Adult anthropometric measures, overweight and obesity

10

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Summary

- This chapter presents measured height, weight, and waist circumference in participants aged 16 and over in 2013. The main focus is on overweight and obesity, including central obesity. The chapter also presents associations between obesity and hypertension, diabetes and longstanding illness.
- Mean BMI was higher for men than women, and the average for both men (27.4 kg/m^2) and women (26.9 kg/m^2) was overweight.
- 26% of men and 24% of women were obese. These figures are similar to those in recent years; the trend in obesity rose sharply in the 1990s, less steeply until around 2006, and has remained at a similar level since then.
- 41% of men and 33% of women were overweight but not obese; in total, 67% of men and 57% of women were above normal weight for their height. As the prevalence of overweight has remained similar since the study began, the trend over time for overweight including obesity has tracked the same pattern as obesity.
- Overweight and obesity were higher for men than women, and increased with age for both sexes, though there was a slight decrease in the oldest age groups.
- Socio-economic indicators were associated with obesity. Those in the lowest income households and most deprived areas were most likely to be obese. This relationship was particularly strong among women: 31% of women in the fifth of households with lowest income were obese, double the rate of the fifth in households with highest incomes (15%). The equivalent figures for men were 30% and 23%.
- A majority of men (57%) and women (67%) had a high or very high waist circumference.
- 34% of men and 44% of women had a very high waist circumference ('raised waist circumference' in previous reports). The proportion with a very high waist circumference increased with age.
- Waist circumference showed a similar relationship with socio-economic position as obesity did: those in lower income households and living in more deprived areas were the most likely to have high waist circumference.
- Both BMI and waist circumference contribute to the NICE (National Institute for Health and Care Excellence) calculation of health risk caused by overweight and obesity. Combining obesity and waist circumference showed that 23% of both men and women were at very high risk. In addition, 13% of men and 18% of women were at high risk, and 18% of men and 14% of women at increased risk.
- Obesity and central obesity were both associated with other health conditions, increasing the risk of hypertension, diabetes and longstanding illness.

10.1 Introduction

10.1.1. Contents of the chapter

This chapter presents anthropometric measures for adults aged 16 and over: interviewer-measured height and weight measurements, and waist measurements taken during the nurse visit. The main focus of the chapter is overweight and obesity, as measured by body mass index (BMI[1]), and central (abdominal) obesity, indicated by waist circumference. Measures of overweight and obesity by BMI, and central obesity by waist circumference are also combined to give an overall risk category. This chapter includes trends in overweight and obesity prevalence since 1993.

The association between overweight, obesity and central obesity and other health conditions is examined. This report looks at longstanding illness, hypertension and diabetes (both diagnosed and undiagnosed). This complements previous reports that focused on general health and mental health (2012),[2] and cardio-vascular disease (2006).[3]

10.1.2. Overweight and obesity as health issues

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.[4] Being overweight or obese is associated with an increased risk for a number of common diseases and causes of death including diabetes, cardiovascular disease and some cancers.[5,6] For individuals classified as obese, the risk of poor health increases sharply with increasing BMI.[7]

Trend data from the Health Survey for England (HSE) has shown obesity rising from 13% of men and 16% of women in 1993 to 24% of men and women in 2006, since when the rise has slowed.[8] Central obesity, defined as a raised waist circumference (see section 10.2.2 below), has also risen markedly, from 20% of men and 26% of women in 2003 to 34% and 45% respectively in 2012.[8] This reflects similar trends in hospital admissions with a primary diagnosis of obesity, which increased from just over 1,000 in 2000/2001 to around 11,000 per year since 2009/2010, although it is possible that part of this rise may be due to diagnostic/definitional changes[9] or changes in management that result in a higher likelihood of admission. Those admitted with a primary diagnosis of obesity are likely to be extreme cases, the 'tip of the iceberg'; at a population level, the majority of harm is done to those with less extreme obesity, of whom there are many more. Admissions with a primary or secondary diagnosis of obesity (i.e. attending hospital for another problem, to which obesity was relevant) have also risen approximately ten-fold in the same period, from 29,000 in 2000/2001 to 292,000 in 2012/2013. Around 48,000 deaths per year are attributed to obesity in England, placing obesity as the fourth largest risk factor (after hypertension, smoking, and high cholesterol) according to the NHS Atlas of Risk.[10]

To address the issue of obesity, a number of government policies and initiatives are in place, aimed at individuals, the NHS, and local authorities. The *Change4Life* public information campaign aims to improve diet and activity levels of parents and children.[11] Voluntary 'Responsibility Deals' are aimed at improving food labelling systems to enable individuals to choose their food more wisely, as well as encouraging the food industry to *'shift the marketing mix towards lower calorie options'*.[12] *The Living Well for Longer* policy document aims to encourage local authorities and clinical commissioning groups (CCGs) to follow the lead of Public Health England in acting on obesity.[13] In particular, local authorities are being encouraged to use their powers to curb fast-food outlets[14] and to promote exercise and active travel.[15]

10.2 Methods and definitions

10.2.1. Methods

Full details of the protocols for carrying out all the measurements are contained in Volume 2 of this report, *Methods and documentation*, Appendix B;[16] they are summarised briefly here.

Height and weight were measured during the interviewer visit, while waist and hip circumferences were measured during the nurse visit.[17] The interviewer also asked participants about self-reported weight and height and their own perception of their weight and weight management. The questions can be found in the Individual Questionnaire in Volume 2 of this report, *Methods and Documentation*, Appendix A. These data are not presented in this chapter but self-reported results from HSE 2012 have been reported previously.[2]

Height

Height was measured using a portable stadiometer with a sliding head plate, a base plate and connecting rods marked with a measuring scale. Participants were asked to remove their shoes. One measurement was taken, with the participant stretching to the maximum height and the head positioned in the Frankfort plane.[18] The reading was recorded to the nearest millimetre. Participants who were unable to stand or were unsteady on their feet were not measured.

Weight

New Class III Seca scales were introduced for HSE 2011, and have been used in the HSE since then. These meet a higher specification than previous (Class IV) scales, and measure up to a maximum of 200kg, compared with the maximum of 130kg in the earlier models.[19]

For the weight measurement, participants were asked to remove their shoes and any bulky clothing or heavy items in pockets etc. A single measurement was recorded to the nearest 100g. Participants who were pregnant, unable to stand, or unsteady on their feet were not weighed. Participants who weighed more than 200kg were asked for their estimated weight because the scales are inaccurate above this level. The estimated weight from the one individual affected (estimated weight 200kg) was included in the analyses, as well as three individuals where the interviewer estimated that they were over 200kg, although when asked, their estimated weight was actually below 200kg.

In the analysis of height and weight, data were excluded from those who were considered by the interviewer to have unreliable measurements, for example those who were too stooped or wearing excessive clothing.

Waist circumference

BMI does not distinguish between mass due to body fat and mass due to muscular physique. It also does not take account of the distribution of fat. It has therefore been suggested that waist circumference, waist to hip ratio (WHR) or waist to height ratio may be a better measure than BMI to identify those with a health risk from being overweight.[20,21]

The waist was defined as the midpoint between the lower rib and the upper margin of the iliac crest. It was measured using a tape with an insertion buckle at one end. The measurement was taken twice, using the same tape (waist and hip measurements were alternated), and was recorded to the nearest millimetre. Where the two waist measurements differed by more than 3cm, a third measurement was taken. The mean of the two valid measurements (the two out of the three measurements that were the closest to each other, if there were three measurements) was used in the analysis.

Participants were excluded from waist measurements if they reported that they were pregnant, had a colostomy or ileostomy, or were unable to stand. All those with measurements considered unreliable by the nurse, for example due to excessive clothing or movement, were also excluded from the analysis.

Response to anthropometric measures

Response rates to anthropometric measurements are shown in Table 10.1. 86% of men and 87% of women provided a valid height measurement, and 87% of men and 85% of women a valid weight measurement. Among those who received a nurse visit, response to waist measurements was 98% of men and 97% of women. Response to all three objective measures was lower among those aged 85 and over. For example, 23% of those in this age

group were unable to give a height measurement because of pain, an inability to stand steadily and sufficiently upright, disability, or other reasons; a further 7% refused; and 8% had a measurement that was considered unreliable. **Table 10.1**

Age-standardisation

Age-standardised data are presented in this chapter for most analyses. Age-standardisation allows comparisons between groups after adjusting for the effects of any differences in their age distributions. Otherwise, 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.

For regions, both observed and age-standardised data are provided. Those wishing to ascertain the actual levels of obesity etc in each region should use the observed data, while those making comparisons between regions should use the age-standardised data. The comments on region in this chapter are based on age-standardised results.

10.2.2. Definitions

Body mass index (BMI)

In order to define overweight or obesity, a measurement is required that allows for differences in weight due to height. A widely accepted measure of weight for height is the body mass index (BMI), defined as weight in kilograms divided by the square of the height in metres (kg/m^2).[22] This has been used as a measure of obesity in the HSE series. Adult participants were classified into the following BMI groups according to the WHO (World Health Organisation) BMI classification.[23]

Table 10A

BMI (kg/m^2)	Description
Less than 18.5	Underweight
18.5 to less than 25	Normal
25 to less than 30	Overweight
30 or more	Obese
40 or more	Morbidly obese

BMI categories of overweight and obese have frequently been combined to show the proportion who are either overweight or obese. As in previous years' reports, a subset of the obese category has also been defined, namely those with morbid obesity (BMI 40kg/m^2 or more), who are at highest risk of morbidity and mortality.[24]

Combined assessment of health risk from BMI and waist circumference

The 2006 NICE evidence-based guidelines include details on prevention, identification, assessment and management of overweight and obesity, with one aim being to increase health professionals' awareness of how to manage overweight and obesity.[25] The guidelines highlight the impact of overweight and obesity on risk factors for developing other long-term health problems such as coronary heart disease, Type 2 diabetes, osteoarthritis and some cancers. It states that risk of these co-morbidities should be identified using both BMI and waist circumference as assessment tools in those with a BMI less than 35kg/m^2. The NICE guidance states that *'waist circumference is a valid measure of abdominal fat mass and disease risk in individuals with a BMI less than 35. If BMI is 35 or more, waist circumference adds little to the absolute measure of risk provided by BMI'*. The NICE categories are defined as follows:

Table 10B			
BMI classification	**Waist circumference**		
	Low	High	Very high
Normal weight (18.5 to less than 25kg/m^2)	No increased risk	No increased risk	Increased risk
Overweight (25 to less than 30kg/m^2)	No increased risk	Increased risk	High risk
Obesity I (30 to less than 35kg/m^2)	Increased risk	High risk	Very high risk
Obesity II (35 to less than 40kg/m^2)	Very high risk	Very high risk	Very high risk
Obesity III (40kg/m^2 or more)	Very high risk	Very high risk	Very high risk

Source: NICE guidelines[25]

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

NICE also defines categories of Obesity II (35 to less than 40kg/m^2) and Obesity III (40kg/m^2 or more). For adults with a BMI of 35kg/m^2 or more, risks are assumed to be very high with any waist circumference.[25]

Note that the combined measures shown in Table 10.10 are based on adults with valid measurements for all three of height, weight and waist circumference. The data may therefore vary slightly from those presented in Table 10.3 for mean BMI and BMI categories which are based on the larger number of adult participants with valid height and weight measurements.

In previous reports, waist circumference has been categorised as 'raised', indicative of central obesity, and 'not raised'. The 'raised' category used the same thresholds as 'very high' in Table 10B. Given the high prevalence of central obesity, this chapter presents the prevalence of normal and high waist circumference as two separate categories, rather than combining them as 'not raised'. The 'low' category is referred to as 'desirable' throughout the chapter, to avoid any suggestion that this is lower than recommended or associated with being underweight.

Hypertension

During the nurse visit, blood pressure was measured three times, following the standard protocol (see Volume 2, *Methods and documentation*, Appendix B). The mean of the second and third readings were used to determine the presence of hypertension, in conjunction with whether or not the participant was currently taking medication to control blood pressure (Table 10C).

Table 10C	
Hypertension category	**Description**[a]
Normotensive untreated	SBP below 140mmHg and DBP below 90mmHg, **not** currently taking medicines specifically prescribed to treat high blood pressure
Hypertensive controlled	SBP below 140mmHg and DBP below 90mmHg, currently taking medicines specifically prescribed to treat their high blood pressure
Hypertensive uncontrolled	SBP at least 140mmHg and/or DBP at least 90mmHg, currently taking medicines specifically prescribed to treat their high blood pressure
Hypertensive untreated	SBP at least 140mmHg and/or DBP at least 90mmHg, **not** currently taking medicines specifically prescribed to treat their high blood pressure

[a]SBP: systolic blood pressure; DBP: diastolic blood pressure

Diabetes

The definition of self-reported doctor-diagnosed diabetes was based on a positive response to both of the questions asked at the interview:
'Do you now have, or have you ever had diabetes?' and
'Were you told by a doctor that you had diabetes?'

The only exception was women who had diabetes only during pregnancy.

Glycated haemoglobin (HbA_{1C}), measured in the blood sample, is a validated tool for monitoring longer-term hyperglycaemia (raised levels of blood glucose).[26] HbA_{1C} shows the

proportion of haemoglobin in the circulation to which glucose is bound. It reflects the average level of blood glucose during approximately three months preceding the measurement and has been suggested as a diagnostic or screening tool for diabetes.

In 2009, an international expert committee recommended using levels of 6.5% (48mmol/mol[27]) or more to diagnose diabetes.[28] This was confirmed by the World Health Organisation in 2011.[26] A level of 48mmol/mol (6.5%) or above represents raised glycated haemoglobin (hyperglycaemia) and in people without diagnosed diabetes, this level indicates undiagnosed diabetes.

Longstanding illness

Longstanding illness is defined as any physical or mental health conditions or illnesses lasting or expected to last 12 months or more. A limiting longstanding illness is one that reduces an individual's ability to carry out day-to-day activities.

10.3 Height and weight

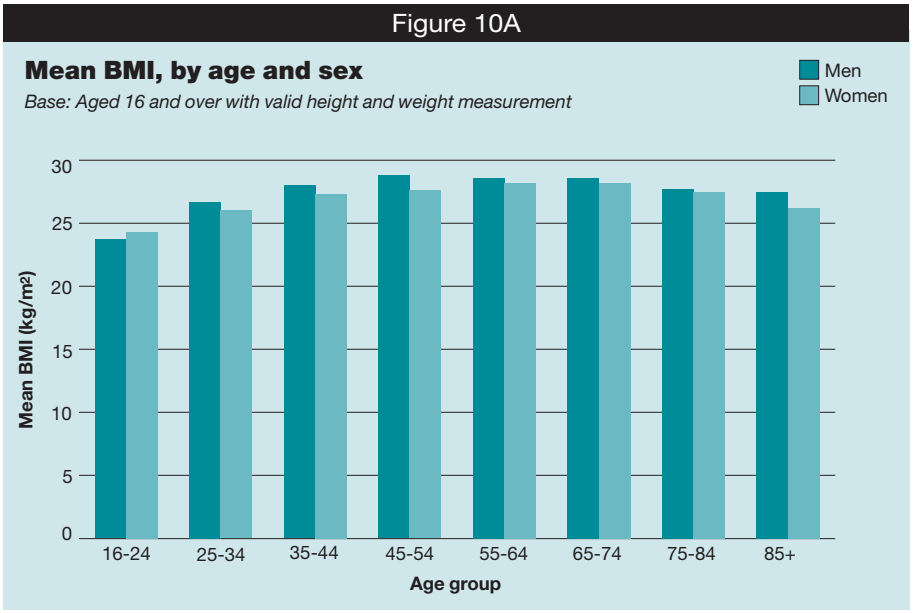
Mean height was 175.6cm for men and 162.0cm for women. For both sexes, height was lower in older age groups, especially from around the age of 65. Mean weight was 84.6kg for men and 70.7kg for women. For both sexes there was an increase in weight up to middle age, and then a decrease in older age. The increase was bigger for men (14kg difference between 16-24 and 45-54) than for women (7kg between the same age groups). **Table 10.2**

10.4 Prevalence of obesity, overweight and high waist circumference

10.4.1 Mean BMI, obesity and overweight, by age and sex

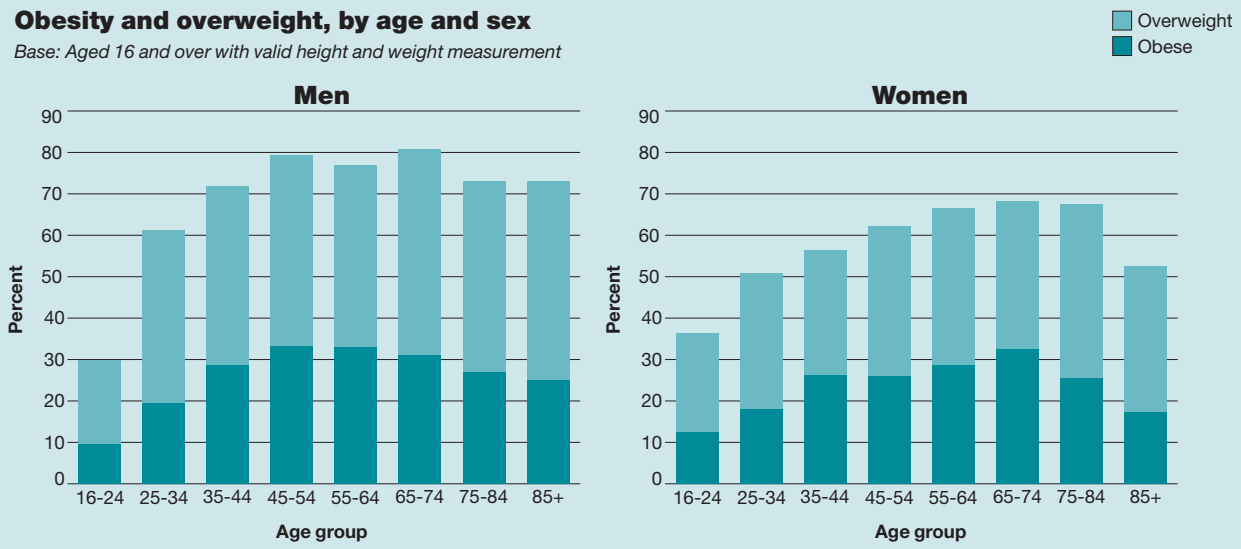
Mean BMI was higher for men than women, and the average for both men (27.4 kg/m^2) and women (26.9 kg/m^2) was overweight. Mean BMI was lowest among younger adults, increasing through middle age, and reducing slightly among older adults 75 and over (Figure 10A).

Figure 10A



Men were more likely than women to be obese (26% and 24% respectively), and also more likely to be overweight (41% and 33%). Like mean BMI, obesity increased through middle age, decreasing in the oldest age groups. Overweight also increased with age, more so for men than women, and overall the proportion overweight or obese followed the patterns shown in Figure 10B. **Figures 10A, 10B, Table 10.2**

Figure 10B



10.4.2 Waist circumference, by age and sex

Mean waist circumference was higher among men (96.9cm) than women (87.4cm), and increased with age, with a slightly steeper increase among men (Figure 10C).

A desirable waist circumference is smaller for women than men. Despite this, more women than men had a high or very high waist circumference (67% of women and 57% of men). As with other measures of obesity, the proportion with high or very high waist circumference increased with age (Figure 10D). **Figures 10C, 10D, Table 10.6**

Figure 10C

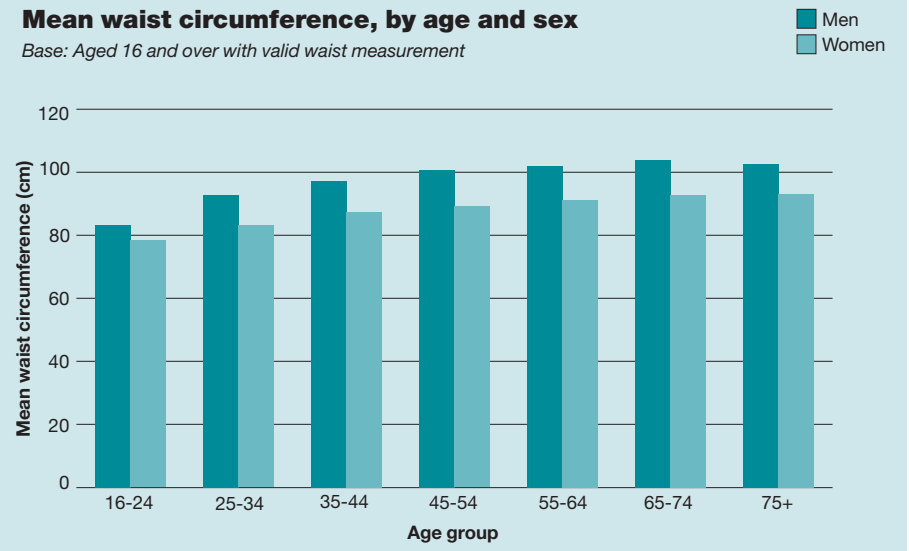
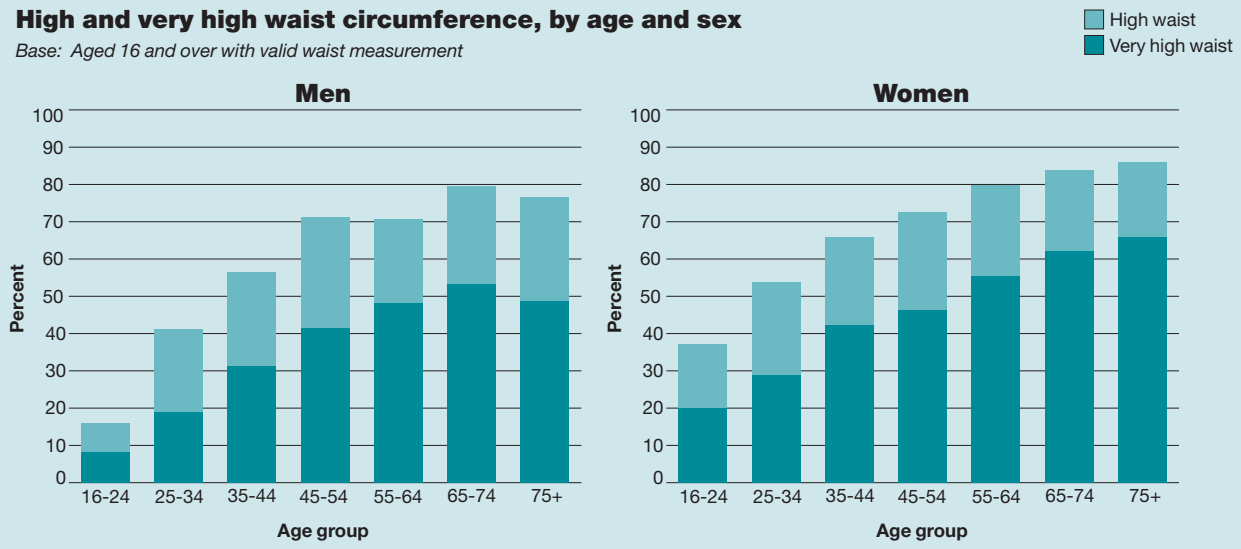


Figure 10D

High and very high waist circumference, by age and sex

Base: Aged 16 and over with valid waist measurement



10.4.3 Prevalence of obesity, overweight and high waist circumference by region

Obesity prevalence as measured by BMI varied by region, being highest in the North East, followed by Yorkshire and Humber and the East and West Midlands, and lowest in the South East, South West, and London (Figure 10E). Central obesity (very high waist circumference) also varied by region, and was highest in the North East and East Midlands (Figure 10F).

Figures 10E, 10F, Tables 10.3, 10.7

10.4.4 Prevalence of obesity, overweight and high waist circumference by income and deprivation

Obesity and overweight

The HSE uses the measure of equivalised household income, which takes into account the number of adults and dependent children in the household as well as overall household income. Households are divided into quintiles based on this measure. Obesity was associated with lower income for both men and women in a similar way, as shown in Figure 10G. However, taking obesity and overweight together, women in lower income households were more likely to be overweight or obese than those in higher income households (51% in the highest income households, 64% in the lowest income households), but there was not a similar pattern in men.

Obesity was also associated with area deprivation (IMD): people living in more deprived areas (especially women) were more likely to be obese. Similarly to income, when overweight was included the association persisted for women, but not for men.

Figure 10G, Tables 10.4, 10.5

High waist circumference

The associations between waist circumference and income and area deprivation followed a similar pattern to those for obesity. For both men and women, as income decreased, the proportion with high or very high waist circumference increased. In deprived areas, a greater proportion of people had a high or very high waist circumference than in less deprived areas; this difference was especially pronounced for women (Figure 10H).

Figure 10H, Tables 10.8 and 10.9

Figure 10E

Prevalence of obesity, by region and sex

Base: Aged 16 and over with valid height and weight measurement

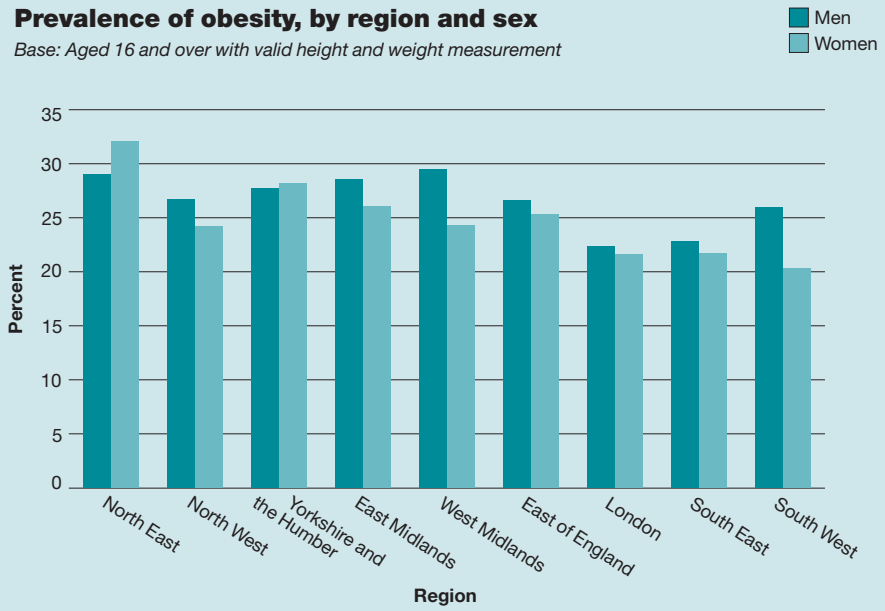


Figure 10F

Prevalence of high or very high waist circumference, by region and sex

Base: aged 16 and over with valid waist measurement

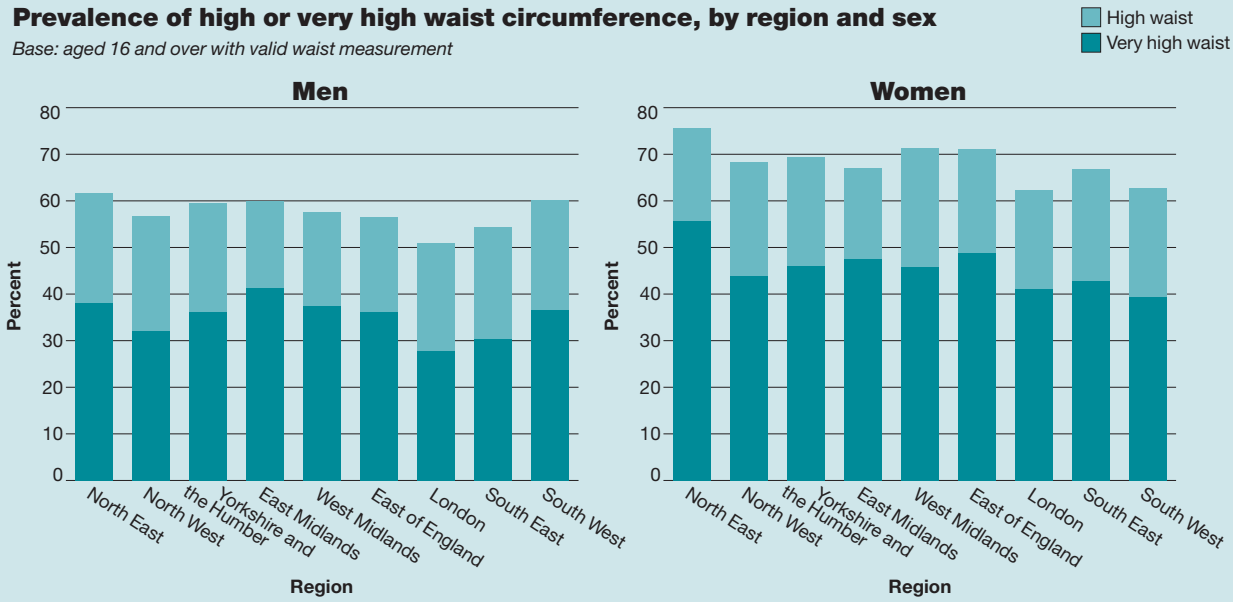


Figure 10G

Obesity and overweight, by equivalised household income and sex

Base: Aged 16 and over with valid height and weight measurement

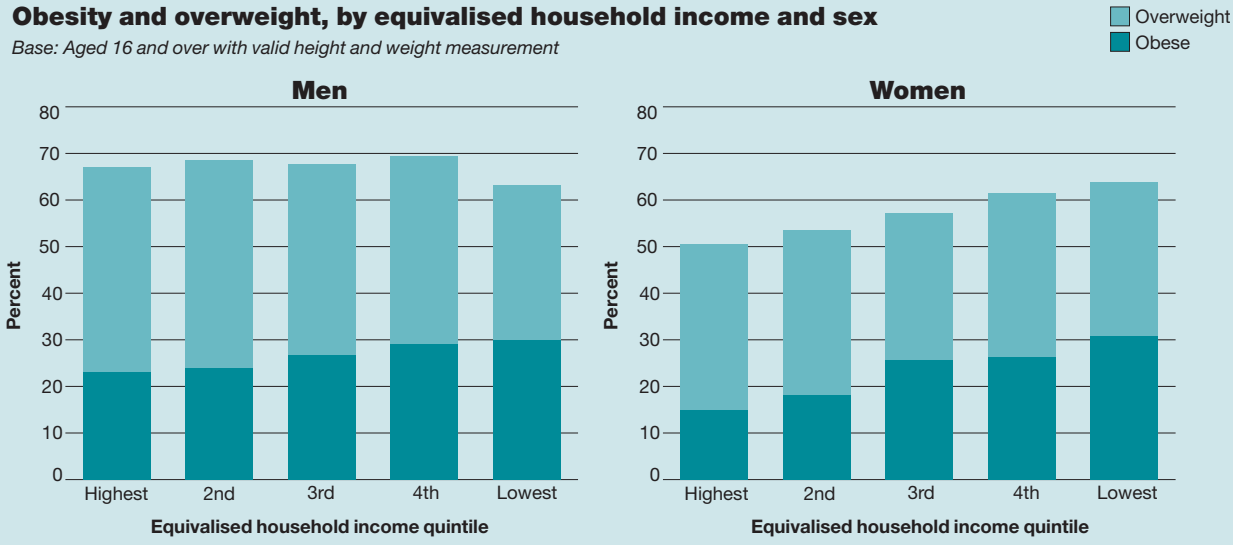
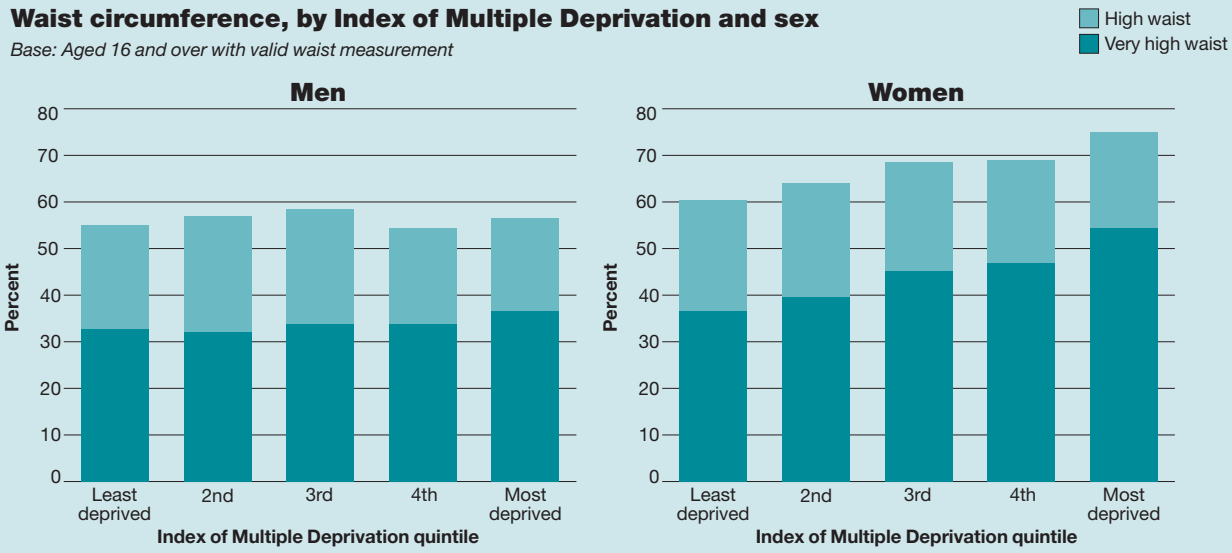


Figure 10H

Waist circumference, by Index of Multiple Deprivation and sex

Base: Aged 16 and over with valid waist measurement



10.5 Health risk category with obesity, overweight and waist circumference

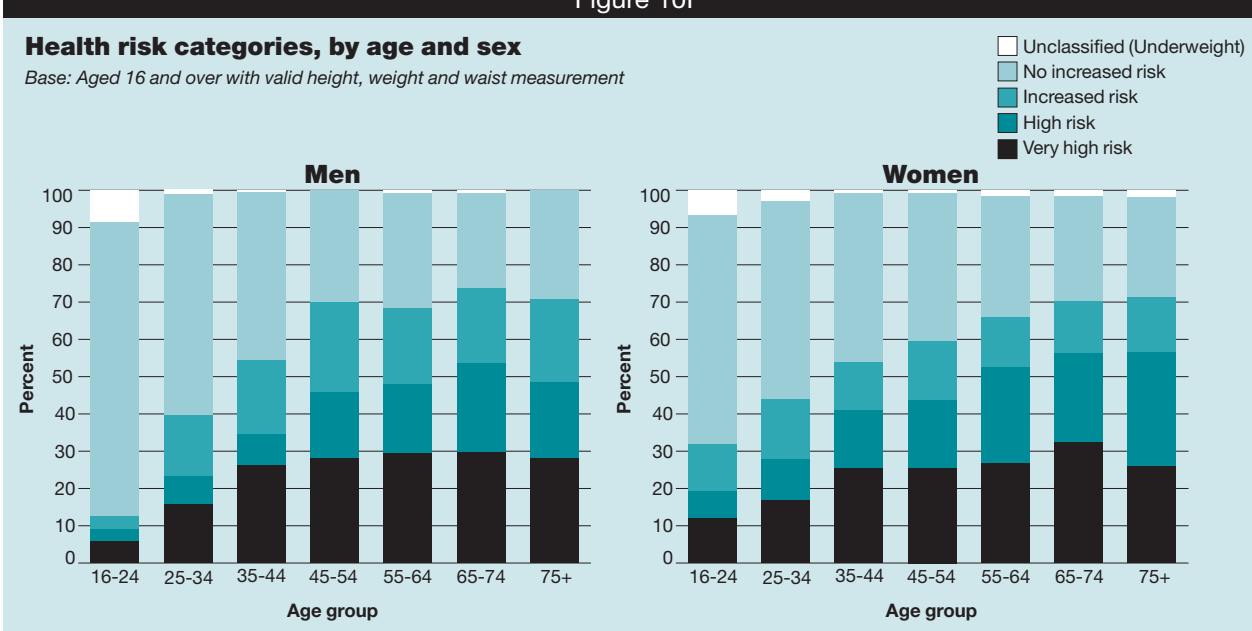
Participants with both BMI and waist measurements were assigned a health risk category as described in Section 10.2.2. Almost all the men who had a normal BMI had either a desirable or high waist circumference, so they were at no increased risk. However, among the men who were overweight (the most common weight category for men) a majority had either a high or very high waist circumference, putting them into the increased or high risk groups. Most of those who were obese had a very high risk, either because they were in the first category of obesity but had a very high waist circumference or because they were in the second or third categories of obesity.

Overall, just over half the men in the sample were in increased, high or very high risk categories. The proportion in each risk category increased with age, as shown in Figure 10I.

Figure 10I

Health risk categories, by age and sex

Base: Aged 16 and over with valid height, weight and waist measurement



Among women with a normal BMI (40% of women), a few were at increased risk due to their very high waist circumference. Among overweight women most had high or very high waist circumference, and thus were at increased or high risk. Women were more likely than men

to be in the **high** risk category (18% and 13% respectively), while an equal proportion of women and men (23%) were in the **very high** risk category.

The proportion of women with increased, high, or very high risk rose with age, as for men, though this increase was less steep in middle age for women than for men. The women's results are shown in Figure 10J.

Figure 10I, Table 10.10

10.6 Trends in obesity and overweight

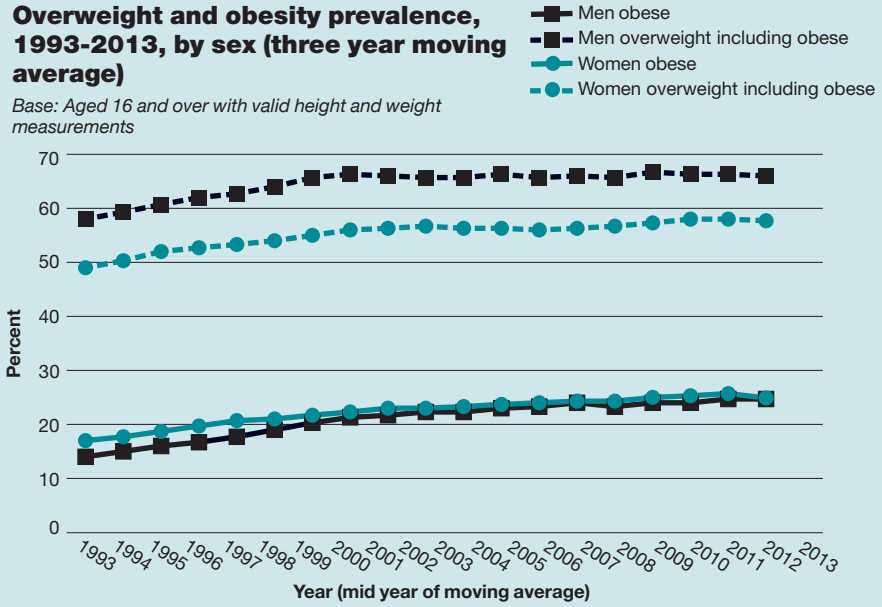
Rates of obesity and overweight were similar in 2013 to recent years. Obesity prevalence increased steeply between 1993 and around 2000, and there was a slower rate of increase after that. Prevalence of obesity has generally fluctuated between 24% and 26% from around 2006 to 2013. Figure 10J shows trends with three year moving averages.

Figure 10J, Table 10.11

Figure 10J

Overweight and obesity prevalence, 1993-2013, by sex (three year moving average)

Base: Aged 16 and over with valid height and weight measurements



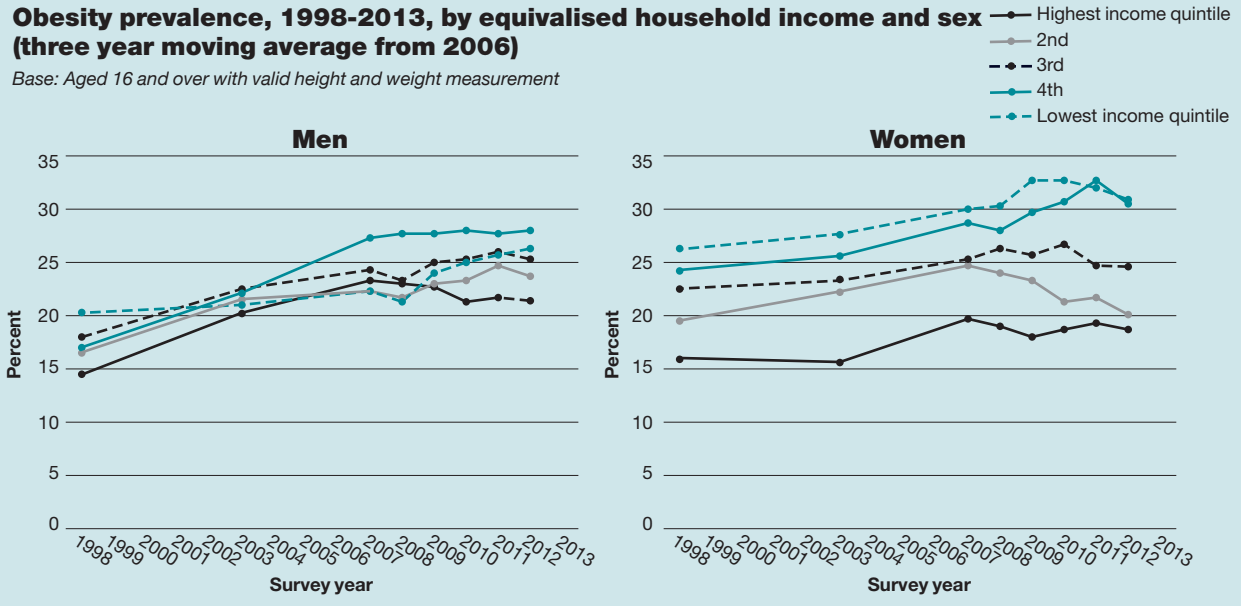
Note: Data from 2003 onwards are weighted for non-response. Some points combine weighted and unweighted estimates.

Figure 10K shows trends for obesity by quintile of equivalised household income from 1998-2013 (with three year moving averages from 2006). Among women, those in the

Figure 10K

Obesity prevalence, 1998-2013, by equivalised household income and sex (three year moving average from 2006)

Base: Aged 16 and over with valid height and weight measurement



lowest income quintile had the highest prevalence of obesity, those in the highest quintile had the lowest obesity. Among men, from 2006 to 2012 it was those in the 4th highest income quintile rather than the lowest quintile who were the most likely to be obese. The pattern of a rise in obesity, followed by a plateau since 2006, has occurred across all income groups. **Figure 10K, Table 10.12**

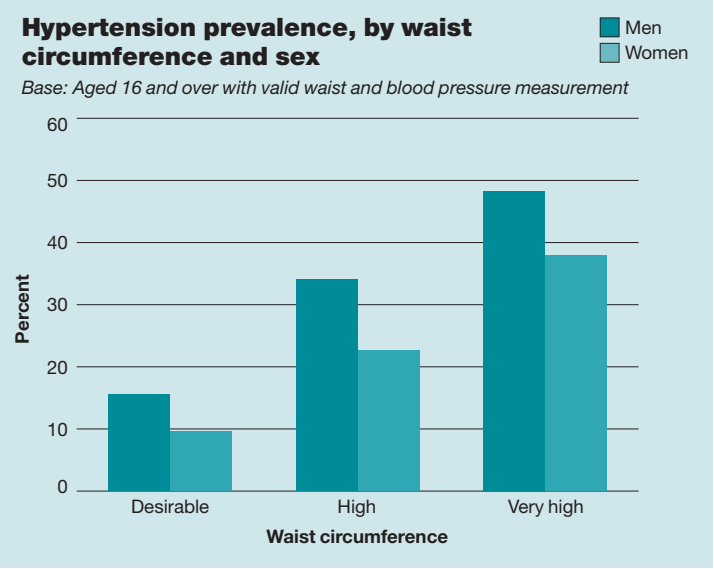
10.7 Health status by obesity, overweight and waist circumference

10.7.1 Hypertension

Hypertension was strongly associated with BMI, especially for men. Prevalence increased from 17% of men and 19% of women of normal BMI to 41% of obese men and 33% of obese women. The increase was seen in all three categories of hypertension (defined in Section 10.2.2): controlled (with blood pressure below the threshold due to medication), uncontrolled (on medication for hypertension, but blood pressure above the threshold) and untreated (not on medication for hypertension, despite blood pressure being over the threshold).

For both sexes, increasing waist circumference was also associated with increasing likelihood of having hypertension, as shown in Figure 10L. **Figure 10L, Tables 10.13, 10.14**

Figure 10L



10.7.2 Diabetes

Diabetes (whether diagnosed by a doctor or undiagnosed but detectable from glycated haemoglobin levels) was more common among men than women. However, obesity was very strongly associated with the presence of diabetes, and almost the same proportion of obese women as men had diabetes (Figure 10M). Increasing waist circumference also increased the risk of diabetes, and as with obesity almost the same proportion of men and women with a very high waist circumference had diabetes (16% and 14% respectively).

Figure 10M, Tables 10.15, 10.16

10.7.3 Longstanding illness

People who were overweight and obese were more likely than those of normal BMI to have a longstanding illness, and more likely to have a limiting longstanding illness (Figure 10N). The relationship with central obesity was even stronger (Figure 10O).

Figures 10N, 10O, Tables 10.17, 10.18

Figure 10M

Diabetes prevalence, by BMI category and sex

Base: Aged 16 and over with valid height, weight, and blood sample

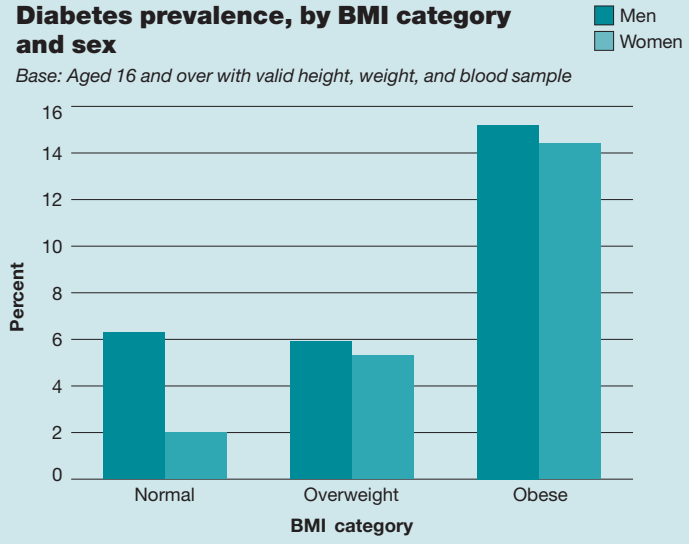


Figure 10N

Longstanding illness, by BMI category and sex

Base: Aged 16 and over with valid height and weight measurement

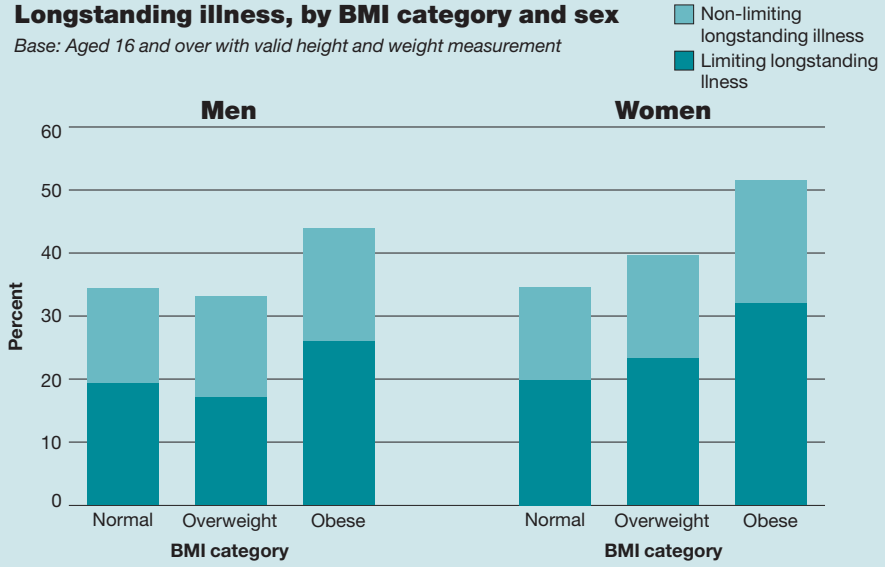
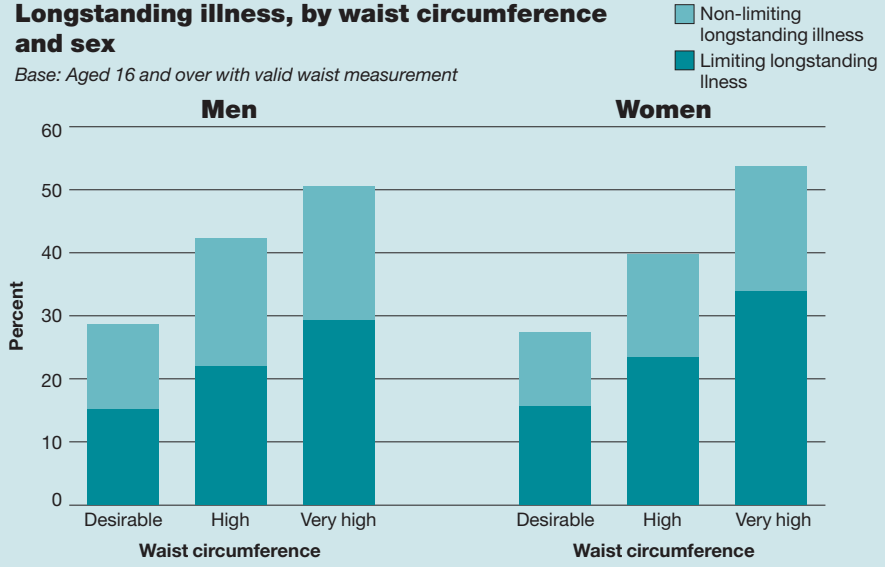


Figure 10O

Longstanding illness, by waist circumference and sex

Base: Aged 16 and over with valid waist measurement



10.8 Discussion

In 2010 the government stated its ambition for "A downward trend in the level of excess weight averaged across all adults by 2020",[29] recognising the harm that is caused by overweight as well as obesity. Many of the initiatives that include reducing the prevalence of overweight and obesity, such as *Change4Life* and the Responsibility Deals, are universal in their scope, promoting or enabling healthiness for all, rather than targeted at a section of the population. This report shows that the majority of adult men and women remain overweight or obese, and the proportions in these categories are currently neither increasing nor decreasing. The mean BMI of men shows an excess of 2.4kg/m^2 above the normal threshold, which, for a man of average height, would be an excess of at least 7.5kg. The equivalent figures for women were 1.9kg/m^2 above the normal BMI threshold, an excess of at least 5.0kg for a woman of average height. The average waist circumference was 2.9cm over the desirable measurement for men and 7.4cm over for women.

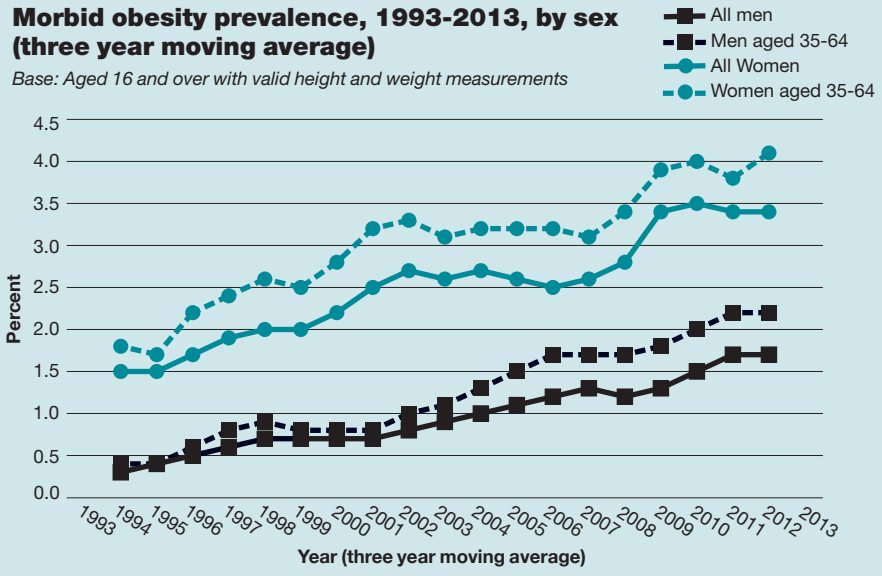
Although the overall trend in overweight and obesity prevalence has stabilised, the mean BMI of heavier adults is increasing, as more overweight and obese people fall into higher categories of obesity.[30] HSE trend data show that in 1993, 0.2% of men and 1.4% of women were morbidly obese with a BMI of 40kg/m^2 or over; by 2013 this has risen to 1.6% of men and 3.9% of women (Figure 10P). The data show that although a greater proportion of men than women were above their ideal weight, most men were overweight, and it was women who were more likely to be severely obese. This has been overlooked by the equality analysis of the call to action on obesity in England which focused on overweight and obesity together, rather than the severity of obesity.[31] Women were also more likely than men to have a very high waist circumference, associated with increased risks to health.

Overweight, obesity, morbid obesity, and central obesity all show an increase with age, with the highest levels mainly recorded among those aged 35 – 64 (depending on the measure). NHS health checks, introduced in April 2009, are aimed at the age group 40 to 74. The checks include BMI measurement every five years, as well as other tests to diagnose and offer timely treatment for common chronic conditions such as hypertension and diabetes.[32] A recent international review of evidence on health checks suggested that people who were given a general-practice based health check had lower odds of remaining obese than those who were not given a health check (odds ratio of 0.89).[33] However, the effectiveness of such health checks is disputed.[34]

Figure 10P

Morbid obesity prevalence, 1993-2013, by sex (three year moving average)

Base: Aged 16 and over with valid height and weight measurements



Note: Data from 2003 onwards are weighted for non-response. Some points combine weighted and unweighted estimates.

The well-known associations between obesity and ill-health were borne out by the examination of the associations between obesity and diabetes, hypertension and longstanding illness reported in this chapter, and associations with poor general health as reported in previous years.[2] This highlights the importance of obesity as a risk factor for illness, but also represents an opportunity for health professionals to advise on weight loss as patients make contact for other health conditions. Of those with both survey-defined hypertension and obesity, 55% are receiving treatment for their hypertension, which is far from ideal, but a little better than the treatment rate of normal-weight people with hypertension (48%). **Figure 10P**

References and notes

1 Body mass index (BMI) is derived by dividing weight in kilograms by the square of height in metres (kg/m^2).

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15 Public Health England. *Obesity and the environment briefing – increasing physical activity and active travel*. Public Health England, London, 2013. www.gov.uk/government/publications/obesity-and-the-environment-briefing-increasing-physical-activity-and-active-travel

16 Craig R, Mindell J (eds). *Health Survey for England 2013: Report. Volume 2: Methods and documentation*. Health and Social Care Information Centre, Leeds, 2014. www.hscic.gov.uk/pubs/hse2013

17 This chapter includes results of waist circumference measurements but not waist:hip ratios; details of how hip circumference was measured are therefore not included in this chapter but can be found in Appendix B, Volume 2 of this report.

18 The Frankfort Plane is an imaginary line passing through the external ear canal and across the top of the lower bone of the eye socket, immediately under the eye. A participant's head is positioned so that the Frankfort Plane is horizontal. In this position the headplate of the stadiometer will rest on the crown of the head.

19 In May 2008 and again in March 2010, the Department of Health issued an alert regarding the need to use Class III scales in certain settings; these include all measurements of those under the age of 18. The National Child Measurement Programme (NCMP) moved to using Class III scales, since it was monitoring children's weight, and it was decided that scales in the HSE should also conform to this standard. Class III scales are manufactured to a more stringent standard of accuracy, and can provide accurate measurements up to 200kg. www.dhsspsni.gov.uk/efa-2010-001a.pdf

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Tables

Notes on the tables

1. The group on which the figures in the table are based is stated at the upper left corner of the table.
2. The data in most tables have been weighted. See Volume 2, Chapter 7 of this report for more detail. Both unweighted and weighted sample sizes are shown at the foot of each table.
3. Apart from tables showing age breakdowns, data have been age-standardised to allow comparisons between groups after adjusting for the effects of any differences in their age distributions. See Volume 2, Chapter 8.4 of this report for more detail.
4. The following conventions have been used in tables:
   - \- no observations (zero value)
   - 0 non-zero values of less than 0.5% and thus rounded to zero
   - [ ] used to warn of small sample bases, if the unweighted base is less than 50. If a group's unweighted base is less than 30, data are normally not shown for that group.
5. Because of rounding, row or column percentages may not add exactly to 100%.
6. 'Missing values' occur for several reasons, including refusal or inability to answer a particular question; refusal to co-operate in an entire section of the survey (such as the nurse visit or a self-completion questionnaire); and cases where the question is not applicable to the participant. In general, missing values have been omitted from all tables and analyses.

Table 10.1

Response to anthropometric measurements, by age and sex

Aged 16 and over who were interviewed/had a nurse visit *2013*

Proportion providing valid measurements	Age group								Total
	16-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	
	%	%	%	%	%	%	%	%	%
Men									
Height	85	88	87	88	89	86	81	61	86
Weight[a]	84	87	86	88	89	88	86	68	87
BMI	84	87	86	88	88	85	80	58	85
Waist circumference	100	99	99	98	99	98	95	96	98
Women									
Height	90	89	91	89	86	84	75	63	87
Weight[a]	88	87	88	87	86	83	80	69	85
BMI	87	86	88	86	84	81	73	61	84
Waist circumference	99	97	97	98	98	96	94	85	97
Bases (unweighted)									
Men									
Height, weight, BMI (interviewed)	*392*	*542*	*629*	*704*	*604*	*616*	*348*	*90*	*3925*
Waist circumference (saw nurse)	*211*	*342*	*407*	*499*	*455*	*481*	*268*	*54*	*2717*
Women									
Height (interviewed)	*477*	*756*	*827*	*884*	*743*	*652*	*387*	*144*	*4870*
Weight, BMI (interviewed)[b]	*461*	*708*	*808*	*882*	*743*	*652*	*387*	*144*	*4785*
Waist circumference (saw nurse)[b]	*286*	*477*	*565*	*642*	*558*	*510*	*281*	*93*	*3412*

[a] Includes 4 individuals who gave self-reported weight, as the interviewer estimated that they were too heavy (more than 200kg) for the scales to measure accurately.

[b] Excluding pregnant women.

Table 10.2

Interviewer-measured body mass index (BMI), overweight and obesity prevalence, by age and sex

Aged 16 and over with both valid height and weight measurements — *2013*

BMI (kg/m^2) and BMI status (%)[a]	Age group								Total
	16-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	
Men									
Mean height (cm)	177.6	177.9	176.6	175.6	174.3	173.1	170.6	165.9	175.6
Standard error of the mean	0.48	0.32	0.35	0.29	0.30	0.30	0.40	0.84	0.15
Mean weight (kg)	74.8	84.5	87.5	88.9	87.2	85.8	80.7	76.2	84.6
Standard error of the mean	0.96	0.81	0.81	0.68	0.77	0.65	0.71	1.51	0.34
Mean BMI (kg/m^2)	23.7	26.7	28.0	28.8	28.6	28.6	27.7	27.5	27.4
Standard error of the mean	0.28	0.24	0.24	0.20	0.23	0.20	0.24	0.48	0.10
% Underweight	9	1	0	0	1	1	-	-	2
% Normal	62	38	28	20	23	18	27	27	31
% Overweight	20	42	43	46	44	50	46	48	41
% Obese, excluding morbidly obese	8	18	27	31	31	30	27	25	24
% Morbidly obese	1	1	2	2	2	1	1	-	2
% Overweight, including obese	*30*	*61*	*72*	*79*	*77*	*81*	*73*	*73*	*67*
% Obese	*10*	*20*	*29*	*33*	*33*	*31*	*27*	*25*	*26*
Women									
Mean height (cm)	164.1	163.8	163.3	162.8	160.9	159.5	156.9	154.1	162.0
Standard error of the mean	0.41	0.29	0.24	0.22	0.23	0.30	0.36	0.95	0.13
Mean weight (kg)	65.7	70.1	72.5	73.1	72.9	72.0	67.6	62.3	70.7
Standard error of the mean	0.78	0.62	0.61	0.59	0.71	0.68	0.80	1.18	0.27
Mean BMI (kg/m^2)	24.3	26.0	27.3	27.6	28.2	28.2	27.5	26.2	26.9
Standard error of the mean	0.26	0.23	0.23	0.21	0.26	0.25	0.34	0.58	0.11
% Underweight	6	3	1	1	1	1	2	4	2
% Normal	57	46	43	37	32	30	31	43	41
% Overweight	24	33	30	36	38	36	42	35	33
% Obese, excluding morbidly obese	11	15	21	22	23	29	23	16	20
% Morbidly obese	2	3	5	4	6	4	2	1	4
% Overweight, including obese	*36*	*51*	*56*	*62*	*67*	*68*	*67*	*52*	*57*
% Obese	*13*	*18*	*26*	*26*	*29*	*33*	*25*	*17*	*24*
Bases (unweighted)									
Men - Height	*333*	*477*	*545*	*621*	*536*	*531*	*283*	*55*	*3381*
Men - Weight	*331*	*474*	*543*	*620*	*537*	*544*	*298*	*61*	*3408*
Men - BMI	*328*	*471*	*540*	*617*	*530*	*525*	*278*	*52*	*3341*
Women - Height	*428*	*672*	*756*	*789*	*642*	*545*	*290*	*91*	*4213*
Women - Weight	*404*	*615*	*710*	*763*	*636*	*543*	*308*	*99*	*4078*
Women - BMI	*399*	*611*	*708*	*760*	*627*	*530*	*283*	*88*	*4006*
Bases (weighted)									
Men - Height	*539*	*646*	*648*	*677*	*542*	*415*	*222*	*42*	*3730*
Men - Weight	*535*	*641*	*646*	*675*	*542*	*425*	*233*	*47*	*3745*
Men - BMI	*531*	*638*	*643*	*672*	*536*	*410*	*218*	*39*	*3688*
Women - Height	*575*	*665*	*694*	*698*	*554*	*436*	*257*	*83*	*3962*
Women - Weight	*548*	*605*	*651*	*676*	*548*	*434*	*274*	*90*	*3827*
Women - BMI	*541*	*602*	*649*	*674*	*541*	*424*	*252*	*81*	*3763*

[a] Underweight: less than 18.5 kg/m^2
Normal weight : 18.5 to less than 25 kg/m^2
Overweight: 25 to less than 30 kg/m^2
Obese, excluding morbidly obese: 30 to less than 40 kg/m^2
Morbidly obese: 40 kg/m^2 or more
Overweight, including obese: 25 kg/m^2 or more
Obese: 30 kg/m^2 or more.

Table 10.3

Interviewer-measured overweight and obesity prevalence (observed and age-standardised), by region[a] and sex

Aged 16 and over with both valid height and weight measurements *2013*

BMI status (%)[b]	Region								
	North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East	South West
	%	%	%	%	%	%	%	%	%
Men									
Observed									
Overweight including obese	66	67	70	65	72	71	63	65	69
Obese	29	27	28	28	29	28	21	23	26
Standardised									
Overweight including obese	67	67	69	65	70	69	65	64	68
Obese	29	27	28	29	30	27	22	23	26
Women									
Observed									
Overweight including obese	63	61	61	57	59	63	53	54	50
Obese	32	25	28	27	24	26	20	22	20
Standardised									
Overweight including obese	64	60	61	56	58	63	56	55	50
Obese	32	24	28	26	24	25	22	22	20
Bases (unweighted)									
Men	*276*	*493*	*289*	*304*	*318*	*344*	*431*	*546*	*340*
Women	*325*	*552*	*374*	*358*	*389*	*401*	*555*	*638*	*414*
Bases (weighted)									
Men	*178*	*512*	*337*	*331*	*372*	*395*	*559*	*622*	*384*
Women	*170*	*488*	*371*	*324*	*393*	*384*	*594*	*628*	*411*

[a] Regions defined as the former Government Office Regions.

[b] Overweight: 25 to less than 30kg/m^2; Obese, including morbidly obese: 30kg/m^2 or more.

Table 10.4

Interviewer-measured body mass index (BMI), overweight and obesity prevalence (age-standardised), by equivalised household income and sex

Aged 16 and over with both valid height and weight measurements *2013*

BMI (kg/m^2) and BMI status (%)[a]	Equivalised household income quintile				
	Highest	2nd	3rd	4th	Lowest
Men					
Mean BMI (kg/m^2)	27.2	27.3	27.7	27.6	27.2
Standard error of the mean	0.21	0.20	0.24	0.27	0.30
% Underweight	1	2	1	4	3
% Normal	32	30	31	27	34
% Overweight	44	44	41	40	33
% Obese, excluding morbidly obese	22	23	26	27	28
% Morbidly obese	1	1	1	2	2
% Overweight, including obese	*67*	*68*	*68*	*69*	*63*
% Obese	*23*	*24*	*27*	*29*	*30*
Women					
Mean BMI (kg/m^2)	25.9	26.3	27.1	27.4	27.9
Standard error of the mean	0.25	0.24	0.30	0.23	0.29
% Underweight	2	1	2	2	2
% Normal	47	45	41	37	34
% Overweight	36	35	32	35	33
% Obese, excluding morbidly obese	12	16	22	23	25
% Morbidly obese	3	2	4	3	6
% Overweight, including obese	*51*	*54*	*57*	*62*	*64*
% Obese	*15*	*18*	*26*	*26*	*31*
Bases (unweighted)					
Men	*629*	*632*	*510*	*511*	*474*
Women	*622*	*703*	*625*	*659*	*635*
Bases (weighted)					
Men	*715*	*695*	*540*	*508*	*539*
Women	601	668	578	584	576

[a] Underweight: less than 18.5 kg/m^2
Normal weight : 18.5 to less than 25 kg/m^2
Overweight: 25 to less than 30 kg/m^2
Obese, excluding morbidly obese: 30 to less than 40 kg/m^2
Morbidly obese: 40 kg/m^2 or more
Overweight, including obese: 25 kg/m^2 or more
Obese: 30 kg/m^2 or more.

Table 10.5

Interviewer-measured body mass index (BMI), overweight and obesity prevalence (age-standardised), by Index of Multiple Deprivation (IMD)[a] and sex

Aged 16 and over with both valid height and weight measurements *2013*

BMI (kg/m^2) and BMI status (%)[b]	IMD quintile				
	Least deprived	2nd	3rd	4th	Most deprived
Men					
Mean BMI (kg/m^2)	27.1	27.1	27.7	27.2	27.7
Standard error of the mean	0.18	0.22	0.22	0.23	0.28
% Underweight	2	1	1	2	3
% Normal	32	33	29	34	30
% Overweight	44	43	41	36	37
% Obese, excluding morbidly obese	21	21	26	27	27
% Morbidly obese	1	1	2	1	3
% Overweight, including obese	*66*	*65*	*70*	*64*	*67*
% Obese	*22*	*22*	*28*	*28*	*30*
Women					
Mean BMI (kg/m^2)	25.8	26.5	26.9	27.4	28.3
Standard error of the mean	0.21	0.20	0.21	0.24	0.25
% Underweight	2	2	2	2	2
% Normal	49	43	41	38	31
% Overweight	33	35	33	32	33
% Obese, excluding morbidly obese	13	17	21	24	28
% Morbidly obese	2	3	4	4	7
% Overweight, including obese	*49*	*55*	*58*	*60*	*67*
% Obese	*15*	*20*	*24*	*28*	*34*
Bases (unweighted)					
Men	*686*	*751*	*718*	*616*	*570*
Women	*809*	*845*	*861*	*782*	*709*
Bases (weighted)					
Men	*725*	*818*	*799*	*716*	*630*
Women	*751*	*807*	*812*	*754*	*640*

[a] The Index of Multiple Deprivation 2010 combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score at the small area level in England.

[b] Underweight: less than 18.5 kg/m^2
Normal weight : 18.5 to less than 25 kg/m^2
Overweight: 25 to less than 30 kg/m^2
Obese, excluding morbidly obese: 30 to less than 40 kg/m^2
Morbidly obese: 40 kg/m^2 or more
Overweight, including obese: 25 kg/m^2 or more
Obese: 30 kg/m^2 or more.

Table 10.6

Waist circumference, by age and sex

Aged 16 and over with a valid waist measurement *2013*

Waist circumference (cm) and high or very high waist circumference (%)[a]	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Men								
Mean waist circumference (cm)	83.3	92.7	97.2	100.7	101.9	103.8	102.7	96.9
Standard error of the mean	0.80	0.71	0.61	0.52	0.62	0.57	0.62	0.32
% with high waist circumference	8	22	25	30	23	26	28	23
% with very high waist circumference	8	19	31	42	48	53	49	34
% total with high/very high waist circumference	*16*	*41*	*57*	*71*	*71*	*79*	*77*	*57*
Women								
Mean waist circumference (cm)	78.3	83.1	87.3	89.1	91.1	92.7	93.0	87.4
Standard error of the mean	0.88	0.54	0.59	0.57	0.58	0.59	0.70	0.29
% with high waist circumference	17	25	24	26	24	22	20	23
% with very high waist circumference	20	29	42	46	55	62	66	44
% total with high/very high waist circumference	*37*	*54*	*66*	*73*	*80*	*84*	*86*	*67*
Bases (unweighted)								
Men	*210*	*338*	*404*	*489*	*449*	*471*	*307*	*2668*
Women	*283*	*464*	*548*	*626*	*545*	*490*	*343*	*3299*
Bases (weighted)								
Men	*425*	*502*	*519*	*521*	*426*	*327*	*227*	*2947*
Women	*425*	*487*	*498*	*529*	*434*	*346*	*299*	*3018*

[a] High waist circumference: 94-102cm in men and 80-88cm in women.
Very high waist circumference: greater than 102cm in men and greater than 88cm in women, referred to as 'raised waist circumference' in previous HSE reports.

Table 10.7

Waist circumference (observed and age-standardised), by region[a] and sex

Aged 16 and over with a valid waist measurement — *2013*

Waist circumference[b]	Region								
	North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East	South West
	%	%	%	%	%	%	%	%	%
Men									
Observed									
Desirable waist circumference	40	44	39	43	39	43	52	42	39
High waist circumference	23	24	24	18	21	21	23	25	24
Very high waist circumference	37	32	37	39	40	36	25	32	37
Standardised									
Desirable waist circumference	39	43	40	40	42	44	49	46	40
High waist circumference	23	24	23	19	20	20	23	24	24
Very high waist circumference	38	32	36	41	38	36	28	30	36
Women									
Observed									
Desirable waist circumference	25	31	32	31	29	28	43	32	37
High waist circumference	20	24	24	20	25	22	21	24	24
Very high waist circumference	56	44	45	49	46	50	37	43	39
Standardised									
Desirable waist circumference	24	32	31	33	29	29	38	33	37
High waist circumference	20	24	23	20	25	22	21	24	23
Very high waist circumference	56	44	46	47	46	49	41	43	39
Bases (unweighted)									
Men	*251*	*374*	*237*	*251*	*266*	*271*	*304*	*434*	*280*
Women	*315*	*440*	*305*	*315*	*329*	*324*	*405*	*522*	*344*
Bases (weighted)									
Men	*149*	*413*	*272*	*265*	*303*	*328*	*436*	*484*	*297*
Women	*150*	*388*	*305*	*262*	*322*	*317*	*465*	*493*	*316*

[a] Regions defined as the former Government Office Regions.

[b] Desirable waist circumference: less than 94cm in men and less than 80cm in women.
High waist circumference: 94-102cm in men and 80-88cm in women.
Very high waist circumference: greater than 102cm in men and greater than 88cm in women, referred to as 'raised waist circumference' in previous HSE reports.

Table 10.8

Waist circumference (age-standardised), by equivalised household income and sex

Aged 16 and over with a valid waist measurement *2013*

Waist circumference[a]	Equivalised household income quintile				
	Highest	2nd	3rd	4th	Lowest
Men					
Mean waist circumference (cm)	95.8	96.2	96.9	98.5	97.5
Standard error of the mean	0.83	0.65	0.73	1.01	0.89
% with desirable waist circumference	47	46	41	40	41
% with high waist circumference	23	23	27	18	20
% with very high waist circumference	30	30	31	42	39
Women					
Mean waist circumference (cm)	84.4	86.1	87.4	88.7	90.4
Standard error of the mean	0.74	0.60	0.71	0.70	0.74
% with desirable waist circumference	41	36	32	28	26
% with high waist circumference	23	25	23	25	19
% with very high waist circumference	36	39	45	47	54
Bases (unweighted)					
Men	*497*	*508*	*421*	*430*	*375*
Women	*520*	*575*	*527*	*563*	*529*
Bases (weighted)					
Men	*565*	*547*	*441*	*422*	*451*
Women	*478*	*522*	*471*	*478*	*486*

[a] Desirable waist circumference: less than 94cm in men and less than 80cm in women.
High waist circumference: 94-102cm in men and 80-88cm in women.
Very high waist circumference: greater than 102cm in men and greater than 88cm in women, referred to as 'raised waist circumference' in previous HSE reports.

Table 10.9

Waist circumference (age-standardised), by Index of Multiple Deprivation (IMD)[a] and sex

Aged 16 and over with a valid waist measurement *2013*

Waist circumference[b]	IMD quintile				
	Least deprived	2nd	3rd	4th	Most deprived
Men					
Mean waist circumference (cm)	96.2	96.5	97.6	96.5	97.0
Standard error of the mean	0.65	0.71	0.66	0.86	0.71
% with desirable waist circumference	45	43	42	46	43
% with high waist circumference	22	25	24	21	20
% with very high waist circumference	33	32	34	34	37
Women					
Mean waist circumference (cm)	84.8	86.0	87.7	88.5	90.4
Standard error of the mean	0.61	0.53	0.58	0.71	0.68
% with desirable waist circumference	40	36	32	31	25
% with high waist circumference	24	24	23	22	21
% with very high waist circumference	37	40	45	47	54
Bases (unweighted)					
Men	*565*	*597*	*567*	*470*	*469*
Women	*664*	*703*	*704*	*634*	*594*
Bases (weighted)					
Men	*585*	*638*	*620*	*560*	*545*
Women	*592*	*631*	*640*	*611*	*544*

[a] The Index of Multiple Deprivation 2010 combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score at the small area level in England.

[b] Desirable waist circumference: less than 94cm in men and less than 80cm in women.
High waist circumference: 94-102cm in men and 80-88cm in women.
Very high waist circumference: greater than 102cm in men and greater than 88cm in women, referred to as 'raised waist circumference' in previous HSE reports.

Table 10.10

Health risk category associated with overweight and obesity based on body mass index (BMI) and waist circumference, by age and sex

Aged 16 and over with valid height, weight and waist circumference measurements[a] *2013*

BMI and waist circumference classification[b]	Health risk category[c]	Age group							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
Men									
Underweight (BMI less than 18.5kg/m²)									
Desirable waist circumference	Not applicable	8	1	1	-	1	1	-	2
High waist circumference	Not applicable	-	-	-	-	-	-	-	-
Very high waist circumference	Not applicable	-	-	-	-	-	-	-	-
All underweight		*8*	*1*	*1*	*0*	*1*	*1*	*0*	*2*
Normal (BMI 18.5 to less than 25kg/m²)									
Desirable waist circumference	No increased risk	58	38	27	19	19	13	19	29
High waist circumference	No increased risk	2	1	3	2	2	6	5	3
Very high waist circumference	Increased risk	-	-	-	0	0	0	0	0
All normal		*60*	*39*	*29*	*21*	*22*	*18*	*25*	*31*
Overweight (BMI 25 to less than 30kg/m²)									
Low waist circumference	No increased risk	19	20	16	9	9	7	5	13
High waist circumference	Increased risk	2	16	19	24	20	20	22	17
Very high waist circumference	High risk	2	3	5	13	17	23	20	11
All overweight		*23*	*40*	*40*	*46*	*46*	*50*	*47*	*41*
Obesity I (BMI 30 to less than 35 kg/m²)									
Desirable waist circumference	Increased risk	1	0	0	0	0	-	-	0
High waist circumference	High risk	1	4	3	5	1	1	-	3
Very high waist circumference	Very high risk	3	10	19	21	21	20	24	16
All obese I		*5*	*15*	*22*	*26*	*23*	*20*	*24*	*19*
Obesity II (BMI 35 to less than 40kg/m²)									
Desirable waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	0	-	-	-	-	0
Very high waist circumference	Very high risk	3	4	6	7	7	8	4	6
All obese II	*Very high risk*	*3*	*4*	*6*	*7*	*7*	*8*	*4*	*6*
Obesity III (BMI 40kg/m² or more)									
Desirable waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	-	-	-	-
Very high waist circumference	Very high risk	-	2	1	1	1	2	1	1
All obese III	*Very high risk*	*0*	*2*	*1*	*1*	*1*	*2*	*1*	*1*
Men – Overall risk[c]									
	Not applicable	8	1	1	-	1	1	-	2
	No increased risk	79	59	45	30	31	26	29	44
	Increased risk	3	16	20	24	21	20	22	18
	High risk	3	8	8	18	19	24	20	13
	Very high risk	6	16	26	28	29	30	28	23
Bases (unweighted)									
Men		*194*	*320*	*381*	*459*	*417*	*428*	*254*	*2453*
Bases (weighted)									
Men		*394*	*470*	*493*	*491*	*393*	*298*	*189*	*2727*

[a] Percentages and bases in this table are based on those who have a valid measurement for waist circumference, in addition to valid measurements of height and weight. Therefore subtotals for BMI categories by age and sex in this table are not definitive and may vary from estimates shown in Table 10.2.

[b] Waist circumference categories according to NICE guidelines:

	Men	Women
Low	less than 94cm	less than 80cm
High	94–102cm	80–88cm
Very high	more than 102cm	more than 88cm

[c] Health risk category according to NICE Guidelines. See note 25.

Continued…

Table 10.10 continued

Aged 16 and over with valid height, weight and waist circumference measurements[a] *2013*

BMI and waist circumference classification[b]	Health risk category[c]	Age group							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
Women									
Underweight (BMI less than 18.5kg)									
Desirable waist circumference	Not applicable	6	3	1	1	1	2	1	2
High waist circumference	Not applicable	1	-	-	-	-	-	0	0
Very high waist circumference	Not applicable	-	-	-	-	-	-	0	0
All underweight		*7*	*3*	*1*	*1*	*1*	*2*	*2*	*2*
Normal (BMI 18.5 to less than 25kg/m^2)									
Desirable waist circumference	No increased risk	50	37	30	25	16	13	12	28
High waist circumference	No increased risk	5	9	11	12	14	13	13	11
Very high waist circumference	Increased risk	0	1	0	2	2	5	7	2
All normal		*55*	*47*	*41*	*39*	*32*	*31*	*32*	*40*
Overweight (BMI 25 to less than 30kg/m^2)									
Desirable waist circumference	No increased risk	6	8	4	3	3	2	2	4
High waist circumference	Increased risk	12	14	12	14	12	9	8	12
Very high waist circumference	High risk	6	10	15	18	26	24	31	17
All overweight		*25*	*32*	*32*	*35*	*40*	*35*	*40*	*34*
Obesity I (BMI 30 to less than 35kg/m^2)									
Desirable waist circumference	Increased risk	0	-	-	-	-	-	-	0
High waist circumference	High risk	1	1	0	0	-	0	-	0
Very high waist circumference	Very high risk	8	11	16	17	16	21	18	15
All obese I		*10*	*12*	*16*	*17*	*16*	*22*	*18*	*15*
Obesity II (BMI 35 to less than 40kg/m^2)									
Desirable waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	0	-	-	-	-	0
Very high waist circumference	Very high risk	2	4	5	5	6	7	5	5
All obese II	*Very high risk*	*2*	*4*	*5*	*5*	*6*	*7*	*5*	*5*
Obesity III (BMI 40kg/m^2 or more)									
Desirable waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	-	-	-	-
Very high waist circumference	Very high risk	1	3	4	3	5	4	3	3
All obese III	*Very high risk*	*1*	*3*	*4*	*3*	*5*	*4*	*3*	*3*
Women - Overall risk[c]									
	Not applicable	7	3	1	1	1	2	2	2
	No increased risk	61	53	45	40	33	28	27	42
	Increased risk	13	16	13	16	14	14	15	14
	High risk	7	11	16	18	26	24	31	18
	Very high risk	12	17	26	26	27	32	26	23
Bases (unweighted)									
Women		*261*	*432*	*515*	*577*	*498*	*446*	*272*	*3001*
Bases (weighted)									
Women		*393*	*453*	*469*	*491*	*398*	*317*	*242*	*2762*

[a] Percentages and bases in this table are based on those who have a valid measurement for waist circumference, in addition to valid measurements of height and weight. Therefore subtotals for BMI categories by age and sex in this table are not definitive and may vary from estimates shown in Table 10.2.

[b] Waist circumference categories according to NICE guidelines:

	Men	Women
Low	less than 94cm	less than 80cm
High	94–102cm	80–88cm
Very high	more than 102cm	more than 88cm

[c] Health risk category according to NICE Guidelines. See note 25.

Table 10.11

Trends in overweight and obesity prevalence, 1993 to 2013, by age and sex

Aged 16 and over with both valid height and weight measurements *1993-2013*

BMI status[a]	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
1993[b]								
Overweight	21	39	48	52	51	54	46	44
Obese	5	10	14	17	20	15	11	13
1994[b]								
Overweight	25	40	46	51	51	53	48	44
Obese	6	10	16	17	18	18	15	14
1995[b]								
Overweight	24	40	47	49	51	50	49	44
Obese	6	12	16	19	22	18	14	15
1996[b]								
Overweight	22	43	48	49	51	52	47	45
Obese	6	13	16	21	24	20	16	16
1997[b]								
Overweight	22	43	48	52	47	56	50	45
Obese	5	13	18	22	27	18	12	17
1998[b]								
Overweight	23	40	48	52	52	55	48	46
Obese	5	16	17	21	23	21	16	17
1999[b]								
Overweight	21	39	46	49	52	49	52	44
Obese	6	16	21	23	21	22	18	19
2000[b]								
Overweight	18	41	48	49	53	50	52	45
Obese	9	20	21	25	26	24	17	21
2001[b]								
Overweight	27	44	48	51	51	52	52	47
Obese	10	16	23	26	27	24	18	21
2002[b]								
Overweight	21	42	47	48	47	52	52	43
Obese	9	18	24	28	28	26	19	22
2003								
Overweight	23	41	47	48	50	49	50	43
Obese	9	18	25	28	27	29	21	22
2004								
Overweight	23	41	50	48	48	48	54	44
Obese	8	18	25	30	30	28	19	23
2005								
Overweight	24	44	46	47	47	47	49	43
Obese	8	17	27	28	29	28	17	22
2006								
Overweight	25	41	48	48	47	49	51	43
Obese	9	21	25	28	33	31	18	24
2007								
Overweight	24	39	47	40	48	49	50	41
Obese	9	16	25	35	31	28	22	24
2008								
Overweight	25	41	46	44	44	50	49	42
Obese	8	18	26	31	34	33	23	24

[a] Overweight: 25 to less than 30kg/m^2; Obese, including morbidly obese: 30kg/m^2 or more.

[b] In HSE years before 2003, data were not weighted for non-response.

Continued…

Table 10.11 continued

Aged 16 and over with both valid height and weight measurements *1993-2013*

BMI status[a]	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
2009								
Overweight	29	38	50	45	49	52	49	44
Obese	6	13	21	34	32	30	23	22
2010								
Overweight	22	37	49	44	44	53	50	42
Obese	13	19	28	35	37	28	26	26
2011								
Overweight	23	39	48	44	44	49	47	41
Obese	9	17	21	32	31	30	29	24
2012								
Overweight	24	39	47	49	46	46	47	42
Obese	12	15	25	32	31	33	25	24
2013								
Overweight	20	42	43	46	44	50	46	41
Obese	10	20	29	33	33	31	27	26
Bases (unweighted)								
Men 1993	*990*	*1444*	*1313*	*1231*	*1020*	*841*	*408*	*7247*
Men 1994	*935*	*1373*	*1288*	*1076*	*925*	*816*	*382*	*6795*
Men 1995	*869*	*1309*	*1296*	*1078*	*919*	*820*	*416*	*6707*
Men 1996	*908*	*1290*	*1348*	*1247*	*938*	*831*	*435*	*6997*
Men 1997	*476*	*710*	*714*	*667*	*511*	*414*	*193*	*3685*
Men 1998	*825*	*1261*	*1229*	*1197*	*910*	*745*	*433*	*6600*
Men 1999	*389*	*566*	*626*	*579*	*466*	*383*	*195*	*3204*
Men 2000	*400*	*591*	*662*	*528*	*469*	*376*	*234*	*3260*
Men 2001	*757*	*1051*	*1220*	*1112*	*958*	*766*	*403*	*6267*
Men 2002	*1553*	*464*	*629*	*485*	*445*	*329*	*203*	*2969*
Men 2003	*686*	*962*	*1178*	*1001*	*997*	*736*	*406*	*5966*
Men 2004	*255*	*388*	*478*	*390*	*424*	*319*	*190*	*2444*
Men 2005	*367*	*463*	*505*	*531*	*501*	*355*	*208*	*2930*
Men 2006	*577*	*762*	*1084*	*933*	*986*	*735*	*446*	*5523*
Men 2007	*321*	*383*	*518*	*463*	*436*	*370*	*231*	*2722*
Men 2008	*695*	*848*	*1071*	*959*	*1053*	*737*	*490*	*5853*
Men 2009	*210*	*245*	*337*	*306*	*301*	*281*	*160*	*1840*
Men 2010	*334*	*431*	*553*	*533*	*552*	*446*	*295*	*3144*
Men 2011	*307*	*467*	*573*	*562*	*531*	*420*	*306*	*3166*
Men 2012	*329*	*413*	*522*	*521*	*537*	*504*	*292*	*3118*
Men 2013	*328*	*471*	*540*	*617*	*530*	*525*	*330*	*3340*
Bases (weighted)[b]								
Men 2003	*960*	*1194*	*1316*	*1073*	*943*	*664*	*369*	*6519*
Men 2004	*418*	*481*	*573*	*465*	*399*	*276*	*160*	*2772*
Men 2005	*491*	*552*	*620*	*521*	*462*	*311*	*187*	*3144*
Men 2006	*930*	*991*	*1246*	*993*	*888*	*599*	*368*	*6014*
Men 2007	*461*	*499*	*603*	*514*	*446*	*296*	*189*	*3008*
Men 2008	*1029*	*1068*	*1243*	*1059*	*968*	*610*	*409*	*6385*
Men 2009	*334*	*346*	*389*	*343*	*291*	*207*	*147*	*2055*
Men 2010	*564*	*611*	*651*	*619*	*516*	*368*	*235*	*3563*
Men 2011	*515*	*597*	*633*	*612*	*522*	*364*	*234*	*3478*
Men 2012	*533*	*587*	*635*	*608*	*514*	*363*	*234*	*3475*
Men 2013	*531*	*638*	*642*	*672*	*536*	*410*	*258*	*3687*

[a] Overweight: 25 to less than 30kg/m^2; Obese, including morbidly obese: 30kg/m^2 or more.

[b] In HSE years before 2003, data were not weighted for non-response.

Continued…

Table 10.11

Table 10.11 continued

Aged 16 and over with both valid height and weight measurements *1993-2013*

BMI status[a]	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Women								
1993[b]								
Overweight	20	25	29	37	39	41	42	32
Obese	8	11	17	19	24	22	16	16
1994[b]								
Overweight	20	25	28	36	39	41	36	31
Obese	8	13	17	18	26	25	16	17
1995[b]								
Overweight	19	25	31	36	42	45	41	33
Obese	8	13	17	22	23	24	17	18
1996[b]								
Overweight	19	28	30	39	41	43	40	34
Obese	8	15	18	19	28	25	20	18
1997[b]								
Overweight	19	27	32	36	37	44	41	33
Obese	9	15	18	23	30	25	22	20
1998[b]								
Overweight	17	27	30	36	39	41	35	32
Obese	11	16	21	24	29	29	21	21
1999[b]								
Overweight	19	27	34	35	40	40	40	33
Obese	10	16	19	26	29	30	20	21
2000[b]								
Overweight	22	27	31	36	41	41	41	34
Obese	9	16	19	24	29	30	23	21
2001[b]								
Overweight	22	26	31	36	38	41	41	33
Obese	12	19	22	28	31	30	20	23
2002[b]								
Overweight	21	27	34	38	36	38	43	34
Obese	11	21	23	25	29	28	22	23
2003								
Overweight	18	28	33	33	39	41	40	33
Obese	13	18	22	26	28	30	26	23
2004								
Overweight	24	31	30	36	37	40	46	34
Obese	12	17	24	27	32	29	21	23
2005								
Overweight	19	27	30	35	37	42	40	32
Obese	12	19	25	28	28	34	26	24
2006								
Overweight	20	29	30	35	36	38	42	32
Obese	12	18	24	27	30	35	27	24
2007								
Overweight	22	25	35	32	37	37	40	32
Obese	10	19	24	30	31	32	27	24
2008								
Overweight	20	27	31	35	38	38	40	32
Obese	14	19	25	29	31	33	26	25

[a] Overweight: 25 to less than 30kg/m^2; Obese, including morbidly obese: 30kg/m^2 or more.

[b] In HSE years before 2003, data were not weighted for non-response.

Continued…

Table 10.11 continued

Aged 16 and over with both valid height and weight measurements *1993-2013*

BMI status[a]	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Women								
2009								
Overweight	23	27	29	36	39	44	35	33
Obese	17	16	24	27	29	31	26	24
2010								
Overweight	21	28	30	34	39	37	37	32
Obese	11	21	26	30	32	37	27	26
2011								
Overweight	21	26	36	35	36	38	39	33
Obese	12	20	25	31	32	32	32	26
2012								
Overweight	22	27	31	34	39	35	42	32
Obese	14	21	25	29	30	33	26	25
2013								
Overweight	24	33	30	36	38	36	40	33
Obese	13	18	26	26	29	33	24	24
Bases (unweighted)								
Women 1993	*1020*	*1544*	*1459*	*1306*	*1060*	*991*	*657*	*8037*
Women 1994	*990*	*1524*	*1418*	*1227*	*988*	*1048*	*689*	*7884*
Women 1995	*979*	*1521*	*1394*	*1258*	*1028*	*936*	*613*	*7729*
Women 1996	*1016*	*1500*	*1493*	*1385*	*1007*	*986*	*677*	*8064*
Women 1997	*510*	*816*	*780*	*766*	*552*	*479*	*351*	*4254*
Women 1998	*903*	*1433*	*1449*	*1373*	*1043*	*853*	*676*	*7730*
Women 1999	*459*	*647*	*744*	*689*	*465*	*410*	*285*	*3699*
Women 2000	*362*	*674*	*778*	*632*	*509*	*422*	*326*	*3703*
Women 2001	*856*	*1221*	*1513*	*1331*	*1038*	*871*	*584*	*7414*
Women 2002	*1719*	*513*	*737*	*590*	*519*	*403*	*300*	*3509*
Women 2003	*788*	*1088*	*1452*	*1142*	*1194*	*810*	*616*	*7090*
Women 2004	*294*	*453*	*649*	*527*	*538*	*393*	*281*	*3135*
Women 2005	*385*	*531*	*668*	*614*	*588*	*364*	*259*	*3409*
Women 2006	*679*	*935*	*1308*	*1125*	*1106*	*776*	*575*	*6504*
Women 2007	*324*	*474*	*632*	*559*	*522*	*415*	*281*	*3207*
Women 2008	*787*	*1026*	*1309*	*1176*	*1196*	*828*	*661*	*6983*
Women 2009	*233*	*299*	*426*	*342*	*343*	*286*	*192*	*2121*
Women 2010	*387*	*559*	*693*	*750*	*613*	*460*	*381*	*3843*
Women 2011	*401*	*587*	*688*	*686*	*639*	*500*	*371*	*3872*
Women 2012	*403*	*550*	*644*	*687*	*578*	*522*	*376*	*3760*
Women 2013	*399*	*611*	*708*	*760*	*627*	*530*	*371*	*4006*
Bases (weighted)[b]								
Women 2003	*912*	*1085*	*1289*	*1073*	*982*	*694*	*536*	*6570*
Women 2004	*378*	*460*	*564*	*459*	*425*	*295*	*231*	*2812*
Women 2005	*432*	*524*	*628*	*517*	*489*	*322*	*272*	*3184*
Women 2006	*866*	*942*	*1207*	*996*	*914*	*637*	*511*	*6074*
Women 2007	*405*	*466*	*599*	*497*	*452*	*312*	*252*	*2983*
Women 2008	*935*	*1020*	*1241*	*1057*	*985*	*663*	*549*	*6450*
Women 2009	*297*	*315*	*393*	*346*	*313*	*216*	*166*	*2045*
Women 2010	*500*	*544*	*643*	*631*	*529*	*378*	*297*	*3523*
Women 2011	*503*	*552*	*628*	*612*	*534*	*391*	*310*	*3530*
Women 2012	*521*	*551*	*618*	*610*	*513*	*382*	*300*	*3495*
Women 2013	*541*	*602*	*649*	*674*	*541*	*424*	*332*	*3763*

[a] Overweight: 25 to less than 30kg/m^2; Obese, including morbidly obese: 30kg/m^2 or more.

[b] In HSE years before 2003, data were not weighted for non-response.

Table 10.12

Trends in obesity prevalence, 1998 to 2013, by equivalised household income and sex

Aged 16 and over with both valid height and weight measurements *1998-2013*

Proportion obese[a]	Equivalised household income quintile				
	Highest	2nd	3rd	4th	Lowest
	%	%	%	%	%
Men					
1998[b]	15	17	18	17	20
2003	20	22	23	22	21
2006	21	23	24	27	25
2007	25	23	24	28	20
2008	24	21	25	27	22
2009	20	21	21	28	22
2010	24	27	29	28	28
2011	20	22	26	28	25
2012	21	25	23	27	24
2013	23	24	27	29	30
Women					
1998[b]	16	20	23	24	26
2003	16	22	23	26	28
2006	19	23	24	29	32
2007	20	25	28	28	27
2008	20	26	24	29	31
2009	17	21	27	27	33
2010	17	23	26	33	34
2011	22	20	27	32	31
2012	19	22	21	33	31
2013	15	18	26	26	31

[a] Obese: 30 kg/m^2 or more.

[b] In HSE years before 2003, data were not weighted for non-response.

Table 10.12 continued

Aged 16 and over with both valid height and weight measurements *1998-2013*

Proportion obese[a]	Equivalised household income quintile				
	Highest	2nd	3rd	4th	Lowest
	%	%	%	%	%
Bases (unweighted)					
Men 1998	*1288*	*1324*	*1344*	*907*	*885*
Men 2003	*1197*	*1214*	*1089*	*821*	*845*
Men 2006	*1079*	*1052*	*949*	*806*	*655*
Men 2007	*575*	*485*	*424*	*407*	*294*
Men 2008	*1200*	*1077*	*926*	*893*	*730*
Men 2009	*386*	*361*	*272*	*279*	*228*
Men 2010	*617*	*587*	*543*	*482*	*353*
Men 2011	*616*	*554*	*530*	*507*	*384*
Men 2012	*539*	*643*	*526*	*424*	*444*
Men 2013	*629*	*632*	*510*	*511*	*474*
Women 1998	*1256*	*1362*	*1501*	*1305*	*1248*
Women 2003	*1114*	*1278*	*1342*	*1116*	*1227*
Women 2006	*1036*	*1117*	*1135*	*1152*	*886*
Women 2007	*551*	*504*	*490*	*548*	*442*
Women 2008	*1139*	*1136*	*1134*	*1206*	*1065*
Women 2009	*381*	*371*	*339*	*360*	*314*
Women 2010	*643*	*674*	*651*	*644*	*548*
Women 2011	*595*	*656*	*633*	*669*	*585*
Women 2012	*567*	*653*	*623*	*607*	*641*
Women 2013	*622*	*703*	*625*	*659*	*635*
Bases (weighted)[b]					
Men 2003	*1304*	*1340*	*1178*	*877*	*907*
Men 2006	*1193*	*1165*	*998*	*809*	*699*
Men 2007	*635*	*556*	*465*	*410*	*333*
Men 2008	*1297*	*1198*	*938*	*940*	*782*
Men 2009	*440*	*408*	*301*	*280*	*252*
Men 2010	*681*	*667*	*607*	*515*	*419*
Men 2011	*662*	*602*	*548*	*534*	*430*
Men 2012	*599*	*704*	*573*	*447*	*507*
Men 2013	*715*	*695*	*540*	*508*	*539*
Women 2003	*1046*	*1221*	*1234*	*993*	*1109*
Women 2006	*979*	*1061*	*1047*	*1035*	*813*
Women 2007	*516*	*486*	*454*	*472*	*415*
Women 2008	*1075*	*1071*	*1034*	*1077*	*961*
Women 2009	*380*	*374*	*319*	*323*	*291*
Women 2010	*596*	*629*	*581*	*571*	*497*
Women 2011	*536*	*610*	*560*	*590*	*522*
Women 2012	*539*	*614*	*564*	*536*	*584*
Women 2013	*601*	*668*	*578*	*584*	*576*

[a] Obese: 30 kg/m^2 or more.

[b] In HSE years before 2003, data were not weighted for non-response.

Table 10.13

Hypertension categories (age-standardised), by body mass index (BMI) status and sex

Aged 16 and over with three valid BP measurements and valid height and weight measurements[a] *2013*

Hypertension categories[b]	BMI status[c]				Total[a]
	Underweight	Normal	Overweight	Obese	
	%	%	%	%	%
Men					
Normotensive untreated	d	83	70	59	70
Hypertensive controlled	d	3	8	13	9
Hypertensive uncontrolled	d	2	6	8	6
Hypertensive untreated	d	11	16	20	16
All with hypertension	*d*	*17*	*30*	*41*	*30*
Women					
Normotensive untreated	[83]	81	76	67	75
Hypertensive controlled	[5]	6	10	12	10
Hypertensive uncontrolled	[10]	5	5	7	6
Hypertensive untreated	[2]	8	9	13	9
All with hypertension	*[17]*	*19*	*24*	*33*	*25*
Bases (unweighted)					
Men	*25*	*567*	*921*	*598*	*2304*
Women	*47*	*1015*	*892*	*672*	*2910*
Bases (weighted)					
Men	*39*	*702*	*946*	*609*	*2487*
Women	*52*	*974*	*805*	*572*	*2643*

[a] The total column includes those without a valid height or weight measurement.

[b] Normotensive untreated: Systolic blood pressure (SBP) less than 140mmHg and diastolic blood pressure (DBP) less than 90mmHg and **not** taking medication prescribed for high blood pressure
Hypertensive controlled: SBP less than 140mmHg and DBP less than 90mmHg and taking medication prescribed for high blood pressure
Hypertensive uncontrolled: SBP at least 140mmHg or DBP at least 90mmHg and taking medication prescribed for high blood pressure
Hypertensive untreated: SBP at least 140mmHg or DBP at least 90mmHg and **not** taking medication prescribed for high blood pressure
All with hypertension: SBP at least 140mmHg or DBP at least 90mmHg or taking medication prescribed for high blood pressure.

c Underweight: less than 18.5kg/m^2
Normal weight: 18.5 to less than 25kg/m^2
Overweight: 25 to less than 30kg/m^2
Obese, including morbidly obese: 30kg/m^2 or more.

d Data not shown because the base is too small.

[ ] Results in brackets should be treated with caution because of the small base size.

Table 10.14

Hypertension categories (age-standardised), by waist circumference and sex

Aged 16 and over with three valid BP measurements and a valid waist measurement[a] — *2013*

Hypertension categories[b]	Waist circumference[c]			Total[a]
	Desirable waist circumference	High waist circumference	Very high waist circumference	
	%	%	%	%
Men				
Normotensive untreated	84	66	52	72
Hypertensive controlled	3	9	16	8
Hypertensive uncontrolled	2	6	11	5
Hypertensive untreated	10	19	21	14
All with hypertension	*16*	*34*	*48*	*28*
Women				
Normotensive untreated	90	77	62	77
Hypertensive controlled	3	7	16	9
Hypertensive uncontrolled	2	6	9	5
Hypertensive untreated	5	9	13	9
All with hypertension	*10*	*23*	*38*	*23*
Bases (unweighted)				
Men	*823*	*569*	*876*	*2638*
Women	*840*	*643*	*1342*	*3243*
Bases (weighted)				
Men	*1046*	*571*	*836*	*2840*
Women	*856*	*578*	*1136*	*2973*

[a] The total column includes those without a valid waist measurement.

[b] Normotensive untreated: Systolic blood pressure (SBP) less than 140mmHg and diastolic blood pressure (DBP) less than 90mmHg and **not** taking medication prescribed for high blood pressure
Hypertensive controlled: SBP less than 140mmHg and DBP less than 90mmHg and taking medication prescribed for high blood pressure
Hypertensive uncontrolled: SBP at least 140mmHg or DBP at least 90mmHg and taking medication prescribed for high blood pressure
Hypertensive untreated: SBP at least 140mmHg or DBP at least 90mmHg and **not** taking medication prescribed for high blood pressure
All with hypertension: SBP at least 140mmHg or DBP at least 90mmHg or taking medication prescribed for high blood pressure.

[c] Desirable waist circumference: less than 94cm in men and less than 80cm in women.
High waist circumference: 94-102cm in men and 80-88cm in women.
Very high waist circumference: greater than 102cm in men and greater than 88cm in women, referred to as 'raised waist circumference' in previous HSE reports.

Table 10.15

Diabetes (age-standardised), by body mass index (BMI) status and sex

Aged 16 and over with valid height and weight measurements[a] and glycated haemoglobin measurement — *2013*

Diabetes	BMI status[b]				Total[a]
	Underweight	Normal	Overweight	Obese	
	%	%	%	%	%
Men					
Diagnosed diabetes	c	4	5	10	7
Undiagnosed diabetes	c	2	1	5	3
All with diabetes	*c*	*6*	*6*	*15*	*9*
Women					
Diagnosed diabetes	-	1	4	10	5
Undiagnosed diabetes	[3]	1	2	5	2
All with diabetes	*[3]*	*2*	*5*	*14*	*7*
Bases (unweighted)					
Men	*21*	*529*	*834*	*506*	*2044*
Women	*40*	*833*	*751*	*567*	*2421*
Bases (weighted)					
Men	*31*	*625*	*838*	*515*	*2161*
Women	*50*	*827*	*696*	*506*	*2294*

[a] The total column includes those without a valid height or weight measurement.

[b] Underweight: less than 18.5kg/m^2
Normal weight: 18.5 to less than 25kg/m^2
Overweight: 25 to less than 30kg/m^2
Obese, including morbidly obese: 30kg/m^2 or more.

[c] Data not shown because the base is too small.

[ ] Results in brackets should be treated with caution because of the small base size.

Table 10.16

Diabetes (age-standardised), by waist circumference and sex

Aged 16 and over with valid waist measurements[a] and glycated haemoglobin measurement — *2013*

Diabetes	Waist circumference[b]			Total[a]
	Desirable waist circumference	High waist circumference	Very high waist circumference	
	%	%	%	%
Men				
Diagnosed diabetes	3	6	11	7
Undiagnosed diabetes	1	3	5	3
All with diabetes	*4*	*9*	*16*	*9*
Women				
Diagnosed diabetes	0	3	10	5
Undiagnosed diabetes	0	1	4	2
All with diabetes	*1*	*4*	*14*	*7*
Bases (unweighted)				
Men	*768*	*507*	*746*	*2044*
Women	*704*	*541*	*1118*	*2421*
Bases (weighted)				
Men	*930*	*486*	*721*	*2161*
Women	*760*	*499*	*982*	*2294*

[a] The total column includes those without a valid waist measurement.

[b] Desirable waist circumference: less than 94cm in men and less than 80cm in women.
High waist circumference: 94-102cm in men and 80-88cm in women.
Very high waist circumference: greater than 102cm in men and greater than 88cm in women, referred to as 'raised waist circumference' in previous HSE reports.

Table 10.17

Longstanding illness[a] (age-standardised), by body mass index (BMI) status and sex

Aged 16 and over with valid height and weight measurements[b] *2013*

Longstanding illness	BMI status[c]				Total[b]
	Underweight	Normal	Overweight	Obese	
	%	%	%	%	%
Men					
No longstanding illness	[69]	66	67	56	65
Non-limiting longstanding illness	[18]	15	16	18	15
Limiting longstanding illness	[13]	19	17	26	20
Women					
No longstanding illness	66	65	60	48	60
Non-limiting longstanding illness	15	15	16	19	16
Limiting longstanding illness	20	20	23	32	24
Bases (unweighted)					
Men	*45*	*952*	*1434*	*910*	*3458*
Women	76	1563	1351	1014	4179
Bases (weighted)					
Men	*63*	*1150*	*1517*	*959*	*3749*
Women	*78*	*1534*	*1254*	*896*	*3889*

[a] Longstanding illness is any physical or mental health condition or illness lasting or expected to last 12 months or more. A limiting longstanding illness is one that reduces a person's ability to carry out day-to-day activities.

[b] The total column includes those without a valid height or weight measurement.

[c] Underweight: less than 18.5kg/m^2
Normal weight: 18.5 to less than 25kg/m^2
Overweight: 25 to less than 30kg/m^2
Obese, including morbidly obese: 30kg/m^2 or more.

[ ] Results in brackets should be treated with caution because of the small base size.

Table 10.18

Longstanding illness[a] (age-standardised), by waist circumference and sex

Aged 16 and over with valid waist measurements[b] *2013*

Longstanding illness	Waist circumference[c]			Total[b]
	Desirable waist circumference	High waist circumference	Very high waist circumference	
	%	%	%	%
Men				
No longstanding illness	71	58	49	65
Non-limiting longstanding illness	13	20	21	15
Limiting longstanding illness	15	22	29	20
Women				
No longstanding illness	73	60	46	64
Non-limiting longstanding illness	12	16	20	14
Limiting longstanding illness	16	24	34	23
Bases (unweighted)				
Men	*986*	*658*	*1024*	*3458*
Women	*968*	*759*	*1571*	*4179*
Bases (weighted)				
Men	*1272*	*672*	*1003*	*3749*
Women	*995*	*688*	*1335*	*3889*

[a] Longstanding illness is any physical or mental health condition or illness lasting or expected to last 12 months or more. A limiting longstanding illness is one that reduces a person's ability to carry out day-to-day activities.

[b] The total column includes those without a valid waist measurement.

[c] Desirable waist circumference: less than 94cm in men and less than 80cm in women.
High waist circumference: 94-102cm in men and 80-88cm in women.
Very high waist circumference: greater than 102cm in men and greater than 88cm in women, referred to as 'raised waist circumference' in previous HSE reports.