, 1998/99 to 2008/09**

England	Numbers		
	Total	Male	Female
OPCS-4.2 procedure codes			
1996/97	148	22	124
1997/98	151	24	127
1998/99	196	41	155
1999/00	198	27	171
2000/01	261	46	215
2001/02	281	38	241
2002/03	345	65	280
2003/04	474	96	378
2004/05	744	137	603
2005/06	1,038	200	808
2006/07 (OPCS-4.3 procedure codes)	1,951	381	1,562
2007/08 (OPCS-4.4 procedure codes)	2,724	598	2,126
2008/09 (OPCS-4.4 procedure codes)	4,221	969	3,251

1. A finished consultant episode (FCE) is a continuous period of admitted patient care under one consultant within one healthcare provider. FCEs are counted against the year in which they end. Figures do not represent the number of different patients, as a person may have more than one episode of care within the same stay in hospital or in different stays in the same year
2. The primary diagnosis is the first of up to 20 (14 from 2002-03 to 2006-07 and 7 prior to 2002-03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital
3. ICD-10 Codes: E66 - Obesity
4. These figures represent the number of episodes where the procedure (or intervention) was recorded in any of the 24 (12 from 2002/03 to 2006/07 and 4 prior to 2002/03) operative procedure fields in a Hospital Episode Statistics (HES) record. A record is only included once in each count, even if the procedure is recorded in more than one operative procedure field of the record. Please note that more procedures are carried out than episodes with a main or secondary procedure. For example, patients under going a 'cataract operation' would tend to have at least two procedures – removal of the faulty lens and the fitting of a new one – counted in a single episode
5. The term 'bariatric surgery' is often used to define a group of procedures that can be performed to facilitate weight loss although these procedures can be performed for conditions other than weight loss. It includes stomach stapling, gastric bypasses and sleeve gastrectomy. The procedures for tables 7.11 and 7.12 show the defined range of procedures when a corresponding main diagnosis of Obesity (ICD10-E66) is also present. Definition of codes can be found in Appendix B
6. All OPCS-4.2, OPCS-4.3 and OPCS-4.4 procedure codes used to define bariatric surgery are described in Appendix B
7. Figures have not been adjusted for shortfalls in data
8. Counts include people resident in English Strategic Health Authorities (SHAs) only, including admissions where the SHA of residence was England but not further specified and excludes admissions where the SHA of residence was unknown.
9. Total includes episodes where the gender was unknown

**Source:**

Hospital Episode Statistics (HES), The NHS Information Centre for health and social care

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**Table 7.12 Finished Consultant Episodes with a primary diagnosis of obesity and a main or secondary procedure of 'Bariatric Surgery' by Strategic Health Authority (SHA), 2008/09**

England	Numbers					
	Finished Consultant Episodes			Finished Consultant Episodes per 100,000 of population		
	Total	Male	Female	Total	Male	Female
England	4,221	969	3,251	8	4	12
North East SHA	268	71	197	10	6	15
North West SHA	316	68	248	5	2	7
Yorkshire and the Humber SHA	584	150	434	11	6	16
East Midlands SHA	550	94	456	12	4	20
West Midlands SHA	445	107	338	8	4	12
East of England SHA	243	61	182	4	2	6
London SHA	909	217	692	12	6	18
South East Coast SHA	446	98	348	10	5	16
South Central SHA	157	38	119	4	2	6
South West SHA	302	65	236	6	3	9

1. A finished consultant episode (FCE) is a continuous period of admitted patient care under one consultant within one healthcare provider. FCEs are counted against the year in which they end. Figures do not represent the number of different patients, as a person may have more than one episode of care within the same stay in hospital or in different stays in the same year

2. The primary diagnosis is the first of up to 20 (14 from 2002-03 to 2006-07 and 7 prior to 2002-03) diagnosis fields in the Hospital Episode Statistics (HES) data set and provides the main reason why the patient was admitted to hospital

3. ICD-10 Codes: E66 - Obesity

4. These figures represent the number of episodes where the procedure (or intervention) was recorded in any of the 24 (12 from 2002/03 to 2006/07 and 4 prior to 2002/03) operative procedure fields in a Hospital Episode Statistics (HES) record. A record is only included once in each count, even if the procedure is recorded in more than one operative procedure field of the record. Please note that more procedures are carried out than episodes with a main or secondary procedure. For example, patients under going a 'cataract operation' would tend to have at least two procedures – removal of the faulty lens and the fitting of a new one – counted in a single episode.

5. The term 'bariatric surgery' is often used to define a group of procedures that can be performed to facilitate weight loss although these procedures can be performed for conditions other than weight loss. It includes stomach stapling, gastric bypasses and sleeve gastrectomy. The procedures for tables 7.11 and 7.12 show the defined range of procedures when a corresponding main diagnosis of Obesity (ICD10-E66) is also present. Definition of codes can be found in Appendix B

6. All OPCS-4.4 procedure codes used to define bariatric surgery are described in Appendix B

7. Figures have not been adjusted for shortfalls in data

8. Counts include people resident in English Strategic Health Authorities (SHA) only, including admissions where the SHA of residence was England but not further specified and excludes admissions where the SHA of residence was unknown

9. Office for National Statistics (ONS estimated resident population mid-2008 figures have been used to calculate FCEs per 100,000 population. Information on ONS population data is available at: <http://www.statistics.gov.uk/STATBA/SE/Product.asp?vlnk=601>

10. Totals include episodes where the gender was unknown

**Source:**

Hospital Episode Statistics (HES), The NHS Information Centre for health and social care

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**Table 7.13 Number of prescription items, net ingredient cost and average net ingredient cost per item of drugs for the treatment of obesity prescribed in Primary Care and dispensed in the community, 1999 to 2008**

England										Thousands / £
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
<b>Prescription Items (thousands)</b>										
Orlistat	127	156	415	540	484	492	645	774	827	848
Sibutramine	-	-	53	196	203	208	226	263	294	325
Rimonabant	-	-	-	-	-	-	-	23	112	106
<b>Total</b>	<b>127</b>	<b>157</b>	<b>469</b>	<b>737</b>	<b>688</b>	<b>699</b>	<b>871</b>	<b>1,060</b>	<b>1,233</b>	<b>1,278</b>
<b>Net Ingredient Cost (£ 000)</b>										
Orlistat	4,863	6,573	17,575	23,401	21,036	21,391	27,020	32,476	32,047	29,980
Sibutramine	-	-	2,030	7,752	8,458	9,314	10,984	13,654	13,093	9,595
Rimonabant	-	-	-	-	-	-	-	1,411	6,440	5,237
<b>Total</b>	<b>4,863</b>	<b>6,613</b>	<b>19,659</b>	<b>31,203</b>	<b>29,532</b>	<b>30,706</b>	<b>38,004</b>	<b>47,541</b>	<b>51,580</b>	<b>44,812</b>
<b>Net Ingredient Cost per item (£)</b>										
Orlistat	38	42	42	43	43	44	42	42	39	35
Sibutramine	-	-	38	39	42	45	49	52	45	30
Rimonabant	-	-	-	-	-	-	-	62	58	50
<b>Total</b>	<b>38</b>	<b>42</b>	<b>42</b>	<b>42</b>	<b>43</b>	<b>44</b>	<b>44</b>	<b>45</b>	<b>42</b>	<b>35</b>

1. Prescriptions are written on a prescription form known as a FP10. Each single item written on the form is counted as a prescription item

2. Net Ingredient Cost (NIC) is the basic cost of a drug. It does not take account of discounts, dispensing costs, fees or prescription charge income

3. This information was obtained from the Prescribing Analysis and Cost Tool (PACT) system, which covers prescriptions prescribed by GPs, nurses, pharmacists and others in England and dispensed in the community in the UK. Prescriptions written in hospitals /clinics that are dispensed in the community, prescriptions dispensed in hospitals, dental prescribing and private prescriptions are not included in PACT data.

4. Prescriptions written in England but dispensed outside England are included

5. Rimonabant was only available on prescription from July 2006, therefore figures for Rimonabant in 2006 only reflect six months worth of data

6. Up until 2007 'total' included other drugs that may be used to treat obesity which include Mazindol, Phentermine and Diethylpropion Hydrochloride. From 2007, only Orlistat, Sibutramine and Rimonabant have generally been prescribed for the treatment of obesity in primary care

7. From February 2010, prescribers have been advised not to issue any new prescriptions for Sibutramine and to review the treatment of patients taking the drug following evidence suggesting that there is an increased risk of non-fatal heart attacks and strokes with this medicine that outweighs the benefits of weight loss, which is modest and may not be sustained in the long term after stopping treatment. Suspension of the drug has been recommended following a European-wide review.

**Source:**

Prescribing Analyses and Cost (PACT) from the Prescription Pricing Division of the NHS Business Services Authority (PPD of the NHS BSA). The NHS Information Centre

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**Table 7.14 Number of prescription items of drugs for the treatment of obesity prescribed in Primary Care and dispensed in the community, by Strategic Health Authority (SHA), 2008**

England	Thousands							
	Prescription Items (thousands)				Prescription Items (thousands) per 100,000 population			
	Total	Orlistat	Sibutramine	Rimonabant	Total	Orlistat	Sibutramine	Rimonabant
<b>England</b>	<b>1,278</b>	<b>848</b>	<b>325</b>	<b>106</b>	<b>2.48</b>	<b>1.65</b>	<b>0.63</b>	<b>0.21</b>
North East SHA	83	61	18	4	3.20	2.36	0.69	0.15
North West SHA	227	145	58	24	3.30	2.11	0.85	0.34
Yorkshire and the Humber SHA	149	101	33	15	2.86	1.94	0.63	0.29
East Midlands SHA	114	80	26	7	2.57	1.81	0.59	0.17
West Midlands SHA	145	100	32	13	2.68	1.84	0.60	0.24
East of England SHA	132	81	42	8	2.30	1.42	0.74	0.14
London SHA	168	114	38	16	2.21	1.50	0.50	0.21
South East Coast	95	56	29	10	2.20	1.30	0.66	0.24
South Central	67	42	22	3	1.65	1.03	0.54	0.08
South West SHA	96	66	25	5	1.85	1.27	0.49	0.09

1. Prescriptions are written on a prescription form known as a FP10. Each single item written on the form is counted as a prescription item
2. This information was obtained from the Prescribing Analysis and Cost Tool (PACT) system, which covers prescriptions prescribed by GPs, nurses, pharmacists and others in England and dispensed in the community in the UK. Prescriptions written in hospitals /clinics that are dispensed in the community, prescriptions dispensed in hospitals, dental prescribing and private prescriptions are not included in PACT data.
3. For data at Strategic Health Authority (SHA) level, prescriptions written by a prescriber located in a particular SHA but dispensed outside that SHA will be included in the SHA in which the prescriber is based
4. Prescriptions written in England but dispensed outside England are included
5. Office for National Statistics (ONS) estimated resident population mid-2008 figures have been used to calculate prescription items per 100,000 population. Information on ONS population data is available at: <http://www.statistics.gov.uk/STATBASE/Product.asp?vlnk=601>
6. The 'Total' column may not equal the sum of the individual drugs, this is due to rounding
7. Including unidentified Doctors (not possible for the Prescription Pricing Division of the Business Service Authority to allocate to a SHA)
8. From February 2010, prescribers have been advised not to issue any new prescriptions for Sibutramine and to review the treatment of patients taking the drug following evidence suggesting that there is an increased risk of non-fatal heart attacks and strokes with this medicine that outweighs the benefits of weight loss, which is modest and may not be sustained in the long term after stopping treatment. Suspension of the drug has been recommended following a European-wide review.

**Source:**

Prescribing Analyses and Cost (PACT) from the Prescription Pricing Division of the NHS Business Services Authority (PPD of the NHS BSA). The NHS Information Centre

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# Appendix A: Key sources

**Active People Survey**

**Allied Dunbar National Fitness Survey**

**Foresight Tackling Obesities: Future Choices – Project report**

**Health Survey for England**

**Hospital Episode Statistics**

**Living Costs and Food Survey**

**Low Income Diet and Nutrition Survey**

**National Diet and Nutrition Survey**

**National Travel Survey**

**Organisation for Economic Co-operation and Development (OECD) Health Data 2009**

**Prescription Pricing Division**

**Quality Outcomes Framework**

**School Meals Research Project**

**School Sport Survey**

**Tackling obesity in England**

**Taking Part Survey**

## Active People Survey

The Active People Survey (APS) is the largest ever survey of sport and active recreation to be undertaken in Europe. It is a telephone survey of England (aged 16 and over) and provides statistics on participation in sport and active recreation for all 354 Local Authorities (LA) in England (a minimum of 1,000 interviews were completed in every LA in England). The APS, conducted by Ipsos MORI on behalf of Sport England, started on the 15th October 2005 and was completed on 16th October 2006. The sample was evenly divided over each month and spread across the whole year for each LA to ensure the results are not biased by variations associated with different seasons.

Due to the success of the Active People Survey 2005/06, Sport England repeated the survey and plan to run it as a continuous survey until 2010. The latest APS started on the 15<sup>th</sup> October 2008 and was completed on the 14<sup>th</sup> October 2009. Headline results were published in December 2009.

The primary objective of the APS is to measure levels of participation in sport and active recreation and its contribution to improving the health of the nation. Sport and active recreation includes walking and cycling for recreation in addition to more traditional formal and informal sports. When measuring sports participation the survey were concerned with not only the type of activity but also the frequency, intensity and duration.

Data from the APS is described in Chapter 4 (Physical activity among adults).

The latest report, Active People Survey 2008/09 Headline results. Available at:

[http://www.sportengland.org/research/active\\_people\\_survey/active\\_people\\_survey\\_3.aspx](http://www.sportengland.org/research/active_people_survey/active_people_survey_3.aspx)

## Allied Dunbar National Fitness Survey

The survey was designed to measure the activity and fitness levels of the adult population (aged 16 and over) in England. A representative sample of 6,000 adults was selected at random throughout the country. The fieldwork was carried out between February and November 1990. A total of 4,316 people completed the home interview stage - a response rate of 75%. Seventy per cent of those interviewed took part in a physical appraisal with 62% attending for tests at a specially equipped mobile laboratory and 8%, primarily the elderly and infirm, being tested on a recurred set of measurements in their homes.

Many aspects of behaviour, attitudes and beliefs were measured in the home interview. These included:

- Levels of participation in sport and active recreation, current and past, including access to facilities and barriers to participation;
- Physical activity at work, in housework, DIY and gardening and in moving about, that is walking, cycling and stair-climbing;
- Other lifestyle and health-related behaviour, including smoking, alcohol and dietary habits;
- Current health status and history of illness;
- Sports-related injuries;
- Knowledge about exercise and attitudes towards physical activity, fitness and health;
- Psychological variables including well-being, social support, stress and anxiety.

Information on the Allied Dunbar National Fitness Survey can be found in Chapter 4 (Physical activity among adults).

Allied Dunbar National Fitness Survey. Available at:

<http://www.data-archive.ac.uk/findingData/snDescription.asp?sn=3303>

## Foresight Tackling Obesities: Future Choices – Project report

One of the Foresight programmes based in the Government Office for Science. The report considers how society might deliver a sustainable response to obesity in the UK over the next 40 years. One objective of the project was to analyse how future levels of obesity might change and to identify the most effective future responses. The report presents key messages and implications for the UK. These are based on an extensive analysis of a wide range of evidence, including several commissioned evidence reviews, a systems analysis of the primary determinants of obesity, scenarios of possible futures and a quantitative model of future trends in obesity and associated diseases.

To achieve this aim Foresight commissioned a model which utilises the dataset of the Health Survey for England from 1994 to 2004 and employs extrapolation and microsimulation techniques to predict the distribution of people across various BMI categories, to 2050. The report also models current and future costs of obesity and obesity related diseases to the NHS. Foresight used the 2002 Health Select Committee's findings and uses £1 billion as the baseline for obesity attributable healthcare costs in the modeling exercise. The model used forecasted costs solely on the basis of anticipated additional morbidity arising from the increasing prevalence of obesity. Factors other than BMI, including costs of disease were fixed at current levels.

Data used from this report are presented in Chapters 2 and 3 (Obesity among adults and children).

Foresight Tackling Obesity: Future Choices – Project Report. Government Office for Science, 2007. Available at:

<http://www.foresight.gov.uk/OurWork/ActiveProjects/Obesity/KeyInfo/Index.asp>

## Health Survey for England

The Health Survey for England (HSE) is an annual survey, monitoring the health of the population which is currently commissioned by the NHS Information Centre (the NHS IC), and before April 2005 was commissioned by the Department of Health. The HSE has been designed and carried out since 1994 by the Joint Health Surveys Unit of the National Centre for Social Research (NatCen) and the Department of Epidemiology and Public Health at the Royal Free and University College Medical School (UCL). All surveys have covered the adult population aged 16 and over living in private households in England. Since 1995, the surveys have also covered children aged two to 15 living in households selected for the survey, and since 2001 infants aged under two have been included as well as older children. Trend tables are also published each year updating key trends on a number of health areas.

Each survey in the series includes core questions and measurements such as blood pressure, anthropometric measurements and analysis of saliva and urine samples, as well as modules of questions on specific issues that vary from year to year. In recent years, the core sample has also been augmented by an additional boosted sample from a specific population subgroup, such as minority ethnic groups, older people or, as in 2006, 2007 and 2008, children.

This statistical report mainly uses data from HSE 2008, except for where updates to data are unavailable. The primary focus of the HSE 2008 report was physical activity and fitness. The report investigated associated lifestyle factors such as diet, smoking and drinking, and also assessed the immediate impact of the smoking ban in public places introduced in England in July 2007 as a secondary focus.

In 1999, the survey concentrated on the health of adults in six minority ethnic groups: Black Caribbean, Indian, Pakistani, Bangladeshi, Chinese and Irish. In 2004, the survey once again investigated the health of minority ethnic groups; the category of Black African was added to the six groups in the 1999 survey.

This report contains data and information from different HSE years. This is to provide the most current information for the general population that was available at the time of publishing. Where possible, data has been used from the HSE 2008, however there are some restrictions to this. For further details of the HSE data used please see [Appendix B \(Technical notes\)](#).

Non-response weighting was introduced to the HSE in 2003, and has been used in all subsequent years. All 2008 data in the HSE 2008 are weighted. Both weighted and unweighted bases are given in each table. The unweighted bases show the number of participants involved. The weighted bases show the relative sizes of the various sample elements after weighting, reflecting their proportions in the English population, so that data from different columns can be combined in their correct proportions. The absolute size of the weighted bases has no particular significance, since they have been scaled to the achieved sample size.

Since 1995, children's data each year have been weighted to adjust for the probability of selection, since a maximum of two children are selected in each household. This ensures that children from larger households are not under-represented. Since 2003, non-response weighting has also been applied in addition to selection weighting.

Trend tables in this publication present figures from 2003 onwards (the first year where non-response weighting was applied) with and without non-response weighting. Data are shown in two rows or columns, one showing unweighted results and the other weighted results. For tables showing trends in children's data, results for years up to 2002 are based on selection weighting only, and results for 2003 to 2006 are based on selection and non-response weighting. A full discussion of the effects of non-response weighting can be found in the 2003 HSE report, Volume 3, Methodology and Documentation. In the commentary in this report, where comparisons are made between 2008 figures and earlier years, weighted figures for 2008 are referred to since these are considered the most accurate estimate of prevalence. As weighted figures are not available for years before 2003, it is not possible to use weighted figures for earlier years and so the comparison is made with unweighted figures.

Data from the HSE are used in Chapters 2, 3, 4, 5, 6 and 7.

The latest Health Survey for England 2008: Physical Activity and Fitness. Available at:

*Main report:*

[www.ic.nhs.uk/pubs/hse08physicalactivity](http://www.ic.nhs.uk/pubs/hse08physicalactivity)

Trend tables:

[www.ic.nhs.uk/pubs/hse08trends](http://www.ic.nhs.uk/pubs/hse08trends)

## Hospital Episode Statistics

NHS hospital Finished Admission Episodes (FAEs) in England have been recorded using Hospital Episode Statistics (HES) since April 1987. HES aims to collect a detailed record for each 'episode' of admitted patient care delivered in England by NHS hospitals or delivered in the independent sector but commissioned by the NHS. HES data is presented in financial years, from April to March.

A Finished Admission Episode (FAE) is the first period of in-patient care under one consultant within one healthcare provider. The figures do not represent the number of in-patients, as a person may have more than one admission within the year.

Data from HES used in the report, show Finished Admission Episodes with a primary diagnosis or secondary diagnosis of obesity. Within HES, diagnoses are recorded using International Classification of Diseases (ICD) codes. From the financial year beginning April 1995 onwards these were classified using the tenth revision of ICD (ICD-10). Details of ICD-10 codes used are included in [Tables 7.5 to 7.12](#). The primary diagnosis is defined as the main condition treated or investigated during the relevant episode of healthcare.

HES data used in [Table 7.11](#) and [7.12](#) show the number of Finished Consultant Episodes (FCEs) for 'bariatric surgery.' The term 'bariatric surgery' is often used to define a group of procedures that can be performed to facilitate weight loss although these procedures can be performed for conditions other than weight loss. It includes stomach stapling, gastric bypasses and sleeve gastrectomy. An

FCE is a period of care under one consultant and patients may experience more than one FCE in a single hospital admission. The figures do not represent the number of patients, as a person may have more than one episode of care within the year or more than one episode of care within a visit to hospital. Bariatric surgery procedures identified using a primary diagnosis of obesity and a main or secondary procedure code for bariatric surgery. Within HES, procedures and interventions are recorded using the Office of Population, Censuses and Surveys: Classification of Interventions and Procedures, 4<sup>th</sup> Revision (OPCS4) codes. OPCS-4.2 were used to identify bariatric surgery procedure codes between the years 1996/97 to 2005/06 and OPCS-4.3 codes were used for 2006/07, OPCS-4.4 codes were used for 2007/08 onwards, however there were no changes to the codes used to define bariatric surgery between OPCS-4.3 and OPCS-4.4. Details of the OPCS-4 codes used are included in [Tables 7.11 and 7.12](#) and in [Appendix B](#). The main procedure is usually the most resource intensive procedure performed during the episode.

HES data are shown in Chapter 7 (Health outcomes).

## Living Costs and Food Survey (LCF), formerly Expenditure and Food Survey (EFS)

The LCF collects information on the type and quantity of food and drink purchased in households. The LCF was previously known as the *Expenditure and Food Survey (EFS)*. It was renamed in 2008 when it became a module of the *Integrated Household Survey (IHS)*.

The Expenditure and Food Survey (EFS) was created in 2001 to replace the National Food Survey (NFS) and the Family Expenditure Survey (FES). The EFS provides data on spending and food purchases since the 1950s. Each household member over the age of seven kept a diary of all their expenditure and quantities of purchased food and drink over a two week period.

Historical estimates of household purchases between 1974 and 2000 have been adjusted to align with the level of estimates from the FES in 2000. Whilst estimates of household consumption from the NFS have been adjusted a break in the series between 2000 and 2001 remains and should be borne in mind when interpreting reported changes before and after this period.

The aligned estimates are generally higher than the original ones and indicate that the scaling has partially corrected for under-reporting in the NFS. Under-reporting may be lower in the EFS because it does not focus on consumption but on expenditure across the board and is largely based on till receipts.

Reliable estimates on food and drink eaten out from the EFS start in 2001/02, less reliable estimates are available from the NFS going back to 1994.

LFC is the data source for two publications, Family Food, published by the Department for Environment, Food and Rural Affairs and Family Spending, published by the Office for National Statistics.

Chapter 6 (Diet) of this report reports on data published in Family Food using the LFC. Throughout the chapter figures used prior to 2001/02 are adjusted NFS estimates. The adjustments brought the results of the NFS into line with the EFS, and tended to increase estimates of food and drink purchases. The largest adjustments were for confectionery, alcoholic drinks, beverages and sugar

and preserves. Adjustments for eggs and carcass meat resulted in reduced NFS estimates. Details of the adjustments to the NFS estimates can be found in Family Food 2002/03.

In 2005/06 significant revisions were made affecting estimates from 2001/02 to 2004/05. The revisions introduce estimates of free food into both eating out and household food and quantity and nutrient content for a range of unspecified food purchases which are estimated based on averages of other food purchases recorded in the survey. Examples of free food estimates now included in the survey are meals on wheels, free welfare milk in the home, free milk, fruit and vegetables provided by schools, free meals provided by schools and employers, food purchased for business that is paid for by employer and buffet meals where items are not specified (such as Indian, Chinese, salad bar etc).

In 2006 the survey moved from a financial year to a calendar year basis in preparation for its integration to the Integrated Household Survey in January 2008. As a consequence there is an overlap of results, data collected between January 2006 and March 2006 are included in the 2005/06 results and the 2006 results. Where the report looks at 3 year averages and 4 year trends this duplication of data has been removed.

As this survey collects information on purchases, consumption is approximated using a wastage estimate. Purchases may differ from actual food consumption for a number of reasons e.g. food may be discarded during preparation, food maybe left on the plate at the end of a meal or food may become inedible before it can be consumed and is thrown away. When average intakes are compared with reference nutrient intakes, a figure of 10% is used for wastage on all types of food and drink. Trends in energy and nutrient content of the purchases are based on a database of nutrient profiles for different types of food which are kept up to date by the Food Standards Agency.

Data from the latest Family Food and EFS can be found in Chapter 6 (Diet).

Expenditure and Food Survey. Available at

<http://www.esds.ac.uk/government/efs/>

Family Food. Available at:

<http://statistics.defra.gov.uk/esg/publications/efs/default.asp>

Family Spending. Available at:

<http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=361>

## Low Income Diet and Nutrition Survey

As the National Diet and Nutrition Survey (also described in this appendix) provided evidence to suggest that differences in food consumption exist between lower and higher socioeconomic groups, the Low Income Diet and Nutrition Survey (LIDNS) was conducted between 2003 and 2005 focusing specifically on people from the low income population in the United Kingdom. This survey provides a comprehensive picture of food consumption and nutritional status of a nationally representative sample living in low income and materially deprived households. It also assessed numerous socio-economic, environmental, behavioural and attitudinal factors, and lifestyle and health characteristics which relate to food consumption, nutritional status and nutrition-related health. The purpose of the survey was to provide an evidence base that would contribute to the development of food policy, which in turn would help to reduce health inequalities.

## Screening questionnaire

A score-based screening questionnaire was devised specifically for LIDNS to provide a useful and discriminating measure of low income and material deprivation. This included a series of questions on use of cars/vans, receipt of incapacity benefit, income support or job seekers allowance, housing and council tax benefits and then further questions on weekly net income for those who have a borderline score.

## Dietary Interview

From all households that were screened in as eligible for the survey, two respondents were randomly selected to take part, either one adult (aged 19 and over) and one child (aged 2-18) or two adults (in households with no children). Both respondents as well as the household's main food provider (if they were not one of the selected respondents) had an extensive face-to-face computer assisted personal interview. Information about the 24 hour dietary recall process was then given and the first 24 hour recall was completed.

## Repeat 24 hour dietary recall

An interviewer visited the household on a total of four randomly selected non-consecutive days (including where possible a weekend day) over a ten day period to conduct the 24 hour dietary recall interviews. The 24 hour recall method used was the 'triple pass' method, which gives respondents three opportunities to think through what they ate and drank over the previous 24 hour period.

Respondent's height and weight measurements were recorded during the second visit.

## Nurse visit

All individuals completing three or four dietary recalls were eligible for the second part of the survey, which consisted of a visit from a qualified nurse. The nurse collected details of any prescribed medications and non-prescribed dietary supplements and took further measurements, including blood pressure, waist and hip measurements and where consented to, a blood sample.

Data from the LIDNS can be found in Chapter 6 (Diet)

The latest Low Income Diet and Nutrition Survey. Available at:

<http://www.food.gov.uk/science/dietarysurveys/lidnsbranch/>

## National Diet and Nutrition Survey (NDNS)

The National Diet and Nutrition Survey (NDNS) programme aims to provide a comprehensive picture of the dietary habits and nutritional status of the population of the Britain. In its original form the NDNS was a series of cross-sectional surveys covering the whole population from age 1½ years upwards, split into four different population age groups: children aged 1½ to 4½ years (fieldwork 1992/93), young people aged 4 to 18 years (1997), adults aged 19 to 64 years (2000/01) and people 65 years and over (1994/95).

Following a review of the Food Standards Agency's dietary survey programme in 2002/03 the NDNS has now moved to a rolling programme in which the survey will run continuously with fieldwork every year, starting in 2008, covering a UK representative sample of both adults and children. This will

strengthen the ability to track changes over time and give flexibility to respond more rapidly to changing data requirements

Data from the NDNS are essential for underpinning a wide range of the Food Standards Agency's work to protect consumer safety and promote healthy diets. The survey provides detailed data on foods consumed by individuals and nutrient intakes with additional information on nutritional status (derived from analysis of blood samples), physical measurements and lifestyle habits such as smoking, drinking and physical activity.

### **The components of the survey**

The survey includes various components (described below) in order to obtain the wide range of information required. Respondents may choose to participate in some components but not in others. The components of the most recent NDNS of adults aged 19-64 years are described below.

#### **Dietary interview**

Initially a face-to-face dietary interview was carried out with the household member selected to take part in the survey (the respondent), to provide information about their eating and drinking habits, their socio-demographic circumstances (e.g. age and marital status) and the socio-demographic circumstances of their household (e.g. benefit status).

#### **Seven-day weighed intake dietary record**

Respondents were also invited to complete a dietary record for seven days. This involved weighing and recording all food and drink consumed both at home and away from home, including medicines taken by mouth and drinks of water. The dietary record collected detailed information in order to look at the range of food consumption and nutrient intake within the population. Food and nutrient intake data could also be related to physical activity and various nutritional status and health measures.

#### **Other components**

These included a 24-hour urine collection (used to estimate salt intake); physical measurements (BMI, blood pressure and waist and hip circumferences); a seven-day physical activity record (to allow an investigation of the relationships between dietary intakes, body composition and physical activity levels); and a blood sample (which was analysed for a range of nutritional status indicators which reflect the levels of certain nutrients available for use in the body).

The information from the dietary record was linked to a nutrient databank and nutrient intakes were calculated from the quantities of foods consumed. No attempt has been made to adjust the nutrient intakes presented here to take account of underreporting.

Data from the NDNS can be found in Chapter 6 (Diet).

The latest National Diet and Nutrition Survey. Available at:

<http://www.food.gov.uk/science/dietarysurveys/ndnsdocuments/>

## Issues associated with reporting food consumption in dietary surveys

Mis-reporting of food consumption in dietary surveys, generally under-reporting, is known to be a problem in dietary surveys worldwide. Under-reporting can cause biased low estimates of intake as respondents under-report their actual intake or modify their diet during the recording period. The level of under-reporting needs to be borne in mind when interpreting findings from dietary surveys, for example in comparing intakes with recommendations. Analysis of data from the NDNS adults 2000/01 indicated that energy intake could be under-reported by about 25%. It is not possible to ascertain whether under-reporting was higher in this survey than in the 1986/87 survey because there was no assessment of physical activity or energy expenditure in the earlier survey. Doubly labelled water studies suggest similar levels of under-reporting for other age groups except for pre-school children where levels were lower. There is evidence that under-reporting is selective – fatty, sugary and snack foods and alcohol are more likely to be under-reported than are other foods such as fruit and vegetables. However the level of under-reporting for specific macro and micronutrients is not known.

## National Travel Survey

The National Travel Survey (NTS) is a survey on personal travel. It provides the Department for Transport, Local Government and the Regions (DTLR) with data to answer a variety of policy and transport research questions. The 2008 NTS is the latest in a series of household surveys designed to provide a databank of personal travel information for Great Britain. It is part of a continuous survey that began in July 1988, following ad hoc surveys since the mid-1960s. The survey is designed to identify long-term trends and is not suitable for monitoring short-term trends.

NTS respondents keep a travel diary of their trips within Great Britain over a seven day period. Travel details provided by respondents include trip purpose, method of travel, time of day and trip length. The households also provided personal information, such as their age, gender, working status and driving licence holding, and details of the cars available for their use. In order to minimise the burden of completing the diaries respondents include walks of under one mile on the seventh day only, but all tables in this publication include data on short walks (over 50 yards) grossed up for the full seven day period.

Data from NTS are used in Chapter 4 and 5 (Physical activity among adults and children).

The National Travel Survey 2008. Available at:

<http://www.dft.gov.uk/pgr/statistics/datatablespublications/personal/mainresults/nts2008/>

## Organisation for Economic Co-operation and Development (OECD) Health Data 2009 – Frequently Requested Data

Released on 1st July 2009, this report offers the most comprehensive source of comparable statistics on health and health systems across OECD countries. It is an essential tool for health researchers and policy advisors in governments, the private sector and the academic community, to carry out comparative analyses and draw lessons from international comparisons of diverse health care systems.

Data from this report can be found in Chapter 2 (Obesity among adults).

The latest report can be found at:

[http://www.oecd.org/document/16/0,3343,en\\_2649\\_33929\\_2085200\\_1\\_1\\_1\\_1.00.html](http://www.oecd.org/document/16/0,3343,en_2649_33929_2085200_1_1_1_1.00.html)

Definitions, Sources and Methods can be found at:

<http://www.ecosante.fr/index2.php?base=OCDE&langs=ENG&langh=ENG&valeur=&source=1>

## Prescription Pricing Division

Prescription statistics in this report are for calendar years. All prescription statistics in this report are based on information systems at the NHS Business Services Authority Prescription Pricing Division (NHSBSA (PPD)). The system used is the Prescription Analysis and Cost Tool (PACT). This system is based on an analysis of all prescriptions dispensed in the community, i.e. by community pharmacists and appliance contractors, dispensing doctors, and prescriptions submitted by doctors for items personally administered.

Each item written on the prescription form (FP10) is counted a single prescription item regardless of the quantity prescribed. Therefore differences in prescribing practices between GPs are not reflected in this data. The counts include items that are prescribed by GPs, nurses, pharmacists and others in England and then subsequently dispensed in the community. Therefore prescriptions that are written but not actually dispensed to the patient (or their representative) are not counted. Prescriptions written in hospitals or clinics that are dispensed in the community, prescriptions dispensed in hospitals, dental prescribing and private prescriptions are also not included.

Data from the Prescription Pricing Division can be found in Chapter 7 (Health outcomes).

## Quality Outcomes Framework

The Quality and Outcomes Framework (QOF) was introduced as part of the new General Medical Services (GMS) contract on 1 April 2004. It is a voluntary annual reward and incentive programme for all GP surgeries in England, detailing practice achievement results. The QOF contains four main components, known as domains. Each domain consists of a set of measures of achievement, known as indicators, against which practices score points according to their level of achievement

QOF is measured by QMAS, a national IT system developed by NHS Connecting for Health (CfH). It is not a comprehensive source of data on quality of care in general practice, but it is potentially a rich and valuable source of such information, providing the limitations of the data are acknowledged. The Prescribing Support Unit (PSU), part of the NHS Information Centre, works on behalf of the Department of Health and in collaboration with CfH to obtain extracts from QMAS to support the publication of QOF information.

QMAS captures the number of patients on the clinical register for each practice. The number of patients on the clinical registers can be used to calculate measures of disease prevalence expressing the number of patients on each register as a percentage of the number of patients on each practice lists.

Data from the QMAS database can be found in Chapter 2 (Obesity Among Adults).

Quality and Outcomes Framework Information. Available at:

<http://www.ic.nhs.uk/statistics-and-data-collections/audits-and-performance/the-quality-and-outcomes-framework>

## School Meals Research Project

In 2001 National Nutritional Standards were reintroduced to set out the frequency with which school caterers must provide items from the main food groups. The Department for Education and Skills (DfES) and the Food Standards Agency (FSA) commissioned a survey in 2003 to assess compliance with the standards and to measure food consumption in school among secondary school pupils. The survey was conducted in a nationally representative sample of 79 secondary schools across England providing information about catering practise and food provisions at lunchtime and information about the food selections and nutrient intake of 5,695 secondary school pupils aged 11 to 18.

This document is referred to in Chapter 6 on Diet.

School Meals in Secondary Schools in England. Available at:

<http://www.food.gov.uk/science/dietarysurveys/schoolmealsresearch>

## School Sport Survey

The Department for Children, Schools and Families (DCSF) commissioned Target Nutrient Specifications (TNS), an independent research company, to conduct the fifth and final annual survey of school sport in England covering the academic year 2007/08. The survey aimed to collect information about levels of participation in physical education (PE) and school sport in partnership schools. In total, 21,631 schools within school sport partnerships took part in the survey between May 2008 and July 2008. The 2007/08 survey reported on what over 6 million school children are doing in terms of physical activity. The survey is the largest of its kind in Europe.

School sports partnerships bring primary, special and secondary schools together in a network benefiting from extra staff and funding to increase sports opportunities for pupils. At the time of the 2007/08 survey 90% of pupils in schools within the School Sport Partnership programme participated in at least two hours of high quality PE and out of hours school sport in a typical week. This compared to 86% in 2006/07, 80% in 2005/06, 62% in 2003/04 and the estimated position of 25% in 2002.

The 2007/08 School Sport Survey. Available at:

<http://publications.dcsf.gov.uk/default.aspx?PageFunction=productdetails&PageMode=publications&ProductId=DCSF-RW063&>

## PE and Sport Survey

In 2008/09 TNS-BMRB (formerly TNS), an independent research company, was commissioned to conduct a further survey of school sport and to provide a consistent dataset to help understand further progress that has been made within partnership schools. The 2008/09 survey aimed to collect information from all partnership schools in the mainstream sector in England and from all Further Education (FE) colleges. Information was collected on the proportion of pupils receiving 2 hours of curriculum PE and the proportion of pupils participating in at least 3 hours of PE and school sport.

Data from the School Sport Survey can be found in Chapter 5 (Physical activity among children).

The PE and School Sport Survey 2008/09 is available at:

<http://www.dcsf.gov.uk/research/data/uploadfiles/DCSF-RR168.pdf#12>

## Tackling obesity in England

In 2001, the National Audit Office (NAO) produced this report which among other subjects, estimated the cost of treating obesity. Costs of obesity were estimated by taking a prevalence-based, cost of illness approach based on extensive literature review and using published data. The cost of treating obesity covers the costs of GP consultations related to obesity, hospital admissions and outpatient attendances and drugs prescribed to help obese patients lose weight. The most recent published data on incidence of these events in England was multiplied by unit costs to calculate a total cost. Prescription costs for obesity were taken from Prescription Cost Analyses reports for England.

The cost of treating the consequences of obesity covered the cost of treating diseases such as coronary heart disease which can be directly attributed to obesity. The cost of treating these diseases was estimated by calculating the relevant population risk proportion. A systematic review of literature was undertaken to establish for each disease, the best data available on the proportion of that disease in the population that was attributable to obesity. This proportion was defined by the relative risk of developing the associated diseases for individuals with obesity compared to the risk for non-obese individuals.

To establish the cost of treating associated diseases in 1998, data on GP consultation rates, hospital inpatient admissions and hospital outpatient attendances were obtained. These were multiplied by unit costs to derive an estimate of the NHS treatment costs for each disease. Prescription costs were taken from Prescription Cost Analyses reports for England. These cost estimates were then applied to the data on relative risk and age and sex specific prevalence of obesity from the HSE to give an estimate of the cost of treating the consequences of obesity.

It is recognised that the direct costs of treating obesity, estimated as £9.5 million in 1998 is probably an under-estimate because the main component of this cost, GP consultations, was based on data from 1991-92 since which obesity prevalence has increased, and no data were available for consultations with practice nurses and dieticians in primary care.

Also, the costs of treating the consequences of obesity is likely to be under-estimated. There are a number of potentially important diseases that were excluded from the analyses because of the lack of data to allow an estimate of the proportion of treatment costs that could be attributed to obesity, for example, depression, hyper-lipidemia and back pain, because no studies were identified in the review that reported the relative risk for obese individuals of developing these conditions. Other limitations of the study are the differing definition of obesity in some of the studies (although no bias was determined), the application of the international studies to the UK population and the cost to other public organisations is not covered e.g. costs to social services.

Tackling Obesity in England. Available at:

[www.nao.org.uk/publications/0001/tackling\\_obesity\\_in\\_england.aspx](http://www.nao.org.uk/publications/0001/tackling_obesity_in_england.aspx)

## Taking Part Survey

The Taking Part Survey (TPS) was commissioned by the Department for Culture, Media and Sport (DCMS) working in partnership with several of its non-departmental public bodies. The survey collects data about engagement and non-engagement in culture, leisure and sport. This information helps the DCMS and its partner bodies to better understand those who do, and do not, engage with its sectors.

The DCMS' current Public Service Agreements (PSAs) have a significant focus on increasing participation in Arts, Sport, Museums and Heritage, particularly by a range of 'priority groups'. The TPS has now become the mechanism for monitoring progress against several of these targets.

Since mid-July 2005, BMRB Social Research (now integrated with TNS Social Research) has been conducting continuous face to face interviews with adults aged 16 or over living in private households in England

From January 2006, children aged 11-15 were included within the survey and in 2008/09, children aged 5-15 were surveyed.

Data from the Taking Part Survey are used in Chapters 4 and 5 (Physical activity among adults and children).

The Taking Part Survey. Main report available at:

[http://www.culture.gov.uk/reference\\_library/publications/6528.aspx](http://www.culture.gov.uk/reference_library/publications/6528.aspx)

Headline figures from the 2008/09 Taking Part child survey:

[http://www.culture.gov.uk/reference\\_library/publications/6409.aspx](http://www.culture.gov.uk/reference_library/publications/6409.aspx)

### Other related information:

Taking Part: The National Survey of Culture, Leisure and Sport – Final assessment of progress on PSA3: complete estimates from year three, 2007/08. Available at:

[http://www.culture.gov.uk/reference\\_library/publications/5653.aspx](http://www.culture.gov.uk/reference_library/publications/5653.aspx)

2007 Comprehensive Spending Review (PSA21 : indicator 6).

[http://www.hm-treasury.gov.uk/pbr\\_csr07\\_psacommunities.htm](http://www.hm-treasury.gov.uk/pbr_csr07_psacommunities.htm)

# Appendix B Technical notes

## Overweight and obesity

- Adults BMI
- Children - UK National BMI percentile classification
- Children - International Obesity Task Force (IOTF)
- NICE guidance

## Physical activity among adults

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- Objective measures of physical activity
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## Overweight and obesity

### Adults BMI

Overweight and obesity among adults is measured in the HSE using Body Mass Index (BMI). The BMI is calculated by dividing weight in kilograms, by the square of the height in metres (kg/m<sup>2</sup>).

$$BMI = \frac{Weight(kg)}{Height^2 (m^2)}$$

Adults are classified into the following BMI groups:

<b>BMI range (kg/m<sup>2</sup>)</b>	<b>Definition</b>
Under 18.5	Underweight
18.5 to less than 25	Normal
25 to less than 30	Overweight
30 and over	Obese
40 and over	Morbidly obese
25 and over	Overweight including obese

## Children

### UK National BMI percentile classification

Due to differences in growth rates among boys and girls at each age, it is not possible to apply a universal formula in calculating obesity and overweight prevalence in children. Each sex and age group therefore needs its own level of classification for obesity. The UK National BMI percentile classification is therefore used which gives a BMI threshold for each age above which a child is considered overweight or obese. Compared to 1990 BMI UK reference data, those children whose BMI is above the 85<sup>th</sup> percentile are classified as overweight and those children whose BMI is above the 95<sup>th</sup> percentile are classified as obese. The percentiles are given for each sex and age. According to this method, 15% and 5% of children in 1990 had a BMI above this level and were thus classified as overweight/obese. Increases over 15% and 5% in the proportion of children who exceed the reference 85<sup>th</sup>/95<sup>th</sup> percentiles over time indicate an upward trend in the prevalence of overweight and obesity. Unless otherwise specified figures relating to the prevalence of childhood obesity in this report are determined by this method.

### International Obesity Task Force (IOTF)

This is an alternative method of determining childhood obesity. It is based on BMI reference data from six different countries around the world (over 190,000 subjects in total aged 0 to 25 from UK, Brazil, Hong Kong, the Netherlands, Singapore, and the United States). The BMI percentile curves that pass through the values of 25kg/m<sup>2</sup> and 30 kg/m<sup>2</sup> (standard cut-off points for overweight and obesity, respectively) at age 18 were smoothed for each national dataset and then averaged. The averaged curves were then used to provide age and sex-specific BMI cut-off points for children and adolescents aged 2 to 18. The benefit of this approach is that it allows international comparisons of levels of obesity in children to be made. Figures derived using this method are discussed in [Chapter 3 \(Obesity among children\)](#) of this bulletin commenting upon results from Foresight: Tackling Obesities: Future Choices. For further information this report is available at:

<http://www.foresight.gov.uk/OurWork/ActiveProjects/Obesity/KeyInfo/Index.asp>

### NICE guidance

NICE guidance suggests that the measurement of waist circumference should be used for people with a BMI less than 35kg/m<sup>2</sup> to assess health risks (as shown in the table below). For adults with a BMI of 35kg/m<sup>2</sup> or more, risks are assumed to be very high with any waist circumference.

## Assessing risk from overweight and obesity

BMI classification	Waist circumference		
	Low	High	Very high
Normal weight	No increased risk	No increased risk	Increased risk
Overweight (25 to less than 30 kg/m <sup>2</sup> )	No increased risk	Increased risk	High risk
Obesity I (30 to less than 35 kg/m <sup>2</sup> )	Increased risk	High risk	Very high risk

For men, low waist circumference is defined as less than 94 cm, high as 94–102 cm, and very high as greater than 102 cm. For women, low waist circumference is less than 80 cm, high is 80–88 cm and very high as greater than 88 cm.

### Source:

National Institute for Clinical Excellence (NICE) guidelines

Further information on the NICE guidelines is available at: <http://www.nice.org.uk/guidance/CG43>

## Physical activity and fitness among adults

The Health Survey for England (HSE) 2008 presented information on physical activity and fitness. Information on Adults' self-reported physical activity in the last four weeks was collected using an enhanced version of the HSE physical activity questionnaire, developed and tested in 2007. The physical activity module was first used in the HSE 1991, repeated in 1992 to 1994 with minor changes, and received more substantial revisions in 1997 and 1998 (producing what is generally referred to as the 'long' version of the questionnaire). A 'shorter' version of the questionnaire was introduced in 1999, when the focus was minority ethnic groups; the shorter questionnaire was repeated in 2002, 2003 and 2004. In 2006, a slightly modified version of the long (1998) form of the questionnaire was used. In 2008, a new occupational physical activity set of questions were included within the questionnaire and additional questions on sedentary behaviour were also asked. To enable continuation of these trend data, the same methods for analysis were used in 2008, as well as the more detailed definition possible for 2008 using the enhanced questionnaire.

### Activity types, frequency, duration, and intensity

Details about four main types of physical activity were included in the questionnaire. For most activities in which they had participated, respondents were asked on how many days in the last four weeks they had done the activity for at least 10 minutes, and the average length of time spent on those days.

1. Home activity consisted of housework and gardening/DIY/building that lasted 10 minutes or more. The lead-in question was 'Have you done any housework in the last four weeks?' Participants were shown a card with a list of examples of light housework and were asked if they had done any of the listed activities. They were then asked about heavy housework by showing another card with higher intensity activities, for which frequency was assessed. A similar sequence of questions was asked for gardening/DIY/building work. Frequency of light home activity (i.e. those activities listed in the first set of show cards) was not assessed.

2. Walks of 10 minutes or more. The key question was 'During the past four weeks, on how many days did you do a walk of least 10 minutes?' Walking intensity was assessed by asking participants to rate their usual walking pace (slow / average / fairly brisk / fast).

3. Sports and exercise activities that lasted 10 minutes or more. For sports and exercise activities in the four weeks prior to interview, participants were asked 'Can you tell me on how many separate

days did you do (name of specific sport and exercise activity) for at least 10 minutes at a time during the past four weeks...?', followed by a question about the activity's usual duration on these days. The intensity of these activities was assessed by asking participants whether or not the activity had made them 'out of breath or sweaty'.

4. Occupational activities that lasted 10 minutes or more. After establishing whether participants did any paid or unpaid work in the last four weeks, the key question was 'Which of these did you do whilst working? Sitting down or standing up; walking at work; climbing stairs or ladders; lifting, carrying or moving heavy loads', followed by a question about the time spent on that type of activity on these days. As in previous years, participants were also asked 'Thinking about your job in general would you say that you are...very physically active; fairly physically active; not very physically active; not at all physically active?'

## Objective measures of physical activity

### Accelerometry

Accelerometers provide objective information on the frequency, intensity, and duration of both physical activity and sedentary behaviour. Using an accelerometer to collect activity data has the advantages of being objective and providing standardised measures, unlike self-report of activity. Direct monitoring reduces recall bias and other problems of subjectivity.

Within the HSE 2008, a sub-sample of adults were asked to wear an accelerometer for the week following the completion of the questionnaire. Participants wore the monitor during waking hours and kept a record of activities when the monitor was not worn, for example while swimming.

### Summary activity levels

The summary measure of physical activity levels groups informants in a way that allows comparisons to the Chief Medical Officer (CMO) physical activity guidelines, which for adults are that they should achieve a total of at least 30 minutes of at least moderate activity, either in one session or in multiple bouts of at least 10 minutes duration, on five or more days of the week. The CMO also recommends that at least twice a week this should include activities to improve bone health, muscle strength and flexibility. Moderate intensity activities have an energy cost of at least 5 kcal/min but less than 7.5 kcal/min and include heavy housework or gardening and sports which make the individual breathe heavily and become sweaty.

The summary activity level classification for both the self-reported and objective measures of physical activity are as follows:

- **Meets recommendations:** 20 or more occasions of moderate or vigorous activity of at least 30 minutes duration in the last four weeks (i.e. at least five occasions per week on average). This category corresponds to the minimum activity level required to gain general health benefits (e.g. reduction in the relative risk for cardiovascular morbidity). However, it does not necessarily indicate the extent of activity required for optimal cardiovascular fitness or for optimal weight control.

- **Some activity:** Four to 19 occasions of moderate or vigorous activity of at least 30 minutes' duration in the last four weeks (i.e. at least one but fewer than five occasions per week on average).
- **Low activity:** Fewer than four occasions of moderate or vigorous activity of at least 30 minutes' duration in the last four weeks (i.e. less than once per week on average).

For comparisons of summary activity levels over time, HSE 2008 self-report data have been analysed with the lower duration for activities set to 30 minutes, to be comparable with results obtained from the shorter questionnaire used in 2003 and 2004. 1997 and 1998 data were also reanalysed using this longer minimum duration, to enable data for the five years to be compared. In 2008 bouts of activity lasting at least 10 minutes counted towards meeting the recommendations. Therefore, three bouts of activity lasting at least 10 minutes each would be considered sufficient to meet the recommendations on that day. Because bouts of activity lasting a minimum of 30 minutes are being used for comparison with results from previous years, the results presented in this chapter are likely to be an underestimate of the proportion of the population that meets the revised recommendations.

## Fitness

Physical fitness, also called functional capacity, is the ability of an individual to perform work. The most common form of work capacity assessed is the aerobic component, measured by the maximal oxygen uptake ( $VO_2\text{max}$ ). Oxygen uptake refers to the use of oxygen by the body's cells. Oxygen uptake rises rapidly on starting exercise and reaches a plateau (steady state  $VO_2$ ) by three to five minutes of steady exercise. Maximal oxygen uptake is reached when oxygen uptake does not increase despite further increase in intensity of the exercise (e.g. running faster or up a steeper incline), although not everyone has such a plateau.  $VO_2\text{max}$  is typically achieved by exercise that involves only about half the total body musculature.

In the HSE 2008, a sub-sample of adults aged 16 to 74 had their fitness levels assessed using a step test. An indirect method of measuring physical fitness was chosen because of the survey design of conducting the tests in participants' homes; direct measurement of oxygen consumption was therefore not possible. The decision to use a step test rather than a treadmill or cycle ergometer was also made for practical reasons. A single step was chosen as this was easier for the nurses to transport to participants' homes than the double step that was piloted with considerable problems in 2005.

The physical fitness test consisted of the step test originally developed by researchers at Medical Research Council (MRC) Cambridge. The test involved the subject stepping up and down a single step. The pace was given digitally by the nurse's laptop and the stepping lasted a maximum of eight minutes. The pace of stepping increased through the duration of the test. The participant stepped up and down first at a slow pace for one minute, at a rate of one leg movement per second. This equates to one body lift (i.e. the respondent stepping up and back down from the step) over four seconds. Then the stepping pace gradually increased over the next seven minutes until, by the end of the eighth minute, the frequency was 33 body lifts per minute (i.e. one body lift in just under two seconds).

The participant's heart rate was the primary outcome measure of the step test. The heart rate was recorded at 30 second intervals during the test and at 15 second intervals for two minutes after the step test ended. The participant wore a Polar heart rate monitor round the chest which transmitted the heart rate to a receiver worn on the participant's wrist. Using a stop watch to mark the time intervals, the nurse recorded the heart rate detected by the monitor. These heart rate measurements

were then combined with the resting heart rate obtained earlier during blood pressure measurement to determine the submaximal relationship between heart rate and oxygen uptake. This relationship was then extrapolated up to age-predicted maximal heart rate<sup>25</sup> to provide an estimate of the individual's maximal oxygen uptake (VO<sub>2</sub>max), the overall level of fitness.

Fitness categories in the HSE 2008 were defined as follows:

- Light exertion: requiring less than 30% of that person's VO<sub>2</sub>max
- Moderate exertion: requiring 30-64% of that person's VO<sub>2</sub>max
- Severe exertion: requiring 65-100% of that person's VO<sub>2</sub>max (therefore unsustainable for any substantial length of time)
- Maximal exertion: requiring more than 100% of that person's VO<sub>2</sub>max

### English, Scottish and Welsh comparisons among adults

The Scottish Health Survey (SHS) 2008 physical activity module is based on the Allied Dunbar National Fitness Survey (ADNFS). A very similar questionnaire was used in both the 1998 and 2003 SHS and therefore comparisons over time are uncomplicated. Participants were asked about their participation in 4 types of activities:

- Home-based activities (housework, gardening, building work and DIY);
- Walking;
- Sports and exercise;
- Activity at work.

Prior to the SHS 2008, duration of participation in physical activities was set to 15 minutes. However, as the CMO recommendations state that activity can be accumulated in bouts of 10 minutes the questionnaire was updated in 2008 to include activities of 10 to 14 minutes duration.

The SHS 2008 also collected information on the amount of time that participants spent in sedentary behaviours.

The Welsh Health Survey asked adults on which days in the past week they did at least 30 minutes of light, moderate, and vigorous exercise or physical activity. In this survey blocks of activity lasting more than 10 minutes, which were done on the same day, count towards the full 30 minutes. Respondents were asked to include physical activity which is part of their job. Examples of each type of activity are:

- light activity - housework or golf
- moderate activity - heavy gardening or fast walking
- vigorous activity - running or aerobics.

## Physical activity among children

The Chief Medical Officer (CMO) of England recommends that children and young people should do a minimum of 60 minutes of at least moderate intensity physical activity each day. Children should also participate in activities that improve bone health, muscle strength and flexibility at least twice a week.

In HSE 2008, the children's physical activity questionnaire was completely revised. The key changes to the 2008 questionnaire were:

- A new division of sports and activities into formal and informal; and as well as the activities on the show cards, participants were asked about any other similar activities they had done, and these were recorded individually;
- For each activity undertaken, participants were asked on which specific days of the week they had done them, rather than on how many weekdays and weekend days;
- For each day that the participant had done an activity, they were asked how long they had done it (in hours and minutes), rather than giving an average for all the days using half hour bands.

Due to the significant revisions to the 2008 children's physical activity questionnaire, the results reported here are not directly comparable with previous HSE reports that present findings on child physical activity.

The HSE 2008 self-report questionnaire collected details about the out-of-school activity of children aged 2 to 15. The decision to exclude activities which are part of the school curriculum was taken for three reasons. Firstly, it was assumed that, generally speaking, the amount of activity carried out by children as part of school lessons would be similar for all children (according to their age) and would contribute to a 'standard' additional amount of activity for each child. Secondly, activities as part of the school curriculum would generally be compulsory and the survey was more concerned with what children would do of their own choice. Thirdly, since a large proportion of data would be collected by proxy from a parent, it was felt that information about activities during school lessons would be less accurate than information about leisure time activities. However, any activities carried out on school premises but not as part of school lessons (e.g. after school clubs, during break times) were covered by the questions asked. For pre-school children, activities done at any nursery or playgroup that the child attended were included.

### The groups of activities for children:

1. Walking (not including to or from school): Walking was presented as part of the informal group of activities. It has been analysed separately as an activity of policy interest. The walks included are of any duration.

2. Informal activities: Activities in this group include cycling, dancing, skating, trampolining, hopscotch, active play, skipping rope, and housework and gardening.

3. Formal sports: Activities in this group include any organised team sports such as football, rugby, cricket, and netball, as well as running or athletics, all types of swimming, gymnastics, weight

training, aerobics and tennis. Where the 'total physical activity' variable has been included in the tables, it is an aggregate of the grouped activities listed above.

4. Walking or cycling to and from school is reported separately from other walking and cycling in these analyses, because active travel to and from school is an important opportunity for physical activity amongst children. The structure of the questions about active travel to school differed from the structure for all other types of physical activity, since journeys were not related to specific weekdays. Thus it is not possible to combine walking and cycling to school with other occasions of walking and cycling in assessing the total amount of activity for the summary activity levels.

## Objective measures of physical activity

A sub-sample of children aged 4 to 15 were asked to wear an accelerometer during the week following the interview. The accelerometer provides a measure of frequency, intensity and duration of physical activity, allowing classification of activity levels as sedentary, light, moderate and vigorous. The accelerometer was worn on a specially provided belt and each child was asked to wear the accelerometer during waking hours for seven consecutive full days; parent co-operation was also required, particularly for younger children. The device was taken off for activities such as showering or swimming, as the Actigraph is not waterproof. Also, some children removed their monitor during contact sports such as karate or rugby.

For adults, current evidence suggests that moderate or vigorous activity should be accumulated in bouts of at least 10 minutes to count towards meeting government recommendations, as it is these bouts of sustained activity that provide health benefits. However, this is not a realistic requirement for children, since the nature of children's physical activity typically differs from adults', being less likely to involve clearly defined periods of specific activities. Thus children's activity is much more likely to be sporadic, occurring in short bursts. For this reason, in keeping with other studies, all of children's moderate or vigorous activity has been taken into account in assessing whether they have met government guidelines for physical activity, rather than imposing a requirement for bouts of 10 minutes or more.

Summary activity levels for both self-reported and objective measures of physical activity in children are:

- **Meets recommendations:** At least 60 minutes of moderate activity on all seven days in the last week.
- **Some activity:** 30-59 minutes of moderate activity on all seven days in the last week.
- **Low activity:** Fewer than 30 minutes of moderate activity on each day, or moderate activity of 60 minutes or more on fewer than seven days in the last week.

## Active sport

The Department for Culture, Media and Sport Public Service Agreement (PSA) and the Taking Part Survey define the following as active sports: swimming or diving; BMX, cyclo-cross, mountain biking; cycling; bowls; tenpin bowling; health, fitness, gym or conditioning activities; keepfit, aerobics, dance exercise; judo; karate; taekwando; other martial arts; weight training; weightlifting; gymnastics; snooker, pool, billiards; darts; rugby league and union; American football; football; cricket; hockey;

baseball/softball; netball; tennis; badminton; squash; basketball; table tennis; track and field athletics; jogging, cross-country, road running; angling or fishing; canoeing; windsurfing or boardsailing; ice skating; golf, pitch and putt, putting; skiing; horse riding; climbing/mountaineering; hill trekking or backpacking; karting; volleyball; orienteering; rounders; rowing; boxing; waterskiing; lacrosse; yoga; fencing; and other types of sport for example roller-blading, street hockey, skateboarding, water polo, surfing, scuba diving, gliding, hang/paragliding, parachuting or parascending are also included in the valid activities which are recorded in the 'other sports' category. Utility cycling and all forms of walking are excluded from the active sport target.

## Diet and nutrition

### Fruit and vegetable portions

Fruit and vegetable consumption is measured in portions; using guidelines specified in the '5 a day' programme. The government recommends that people should eat five portions of fruit and vegetables a day. Five portions are defined as 400g of fruit and vegetables per day, an average of 80g per portion. A variety of foodstuffs represent a portion, including vegetables (fresh, frozen, canned), vegetables in composite dishes (such as pies or curries), salads, pulses, fruit (fresh, frozen, canned, dried), fruit in composites (such as pies or crumbles) and fruit juice. Below is a table showing the recommended portions sizes of the different types of fruit and vegetables in terms of everyday household measures. These measures have been used by the Health Survey for England when collecting data through dietary recall and for estimation of the number of portions respondents have consumed. The Low Income Diet and Nutrition Survey also followed the government guidelines in terms of what and how much counts as a portion, but estimated the weight of the fruit and vegetables consumed and divided by 80 (or 157 in the case of fruit juice to convert to millilitres) to determine the number of portions.

According to the current guidelines, fruit juice, regardless of how much is drunk in excess of one small glass (150ml), only counts as a maximum of one portion per day. This is due to its low fibre content and its high content of non-milk extrinsic sugars, which, when consumed in too high a quantity can lead to tooth decay and dental health problems. Pulses (such as beans, lentils and chick peas) can also only contribute a maximum of one portion per day regardless of how much is consumed; whilst they do contain fibre, they do not provide the same mixture of vitamins, minerals and other nutrients that can be obtained from fruit and vegetables. Due to their high starch content, potatoes in any form (including sweet potato varieties) and other starchy vegetables, such as plantain and green bananas, do not count towards the '5 a day' portions. Nuts and seeds do not count towards the '5 a day' portions. These guidelines and quantities are based on adult requirements and while the government recommends that children over the age of five should also consume five portions of a variety of the foodstuffs shown below, their portion sizes may be smaller. However, survey measures of fruit and vegetable consumption among children are based on adult portion sizes.

<b>Food item</b>	<b>Portion size</b>
Vegetables (fresh, raw, tinned and frozen)	3 tablespoons
Pulses	3 tablespoons
Salad	1 cereal bowl
Vegetables in composites, such as vegetable chilli	3 tablespoons
Very large fruit, such as melon	1 average slice
Large fruit, such as grapefruit	Half a fruit
Medium fruit, such as apples	1 fruit
Small fruit, such as plums	2 fruits
Very small fruit, such as blueberries	2 average handfuls
Dried fruit	1 tablespoon
Frozen fruit / tinned fruit	3 tablespoons
Fruit in composites, such as stewed fruit	3 tablespoons
Fruit juice	1 small glass (150ml)

## Estimated Average Requirements and Reference Nutrient Intakes

In 1991 the Committee on Medical Aspects of Food and Nutrition Policy (COMA) recommended that population average intakes of different macronutrients should not exceed specified limits. For example the population average intakes of total fat, saturated fatty acids and non-milk extrinsic sugars (principally added sugars) should not exceed 35 per cent, 11 per cent and 11 per cent of food energy respectively.

Energy intake is compared against the Estimated Average Requirement (EAR) for a group. Estimates of energy requirements for different populations are termed EARs and are defined as the energy intake estimated to meet the average requirements of the group. About half the people in the group will usually need more energy than the EAR and half the people in the group will usually need less.

Nutrient intakes derived from surveys are compared with Reference Nutrient Intakes (RNIs). These RNIs represent the best estimate of the amount of a nutrient that is enough, or more than enough, for about 97 per cent of people in a group. If average intake of a group is at the level of the RNI, then the risk of deficiency in the group is very small.

## Health Survey for England (HSE)

### Age Standardisation

Adult data have been age-standardised throughout the HSE 2008 to allow comparisons between groups after adjusting for the effects of any differences in their age distributions. When different sub-groups are compared in respect of a variable on which age has an important influence, any differences in age distributions between these sub-groups are likely to affect the observed differences in the proportions of interest. All age standardisation has been undertaken separately within each gender, expressing male data to the overall male population and female data to the overall female population. When comparing data for the two genders, it should be remembered that no age standardisation has been introduced to remove the effects of the genders' different age distributions.

Footnotes have been provided in this report on tables where age standardised figures have been presented and include the following variables: equivalised household income quintile and Government Office Region.

Further information on overweight and obesity prevalence across Strategic Health Authorities (SHAs) is given in 'HSE: Health and Lifestyle Indicators for Strategic Health Authorities 1994 - 2002'. This includes an age-standardised time series of overweight and obesity prevalence levels by SHA. This publication is available at:

[http://www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/HealthSurveyForEngland/HealthSurveyResults/HealthSurveyResultsArticle/fs/en?CONTENT\\_ID=4077728&chk=5Mjlqy](http://www.dh.gov.uk/PublicationsAndStatistics/PublishedSurvey/HealthSurveyForEngland/HealthSurveyResults/HealthSurveyResultsArticle/fs/en?CONTENT_ID=4077728&chk=5Mjlqy)

## Use of HSE data from different years

This report contains data and information from different years of the HSE. This is to provide the most recent information for the general population that was available at the time of publishing. Where possible, data has been used from the most recent HSE 2008 results, however there are some restrictions to this.

In some cases data is not presented in the HSE reports in the format required for this report, therefore additional analysis of the data set is undertaken. At the time of publishing, the HSE 2008 data set was not available for such additional analysis; therefore data from previous HSE survey years was used as appropriate.

## Blood pressure

Chapter 7 discusses blood pressure and longstanding illnesses by BMI and waist circumference. Analysis of these health conditions by BMI and waist circumference was carried out on the 2007 dataset specifically for this publication

The levels of blood pressure used to define hypertension in the HSE are in accordance with the latest guidelines on hypertension management. To compute the prevalence of hypertension, adult informants were classified in one of four groups on the basis of their SBP (systolic blood pressure) and DBP (diastolic blood pressure) readings and their current use of anti-hypertensive medication.

- Normotensive-untreated SBP<140 mmHg and DBP<90 mmHg, not currently taking any prescribed drugs that lower blood pressure
- Hypertensive-controlled SBP<140 mmHg and DBP<90 mmHg, currently taking medication prescribed to lower blood pressure
- Hypertensive-uncontrolled SBP≥140 mmHg and DBP≥90 mmHg, currently taking medication prescribed to lower blood pressure
- Hypertensive-untreated SBP≥140 mmHg and DBP≥90 mmHg, not currently taking any prescribed drugs that lower blood pressure

The last three categories together are considered as 'hypertensive' for the purpose of this report. The definition of hypertension used for clinical purpose talks about 'sustained' levels of high blood pressure, while HSE only measures blood pressure at one point in time. This needs to be taken into account when interpreting the results. Hypertensive controlled and hypertensive uncontrolled groups are all those who take drugs that were prescribed to lower their blood pressure.

## Weighted HSE data used in Chapter 7: Health Outcomes

Tables 7.1 and 7.2 show prevalence of blood pressure levels and longstanding illness by BMI and Tables 7.3 and 7.4 show blood pressure levels and longstanding illness by waist circumference. Questions on longstanding illness are asked during the interview visit, whereas blood pressure and waist circumference are measured during the nurse visit. Different weights are used within the HSE depending on which stage of the process the information is collected (interview or nurse).

Totals in both tables include those without a valid BMI recorded. Therefore the weighting used in analysis needs to take account the stage of the process for which the associated variable is collected. The blood pressure variable is collected by the nurse and therefore uses the nurse weight to calculate weighted prevalence totals, but weighted totals for longstanding illness are based on the interview weight since these are collected at the interview stage, however the prevalence and weighted bases for each BMI status (normal, overweight or obese) for these conditions are based on the nurse weight.

Further details of weighting can be found in the methodology chapter of the Health Survey for England 2007: Healthy Lifestyles: Knowledge, attitudes and behaviour  
[www.ic.nhs.uk/pubs/hse07healthylifestyles](http://www.ic.nhs.uk/pubs/hse07healthylifestyles)

## Equivalised household income quintiles

Household income was established in the HSE by means of a show-card on which banded incomes were presented. There has been increasing interest recently in using measures of equivalised income that adjust income to take account of the number of persons in the household. To derive this, each household member is given a score depending, for adults, on the number of adults apart from the household reference person, and for dependent children, on their age. The total household income is divided by the sum of the scores to provide the measure of equivalised household income. All individuals in each household were allocated to the equivalised household income quintile to which their household had been allocated.

## Logistic Regression

Logistic regression is a statistical technique that examines the relationship between an outcome variable and a number of predictor variables. In the table presented, the outcome variable is being in the high health risk category.

Results are displayed as odds ratios for the final model. Odds are expressed relative to a reference category. An odds ratio of above 1 implies that people within the category are more likely to be in the high health risk category. The 95% confidence interval is also shown. Where the interval does not include 1, the association is unlikely to be due to random chance and we say the category is significantly different from the reference category.

For example, the odds ratio for women in the category 'Used to smoke cigarettes regularly' is 1.36, with a 95% confidence interval of 1.08-1.72. The reference category for this variable is 'Never smoked.' As the odds ratio is greater than 1 and the 95% confidence interval does not contain 1, we say that women who used to smoke cigarettes are more likely to be in the high risk health category than women who have never smoked.

## Hospital Episode Statistics codes: coding for Bariatric Surgery used in Tables 7.11 and 7.12

The term 'bariatric surgery' is often used to define a group of procedures that can be performed to facilitate weight loss although these procedures can be performed for conditions other than weight loss. It includes stomach stapling, gastric bypasses and sleeve gastrectomy. Using Hospital Episode Statistics (HES) data held at the NHS Information Centre, the number of Finished Consultant Episodes (FCEs) for bariatric surgery has been determined where the primary diagnosis was obesity (ICD-10 code E66) and the main or secondary procedure was one of the following OPCS codes for the relevant time periods. OPCS-4.2 codes were used between 1996/97 to 2005/06, OPCS-4.3 codes for 2006/07 and OPCS-4.4 codes for 2007/08 and 2008/09. (NB The change in OPCS codes from version 4.3 to 4.4 did not result in a change to the definition for bariatric surgery).

### The following OPCS 4.2 codes have been used for bariatric surgery from 1996/97 to 2006/07:

G27.2 Total gastrectomy and anastomosis of oesophagus to duodenum  
G27.3 Total gastrectomy and interposition of jejunum  
G27.4 Total gastrectomy and anastomosis of oesophagus to transposed jejunum  
G27.5 Total gastrectomy and anastomosis of oesophagus to jejunum nec  
G27.8 Other specified total excision of stomach  
G27.9 Unspecified total excision of stomach  
G28.1 Partial gastrectomy and anastomosis of stomach to duodenum  
G28.2 Partial gastrectomy and anastomosis of stomach to transposed jejunum  
G28.3 Partial gastrectomy and anastomosis of stomach jejunum nec  
G28.8 Other specific partial excision of stomach  
G28.9 Unspecified partial excision of stomach  
G30.1 Gastroplasty nec  
G30.2 Partitioning of stomach nec  
G30.8 Other specified plastic operations on stomach  
G30.9 Unspecified plastic operations on stomach  
G31.1 Bypass of stomach by anastomosis of oesophagus to duodenum  
G31.2 Bypass of stomach by anastomosis of stomach to duodenum  
G31.3 Revision of anastomosis of stomach to duodenum  
G31.4 Conversion to anastomosis of stomach to duodenum  
G31.8 Other specified connection of stomach to duodenum  
G31.9 Unspecified connection of stomach to duodenum  
G31.0 Conversion from pervious anastomosis of stomach to duodenum  
G32.0 Conversion from previous anastomosis of stomach to transposed jejunum  
G32.1 Bypass of stomach by anastomosis of stomach transposed to jejunum  
G32.2 Revision of anastomosis of stomach to transposed jejunum  
G32.3 Conversion to anastomosis of stomach to transposed jejunum  
G32.8 Other specified connection of stomach to transposed jejunum

G32.9 Unspecified connection of stomach to transposed jejunum  
G33.1 Bypass of stomach by anastomosis of stomach to jejunum nec  
G33.2 Revision of anastomosis of stomach to jejunum  
G33.3 Conversion of anastomosis of stomach to jejunum nec  
G33.8 Other specified other connection of stomach to jejunum  
G33.9 Unspecified other connection of stomach to jejunum  
G33.0 Conversion from previous anastomosis of stomach to jejunum nec  
G38.8 Other specified other open operations on stomach  
G48.1 Insertion of gastric bubble  
G48.2 Attention of gastric bubble

**The following OPCS 4.3/OPCS 4.4 codes have been used for bariatric surgery in 2006/07 onwards (in addition to above):**

G28.4 Sleeve gastrectomy and duodenal switch  
G28.5 Sleeve gastrectomy nec  
G30.3 Partitioning of stomach using band  
G30.4 Partitioning of stomach using staples  
G31.5 Closure of connection of stomach and duodenum  
G31.6 Attention of connection of stomach and duodenum  
G32.4 Closure of connection of stomach to transposed jejunum  
G32.5 Attention to connection of stomach to transposed jejunum  
G33.5 Closure of connection of stomach to jejunum nec  
G33.6 Attention to connection of stomach to jejunum  
G38.7 Removal of gastric band  
G71.6 Duodenal switch

# Appendix C Government policy and targets

## Obesity

### Change 4 Life

In January 2009 the government launched its ambitious new campaign Change 4 Life – a society wide movement that aims to prevent people from becoming overweight by encouraging them to eat better and move more. The campaign will encourage target groups to

- Be aware of the risks of accumulating dangerous levels of fat in their bodies and understand the health risks associated with this condition
- Reduce overall calorie intake and develop healthier eating habits, In particular by;
- cutting down on foods and drinks high in added sugar
- cutting down on food high in fat, particularly saturated fat
- reducing frequency of snacking in favour of regular balanced meals
- eating more fruit and vegetables (increase the 5-a-day habit)
- Increase exercise by engaging in regular physical activity, with particular emphasis on parent/child activities and by avoiding prolonged periods of inactivity and sedentary behaviour

<http://www.dh.gov.uk/en/News/Currentcampaigns/Change4life/index.htm>

### Healthy Weight, Healthy Lives: A Cross Government Strategy for England

The government's new ambition on excess weight, announced in the Comprehensive Spending Review 2007 is to be the first major country: *to reverse the rising tide of obesity and overweight in the population, by ensuring that all individuals are able to maintain a healthy weight. Our initial focus is on children: by 2020 we will have reduced the proportion of overweight and obese children to 2000 levels.* The Department of Health is responsible for overall policy on obesity and is jointly responsible with the Department for Children, Schools and Families (DCSF) for tackling child obesity. Although the ambition covers a period of 12 years, progress for the first three years 2008-11 will be monitored through the inclusion of child obesity as one of the indicators in the Child Health PSA (PSA 12). This will provide a solid platform upon which to expand efforts to reduce the proportion of overweight children, as well as the proportion of obese children in order to fulfil the 2020 ambition.

While accountability for meeting the ambition will be based on indicators of BMI in Reception and Year 6, the government want to ensure that action is not solely focused on these age groups. They are therefore committing to publishing an annual report setting out performance against these and other BMI indicators:

- Children in Reception Year: overweight and obesity levels;
- Children in Year 6: overweight and obesity levels;
- Young adults: overweight and obesity levels (based on Health Survey for England data);
- Adults: overweight and obesity levels (based on Health Survey for England data).

However, because changes to population measures of BMI can take some time to become apparent, the government will complement these with a range of early indicators of success which it is yet to finalise.

For further information on this and the government's wider strategy on tackling this health issue please view the full document on the link below:

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_082378](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_082378)

## Public Service Agreements

In October 2007, the government published a new long-term plan to reverse the rising tide of obesity and overweight in the population. As part of this a new Public Service Agreement (PSA) was created with the aim of improving the health and well being of children and young people. The PSA aims to:

- Reduce the number of obese and overweight children to 2000 levels by 2020. In the context of tackling obesity across the population
- This replaces the previous target to:
- Halt the year-on-year rise in obesity among children aged under 11 by 2010 in the context of a broader strategy to tackle obesity in the population as a whole.

See link for further information:

[http://www.hm-treasury.gov.uk/d/pbr\\_csr07\\_psa12.pdf](http://www.hm-treasury.gov.uk/d/pbr_csr07_psa12.pdf)

## NICE guidance

The National Institute for Health and Clinical Excellence (NICE) and the National Collaborating Centre for Primary Care (NCC-PC) have published guidance on the prevention, identification, assessment, treatment and weight management of overweight and obesity in adults and children.

The guidance is intended to provide recommendations on the clinical management of overweight and obesity in the NHS. It also provides guidance on primary prevention approaches aimed at supporting adults and children to maintain a healthy weight. The latter includes advice as to what can be done in schools, in the workplace and in the wider community.

The guidance was published December 2006 and can be accessed on the NICE website.

<http://www.nice.org.uk/guidance/CG43>

## Physical activity

### NICE guidance

In March 2006 the National Institute for Health and Clinical Excellence (NICE) published physical activity public health intervention guidance concerning four common methods used to increase individual physical activity levels. On the basis of its review of the available evidence, NICE

recommended that primary care practitioners should take the opportunity, whenever possible, to identify inactive adults and advise them to aim for 30 minutes of moderate activity on at least five days of the week.

<http://www.nice.org.uk/guidance/PH12/?c=296726>

## Public Service Agreements

In the 2007 comprehensive spending review an existing public service agreement was replaced by the new PSA 22 which aims to create a world class system for physical education and sport by:

- Increasing the percentage of 5-16 year olds participating in at least 2 hours per week of high quality PE and sport at school
- Increasing the percentage of 5-19 year olds participating in a at least 3 further hours a week of sporting opportunities

The full PSA can be viewed on the Treasury web site:

[http://www.hm-treasury.gov.uk/d/pbr\\_csr07\\_psa22.pdf](http://www.hm-treasury.gov.uk/d/pbr_csr07_psa22.pdf)

The department for Children Schools and Families (DCSF) is the lead on this PSA

[http://www.culture.gov.uk/about\\_us/our\\_priorities\\_and\\_targets/default.aspx](http://www.culture.gov.uk/about_us/our_priorities_and_targets/default.aspx)

## The Play Strategy

The national Play Strategy published in December 2008, backed by £235 million of dedicated investment for local play facilities across the country, is informed by extensive consultation with children, young people and their parents.

The Government's aim is for all children to be able to enjoy a range of safe and exciting places to play close to where they live. Through children and communities' involvement in the design and planning of these spaces, play areas will be valued locally and continue to reflect the distinct needs of each community.

Further information can be found at:

<http://www.dcsf.gov.uk/play/>

## Be active, be healthy: a plan for getting the nation moving

Be active, be healthy establishes a new framework for the delivery of physical activity alongside sport for the period leading up to the London 2012 Olympic Games, Paralympic Games and beyond. Programmes outlined in the plan will contribute to government's ambition of getting 2 million more people active by 2012 and have been designed to leave a lasting legacy from the Games.

Further information can be found at:

[http://www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh\\_094358](http://www.dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh_094358)

# Diet

## School Food Trust

The School Food Trust was established by the Department for Education and Skills in September 2005. Its remit is to transform school food and food skills, promote the education and health of children and young people and improve the quality of food in schools.

<http://www.schoolfoodtrust.org.uk/index.asp>

## Choosing Health? Choosing a Better Diet

'Choosing Health? Choosing a Better Diet' was published in Spring 2004 and sets out nutritional priorities in England. Improving health and narrowing health inequalities are priorities for the government. However, although there is much government can do to maximise opportunities for people to enjoy better health, these are issues for society as a whole. The NHS and other public bodies, local government, the voluntary and community sector, individuals, communities, the food industry, employers and the media all have a role to play.

The nutritional priorities, for the population of England as a whole, are:

- increase average consumption of a variety of fruit and vegetables to at least 5 portions per day (estimated to be 2.8 portions per day in 2000/01 from the National Diet and Nutrition Survey data);
- increase the average intake of dietary fibre to 18 grams per day (estimated to be 13.8 grams per day in 2000/01 from the National Diet and Nutrition Survey data);
- reduce average intake of salt to 6 grams per day (estimated to be 9.5 grams per day in 2000/01 from the National Diet and Nutrition Survey data);
- reduce average intake of saturated fat to 11% of food energy (estimated to be at 13.3% in 2000/01 from the National Diet and Nutrition Survey data);
- maintain the current trends in reducing average intake of total fat to 35% of food energy (estimated to be at 35.3% in 2000/01 from the National Diet and Nutrition Survey data); and
- reduce the average intake of added sugar to 11% of food energy (estimated to be 12.7% in 2000/01 from the National Diet and Nutrition Survey data).

[http://www.dh.gov.uk/Consultations/ClosedConsultations/ClosedConsultationsArticle/fs/en?CONTENT\\_ID=4084430&chk=IRO27F](http://www.dh.gov.uk/Consultations/ClosedConsultations/ClosedConsultationsArticle/fs/en?CONTENT_ID=4084430&chk=IRO27F)

## '5 a day' programme

The government's '5 a day' programme aims to increase fruit and vegetable consumption by

- raising awareness of the health benefits
- improved access to fruit and vegetables through targeted action
- The '5 a day' programme has five strands which are underpinned by an evaluation and monitoring programme
- School Fruit and Vegetable Scheme (formerly the National School Fruit Scheme)
- Local '5 a day' initiatives
- National/local partners (Government Health Consumer Groups)
- Communications programmes

- Work with industry – producers, caterers, retailers  
<http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/FiveADay/index.htm>

## Appendix D Editorial notes

For the purpose of clarity, figures in the bulletin are shown in accordance with the Information Centre publication conventions.

These are as follows:

- . not applicable
- .. not available
- zero
- 0 less than 0.5

Numbers greater than or equal to 0.5 are rounded to the nearest integer. Totals may not sum due to rounding.

Most data in the bulletin discussed in the text are presented in a table; the relevant table number is given at the end of the last paragraph in the discussion around each table. For data where no table is presented a reference number to the data source is provided in the relevant section of text.

## Appendix E Further information

This new report (published 10th February 2010) draws together statistics on obesity, physical activity and diet. It is anticipated that the next bulletin will be published in 2011 but may be in a different format following a compendia report review in Spring 2010. This report forms part of a suite of statistical reports which also cover drug misuse, alcohol and smoking which are also under review.

Constructive comments on this report would be welcomed. Any questions concerning any data in this publication, or requests for further information, should be addressed to:

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Media Relations Manager:  
Telephone: 0845 300 6016  
Email: [enquiries@ic.nhs.uk](mailto:enquiries@ic.nhs.uk)

This report is available on the internet at:

[www.ic.nhs.uk/pubs/opad10](http://www.ic.nhs.uk/pubs/opad10)

Previous reports on Statistics on obesity, physical Activity and diet: England can be found on the NHS Information Centre website:

<http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/obesity>

Information on data sources used within this report are described in [Appendix A](#) and government plans and targets discussed in [Appendix C](#). However further information regarding the topics discussed within this report maybe found from the following sources:

### 5-a-day

The 5-a-day website provides lots of useful information and resources for health professionals as well as the general public about healthy eating and fruit and vegetable consumption

<http://www.5aday.nhs.uk/>

## Annual Report of the Chief Medical Officer

Over the last 150 years, annual reports have been published by the Chief Medical Officer, almost every year. These reports provide an important record of the nation's health and the major challenges faced by government in tackling the main problems. In the last twenty years or so, the annual report has also provided detailed accounts of a wide range of initiatives taken by the government on public health and in the NHS.

[http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/AnnualReports/DH\\_076817](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/AnnualReports/DH_076817)

## Association for the Study of Obesity

The Association for the Study of Obesity (ASO) was founded in 1967 and is the UK's foremost organisation dedicated to the understanding and treatment of obesity. The ASO has three key objectives:

- To promote professional awareness of obesity and its impact on health.
- To educate and disseminate recent research on the causes, consequences, treatment, and prevention of obesity
- To prioritise obesity and provide opinion leadership in the UK.
- <http://www.aso.org.uk/portal.asp>

## Eurostat

Data presented on BMI by European Union (EU) countries, collected by Eurostat uses Health Interview Surveys (HIS). The HIS data are collected in different years depending on the country, ranging from 1996 to 2003. There is no fixed periodicity in these kinds of health surveys. Very few countries have a yearly survey on these topics. Data are disseminated simultaneously to all interested parties through a database update and on Eurostat's website.

There are other sources available which present international figures on BMI. A source of such data is the World Health Organisation (WHO). The source of BMI from WHO varies from country to country. The prevalence of obesity among EU countries is broadly similar between Eurostat and WHO.

Eurostat. Available at:

[epp.eurostat.ec.europa.eu/portal/page?\\_pageid=0,1136184,0\\_45572595&\\_dad=portal&\\_schema=PORTAL](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=0,1136184,0_45572595&_dad=portal&_schema=PORTAL)

## Food Standards Agency

The Food Standards Agency (FSA) is an independent government department set up by an Act of Parliament in 2000 to protect the public's health and consumer interests in relation to food. The FSA provides advice and information to the public and government on food safety from farm to fork, nutrition and diet. It also protects consumers through effective food enforcement and monitoring. Although the FSA is a government agency, it works at 'arm's length' from government because it does not report to a specific minister and is free to publish any advice it issues.

<http://www.food.gov.uk/>

## General Household Survey 2002

The General Household Survey (GHS) is a multi purpose continuous survey carried out by the Office of National Statistics (ONS) which collects information on a range of topics from people living in households in Great Britain. The survey started in 1971. The GHS 2002 module 'Sport and leisure' contains further useful information on the participation of adults (aged 16 and over) in a wide range of sport and leisure activities.

[www.statistics.gov.uk/LIB2002/default.asp](http://www.statistics.gov.uk/LIB2002/default.asp)

## International Obesity TaskForce

The International Obesity TaskForce (IOTF) is a global network of expertise, a research-led think tank and advocacy arm of the IOTF. The IOTF is working to alert the world to the growing health crisis threatened by soaring levels of obesity. It works with the World Health Organisation, other NGOs and stakeholders to address this challenge.

[www.iotf.org](http://www.iotf.org)

## National Institute for Health and Clinical Excellence (NICE)

The NICE website includes some information and clinical guidelines on the prevention, identification, assessment and management of overweight and obesity in adults and children.

<http://www.nice.org.uk/CG43>

## National Obesity Forum

The National Obesity Forum (NOF) was established by medical practitioners in May 2000 to raise awareness of the growing health impact that being overweight or obese was having on patients and the NHS

<http://www.nationalobesityforum.org.uk/>

## National Child Measurement Programme

The National Child Measurement Programme (NCMP) weighs and measures children in Reception (aged 4–5 years) and Year 6 (aged 10–11 years). The findings are used to inform local planning and delivery of services for children, and gather population-level surveillance data to allow analysis of trends in excess weight. The latest NCMP data, for the school year 2008/09, has been collected by the NHS Information Centre (IC) and a national report is available from:

<http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/obesity/national-child-measurement-programme-england-2008-09-school-year>

## Primary Care Management of Adult Obesity – Dr Foster

The aim of the report Primary Care Management of Adult Obesity, published by Dr Foster, is to examine the degree to which Primary Care Organisations (PCOs) across the UK are currently tackling the problem of obesity.

[www.drfooster.co.uk/library/reports/obesityManagement.pdf](http://www.drfooster.co.uk/library/reports/obesityManagement.pdf)

## School Fruit and Vegetable Scheme

Under the scheme, all four to six year old children in Local Education Authority maintained infant, primary and special schools are now entitled to a free piece of fruit or vegetable each school day. It was introduced after the NHS Plan 2000 included a commitment to implement a national school fruit scheme by 2004.

[www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/FiveADay/FiveADaygeneralinformation/DH\\_4002149](http://www.dh.gov.uk/en/Policyandguidance/Healthandsocialcaretopics/FiveADay/FiveADaygeneralinformation/DH_4002149)

## Scientific Advisory Committee on Nutrition

The Scientific Advisory Committee on Nutrition (SACN) is an advisory committee of independent experts that provides advice to the Food Standards Agency and Department of Health as well as other government agencies and departments. Its remit includes matters concerning nutrient content of individual foods, advice on diet and the nutritional status of people.

[www.sacn.gov.uk/](http://www.sacn.gov.uk/)

## Scottish Health Survey

The Scottish Health Survey provides information on the health and health-related behaviours of people living in private households in Scotland. Among the Surveys' aims are to estimate the prevalence of a range of health conditions and to monitor progress towards Scottish health and dietary targets. The 2008 survey is the fourth in a series which began in 1995 with a survey of adults aged 16 to 64. The 1998 survey also included children aged 2 to 15 and adults aged 65 to 74 for the first time. From 2003, the survey did not have any age limits and included children from 0 upwards and adults aged 16 and over. All four surveys were commissioned by what is now the Scottish Executive Health Department.

The Scottish Health Survey 2008. Available at:

<http://www.scotland.gov.uk/Publications/2009/09/28102003/0>

## Securing Good Health for the Whole Population

Derek Wanless' first report 'Securing our Future Health: Taking a Long-Term View' was published in April 2002. This identified three scenarios for meeting the long-term financial and resource needs of the NHS for the next two decades, to 2022. In its response to the report, the government announced that it would address the 'fully engaged' scenario identified by Mr Wanless. Under this scenario the level of public engagement in relation to health is high, life expectancy goes beyond current forecasts, health status improves dramatically, use of resources is more efficient and the health service is responsive with high rates of technology uptake. The scenario envisaged delivery of better health outcomes at less cost than the others considered.

In April 2003, the Prime Minister, the Chancellor and the Secretary of State for Health asked Derek Wanless, ex-Group Chief Executive of NatWest, to provide an update of the challenges in implementing the fully engaged scenario set out in his report on long-term health trends. Derek Wanless' final report "Securing Good Health for the Whole Population" was published on 25th February 2004.

[www.hm-treasury.gov.uk/consultations\\_and\\_legislation/wanless/consult\\_wanless04\\_final.cfm](http://www.hm-treasury.gov.uk/consultations_and_legislation/wanless/consult_wanless04_final.cfm)

## South East Public Health Observatory

The South East Public Health Observatory (SEPHO) is one of nine regional observatories throughout England and Wales and is a member of the Association of Public Health Observatories (APHO). SEPHO's aim is to improve health and reduce inequalities in the South East region by providing information and support to local organisations, partners and stakeholders.

As part of the PHO Choosing Health series, the report Choosing Health in the South East: Obesity defines obesity and overweight, its causes and impacts on health, and looks at this issue as it varies with geography, age, gender, ethnicity, etc. It also discusses obesity and overweight in children and interventions.

<http://www.sepho.org.uk/Download/Public/9783/1/SEPHO%20obesity%20report%20Nov%202005.pdf>

For further information on a wide range of public health issues (including obesity, physical activity and diet) visit the APHO website.

<http://www.apho.org.uk/resource/item.aspx?RID=44273>

## Tackling child obesity

This report is based on a joint study conducted by the Audit Commission, the Healthcare Commission and the National Audit Office, one of a series that looks at the “delivery chains” between important national policy intentions (set out in government departments’ Public Service Agreement targets agreed with HM Treasury) and local delivery.

[www.nao.org.uk/publications/nao\\_reports/05-06/0506801.pdf](http://www.nao.org.uk/publications/nao_reports/05-06/0506801.pdf)

## Time Use Survey

The UK Time Use Survey is conducted on behalf of a funding consortium consisting of: the Economic and Social Research Council; the Department of Culture, Media and Sport; the Department for Education and Skills; the Department of Health; the Department of Transport, Local Government and the Regions; and the Office for National Statistics.

The main aim of the survey was to measure the amount of time spent by the UK population on various activities. The UK 2000 Time Use Survey was the first time that a major survey of this type has been conducted in the UK and as such provides an opportunity to inform a cross-section of policy areas as well as having interest for academia, social research centres and the advertising and retail sector.

In 2000, the first Time Use Survey was carried out using a combination of questionnaires and diaries. In 2005, a pre-coded time use diary was used to collect the results from adults aged 16 and over as part of the National Statistics Omnibus Survey. The Omnibus diary results are compared with the data collected in the UK 2000 Time Use Survey.

<http://www.statistics.gov.uk/cci/article.asp?ID=1600>

## Welsh Health Survey 2008

The Welsh Health Survey is a source of information about the health of people living in Wales, the way they use health services, and the things that can affect their health and is produced by the Welsh Assembly Government. This survey replaced two previous surveys: the former Welsh Health Survey (undertaken in 1995 and 1998) and the former Health in Wales Survey (undertaken every two to three years between 1985 and 1996). Results from this survey are not comparable with those from the previous surveys because of differences in the questionnaires and the way the survey is designed and conducted. One addition to the survey is the collection of some limited information on children's health. More detailed information for children is collected from 2007 onwards.

The Welsh Health Survey 2008. Available at:

<http://wales.gov.uk/topics/statistics/publications/healthsurvey2008/?lang=en>

## World Health Organisation

The World Health Organisation (WHO) have created a global database on BMI. This database provides both national and sub-national adult underweight, overweight and obesity prevalence rates by country, year of survey and gender. The information is presented interactively as maps, tables, graphs and downloadable documents.

[www.who.int/bmi/index.jsp](http://www.who.int/bmi/index.jsp)



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