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Statistics on obesity, physical activity and diet: England, 2011

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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. Note, many of these were introduced by the previous government but were relevant at the time the data were collected.

Chapters 2 to 6 cover obesity, physical activity and diet providing an overview of the key findings from a number of sources of previously published information, whilst maintaining useful links to each section of the reports. Additional analysis has been undertaken of the Health Survey for England (HSE) to provide more detailed information previously unpublished.

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 NHS Information Centre or the National Audit Office. Previously unpublished figures on obesity-related Finished Hospital Episodes and Finished Consultant Episodes for 2009/10 are presented using data from The NHS Information Centre's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 2009, almost a quarter of adults (22% of men and 24% of women aged 16 or over) in England were classified as obese (BMI 30kg/m² or over).
- A greater proportion of men than women (44% compared with 33%) in England were classified as overweight in 2009 (BMI 25 to less than 30kg/m²).
- Thirty-eight per cent of adults had a raised waist circumference in 2009 compared to 23% in 1993. Women were more likely than men (44% and 32% 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: 19% were estimated to be at increased risk; 14% at high risk and 20% at very high risk in 2009.

Equivalent figures for women were: 14% at increased risk, 18% at high risk and 23% at very high risk.

- In 2009, around three in ten boys and girls aged 2 to 15 were classed as either overweight or obese (31% and 28% respectively), which is very similar to the 2008 findings (31% for boys and 29% for girls).
- In 2009, 16% of boys aged 2 to 15, and 15% of girls were classed as obese, an increase from 11% and 12% 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 15% in boys and 13% in girls in 2009).
- In 2009/10, around one in ten pupils in Reception class (aged 4-5 years) were classified as obese (9.8%). This compares to around a fifth of pupils in Year 6 (aged 10-11 years) (18.7%). Boys were more likely to be obese than girls for both groups. In 2009/10, 13.3% of pupils in Reception class and 14.6% of pupils in Year 6 were reported as being overweight.

Physical Activity

- In 2009/10, almost a quarter of adults (24.3% of respondents) in England reported that they had taken part in sport on 11 to 28 days within a four week period.
- In 2009, 41% 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. However 20% of respondents reported that they took walks of at least 20 minutes “less than once a year or never”.
- 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).
- In 2009/10, 86% of 5-10 year olds had taken part in sports activities outside of school time in the last four weeks and of these, almost 78% participated in the last week. Whereas 97% of 11-15 year olds have taken part in sporting activities in the last four weeks and of these, 88% had participated in the past week.
- In 2009/10, 55% of pupils in years 1-13 of participating schools took part in at least 3 hours of high quality PE and out of hours school sport in a typical week. Among the three types of schools that were surveyed, 64% of pupils in primary schools, 46% of pupils in secondary schools and 64% of pupils in special schools reported participating in at least three hours of high quality PE and out of hours school sport in a typical week.

Diet

- In 2008/09, it was found that people are eating less saturated fat, trans fat and added sugar than they were 10 years ago.
- In 2009, around 1 in 5 children aged 5 to 15 consumed five or more portions of fruit and vegetables a day (21% of boys and 22% of girls). This has increased from 5 years ago where the corresponding figures were 13% and 12% in 2004.
- In 2009, in the UK, there was a reduction in the quantities purchased in most major food groups. For example, purchases of fresh fruit fell by 3.6% between 2008 and 2009 and fresh green vegetables fell by 1.1%.

- Total energy intake per person has risen since 2008 values but the overall trend from 2006 is downwards. Total energy intake for 2009 was 2303 kcal per person per day (2,276 in 2008).

Health Outcomes

- In 2008, 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 48% of men and 46% of women in the obese group, compared with 32% of overweight men and women and 17% of men and women in the normal weight group.
- The number of recorded Finished Admission Episodes (FAEs) in NHS hospitals with a primary diagnosis of obesity among people of all ages was 10,571 in 2009/10. This is over ten times as high as the number in 1999/00 (979) and more than 30% higher than in 2008/09 (7,988).
- In 2009/10, the number of recorded Finished Consultant Episodes (FCEs) with a primary diagnosis of obesity and a main or secondary procedure of 'bariatric surgery' among people of all ages was 7,214. Females continue to account for the majority of these; in 2009/10 there were 1,450 such FCEs for males and 5,762 for females. Hospital coding for bariatric surgery was updated in 2009/10, which means it is now possible to identify how many bariatric procedures were for maintenance of an existing gastric band; 1,444 were for maintenance.
- In 2009, the number of prescription items dispensed for the treatment of obesity was 1.45 million; this is more than eleven times the number in 1999 (127 thousand).
- In 2009/10, the age groups with the highest number of admissions with a primary diagnosis of obesity were those aged 35 to 44 (3,132) and those aged 45 to 54 (3,076). Together these two age groups accounted for more than half of all such admissions.

1 Introduction

This annual statistical report presents a range of information on obesity, physical activity and diet, drawn together from a variety of previously published sources. It also presents new analysis not previously published before which mainly consists of data from The NHS Information Centre's *Hospital Episode Statistics (HES)* databank as well as data from the Prescribing Unit at The NHS Information Centre. It also includes additional analysis on the *Health Survey for England (HSE)* dataset.

The HSE, one of the major sources of information for this report, consists of 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 publication 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 data 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/m² means that person is considered to be overweight, and a BMI of 30kg/m² or above means that person is considered to be obese.

In England, childhood overweight and obesity is defined using the British 1990 growth reference (as used in the sources of this report). This is because BMI varies with age and sex in children and adolescents.

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 have 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.¹

In November 2010, the new coalition government set out its long-term vision for the future of public health in England in the White Paper, *Healthy Lives, Healthy People: Our Strategy for Public Health in England*.² The White Paper describes a new approach for public health in England. It also sets out examples of

national level action to help tackle obesity. This includes:

- Continuing to run the National Child Measurement Programme, including sharing results with parents, so that local areas have information about levels of overweight and obesity in children to inform planning and commissioning of local services.
- Helping consumers make healthier food choices through the Change4Life³ programme.
- Sharing learning from 'Healthy Towns' which have been leading the way in developing community-led action to support people to become more active and promote healthy eating.
- Working with business and other partners through the Public Health Responsibility Deal (see section on Diet)

The Department of Health will be publishing a document on obesity which will set out how obesity will be tackled in the new public health and NHS systems.

[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, demographics and lifestyle habits are also explored. [Chapter 3](#) on Obesity among children focuses upon key obesity measurements and trends for children, again, 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.⁴ These recommendations and their evidence build on those published by the Health Education Authority in 1998.⁵ The four home countries are currently reviewing the CMO guidelines in light of new and emerging evidence.

In 2007, a Public Service Agreement (PSA) 22 indicator⁶ was introduced by the then government to deliver a successful Olympic and Paralympic Games and to get more children and young people taking part in high quality PE and sport. This PE and Sports Strategy for Young People supported the delivery of PSA22 and aimed to give all children aged 5 to 16 the opportunity to take part in five hours of PE or sport during the school week (three hours for 16-19 year olds). The new coalition government is committed to reforming sport in schools to create a lasting Olympic legacy. The PE and Sports Strategy of the previous administration ended in October 2010 to give schools the time and freedom to focus on providing competitive sport.

In order to tackle physical inactivity outside school, initiatives such as the Change4Life continue to be driven forward (in conjunction with tackling obesity and healthier eating).

The latest White Paper, *Healthy Lives, Healthy People*, proposes to launch physical activity initiatives, including a £135 million Lottery investment in a Mass Participation and Community Sport legacy programme. There will be updated guidelines on physical activity and the Department of Health will broaden the Change4Life programme to take a more holistic approach to childhood issues, for instance covering strategies to help parents talk to their children about other health issues and behaviour, such as alcohol.

There is currently a *Public Health Outcomes Framework*⁷ out for consultation which finishes at the end of March 2011. This could mean future changes in what information is collected on physical activity.

Chapter 4 on Physical activity among adults and **Chapter 5** on Physical activity among children cover information on self reported and accelerometry data. Physical activity levels, according to physical activity guidelines, and types of physical activity are considered. 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*, *The National Travel Survey*, *The Active People Survey*, *The PE and Sport Survey* and other fitness surveys.

The Active People Survey, published by Sport England, provides information on participation in sport and recreation. It provides the measurements for the Local area estimates of adult participation in sport and active recreation (formerly National Indicator 8) as well as the other Local area estimates of cultural participation (formerly 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,⁸ to reduce the risks of coronary heart disease and some cancers.

The latest White Paper, *Healthy Lives, Health People* describes a partnership between Department of Health and the Association of Convenience Stores aimed at increasing the availability and sales of fresh fruit and vegetables in convenience stores in deprived areas. Work includes the positioning of dedicated fruit and

vegetable chiller cabinets in prominent positions and the use of Change4Life branding. By November 2010, over 190 stores in five regions were retailing fresh fruit and vegetables using the popular Change4Life brand. By March 2011, Change4Life convenience stores will be active in every region of the country. Evaluation shows an increase in sales of fruit and vegetables of up to 50% in some stores.

The government plan to launch a Public Health Responsibility Deal in early 2011 which will deliver voluntary agreements to improve public health through activities such as further reformulation of food; better information for consumers about food; and promotion of more socially responsible retailing and consumption of alcohol. The Department for Environment, Food and Rural Affairs' (Defra) Fruit and Vegetable Task Force has recommended that food containing fruit or vegetables with other types of food should be added to the 5 A DAY licensing scheme. This work is ongoing with industry and the voluntary sector.

Under the new government, the Department for Education will maintain existing standards for school food. All school food must meet the minimum standards set out in the Education (Nutritional Standards and Requirements for School Food) (England) Regulations 2007⁹, which came into force on 10 September 2007, as amended by the Education (Nutritional Standards and Requirements for School Food) (England) (Amendment) Regulations 2008.¹⁰ The amendments reflect minor technical changes to the school lunch requirements for Local Authority (LA)-maintained primary, secondary and special schools and pupil referral units. The regulations introduce combined food-based and nutrient-based standards for school lunches in primary schools from September 2008 and secondary and special schools and pupil referral units from September 2009. These require school lunches to provide prescribed amounts of essential nutrients, vitamins and minerals.

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* and *The Low Income Diet and Nutrition Survey*.

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 HSE 2009.¹

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. Regional, national and international comparisons have been provided as well as the Quality and Outcomes Framework (QOF) obesity prevalence rates.

The chapter also includes a focus 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)² 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/m². 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/m²). [Figure 2.1](#) presents the various BMI ranges used to define BMI status.

Figure 2.1 BMI definitions

Definition	BMI range (kg/m ²)
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/m² 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/m². For adults with a BMI of 35kg/m² 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 ²)	No increased risk	Increased risk	High risk
Obesity I (30 to less than 35 kg/m ²)	Increased risk	High risk	Very high risk

2.2 Overweight and obesity prevalence

2.2.1 BMI

Chapter 7 on pages 113 to 136 of the HSE 2009 report provides information on anthropometric measures, overweight and obesity. In particular, Table 7.2 on page 127 shows BMI among adults by age and gender for 2009.

The key findings show that in 2009, almost a quarter of adults (22% of men and 24% of women) were obese, and 66% of men and 57% of women were overweight including obese. By comparison 32% of men and 41% of women had a BMI in the normal range. A greater proportion of men than women were overweight (44% compared with 33%).

Overall, mean BMI in men was the same as in women (27.0kg/m²) 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 118 of the HSE 2009 report shows prevalence of overweight and obesity by age and gender for 2009.

2.2.2 Waist circumference

Table 7.5 on page 130 of the HSE 2009 report shows the distribution of mean waist circumference and prevalence of raised waist circumference by age and gender for 2009.

In 2009, women were significantly more likely than men to have a raised waist circumference (44% and 32% 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 7.8 on page 132 in HSE 2009 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: 19% of men were at increased risk, 14% at high risk and 20% at very high risk. The equivalent proportions for women were: 14% at increased risk, 18% at high risk, and 23% at very high risk.

2.3 Trends in obesity and overweight

2.3.1 BMI

Table 4 from the HSE 2009 Adult Trend Tables³ shows that in England the proportion of adults with a normal BMI decreased between 1993 and 2009, from 41% to 32% among men and from 49% to 41% among women. Among men, the proportion that were overweight over the same period stayed the same at 44%. 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 22% in 2009 for men and from 16% to 24% for women. This increase is also shown in [Figure 7E](#) on page 122 of the HSE 2009 report (based on a 3 year moving average).

2.3.2 Waist circumference

Table 5 from the HSE 2009 Adult Trend Tables shows that between 1993 and 2009, the proportion of adults with a raised waist circumference also increased, from 23% to 38% (from 20% to 32% among men and from 26% to 44% among women).

2.4 Obesity and demographic characteristics

The HSE 2009 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 7.3 on page 128 of the HSE 2009 report shows that there are very little differences in mean BMI by equivalised household income for men with the exception of those in the lowest income quintile who had slightly lower BMI; in contrast for 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 three income quintiles (ranging from 27%-33%) than women in the highest two quintiles (ranging from 17%-21%). The relationships between BMI and income for men were less clear.

Table 7.6 on page 130 of the HSE 2009 report shows that the proportion of women with a raised waist circumference was also lowest in the highest income quintile (36%) and highest in the lowest income quintile (51%). There was no observed relationship between waist circumference and equivalised household income for men.

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 report⁴ 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 report⁵ included a regression analysis exploring the risk factors associated with a raised waist circumference; and the HSE 2003 report⁶ 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). 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

Self-reported physical activity levels were not included in the HSE 2009 report but did feature in the HSE 2008⁷ report. [Figure 2C](#) and [Table 2.5](#) on pages 31 and 47 of the HSE 2008 show self reported activity levels by BMI category. Both men and women who were overweight (BMI 25 to less than 30 kg/m²) or obese (BMI 30 kg/m² 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/m²). 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 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 waist circumference by Strategic Health Authority

[Table 7.3](#) on page 194 of the HSE 2008 report shows that among the different Strategic Health Authorities (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.

2.7.2 Quality and Outcomes Framework

The Quality and Outcomes Framework (QOF) for 2009/10⁸ 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 2009/10, it was calculated that the prevalence rate based on GP obesity registers was 10.5%; much lower than the 23% for adults reported in HSE 2009. 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.

The Quality and Outcomes Framework (QOF) prevalence data tables for 2009/10⁹ show a breakdown of obesity at a regional level. Prevalence rates based on the QOF ranged from 13.4% in North East SHA to 9.0% in South East Coast SHA in 2009/10. **Figure 2.3** shows the obesity prevalence rates from QOF for each SHA in England in 2009/10. There is clearly a north-south divide with northern England having higher obesity prevalence rates than southern England.

Figure 2.3 Obesity prevalence rates quoted by QOF for each SHA in 2009/10

SHA	Obesity prevalence (%)
North East	13.4%
North West	11.5%
Yorkshire and The Humber	11.4%
East Midlands	10.8%
West Midlands	11.6%
East of England	10.0%
London	9.5%
South East Coast	9.0%
South Central	9.6%
South West	9.9%

2.7.3 National and international comparisons

Scotland and Wales carry out their own health surveys. Adult BMI information can be found in Section 7.5 on pages 223 to 224 and Tables 7.2 and 7.3 on pages 236 to 239 of the *Scottish Health Survey 2009*.¹⁰ Similarly, adult BMI information for Wales can be found in Section 4.7 on pages 56 to 58 and Table 4.8 on page 69 of the *Welsh Health Survey 2009*.¹¹

The Organisation for Economic Co-operation and Development (OECD) in 2009¹² published comparable 2007 data on overweight and obese populations across different countries. **Figure 2.4** 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 B](#).

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/m² (25 ≤ BMI < 30 kg/m²) which is same as the HSE.
3. Obesity is defined as a BMI of 30 kg/m² or more (BMI ≥ 30 kg/m²).
4. Data for Luxembourg, New Zealand, Slovak Republic and the United Kingdom are based on actual height and weight measurements rather than self-reported data.

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* report¹³ which 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*¹⁴ 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) 2009.¹ As described in [Chapter 1](#), the HSE 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 2009/10 data from the National Child Measurement Programme for England (NCMP)² 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 British 1990 growth reference (UK90) 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 85th (overweight) or 95th (obese) BMI percentiles based on the 1990 UK reference population.

3.2 Trends in overweight and obesity

Table 11.2 on page 201 of the HSE 2009 report shows that around three in ten boys and girls aged 2 to 15 were classed as either overweight or obese (31% and 28% respectively), which is very similar to the HSE 2008 findings (31% for boys and 29% for girls).

However, mean BMI was higher overall among girls than boys aged 2-15 (a difference of 0.2kg/m²). While mean BMI was generally similar among younger children of both sexes, the mean was higher among older girls than boys, with a gap ranging from 0.3kg/m² to 0.9kg/m² among those aged 12-15.

Table 4 of the HSE 2009 Child Trend Tables³ show that among boys aged 2 to 15, the proportion who were obese increased overall between 1995 and 2004 where the prevalence increased from 11.1%, to 19.4%, but has steadily fallen between then and 2009 to 16.1%. Among girls in the same age group, the proportion who were obese increased from 12.2% to 18.8% between the years of 1995 and 2005 but since then has steadily decreased to 15.3% in 2009. 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 2009 this

was 15.4% for boys and 12.9% for girls. (Note: data for 1995 to 2007 in Table 4 were revised in November 2009).

The same overall obesity increase was apparent among both younger children aged 2 to 10 and children aged 11 to 15. For boys aged 2 to 10, the prevalence of obesity increased overall from 9.7% in 1995, peaking at 17.4% in 2006 but then steadily falling to 13.7% in 2009. Among girls the prevalence of obesity increased from 10.6% in 1995 to 17.4% in 2005 but had similarly decreased by 2009 to 15.2%. In the 11 to 15 age group, obesity increased among boys from 13.9% in 1995 to 24.3 in 2004, falling back to 19.7% in 2009. The situation is similar among girls, increasing from 15.5 in 1995 to 26.7% in 2004 but decreasing to 15.4% in 2009 (itself representing a drop of 2.9% from the 2008 result).

Figure 11D on page 194 of the HSE 2009 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 2009/10, the NCMP data shows that around one in ten pupils in Reception class (aged 4-5 years) were classified as obese (9.8%) which compares to around a fifth of pupils in Year 6 (aged 10-11 years) (18.7%). Also, 13.3% of pupils in Reception class and 14.6% of pupils in Year 6 were reported as being overweight.

Obesity prevalence was significantly higher in urban areas than in rural areas for both school years, as was the case in previous years.

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 11B on page 192 of the HSE 2009 report shows the proportion of children who were overweight or obese in each equivalised household income quintile. Reflecting the pattern with mean BMI, girls in the highest two income quintiles were the least likely to be obese (6% in the highest quintile and 8% in the second highest), and girls in the lowest two quintiles were the most likely (19% and 21%). However, the pattern was slightly different among boys with similar proportions obese in the highest four quintiles (between 14% and 16%) and a higher proportion in the lowest quintile (20%).

3.4 Obesity and overweight prevalence by parental BMI

Overweight and obesity prevalence among children varied by parental BMI status. The HSE 2007⁴ 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. 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% for 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.

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

Statistics derived from the National Child Measurement Programme (NCMP) in England, enables us to make regional comparisons. Obesity prevalence ranged from 8.4% in South East Coast Strategic Health Authority (SHA) to 11.6% in London SHA for Reception and from 16.1% in South West SHA to 21.8% in London SHA for Year 6.

The NHS Information Centre provides an online database of results by PCT. Maps in Figures 11 and 12 on pages 26 and 27 of the 2009/10 NCMP publication show child obesity prevalence rates in Reception class and Year 6 by Primary Care Trust (PCT). Obesity prevalence varied, ranging from 6.2% in Richmond and Twickenham PCT to 14.8% in Southwark PCT for Reception; and from 12.1% in Richmond and Twickenham PCT to 28.6% in Westminster PCT for Year 6.

Information for Scotland and Wales can be found from their own health surveys. Child Obesity information for Scotland can be found in Chapter 8 from page 252 and Tables 8.1 to 8.6 on pages 264 to 271 of the *Scottish Health Survey 2009*.⁵ Similarly, child obesity information for Wales can be found in Section 6 on pages 91 to 96 and Tables 6.1 to 6.6 on pages 97 to 100 of the *Welsh Health Survey 2009*.⁶

3.7 Attitudes to and knowledge of physical activity by BMI status

Government recommendations at the time were 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 in the healthy BMI category. 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 healthy BMI category thought that children should spend at least 60 minutes a day doing physical activity, compared with 53% of those in the overweight category. 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 healthy BMI category.

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 healthy BMI category 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 healthy BMI category: 71% and 57% respectively for boys, 84% and 71% for girls.

In the HSE 2009, children aged 8-15 were asked about their perception of their weight. They were asked whether or not they thought they were about the right weight, and whether they were trying to change their weight. Table 11B on page 193 of the HSE 2009 shows that of those children who thought of themselves as about the right weight, 75% of boys and 41% of girls were overweight and 33% of boys and 22% of girls were obese suggesting that there is a lack of self-awareness in weight issues among some children.

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*⁷ 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*⁸ 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 a 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.¹ 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 HSE 2009 did not include questions about physical activity and fitness but the main focus of the HSE in 2008² 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. Both the HSE 2009 and the HSE 2008 did not include questions of people's perceptions and attitudes towards physical activity, therefore, results from the HSE 2007³ were used.

*The Taking Part Survey (TPS) 2010*⁴ 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) 2009*⁵ 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 2009/10.⁶ 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 Chief Medical Officer (CMO)'s physical activity guidelines (at the time) 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 then 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 2009/10, 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 2009/10, 6.938 million adults (4.176 million men and 2.761 million women) participated in sport and active recreation three times a week for 30 minutes.

The Taking Part Survey (TPS) 2010 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 2009/10, 24.3% of respondents reported that they had taken part in sport on 11 to 28 days within a four week period. The TPS 2009/10 report contains further information on the participation in sport on pages 40 to 46.

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 then 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)*,⁷ 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 among men and 33.9 ml O_2 /min/kg among women).
- 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 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) 2009 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 2009, 41% 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 per cent of respondents reported that they took walks of at least

20 minutes “less than once a year or never”.

- In 2009, 14% of respondents said they ride a bicycle at least once a week and a further 10% said they did so at least once a month whilst 68% said they use a bicycle less than once a year or never.

Full details of walking and cycling can be found in the complete set of annual NTS tables, charts and maps in the National Travel Survey (NTS) 2009.

The Active People Survey 2009/10 monitors participation in 32 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 2009/10, the most common sports that people had participated in were swimming (3,156,300 participants), football (2,090,000 participants) and cycling (1,866,300 participants).
- Between 2008/09 and 2009/10, three sports had seen a significant increase in the number of participants; these were athletics, judo and mountaineering. A further 10 sports had seen a significant decrease in participants including golf, tennis, cricket and basketball.

Further details of the number of people participating in each sport and how this has changed since 2007/08 can be found in the Active People Survey 2009/10.

The Taking Part Survey in 2005/06⁸ and 2006/07⁹ 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.

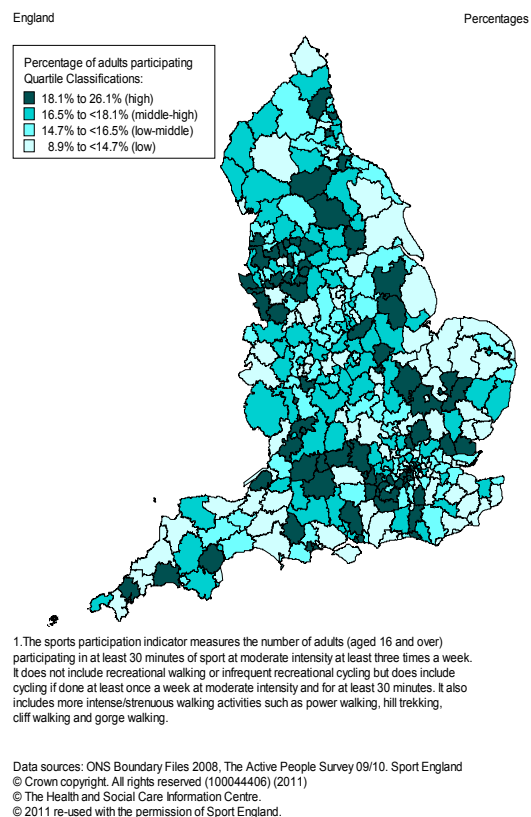
4.5.2 Sport and active recreation by Local Authority

Within the Active People Survey 2009/10, 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 2009/10.

Figure 4.1 Adults' participation in sport 2009/10



4.5.3 Physical Activity levels in Scotland and Wales

*The Scottish Health Survey 2009*¹⁰ contains information on self-reported physical activity in adults in Scotland. The key finding regarding meeting government physical activity recommendations is that in 2009, 37% of adults aged 16 and over reported meeting the then government's recommendations for physical activity in Scotland. Forty three per cent of men and 32% of women reported meeting the recommendations.

Full details of physical activity in Scotland can be found in the Scottish Health Survey 2009, Chapter 6: Physical Activity on pages 179 to 214 in the report.

*The Welsh Health Survey 2009*¹¹ 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 2009, 29% of adults reported meeting the recommended levels of physical activity in the last week. A higher proportion of men than women reported meeting the recommendations (36% and 23% respectively).

Further details of physical activity can be found in the Welsh Health Survey 2009, Chapter 4: Health-related lifestyle, section 4.6: Physical activity on pages 55 and 56 and Table 4.7 on page 68.

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 without considering moderate to vigorous activity levels.¹² In England, in 2002, physical inactivity was estimated to cost at least £2 billion and maybe up to £8.2 billion a year and does not include the contribution of physical inactivity to obesity estimated at £2.5 billion annually.

The HSE 2008 chapter 2: Self-reported physical activity in adults, and chapter 3: Accelerometry in adults, 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

and 4.14) and equivalised household income (Tables 4.7, 4.11 and 4.15).

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

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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). The HSE gathers information on the physical activity levels by children aged 2 to 15. In the Health Survey for England 2008 (HSE 2008),¹ in addition to self-reported physical activity, objective measures of physical activity were collected using accelerometry data for children aged 4 to 15. The HSE gathers information on self-reported participation in physical activities excluding the time spent at school. The HSE 2008 is still the most up to date source of information on this topic so is included again in this year's OPAN report.

Other sources of data used in this chapter include the *Taking Part Survey (TPS)*,² *PE and Sport Survey*³ and the *National Travel Survey*.⁴ 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

At the time the data was collected the Chief Medical Officer (CMO) of England recommended 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 2009/10, 86% of 5-10 year olds had taken part in sports activities outside of school time in the last four weeks. Of these, almost 78% participated in the last week. Whereas 97% of 11-15 year olds have taken part in sporting activities in the last four weeks, whilst of these, 88% had participated in the past week.

Full details are presented from pages 40 - 46 of the 2009/10 Taking Part Statistical Release.

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) 2009 presents data on travel to/from school for children aged 5 to 15. This includes information on the number of trips to and from school by walking and cycling per child per year, for the years 1995/1997 to 2009 (Table NTS0613). Figures for 2009 suggest that 43% of 5-16 year olds' main method of getting to and from school is walking, while the main method for 31% of this age group is being driven to school in a car / van. Just 2% used a bike to travel to school as their main mode of transport.

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 2008/09⁵ 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 2009, 68% of children aged 2 to 16, reported walking for 20 minutes or more, at least once a week.

Full details are available within the Transport Statistics Bulletin, National Travel Survey 2009.

5.4 Participation in Physical Education and school sport

The PE and Sport Survey 2009/10 (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 21,436 schools and further education (FE) colleges took part in the survey between May and July 2010.

5.4.1 Participation in PE and school sport

The key findings from the survey show that in 2009/10, 55% of pupils in years 1-13 of participating schools took part in at least 3 hours of high quality PE and out of hours school sport in a typical week.

Among the three types of schools that were surveyed (primary, secondary and special), 64% of pupils in primary schools, 46% of pupils in secondary schools and 64% of pupils in special schools reported participating in at least three hours of high quality PE and out of hours 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 schools surveyed spent an average of 117 minutes in a typical

week in 2009/10 on curriculum PE. The long term trend shows an increase in the average number of minutes pupils take part in PE each week. In 2004/05 the average number of minutes for Years 1 – 11 was 107, compared to 123 in 2009/10. For the first time data was collected by gender and showed that slightly more boys (80%) took part in at least 120 minutes of curriculum PE compared to girls (78%). In Years 1 – 6 there is no difference between the sexes, but on entry to secondary school a difference emerges. At Year 7 this difference is only two percentage points (89% of girls participate in at least two hours of curriculum PE, compared to 91% of boys), rising gradually to reach a four or five percentage point differential in Years 10, 11, 12 and 13.

The PE and Sport Survey 2009/10 includes full details of the amount of time children in partnership schools spend in PE and out of hours school sport (Chapter 3, pages 9 to 22) including gender patterns (Figure 15 page 22), the types of sports children participate in (Chapter 5, pages 32 to 34), participation in intra- and inter-school competitive activities (Chapter 4, pages 23 to 31) and links to other clubs and organisations (Chapter 6, pages 35 to 36).

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 then 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 percentage rose steeply after this age. At weekends, the percentage 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 time 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 2007,⁶ 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 2009*¹ being the most recent edition.

The NDNS is a new rolling programme² of a continuous cross-sectional survey of the food consumption, nutrient intakes and nutritional status of people aged 18 months and older living in private households in the UK. The previous NDNS had collected data on consumption for 19 to 64 year olds over a period of seven days in Great Britain which was conducted in 2000/2001³. The last NDNS for those aged 4 to 18 years was carried out in 1997.⁴

The report of the first year of the new NDNS rolling programme (February 2008 to March 2009)² focuses on food consumption and nutrient intakes for adults aged 19 to 64 years and for children aged

18 months to 3 years, 4 to 10 years and 11 to 18 years. Intakes are compared with government recommendations and comparisons with findings from previous surveys are also made.

Data on fruit and vegetable consumption among both adults and children are taken from the HSE as this source was 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 2007⁵, HSE 2008⁶ and HSE 2009.⁷

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 (since 2008).

Family Food 2009 presents trends in purchases and expenditure on food and drink, based on the 2009 LCF. Table 1.8 on pages 11-12 of this report shows quantities of household purchases of food and drink in the UK between 2006 and 2009. Table 1.10 on page 14 shows expenditure on food and drink over the same period. Chapter 5 on pages 67 to 90 presents some analysis on how the rises in food prices in 2009 have affected spending patterns. Some key findings were:

- Household purchases of fruit and vegetables fell by 3.1% in 2009 and are now 8.5% lower than 2006. Since 2008,

purchases of fresh fruit fell by 3.6%, fresh green vegetables fell by 1.1% and fruit juices fell by 7.1%.

- Faced with the 2009 price rises of 7% and 8% in fruit and vegetables respectively, consumers spent almost the same amount as before on fruit and slightly more on vegetables.
- The average weekly expenditure on all household food and drink in 2009 was £26.75 per person (this was £36.83 per person in 2008), after a 5% price rise in food prices. There have been significant upward trends in household expenditure on eggs, butter, bread and sugar.

Family Food 2009 also presents some regional analysis of food purchases using a 3 year average. Table 3.5 on page 47 shows purchases of selected food groups by Government Office Region. Some findings were:

- Household purchases of vegetables (excluding potatoes) were highest in the South West and lowest in the North West (1,259 and 997 grams per person per week respectively).
- Household purchases of fruit were highest in London and lowest in the North East (1,383 and 966 grams per person per week respectively).

6.2.2 Consumption of food and drink by age and gender

Results from the first year of the rolling NDNS programme showed that diet and nutrient intakes of the UK population were largely similar to findings from previous assessments of diet in Great Britain, for all age groups studied. However, there were some indications of trends in intake in a direction towards recommendations and guidelines for healthy eating.

Chapter 5 on Dietary intakes from the Headline results of the NDNS Year 1 of the

Rolling Programme (2008/2009) show the key findings of consumers' diet over a 4 day diary period between February 2008 and June 2009. Table 5.3 shows vegetable, fruit, meat and fish consumption (including from composite dishes). The main findings from the report show that:

- People are eating less saturated fat, trans fat and added sugar than they were 10 years ago, when the survey was last carried out.
- People are still eating too much added sugar, currently 12.5% of food energy intake compared to the recommended 11%.
- A third of men and women are now eating the recommended '5-a-day' fruit and vegetable.
- People are still not eating enough fibre, which is essential for healthy digestion. On average intakes are 14g per day for adults, some way below the recommended 18g. There was an increase in the percentage of four to 10 year olds consuming wholegrain and high fibre breakfast cereals.
- Consumption of oily fish, which is the main source of omega 3 fatty acids, remains below the recommended one portion per week.
- Iron intakes among teenage girls and women are still low, which can lead to iron deficiency and anaemia. However, overall, vitamin and mineral intakes among the population are slightly improved.

6.2.3 Fruit and vegetable consumption

Data on the consumption of fruit and vegetables are given in Chapter 8 on pages 137 to 144 of the HSE 2009 report and in Table 10 of the HSE 2009 Adult Trend Tables.⁸ Tables 8.1 and 8.2 (pages 146 and 147) show daily consumption and types of fruit and vegetables consumed by age and sex, Tables 8.3 and 8.4 (pages 148 and

149) show these data age standardised by equivalised household income and Tables 8.5 and 8.6 (pages 150) show the same information by Spearhead status and sex. Some key findings were:

- 25% of men and 28% of women consumed the recommended five or more portions of fruit and vegetables daily. These results are similar to those reported in 2008, and are slightly lower than in 2006, when 28% of men and 32% of women consumed at least five portions daily.
- Women continued to be more likely than men to consume five or more portions of fruit and vegetables a day. Consumption varied with age among both sexes, being lowest among those aged 16-24 (17% of men and 18% of women this age ate five or more portions), and generally increased with age until the oldest age group, where consumption was slightly lower than among those aged 55-74.
- Higher consumption was also associated with higher income, and vice versa: 32% of men and 37% of women in the highest income quintile had consumed five or more portions, but only 18% of men and 19% of women in the lowest quintile had done so.
- The proportion of adults eating five or more portions of fruit and vegetables per day was higher among adults in non-Spearhead Primary Care Trusts (PCTs) (27% of men and 31% of women) than in Spearhead PCTs (20% of men and 23% of women).

Scotland and Wales carry out their own health surveys. Fruit and vegetable consumption can be found in Section 5.3 on pages 147 to 153 of the Scottish Health Survey 2009.⁹ Similarly, fruit and vegetable consumption can be found in Section 4.5 on pages 53 to 55 of the Welsh Health Survey 2009.¹⁰

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 Chapter 2 of Family Food 2009. Key findings are:

- Total energy intake per person has risen by 1.2% on 2008 values but the overall trend from 2006 is downwards. Total energy intake for 2009 was 2303 kcal per person per day (2,276 in 2008).

- Energy from household food and drink has fallen 1% since 2006 but rose 1.3% from 2008. Energy from eating out has fallen more sharply with a drop of 9.6% since 2006 but it did show a rise of 0.5% in the most recent year. Eating out accounted for an average of 11% of energy intake per person in 2009.
- Intakes of sodium are estimated to be 4.2% lower in 2009 than in 2006. Household intakes have fallen 3.7% over this period but from 2008 to 2009 they rose by 1.7%.
- There was an increase in the percentage of four to 10 year olds consuming wholegrain and high fibre breakfast cereals.
- Coated or fried white fish was the most commonly consumed fish intake in toddlers and younger children.
- Consumption of crisps and savoury snacks in children aged four to 10 years was lower than in the previous survey but little changed in older children.

Family Food 2009 also presents some country and regional analysis of energy intake, using data covering the combined years 2007-2009. Table 3.4 on pages 45-46 shows energy and nutrient intakes by country and Table 3.7 shows the same information by Government Office Region. Some findings were:

- Total energy intake was lowest in England (2,285 kcal per day) compared to Wales, Scotland and Northern Ireland which had similar intakes (2,388, 2,375 and 2,374 kcal per day respectively).
- Total energy intake was highest in the South West (2,386 kcal per day) and lowest in London (2,191 kcal per day).

6.3 Children's diet

6.3.1 Consumption of food and drink

The new NDNS covers children as well as adults for the first time since 2000. The report focuses on food consumption and nutrient intakes for children aged 18 months to 3 years, 4 to 10 years and 11 to 18 years. Some of the initial findings include:

A study on School Meals in Primary Schools in England,¹¹ 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

The latest HSE 2009 Child Trend Tables¹² (Table 7) shows that between 2008 and 2009, the percentage of 5-15 year old boys consuming 5 or more portions of fruit and vegetables increased from 19% to 21%. For 5-15 year old girls the corresponding percentages showed a similar increase from 20% to 22%. Overall, the mean number of portions consumed was 3.3 portions for boys and 3.4 portions for girls in 2009.

Further information 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 sex, 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:

- 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 Tables 10.14 and 10.15 (page 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)¹³ 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.

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7 Health outcomes

7.1 Introduction

The association 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.¹ This chapter focuses on the health outcomes related to being overweight and obese.

Information from the National Audit Office² (NAO) and a House of Commons Select Committee report,³ is used to establish the broad risk of death and disease associated with obesity. Data from the Health Survey for England 2009 (HSE 2009)⁴ are used to analyse the relationships between Body Mass Index (BMI) and waist circumference and the prevalence of selected diseases in the population. This is data that has been analysed for this report and has not been published before.

Data on finished admissions and consultant episodes related to a diagnosis of obesity are presented using the *Hospital Episode Statistics (HES) databank*⁵ 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,⁶ including data on the number of items prescribed and the net ingredient cost of drugs used in the treatment of obesity. European regulators suspended the marketing authorisation for the weight loss drug Sibutramine in early 2010 amid concerns about a raised risk of heart attacks and strokes. This follows the withdrawal of the marketing authorisation for the less prescribed obesity drug Rimonabant in 2009 for similar reasons.

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 2008. 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

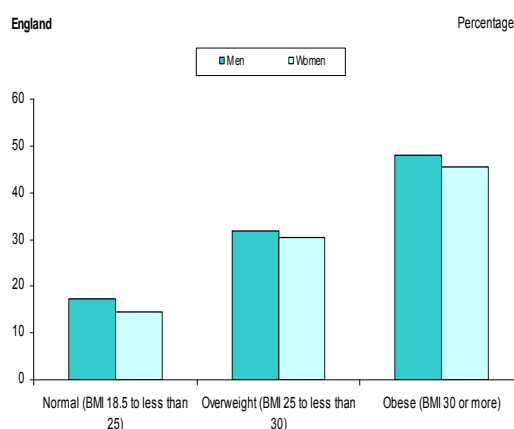
Table 1 from the HSE 2009 Adult Trend Tables⁷ shows the latest trend information on blood pressure levels by age and gender for 2003-2009.

Within this section, the latest information on blood pressure by BMI and waist circumference have been updated using data from HSE 2008 as this is the latest data available.

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 17% in the normal weight group for men and 30% compared to 15% in the normal weight group women), while obese men and women were most likely to have high blood pressure (48% and 46% respectively). This is also shown in Figure 7.2.

Figure 7.2 High blood pressure by Body Mass Index (BMI) and gender, 2008



Source: Health Survey for England 2008. 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 16% of those with a waist circumference of 88cm or less.

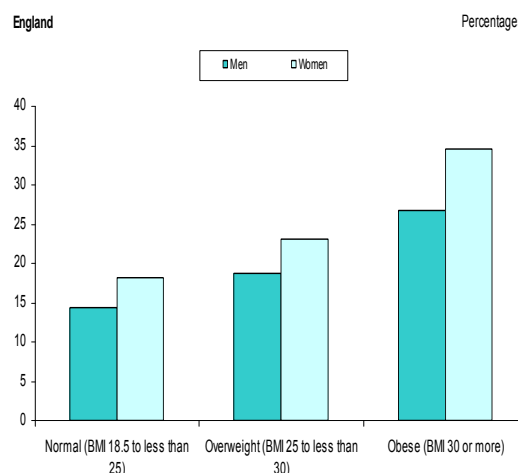
7.3.2 Longstanding illness

Table 11 from the HSE 2009 Adult Trend Tables shows the latest trend information on general health, longstanding illness and acute sickness by gender for 1993-2009.

Within this section, the latest information on longstanding illness by BMI and waist circumference has been updated using data from HSE 2008 as this is the latest data available.

Table 7.3 shows that, in 2008, the prevalence of limiting longstanding illness (whereby a longstanding illness limits the respondents' activity in some way) was higher among obese men and women (27% and 34% respectively) than those in the normal weight group (14% and 18% 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, 2008



Source: Health Survey for England 2008. 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 (31% compared with 16% for men and 33% compared with 19% for women).

Table 7.5 shows that neither men nor women who were either overweight or obese score differently on the GHQ12 questionnaire (designed to measure self-assessed general health, acute sickness leading to reduction in recent activity and psychosocial wellbeing) than those men and women in the normal weight group.

No recent data has been collected that discusses cardiovascular disease, diabetes and general health and their relationships with BMI and waist circumference but data using HSE 2006⁸ can be found in chapter 7 of *Statistics on obesity, physical activity and diet: England, 2009*⁹.

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* from The NHS Information Centre. This section presents recorded FAEs in England where there was a primary or secondary diagnosis of obesity and recorded 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).¹⁰ The FCE data for bariatric surgery are based on the Office for Population, Censuses and Surveys: Classification of Intervention and Procedures, 4th Revision (OPCS-4) codes.¹¹ The most recent data available are for the financial year 2009/10.

HES data is available from 1989-90 onwards. During this time there have been ongoing improvements in data quality and coverage, which particularly affect earlier data years. As well as this, there have been a number of changes to the classifications used within HES records. Changes have also been made to the organisation of the NHS.

These changes need to be considered when interpreting the accuracy and validity of time series analyses.

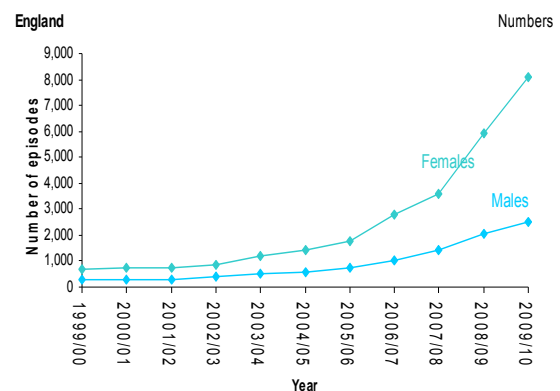
7.4.1 Finished admission episodes with a diagnosis of obesity

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 7.6 shows that in 2009/10 there were 10,571 hospital admissions with a primary diagnosis of obesity among people of all ages. This is over ten times as high as the number in 1999/00 (979) and more than 30% higher than the previous year (7,988).

Over the period 1999/00 to 2009/10, 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).

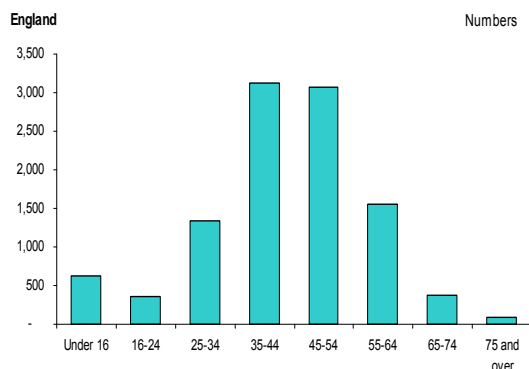
Figure 7.4 Finished Admission Episodes with a primary diagnosis of obesity, by gender, 1999/00 to 2009/10



Source: Hospital Episode Statistics, HES. The Information Centre

In 2009/10, the age groups with the highest number of admissions with a primary diagnosis of obesity were those aged 35 to 44 (3,132) and those aged 45 to 54 (3,076). Together these two age groups accounted for more than half of all such admissions (Table 7.7, Figure 7.5).

Figure 7.5 Finished Admission Episodes with a primary diagnosis of obesity, by age, 2009/10



Source: Hospital Episode Statistics, HES. The Information Centre

Among Strategic Health Authorities (SHAs) in 2009/10, over one in every five admissions with a primary diagnosis of obesity occurred in London SHA (2,262), with the next highest number in East Midlands SHA (2,057). East Midlands SHA had the highest rate of admissions per 100,000 of the population (46) and South Central SHA had the lowest (8). 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 7.8).

In 2009/10, there were 142,219 admissions with a mention of obesity (i.e. a primary or a secondary diagnosis), compared with 102,987 in 2008/09. 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 7.9, Figure 7.6).

Figure 7.6 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by gender, 1999/00 to 2009/10

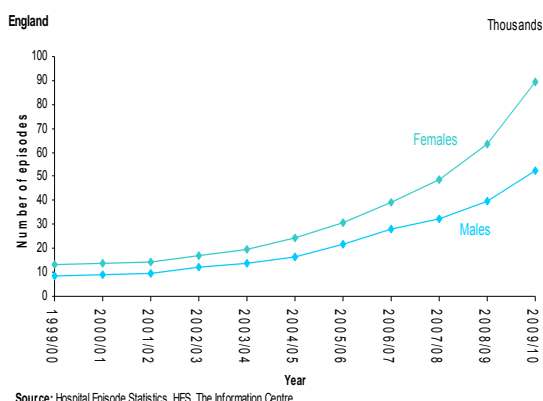


Table 7.10 shows that in 2009/10, adults aged 55 to 64 had the highest number of recorded hospital admissions with either a primary or secondary diagnosis of obesity

(30,884), followed by those aged 45 to 54 years (27,641) and 65 to 74 years (24,294). 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 (25,056) and the highest admission rate (363 per 100,000 population). South Central SHA reported the least number of admissions (6,975) and the lowest admission rate (170 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 7.11).

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 7.12 shows the number of recorded 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, 4th Revision (OPCS-4) codes. Operative procedure codes were revised from 2006-07. 2009-10 data uses OPCS 4.5 codes, 2008-09 and 2007-08 data uses OPCS 4.4 codes, 2006-07 data uses OPCS 4.3 codes, data prior to 2006-07 uses OPCS 4.2 codes. Results based on the old coding system cannot be compared with results based on the revised systems so data for 2006/07 to 2009/10 are presented separately from previous years. See [Appendix B](#) for further details.

There was a year on year increase in the number of recorded FCEs for bariatric surgery from 198 in 1999/00 to 1,038 in 2005/06. Annually the ratio of these recorded FCEs between men and women remained relatively constant with around eight in ten recorded FCEs involving female patients ([Table 7.12](#)).

Using the new classifications, in 2009/10 there were 7,214 recorded FCEs with a primary diagnosis of obesity and a main or secondary procedure of bariatric surgery. Females continue to account for the majority of these; in 2009/10 there were 1,450 such recorded FCEs for males and 5,762 for females. Hospital coding for bariatric surgery was updated in 2009/10, which means it is now possible to identify how many bariatric procedures were for maintenance of an existing gastric band. Nationally, of the 7,214 bariatric procedures in 2009/10, 1,444 of these were for maintenance ([Table 7.12](#)).

London SHA had the highest number of recorded FCEs for bariatric surgery in 2009/10 (1,643), while South Central SHA had the lowest (226). East Midlands SHA had the highest number of FCEs per 100,000 of the population, this value being

35. The SHA with the lowest value was North West SHA, with 5 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 7.13](#)).

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. This drug has now been suspended following a European review, as well as the less prescribed drug Rimonabant (Acomplia), in 2009, for similar reasons.

In 2009, there were 1.45 million prescription items for drugs for the treatment of obesity. Overall, the number of prescription items in 2009 was over nine times the number in 2000, when there were 157 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 £6.6 million in 2000 to £46.8 million in 2009, reaching its peak in 2007 at £51.6 million. The NIC per item decreased from £42 in 2000 to £32 in 2009 (which showed a slight increase until 2006 where it peaked at £45) ([Table 7.14](#)).

Nearly three quarters (74%) of the total number of prescription items in 2009 for obesity drugs were for Orlistat and just over a quarter (26%) were for Sibutramine ([Figure 7.7](#)).

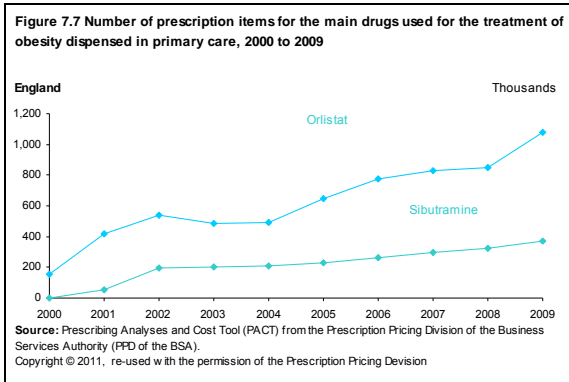
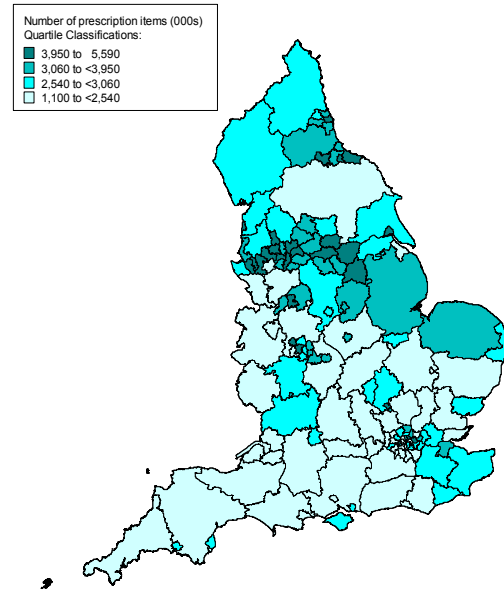


Figure 7.8 Number of prescription items dispensed for treatment of obesity per 100,000 of the population, by PCT, 2009



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

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Table 7.15 shows prescription data for treatment of obesity by Strategic Health Authority. North West SHA had the greatest number of prescription items in total (257 thousand) and per head of population (3.7 thousand items per 100,000). South Central SHA had the lowest with 76 thousand items, equating to 1.9 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.

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- 7.6 Finished Admission Episodes with a primary diagnosis of obesity, by gender, 1999/2000 to 2009/10
- 7.7 Finished Admission Episodes with a primary diagnosis of obesity, by age group, 1999/2000 to 2009/10
- 7.8 Finished Admission Episodes with a primary diagnosis of obesity, by Strategic Health Authority (SHA) of residence and gender, 2009/10
- 7.9 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by gender, 1999/2000 to 2009/10
- 7.10 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by age group, 1999/2000 to 2009/10
- 7.11 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by Strategic Health Authority (SHA) of residence and gender, 2009/10
- 7.12 Finished Consultant Episodes with a primary diagnosis of obesity and a main or secondary procedure of 'Bariatric Surgery' by gender, 1999/2000 to 2009/10
- 7.13 Finished Consultant Episodes with a primary diagnosis of obesity and a main or secondary procedure of 'Bariatric Surgery', by Strategic Health Authority (SHA), 2009/10
- 7.14 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 2009
- 7.15 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), 2009

Table 7.1 Blood pressure level by body mass index (BMI) and gender, 2008

England	Percentages				
	Total	Underweight	Normal	Overweight	Obese (including morbidly obese)
Men					
Normotensive untreated	68	[91]	83	68	52
Hypertensive controlled	8	[0]	4	9	13
Hypertensive uncontrolled	6	[1]	3	6	11
Hypertensive untreated	17	[8]	11	17	24
All with high blood pressure	32	[9]	17	32	48
Women					
Normotensive untreated	71	86	85	70	54
Hypertensive controlled	9	4	4	9	16
Hypertensive uncontrolled	7	3	3	7	12
Hypertensive untreated	12	7	8	14	18
All with high blood pressure	29	14	15	30	46
<i>Unweighted bases</i>					
<i>Men</i>	<i>4,040</i>	<i>40</i>	<i>1,080</i>	<i>1,630</i>	<i>970</i>
<i>Women</i>	<i>4,940</i>	<i>80</i>	<i>1,730</i>	<i>1,520</i>	<i>1,150</i>
<i>Weighted bases</i>					
<i>Men</i>	<i>4,350</i>	<i>63</i>	<i>1,283</i>	<i>1,688</i>	<i>989</i>
<i>Women</i>	<i>4,507</i>	<i>83</i>	<i>1,644</i>	<i>1,344</i>	<i>1,026</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. 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 the
 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.
- [] Results in brackets should be treated with caution because of the low base size (below 50).

Source:

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Table 7.2 Blood pressure level by waist circumference and gender, 2008

England	Percentages		
	Total	Non raised waist circumference	Raised waist circumference
Men			
Normotensive untreated	68	78	50
Hypertensive controlled	8	5	15
Hypertensive uncontrolled	6	3	12
Hypertensive untreated	17	14	23
All with high blood pressure	32	22	50
Women			
Normotensive untreated	71	84	57
Hypertensive controlled	9	4	15
Hypertensive uncontrolled	7	4	11
Hypertensive untreated	12	8	17
All with high blood pressure	29	16	43
<i>Unweighted bases</i>			
<i>Men</i>	4,040	2,490	1,470
<i>Women</i>	4,940	2,610	2,190
<i>Weighted bases</i>			
<i>Men</i>	4,350	2,823	1,449
<i>Women</i>	4,507	2,471	1,918

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, 2008

England	Percentages				
	Total	Underweight	Normal	Overweight	Obese (including morbidly obese)
Men					
Limiting Longstanding Illness	21	10	14	19	27
Non limiting Longstanding Illness	19	13	16	22	22
No Longstanding Illness	60	77	70	60	51
Women					
Limiting Longstanding Illness	25	22	18	23	34
Non limiting Longstanding Illness	19	13	16	21	23
No Longstanding Illness	56	65	66	56	43
<i>Unweighted bases</i>					
<i>Men</i>	6,760	70	1,770	2,540	1,480
<i>Women</i>	8,340	120	2,790	2,290	1,790
<i>Weighted bases</i>					
<i>Men</i>	7,325	102	2,075	2,667	1,541
<i>Women</i>	7,680	126	2,653	2,063	1,607

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.

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Health Survey for England 2008, The NHS Information Centre for health and social care.

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Table 7.4 Longstanding illness by waist circumference and gender, 2008

England	Percentages		
	Total	Non raised waist circumference	Raised waist circumference
Men			
Limiting Longstanding Illness	21	16	31
Non limiting Longstanding Illness	19	18	24
No Longstanding Illness	60	66	45
Women			
Limiting Longstanding Illness	25	19	33
Non limiting Longstanding Illness	19	17	23
No Longstanding Illness	56	64	44
<i>Unweighted bases</i>			
<i>Men</i>	6,760	2,940	1,730
<i>Women</i>	8,340	3,050	2,610
<i>Weighted bases</i>			
<i>Men</i>	7,325	3,363	1,714
<i>Women</i>	7,680	2,896	2,292

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 2008, The NHS Information Centre for health and social care.

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Table 7.5 GHQ 12 score by body mass index (BMI) and gender, 2008

England	Percentages				
	Total	Underweight	Normal	Overweight	Obese (including morbidly obese)
Men					
score 0	68	68	66	70	67
score 1-3	21	21	22	21	22
score 4+	11	10	12	9	10
Women					
score 0	61	51	63	64	58
score 1-3	25	28	23	22	23
score 4+	15	21	13	13	19
<i>Unweighted bases</i>					
<i>Men</i>	6,690	70	1,750	2,510	1,460
<i>Women</i>	8,200	120	2,750	2,250	1,760
<i>Weighted bases</i>					
<i>Men</i>	7,257	101	2,054	2,644	1,524
<i>Women</i>	7,553	126	2,619	2,031	1,580

1. See Appendix B for explanation of GHQ12.
2. All figures are based on those with a valid GHQ12 score.
3. BMI categories used for classifying levels of obesity are: underweight = BMI less than 18, normal = BMI 18 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. Unweighted bases have been rounded to the nearest 10.

Source:

Health Survey for England 2008, The NHS Information Centre.

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Table 7.6 Finished Admission Episodes with a primary diagnosis of obesity, by gender, 1999/00 to 2009/10

England	Numbers		
	Total	Males	Females
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
2009/10	10,571	2,495	8,074

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.

7. HES data is available from 1989-90 onwards. During this time there have been ongoing improvements in data quality and coverage, which particularly affect earlier data years. As well as this, there have been a number of changes to the classifications used within HES records. Changes have also been made to the organisation of the NHS. These need to be considered when interpreting the accuracy and validity of time series analyses.

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 age group, 1999/00 to 2009/10

England	Numbers								
	Total	Under 16	16-24	25-34	35-44	45-54	55-64	65-74	75 and over
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
2009/10	10,571	632	361	1,348	3,132	3,076	1,555	378	87

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.

7. HES data is available from 1989-90 onwards. During this time there have been ongoing improvements in data quality and coverage, which particularly affect earlier data years. As well as this, there have been a number of changes to the classifications used within HES records. Changes have also been made to the organisation of the NHS. These need to be considered when interpreting the accuracy and validity of time series analyses.

Source:

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

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Table 7.8 Finished Admission Episodes with a primary diagnosis of obesity, by Strategic Health Authority (SHA) of residence and gender, 2009/10

England	Numbers					
	Admissions			Admissions per 100,000 of population		
	Total	Male	Female	Total	Male	Female
England	10,571	2,495	8,074	20	9	32
North East SHA	856	196	660	33	15	52
North West SHA	817	254	563	12	7	17
Yorkshire and the Humber SHA	1,244	291	953	24	11	37
East Midlands SHA	2,057	372	1,685	46	17	77
West Midlands SHA	794	200	594	15	7	22
East of England SHA	714	242	472	12	8	17
London SHA	2,262	501	1,760	29	13	46
South East Coast SHA	789	190	599	18	9	28
South Central SHA	327	84	243	8	4	12
South West SHA	708	163	544	14	6	21

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-2009 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 7.9 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by gender, 1999/00 to 2009/10

England	Numbers		
	Total	Male	Female
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
2009/10	142,219	52,517	89,657

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.

7. HES data is available from 1989-90 onwards. During this time there have been ongoing improvements in data quality and coverage, which particularly affect earlier data years. As well as this, there have been a number of changes to the classifications used within HES records. Changes have also been made to the organisation of the NHS. These need to be considered when interpreting the accuracy and validity of time series analyses.

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 age group, 1999/00 to 2009/10

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
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
2009/10	142,219	2,400	6,609	15,490	21,344	27,641	30,884	24,294	13,399

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.

7. HES data is available from 1989-90 onwards. During this time there have been ongoing improvements in data quality and coverage, which particularly affect earlier data years. As well as this, there have been a number of changes to the classifications used within HES records. Changes have also been made to the organisation of the NHS. These need to be considered when interpreting the accuracy and validity of time series analyses.

Source:

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

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Table 7.11 Finished Admission Episodes with a primary or secondary diagnosis of obesity, by Strategic Health Authority (SHA) of residence and gender, 2009/10

England	Numbers					
	Admissions			Admissions per 100,000 of population		
	Total	Male	Female	Total ⁷	Male	Female
England	142,219	52,517	89,657	275	200	351
North East SHA	8,900	3,564	5,336	344	270	422
North West SHA	25,056	9,631	15,423	363	275	455
Yorkshire and the Humber SHA	12,651	3,991	8,660	241	150	334
East Midlands SHA	12,397	4,373	8,024	279	194	365
West Midlands SHA	18,497	5,777	12,720	341	209	476
East of England SHA	19,449	7,785	11,663	337	266	410
London SHA	17,458	6,938	10,500	225	178	273
South East Coast SHA	8,637	3,525	5,112	199	158	242
South Central SHA	6,975	2,528	4,427	170	122	219
South West SHA	12,160	4,384	7,775	232	164	303

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-2009 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 7.12 Finished Consultant Episodes with a primary diagnosis of obesity and a main or secondary procedure of 'Bariatric Surgery' by gender, 1999/00 to 2009/10

England	Numbers		
	Total	Male	Female
OPCS-4.2 procedure codes			
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)			
2006/07	1,951	381	1,562
2007/08 (OPCS-4.4 procedure codes)			
2007/08	2,724	598	2,126
2008/09 (OPCS-4.4 procedure codes)			
2008/09	4,221	969	3,251
2009/10 (OPCS-4.5 procedure codes)			
2009/10	7,214	1,450	5,762

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 7.12 and 7.13 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, OPCS-4.4 and OPCS-4.5 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.
10. HES data is available from 1989-90 onwards. During this time there have been ongoing improvements in data quality and coverage, which particularly affect earlier data years. As well as this, there have been a number of changes to the classifications used within HES records. Changes have also been made to the organisation of the NHS. These need to be considered when interpreting the accuracy and validity of time series analyses.
11. Figures before 2009-10 were based on decisions as to which operative procedures constituted 'Bariatric Surgery' at that time. Changes to the figures over time need to be interpreted in the context of improvements in data quality and coverage (particularly in earlier years). In particular, improvements in how 'Bariatric surgery' is coded, with the change of codes in various versions of OPCS, means that had the previous years been based on OPCS-4.5, figures would have been slightly lower and affects earlier years more.
12. Hospital coding for bariatric surgery was updated in 2009/10, which means it is now possible to identify how many bariatric procedures were for maintenance of an existing gastric band. Nationally, of the 7,214 bariatric procedures in 2009/10, 1,444 of these were for maintenance.

Source:

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

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Table 7.13 Finished Consultant Episodes with a primary diagnosis of obesity and a main or secondary procedure of 'Bariatric Surgery' by Strategic Health Authority (SHA), 2009/10

England	Numbers					
	Finished Consultant Episodes			Finished Consultant Episodes per 100,000 of population		
	Total	Male	Female	Total	Male	Female
England	7,214	1,450	5,762	14	6	23
North East SHA	483	112	371	19	8	29
North West SHA	373	86	287	5	2	8
Yorkshire and the Humber SHA	866	198	668	16	7	26
East Midlands SHA	1,574	263	1,311	35	12	60
West Midlands SHA	538	114	424	10	4	16
East of England SHA	363	110	253	6	4	9
London SHA	1,643	287	1,355	21	7	35
South East Coast SHA	653	137	516	15	6	24
South Central SHA	226	50	176	6	2	9
South West SHA	493	92	400	9	3	16

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 7.12 and 7.13 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-4.5 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-2009 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](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 7.14 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 2009

England											Thousands / £
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Prescription Items (thousands)											
Orlistat	127	156	415	540	484	492	645	774	827	848	1,080
Sibutramine	-	-	53	196	203	208	226	263	294	325	370
Rimonabant	-	-	-	-	-	-	-	23	112	106	-
Total	127	157	469	737	688	699	871	1,060	1,233	1,278	1,450
Net Ingredient Cost (£ 000)											
Orlistat	4,863	6,573	17,575	23,401	21,036	21,391	27,020	32,476	32,047	29,980	36,769
Sibutramine	-	-	2,030	7,752	8,458	9,314	10,984	13,654	13,093	9,595	10,024
Rimonabant	-	-	-	-	-	-	-	1,411	6,440	5,237	-
Total	4,863	6,613	19,659	31,203	29,532	30,706	38,004	47,541	51,580	44,812	46,793
Net Ingredient Cost per item (£)											
Orlistat	38	42	42	43	43	44	42	42	39	35	34
Sibutramine	-	-	38	39	42	45	49	52	45	30	27
Rimonabant	-	-	-	-	-	-	-	62	58	50	-
Total	38	42	42	42	43	44	44	45	42	35	32

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. On 16th January 2009, the European Commission issued a decision to withdraw the marketing authorisation for Rimonabant (Acomplia) following an assessment of the benefits and risks of taking this medicine.
7. 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.
8. On 21st January 2010, the European Medicines Agency (EMA) released a statement advising the suspension of sibutramine following a study which showed that there was an increased risk of non-fatal heart attacks and strokes outweighing the benefits of this weight loss drug. Therefore, data on Sibutramine will be limited for 2010.

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 7.15 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), 2009

England

	Prescription Items (thousands)			Prescription Items (thousands) per 100,000 population		
	Total	Orlistat	Sibutramine	Total	Orlistat	Sibutramine
England	1,450	1,080	370	2.80	2.08	0.71
North East SHA	96	76	21	3.7	2.9	0.8
North West SHA	257	187	70	3.7	2.7	1.0
Yorkshire and the Humber SHA	171	132	40	3.3	2.5	0.8
East Midlands SHA	129	99	30	2.9	2.2	0.7
West Midlands SHA	159	124	35	2.9	2.3	0.6
East of England SHA	147	101	46	2.6	1.8	0.8
London SHA	195	152	43	2.5	2.0	0.6
South East Coast	105	72	32	2.4	1.7	0.7
South Central	76	52	24	1.9	1.3	0.6
South West SHA	112	83	29	2.1	1.6	0.6

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-2009 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. The England figures include an unidentified Doctors element (where it is not possible for the Prescription Pricing Division of the Business Service Authority to allocate to a SHA).

8. On 21st January 2010, the European Medicines Agency (EMA) released a statement advising the suspension of sibutramine following a study which showed that there was an increased risk of non-fatal heart attacks and strokes outweighing the benefits of this weight loss drug. Therefore, data on Sibutramine will be limited for 2010.

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. The latest APS started in the middle of October 2009 and ran for twelve months until mid October 2010. Headline results were published in December 2010.

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 2009/10 Headline results. Available at:

http://www.sportengland.org/research/active_people_survey/active_people_survey_4.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 Obesities: Future Choices – Project Report. Government Office for Science, 2007. Available at:

<http://www.bis.gov.uk/foresight/our-work/projects/published-projects/tackling-obesities/reports-and-publications>

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 available in the 2009 report. 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. Some information from the HSE 04 is included in Chapter 2 (Obesity among adults).

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 2009, 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 2009 data in the HSE 2009 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 2009 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 Health Survey for England 2008: Physical Activity and Fitness. Available at:

Main report:

www.ic.nhs.uk/pubs/hse08physicalactivity

Trend tables:

www.ic.nhs.uk/pubs/hse08trends

The Health Survey for England 2009: Health and Lifestyles. Available at:

Main report:

www.ic.nhs.uk/pubs/hse09report

Trend tables:

www.ic.nhs.uk/pubs/hse09trends

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 Episodes (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 7.6 to 7.13](#). The primary diagnosis is defined as the main condition treated or investigated during the relevant episode of healthcare.

HES data used in [Table 7.12](#) and [7.13](#) 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, 4th Revision (OPCS-4) 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 and 2008/09 and OPCS-4.5 codes were used for 2009/10, 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-4.5 codes used are included 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 presents 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://ww2.defra.gov.uk/>

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 24h 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, (which started 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 2009 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 2009. Available at:

<http://webarchive.nationalarchives.gov.uk/+/dft.gov.uk/pgr/statistics/datatablespublications/nts/>

Organisation for Economic Co-operation and Development (OECD) Health Data 2010 – Frequently Requested Data

Released during October 2010, 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

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 Education (DfE, formerly 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:

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 latest 2009/10 survey has continued in its aims 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 2009/10 is available at:

<http://www.education.gov.uk/publications/RSG/publicationDetail/Page1/DFE-RR032>

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 cost 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

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. Available at:

Main Report:

http://www.culture.gov.uk/reference_library/publications/6528.aspx

Headline figures from the 2009/10 Taking Part Adult and Child Report:

<http://www.culture.gov.uk/publications/7386.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

2007 Comprehensive Spending Review (PSA21 : indicator 6).

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

- Activity types, frequency, duration, and intensity
- Objective measures of physical activity - Accelerometry
- Objective measures of physical activity - Summary activity levels
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- English, Scottish and Welsh comparisons among adults

Physical activity among children

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Active sport

Diet and nutrition

- Fruit and vegetable portions
- Estimated Average Requirements and Reference Nutrient Intakes

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- Age standardisation
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- General Health Questionnaire GHQ12
- Blood pressure
- Weighted HSE data used in Chapter 7: Health Outcomes
- Equivalent household income quintiles
- Logistic regression

Hospital Episode Statistics: coding for bariatric surgery

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/m²).

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

Adults are classified into the following BMI groups:

BMI range (kg/m ²)	Definition
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

British 1990 growth reference percentiles

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 British 1990 growth reference (UK90) percentiles is therefore used which gives a BMI threshold for each age above which a child is considered overweight or obese; those children whose BMI is above the 85th percentile are classified as overweight and those children whose BMI is above the 95th 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 85th/95th 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/m² and 30 kg/m² (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/m² to assess health risks (as shown in the table below). For adults with a BMI of 35kg/m² 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 ²)	No increased risk	Increased risk	High risk
Obesity I (30 to less than 35 kg/m ²)	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 rate²⁵ to provide an estimate of the individual's maximal oxygen uptake (VO₂max), 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 VO₂max
- Moderate exertion: requiring 30-64% of that person's VO₂max
- Severe exertion: requiring 65-100% of that person's VO₂max (therefore unsustainable for any substantial length of time)
- Maximal exertion: requiring more than 100% of that person's VO₂max

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 at the time 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 the then 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; keep fit, aerobics, dance exercise; judo; karate; taekwondo; 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.

Food item	Portion size
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 2009 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

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 2009 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 2009 data set was not available for such additional analysis; therefore data from previous HSE survey years was used as appropriate.

Chapter 7 discusses blood pressure, longstanding illnesses and GHQ12 (12-item General Health Questionnaire – see below) by BMI and waist circumference. Analysis of these health conditions by BMI and waist circumference was carried out on the 2008 dataset specifically for this publication.

GHQ12

GHQ12 is the 12-item General Health Questionnaire designed to measure self-assessed general health, acute sickness leading to reduction in recent activity and psychosocial wellbeing.

Blood pressure

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 by BMI and waist circumference, tables 7.3 and 7.4 show longstanding illness by BMI and waist circumference and table 7.5 shows GHQ12 score by BMI. 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 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

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 7.12 and 7.13

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, OPCS-4.4 codes for 2007/08 and 2008/09 and OPCS-4.5 codes for 2009/10.

The following OPCS 4.2 codes have been used for bariatric surgery from 1996/97 to 2005/06 inclusive:

- 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 in addition to the above have been used for bariatric surgery from 2006/07 to 2008/09 inclusive:

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

The following OPCS-4.5 procedure codes have been used for bariatric surgery for 2009/10:

G27.1 Total gastrectomy and excision of surrounding tissue
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 to jejunum nec
G28.8 Other specified partial excision of stomach
G28.9 Unspecified partial excision of 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 previous 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 to transposed 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
G48.1 Insertion of gastric bubble
G48.2 Attention to gastric bubble
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
G30.5 Maintenance of gastric band
G31.5 Closure of connection of stomach to duodenum
G31.6 Attention to connection of stomach to 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

Healthy Lives, Healthy People: Our Strategy for Public Health in England

This latest White Paper sets out the Government's long-term vision for the future of public health in England. The aim is to strengthen both national and local leadership. For a full copy of the report follow the link:

www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_121941

Healthy Lives, Healthy People: transparency in outcomes, proposals for a public health outcomes framework

This is currently out for consultation and explores the proposed public health outcomes framework. The consultation closes on 31 March 2011, after which a summary of consultation responses received will be published. For further information, please follow link:

www.dh.gov.uk/en/Consultations/Liveconsultations/DH_122962

Public Service Agreements

The new coalition government ended the system of Public Service Agreements (PSAs) set at national level in 2010. For the meantime these are to be replaced by Departmental business plans, which each Government department has recently published setting out the details of its reform plans, including its:

- vision and priorities to 2014-15;
- structural reform plan, including actions and deadlines for implementing reforms over the next two years; and
- contribution to transparency, including the key indicators against which it will publish data to show the cost and impact of public services and departmental activities. This section will be published for consultation to ensure that the Government agrees the most relevant and robust indicators in time for the beginning of the Spending Review period in April 2011.

However some PSA targets may be included in this report as they were in place when the data were collected.

A link to the Department of Health's Business Plan (2011-2015) can be found following this link:

www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_121393

National Indicator Set

The Audit Commission was commissioned by the previous government to publish the National Indicator Set (NIS) as part of the assessment of local areas' 'Comprehensive Area Assessment' (CAA). In May 2010, the new government announced their intention to abolish CAA. The Audit Commission stopped work on updates to the assessments and decided not to update the National Indicator data on the CAA website.

NICE guidance

The guidance on the prevention, identification, assessment, treatment and weight management of overweight and obesity in adults and children was 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 guidance was published December 2006 and can be accessed on the NICE website:

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

Change 4 Life

In January 2009, the previous government launched an 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 new coalition government sets out in the White Paper, *Healthy Lives, Healthy People: Our Strategy for Public Health in England* it's plans to broaden the Change4Life programme to take a more holistic approach to childhood issues, for instance covering strategies to help parents talk to their children about other health issues and behaviour, such as alcohol.

For further information on this campaign, follow the link below:

www.nhs.uk/change4life/Pages/change-for-life.aspx

'5 a day' programme

There is continued support for the 5 a day programme from the new coalition government. The programme aims to increase fruit and vegetable consumption by:

- raising awareness of the health benefits
- improving 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
- Local 5 a day initiatives
- National/local partners - Government Health Consumer Groups
- Communications programme including 5 A DAY logo

- Work with industry - producers, caterers, retailers

For further information, please see link:

www.nhs.uk/livewell/5aday/pages/5adayhome.aspx#

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 24th February 2011) draws together statistics on obesity, physical activity and diet. This report forms part of a suite of statistical reports covering drug use among young people, 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:

The Contact Centre
The Information Centre
1 Trevelyan Square
Boar Lane
Leeds
West Yorkshire
LS1 6AE
Telephone: 0845 300 6016
Email: enquiries@ic.nhs.uk

Press enquiries should be made to:
Media Relations Manager:
Telephone: 0845 300 6016
Email: enquiries@ic.nhs.uk

This report is available on the internet at:
www.ic.nhs.uk/pubs/opad11

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 may be 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_096206

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>

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:

<http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home>

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 Lifestyle Survey (formerly General Household Survey)

The General Lifestyle Survey (GLF) 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.

<http://www.statistics.gov.uk/statbase/product.asp?vlnk=5756>

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

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 2009/10, has been collected by The NHS Information Centre (IC) and a national report is available from:

www.ic.nhs.uk/ncmp

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.

<http://www.drfoosterintelligence.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

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/

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 2009 survey is the fifth 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 five surveys were commissioned by what is now the Scottish Executive Health Department.

The Scottish Health Survey 2009. Available at:

<http://www.scotland.gov.uk/Publications/2010/09/23154223/0>

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 then 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

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>

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

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 2009

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 2009. Available at:

<http://wales.gov.uk/topics/statistics/publications/healthsurvey2009/?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

ISBN: 978-1-84636-523-2

This publication may be requested in large print or other formats.

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