

# Adult anthropometric measures, overweight and obesity

# 10

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## Summary

- This chapter reports on measurements relevant to obesity: body mass index (BMI), prevalence of overweight and obesity, and waist circumference. In addition, self-reported height and weight estimates, perceptions of weight, and the relationships between obesity and other health measures are examined.
- In 2012 around a quarter of adults (24% of men and 25% of women) were obese, including morbidly obese. This was similar to the level in recent years, for example 2011 when 24% of men and 26% of women were obese.
- Overweight was more common than obesity, with 42% of men and 32% of women being overweight but not obese. In 2011 the figures were similar (41% of men and 33% of women). Thus overall in 2012, 67% of men and 57% of women were either overweight or obese.
- Obesity was strongly related to age, rising from 12% of men and 14% of women aged 16-24, to 33% of men and women aged 65-74, before falling again to 19% of men and 18% of women aged 85 and over.
- The proportion of those who were overweight or obese increased from 36% of men and women aged 16-24, to 76-81% of men aged 45-84 and 68-71% of women aged 55-84, before declining in the oldest age group.
- Interviewer-measured mean BMI was 27.3kg/m<sup>2</sup> for men and 27.0kg/m<sup>2</sup> for women; as in previous years, this rose with age from youth to late middle-age, before falling again in old age.
- Despite the majority of men being overweight or obese (67%), around half felt that they were about the right weight (52%), and 55% were not trying to change their weight.
- While fewer women than men were overweight or obese (57%), they were more likely than men to say that they were too heavy (51%) and that they were trying to lose weight (55%).
- Mean interviewer-measured height was 175.3cm for men and 161.9cm for women. As in 2011, self-reported height was greater, at 176.9cm for men and 162.8cm for women.
- Both interviewer-measured and self-reported height declined as age increased, from 177.8cm (interviewer-measured) among men aged 25-34 to 166.9cm among those aged 85 and over, and a little more among women, from 164.5cm among those aged 16-24 to 153.1cm among those aged 85 and over.
- As in 2011, inaccurate estimation of height and weight resulted in a discrepancy between BMI from self-report and BMI from interviewer measurements. 30% of men and 28% of women who were obese based on interviewer-measured BMI, gave estimated height and weight that placed them in the overweight (not obese) or not overweight categories.
- In addition to general overweight and obesity, central obesity was common. 34% of men and 45% of women had a raised waist circumference (over 102cm for men and

over 88cm for women). Like raised BMI, raised waist circumference increased with age. Unlike overweight and obesity defined by BMI, central obesity continued to increase into the oldest age group, to 52% of men and 64% of women aged 75 and over.

- 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. By these definitions 20% of men had increased risk, 12% a high risk and 22% a very high risk. 13% of women had increased risk, 18% a high risk and 24% a very high risk. Thus a minority of men and women (45% and 42% respectively) had no increased risk from their combination of BMI and waist circumference.
- Overweight and obesity were associated with other health conditions. The prevalence of hypertension doubled from 21% of men and 18% of women of normal weight to 43% of obese men and 38% of obese women.
- Self-reported bad/very bad health was higher among obese people (7% of men and 11% of women) than those of a normal weight (4% in each sex). There was the same pattern for limiting longstanding illness: among obese men, 21% had a limiting longstanding illness, compared with 17% who were overweight and 15% of normal weight men. There was a stronger relationship among women, with 33% of obese women reporting a limiting longstanding illness compared with 21% of overweight and 17% of underweight or normal weight women.
- Psychological disturbance or mental ill health was more common in obese men and women (13% and 21%) than those who were of normal weight (11% and 15% respectively).
- Obesity was associated with income. It was lowest in the highest income groups (21% of men and 19% of women), and highest in the fourth quintile (27% of men and 33% of women). The relationship between obesity and income appeared to be stronger for women than men.
- Prevalence of overweight including obesity varied between regions, and was notably lower in London than other regions of the country.

## 10.1 Introduction

### 10.1.1 Contents of the chapter

The anthropometric measures presented in this chapter focus on measurements relevant to obesity for adults aged 16 and over. Height and weight data have been collected in each year of the Health Survey for England (HSE) series, and waist circumference in most years. Interviewer-measured height and weight data are used to calculate body mass index (BMI); waist circumference is used to assess central obesity. In 2011, the HSE for the first time asked for self-reported height and weight, which were used to calculate self-reported estimates of BMI, overweight and obesity<sup>1</sup>; this was continued for HSE 2012. In HSE 2012, adults were asked for the first time about their perception of their weight and whether or not they were trying to change their weight.

Many surveys rely on self-reported height and weight, which are known to be less accurate than interviewer-measured estimates,<sup>2,3,4</sup> and which may be increasing in bias over time.<sup>5</sup> The HSE is one of a small number of surveys that records interviewer measurements of height and weight. This chapter presents comparisons between self-reported and interviewer-measured height and weight estimates, as was done in 2011. In addition, participants' self-reported and interviewer-measured height and weight are presented according to their perception of weight, and planned weight management, in order to see whether individuals are correctly recognising whether they are too heavy, too light, or about right, and whether they are attempting to change their weight.

As well as presenting total data for men and women for the various measures, the chapter includes analyses by sex, age and equivalised household income. Participants are classified according to the National Institute for Health and Care Excellence (NICE) obesity categories for health risk using both BMI and waist circumference.<sup>6</sup> The associations between obesity and other health problems (self-rated general health, limiting longstanding illnesses, hypertension, and mental health problems) are also included in the chapter.

There has been some exploration of the factors associated with obesity measures in previous HSE reports. The 2007 report included a regression analysis of the risk factors for those classified as 'most at risk' according to the NICE health risk categories<sup>7</sup>; the 2006 report included a regression analysis exploring the risk factors associated with a raised waist circumference<sup>8</sup>; and the 2003 report included a regression analysis of risk factors associated with overweight and obesity.<sup>9</sup>

### 10.1.2 Overweight and obesity as health issues

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.<sup>10</sup> Being overweight or obese is associated with an increased risk for a number of common causes of disease and death including diabetes, cardiovascular disease and some cancers.<sup>11,12</sup> For individuals classified as obese, the risk of poor health increases sharply with increasing BMI.<sup>13</sup>

Trend data from the Health Survey for England has shown obesity rising from 13% of men and 16% of women in 1993, to 24% of men and women in 2006, after which the rise appears to have slowed or perhaps even halted.<sup>14</sup> This reflects similar trends in hospital admissions with a primary diagnosis of obesity, which increased from just over 1,000 in 2000/2001 to more than 11,500 a year in 2010/11 and 2011/12, although it is possible that part of this rise may be due to diagnostic/definitional changes.<sup>15</sup> Those admitted with a primary diagnosis of obesity are likely to be extreme cases, the 'tip of the iceberg', while the majority of harm is done to those with less extreme obesity, of whom there are many more. 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.<sup>16</sup>

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.<sup>17</sup> 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*’.<sup>18</sup> NHS health checks for those aged 40 to 74 will 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.<sup>19</sup> The *Living Well for Longer* policy document aims to encourage local authorities and clinical commissioning groups to follow the lead of Public Health England in acting on obesity.<sup>20</sup>

One issue related to appropriate weight management is the accurate knowledge of one’s own height and weight, and accurate perception of what a healthy weight should be. Research has shown that inaccurate estimates of height and weight are common<sup>21</sup> and that misperceptions about having a healthy weight are both common and increasing.<sup>22,23</sup> There are inequalities across income groups for weight perceptions and attempts at weight control; the situation is worse among those in lower income households, especially among women.<sup>24</sup> This may explain why recent HSE reports have found mean BMI and prevalence of obesity increasing as income decreases among women.<sup>1</sup>

## 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, and are summarised briefly here. Height and weight were measured during the interviewer visit, while waist and hip circumferences were measured during the nurse visit.<sup>25</sup>

#### 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.<sup>26</sup> 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 the HSE 2011, and continued to be used in 2012. 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.<sup>27</sup>

For the weight measurement, participants were asked to remove their shoes and any bulky clothing. 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.

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.

#### Self-reported height and weight

Early in the interview, participants were asked to report how tall they were without shoes, and how much they weigh without clothes or shoes. Participants could give measurements in either imperial or metric units, and these were converted to metric units if necessary (metres for height, kilograms for weight). The interviewer recorded any cases where the participant did not know their height and/or weight or was unwilling to provide this

information.

### **Self-perception of weight and weight management**

Adult participants were asked as part of the self-completion questionnaire to give their perception of their weight: 'Given your age and height, would you say that you are... about the right weight, too heavy, or too light?' They were also asked about intended weight management: 'At the present time are you trying to lose weight, trying to gain weight, or are you not trying to change your weight?'

### **Waist circumference**

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 women provided a valid height measurement, and 86% of men and 85% of women a valid weight measurement. Among those who received a nurse visit, response to waist measurements was 98%. Response to all three objective measures was lower among those aged 85 and over. For example, 26% 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 9% gave a measurement that was considered unreliable.

**Table 10.1**

## **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 ( $\text{kg}/\text{m}^2$ ). This has been used as a measure of obesity in the HSE series. Since 2011, BMI has been calculated both from valid interviewer-measured height and weight, and from self-estimated height and weight. Adult participants were classified into the following BMI groups according to the WHO (World Health Organisation) BMI classification.<sup>28</sup>

<b>BMI (<math>\text{kg}/\text{m}^2</math>)</b>	<b>Description</b>
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  $40\text{kg}/\text{m}^2$  or more), who are at highest risk of morbidity and mortality.<sup>29</sup>

## Ethnic differences in target BMI

Recently, the National Institute for Health and Care Excellence (NICE) has issued guidance about BMI and waist circumference thresholds for people from minority ethnic groups. They concluded that no single value applied to all such groups, and the evidence was very limited for thresholds for specific groups. For diabetes risk, limited but consistent evidence in Asian and Chinese populations suggests:

- a BMI threshold of 23kg/m<sup>2</sup> to define overweight, equivalent to the threshold of 25kg/m<sup>2</sup> in European populations
- a BMI threshold of 27.5kg/m<sup>2</sup> to define the same obesity-related diabetes risk as the threshold of 30kg/m<sup>2</sup> in European populations.

However, the obesity-related risk for other diseases and outcomes was even more sparse – or absent – so no overall recommendation was made for thresholds to be used.<sup>30</sup> This HSE report has therefore used the European thresholds for all participants, regardless of ethnic group.

## 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.<sup>31,32</sup>

A raised waist circumference has been taken to be greater than 102cm in men and greater than 88cm in women, in accordance with the definition of abdominal obesity used by the National Institutes of Health (USA) ATP (Adult Treatment Panel) III.<sup>33</sup> These levels identified people at risk of metabolic syndrome. It has been shown recently that these levels corresponded fairly closely to the 95th centile of waist circumference for healthy people, indicating that few healthy people have a waist circumference above these thresholds.<sup>34</sup>

## Combined assessment of health risk from obesity

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.<sup>6</sup> 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<sup>2</sup>. 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:

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

Source: NICE guidelines<sup>6</sup>

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<sup>2</sup>) and Obesity III (40kg/m<sup>2</sup> or more). For adults with a BMI of 35kg/m<sup>2</sup> or more, risks are assumed to be very high with any waist circumference.<sup>6</sup>

Note that the combined measures shown in Table 10.12 are based on all adults with valid height, weight and waist circumference measurements. The data may therefore vary slightly from those presented in Table 10.3 for mean BMI and BMI categories which are based on adults with valid height and weight measurements.

### Hypertension

Hypertension is defined as the presence of persistently raised blood pressure, measuring 140/90mmHg or above.<sup>35,36</sup> The definition of hypertension in the HSE is based on objective blood pressure measurements taken during the nurse visit. This threshold to define hypertension is in accordance with guidelines on hypertension management. Adult participants were classified into one of four groups on the basis of their systolic (SBP) and diastolic (DBP) readings and their current use of anti-hypertensive medication.

Normotensive untreated	SBP below 140mmHg and DBP below 90mmHg, <b>not</b> currently taking medication specifically prescribed to treat high blood pressure
Hypertensive controlled	SBP below 140mmHg and DBP below 90mmHg, currently taking medication specifically prescribed to treat their high blood pressure
Hypertensive uncontrolled	SBP at least 140mmHg or DBP at least 90mmHg, currently taking medication specifically prescribed to treat their high blood pressure
Hypertensive untreated	SBP at least 140mmHg or DBP at least 90mmHg, <b>not</b> currently taking medication specifically prescribed to treat their high blood pressure

Participants in any of the last three categories are considered to have ‘hypertension’ for the purpose of this report.

### Mental health

The 12-item General Health Questionnaire (GHQ-12) is a widely used and validated measure of mental health. It was originally intended for use in general practice settings as a screening instrument for general, non-psychotic psychiatric morbidity. The questionnaire uses a Likert scale, and scoring is applied to give a maximum score of 12. A score of 4 or more is referred to as a ‘high GHQ-12 score’, indicating probable psychological disturbance or mental ill health. Chapter 4 examines GHQ-12 results in more detail.

## 10.3 Height and weight: interviewer-measured and self-reported estimates

Mean interviewer-measured height was 175.3cm for men, and 161.9cm for women. It was highest among the youngest age groups (177.8cm for men aged 25-34 and 164.5cm for women aged 16-24), declining gradually by nearly 2cm between the 16-24 and 45-54 groups, and then more rapidly by a further 8-9cm to 166.9cm for men and 153.1 for women aged 85 and over (Figure 10A). The magnitude of the change across age groups was greater in women than in men.

Mean measured weight was 84.0kg among men and 70.7kg among women. It was lowest among the youngest and oldest adult participants, rising from 76.4kg among men aged 16-24 up to 88.6kg among those aged 45-54, before declining again down to 74.1kg among those aged 85 and over. Among women a slightly less pronounced pattern was seen, with mean weight increasing from 66.5kg (aged 16-24) to 73.6kg (aged 45-54) and declining to 62.3kg among those aged 85 and over (Figure 10B).

Mean self-reported height was greater than mean interviewer-measured height in both men (176.9cm) and women (162.8cm). Similarly, self-reported weight was lower for both men (82.4kg compared with 84.0kg) and women (68.3kg compared with 70.7kg). However, it

Figure 10A

**Interviewer-measured mean height, by age and sex**

Base: Aged 16 and over with valid height measurement

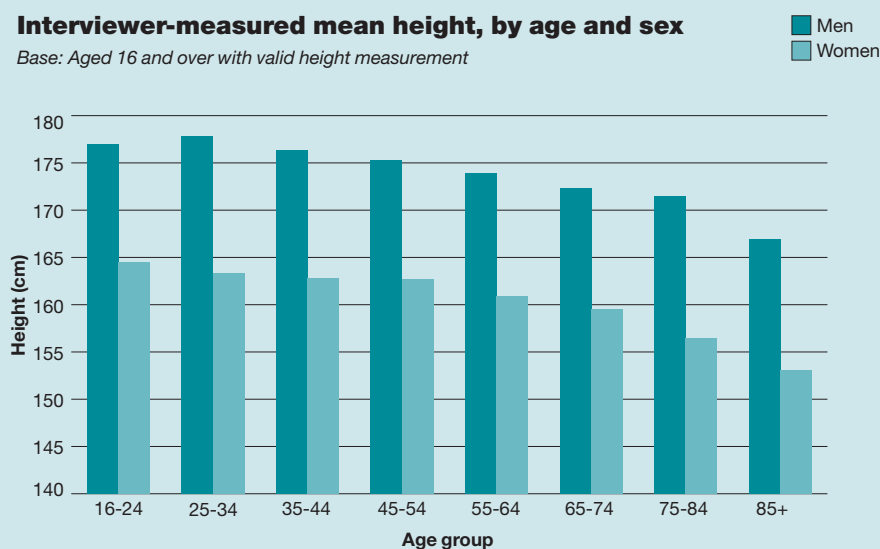
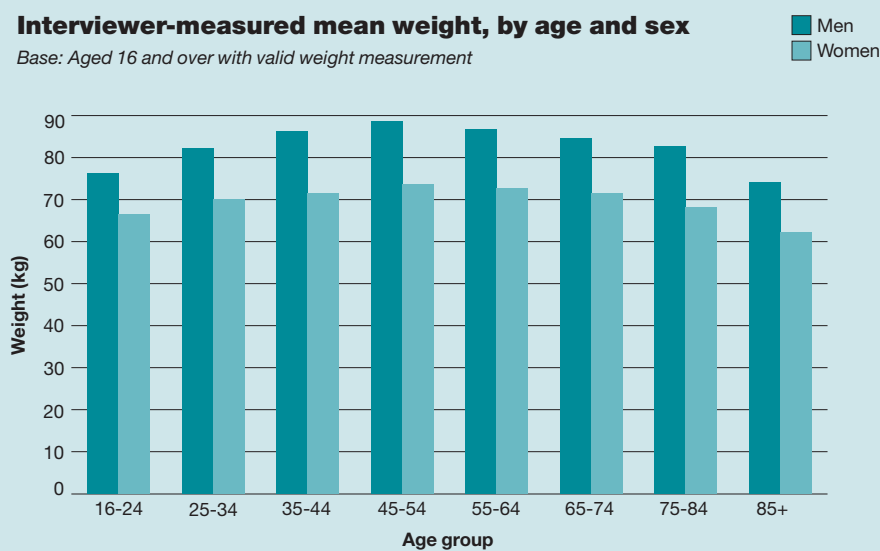


Figure 10B

**Interviewer-measured mean weight, by age and sex**

Base: Aged 16 and over with valid weight measurement



should be borne in mind that self-reported height and weight was available for a larger sample than measured height and weight (particularly among the older age groups). Many of those who estimated their height but did not have it measured for safety or health reasons were older participants, who were especially likely to have overestimated their height due to the common natural decline in height with age. Table 10.2 gives results for everyone who reported their own weight, regardless of whether it was also measured.

Table 10D

**Comparison of measured and self-reported height, weight and BMI**

	Men	Women
<b>Mean height (cm)</b>		
Interviewer-measured	175.4	161.9
Self-reported	176.9	162.9
<b>Mean weight (kg)</b>		
Interviewer-measured	84.0	70.3
Self-reported	82.5	68.3
<b>Mean BMI (kg/m<sup>2</sup>)</b>		
Interviewer-measured	27.3	26.8
Self-reported	26.3	25.7



The comparisons in Table 10D on the previous page are limited to participants who *both* had their height and/or weight measured *and* reported their own estimates; the figures therefore differ slightly from those presented in Tables 10.2 and 10.3 (though in fact the results are very similar). This 'like-for-like' comparison showed that self-reported height was 1.5cm greater among men, and 1.0cm greater among women. Mean self-reported weight was 1.5kg less for men, and 2.0kg less for women. Men's greater tendency to overestimate height, and women's greater tendency to underestimate weight, resulted in a similar underestimation of BMI by both sexes: 1.0kg/m<sup>2</sup> for men and 1.1kg/m<sup>2</sup> for women. **Tables 10D, 10.2, Figures 10A, 10B**

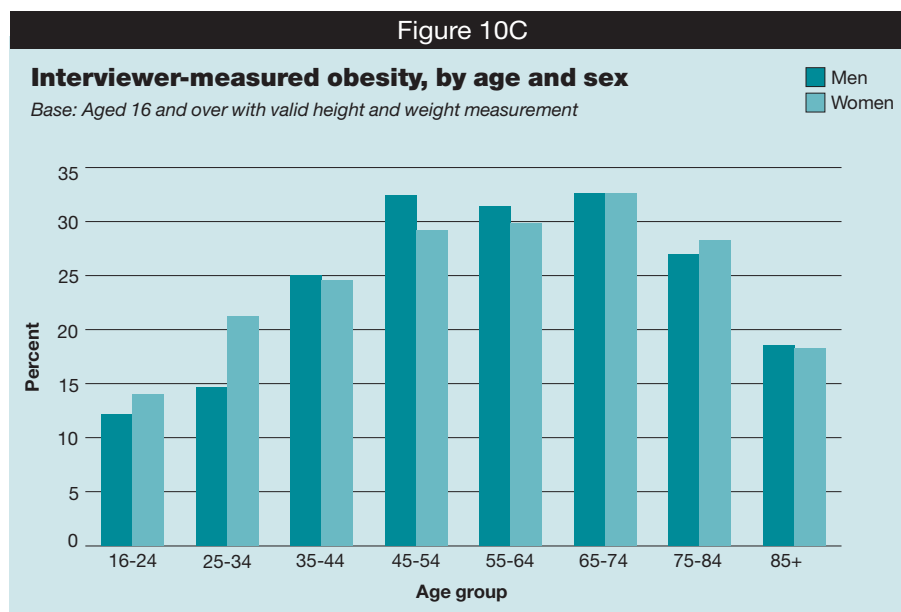
## 10.4 Prevalence of obesity, overweight and raised waist circumference

### 10.4.1 Prevalence of obesity, overweight and raised waist circumference, by age and sex

#### *Mean BMI, obesity and overweight*

Mean BMI derived from interviewer measurements was higher among men (27.3kg/m<sup>2</sup>) than women (27.0kg/m<sup>2</sup>) and followed a similar pattern in both sexes, rising between youth and middle age, before falling again in the oldest age groups.

A similar proportion of men and women were obese, including morbidly obese (24% and 25% respectively). Obesity rose from 12% of men and 14% of women aged 16-24, to 33% of men and women aged 65-74, before falling again to 19% of men and 18% of women aged 85 and over, as shown in Figure 10C. More men than women were overweight (42% and 32% respectively). Overweight also rose with age up to the age of 54, with similar levels among older age groups.



Overall, 67% of men and 57% of women were either overweight or obese. Taken together, these two groups increased from 36% of men and women aged 16-24, reaching 76-81% of men aged 45-84, and 68-71% of women aged 55-84, before decreasing somewhat to 59% of men and 58% of women aged 85 and over. **Table 10.3, Figure 10C**

#### *Comparison with self-reported estimates*

A substantial minority of those who were overweight gave estimated heights and weights that yielded a 'not overweight' BMI (26% of overweight men and 29% of overweight women). Similarly 30% of men and 28% of women who were obese gave estimates that placed them in the 'overweight' or 'not overweight or obese' categories. Almost all the men and women who were not overweight (interviewer-measured) were also not overweight by their self-reported estimates of height and weight (95% of men and 97% of women). **Table 10.6**

## Perception of weight

Table 10E below shows that around half of women (51%) and two fifths of men (42%) felt that they were too heavy for someone of their age and height; a minority (6% of men and 3% of women) felt that they were too light. Similarly substantial proportions of adults were trying to change their weight (among women, 55% trying to lose, and 3% trying to gain weight; among men, 37% trying to lose and 8% trying to gain weight).

	Men	Women
	%	%
About the right weight	52	45
Too heavy	42	51
Too light	6	3
Not trying to change weight	55	42
Trying to lose weight	37	55
Trying to gain weight	8	3

There tended to be a gap between perception of weight and classification of BMI, which was greater for men than for women. Half of men who felt that their weight was 'about right' were in fact overweight (45%) or obese (5%). This group of men had a mean interviewer-measured BMI of 25.2kg/m<sup>2</sup>, on the threshold of the definition for overweight. Men who felt that they were too heavy had a mean interviewer-measured BMI of 30.8kg/m<sup>2</sup>; 46% were overweight and a further 50% were obese. Only 12% of men who felt they were too light had a BMI in the underweight group, while 82% were within the normal BMI category and 6% were in fact overweight.

In contrast with men, fewer women had a discrepancy between their perception of weight and classification of BMI. The mean BMI of women who felt they were about the right weight (23.5kg/m<sup>2</sup>) was lower than for men who said the same. Compared with men, a greater proportion (74%) were in the normal BMI category, with only 22% overweight, and 3% obese. Women who judged themselves to be too heavy had a similar profile to men: a mean BMI of 30.6kg/m<sup>2</sup>, with 42% of women in this group being overweight and 46% being obese, according to interviewer-measured BMI. Women who felt they were too light were more likely than men to be underweight as measured by BMI (37% of women, compared with 12% of men), although 62% of women in this self-judged 'too light' group would be considered normal according to their BMI. The mean BMI (19.3kg/m<sup>2</sup>) for this group was also in the normal BMI range, though at the lower end.

Tables 10E, 10.7, Figure 10D

## Waist circumference

Mean waist circumference was 97.0cm for men and 87.6cm for women. Waist circumference increased with age for both men and women. Unlike BMI (which decreased in the oldest age groups compared with middle-age), the rise was continuous, from 85.5cm in men aged 16-24 to 103.0cm in men aged 75 and over and from 79.5cm to 92.4cm in women. For both men and women the increase was steeper in the younger age groups.

The definition of 'raised waist circumference' is more than 102cm for men, and more than 88cm for women, so although men had a higher mean waist circumference, a greater proportion of women had a raised circumference (45% of women, compared with 34% of men). As with the mean measurements, the proportion with a raised waist circumference increased with age from 11% of men and 19% of women aged 16-24, to 52% of men and 64% of women aged 75 and over.

Table 10.8, Figure 10E

### 10.4.2 Prevalence of obesity, overweight and raised waist circumference by region

Age-standardised prevalence of interviewer-measured obesity did not vary significantly by region, ranging from 19%-29% among men and 23%-29% among women. However,

Figure 10D

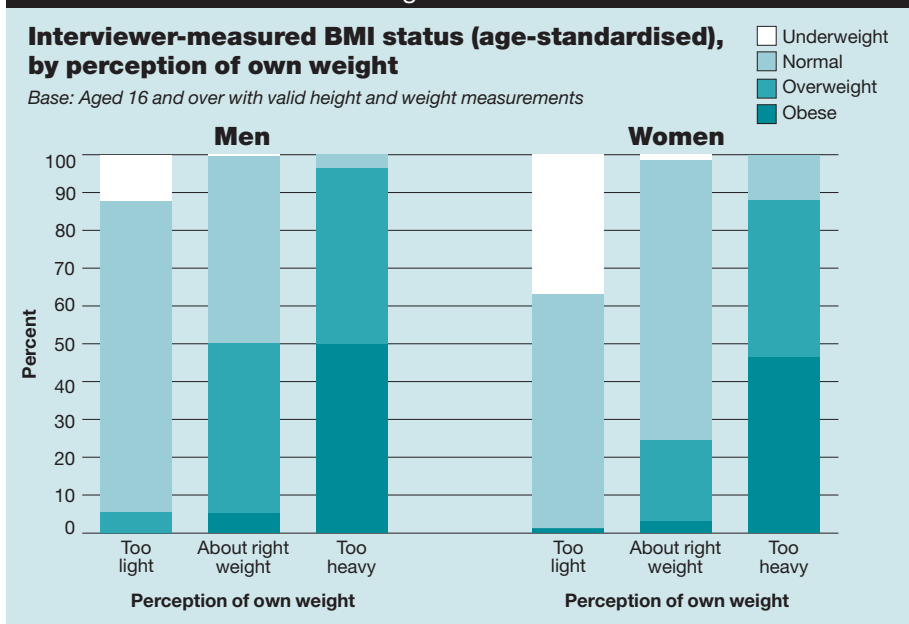
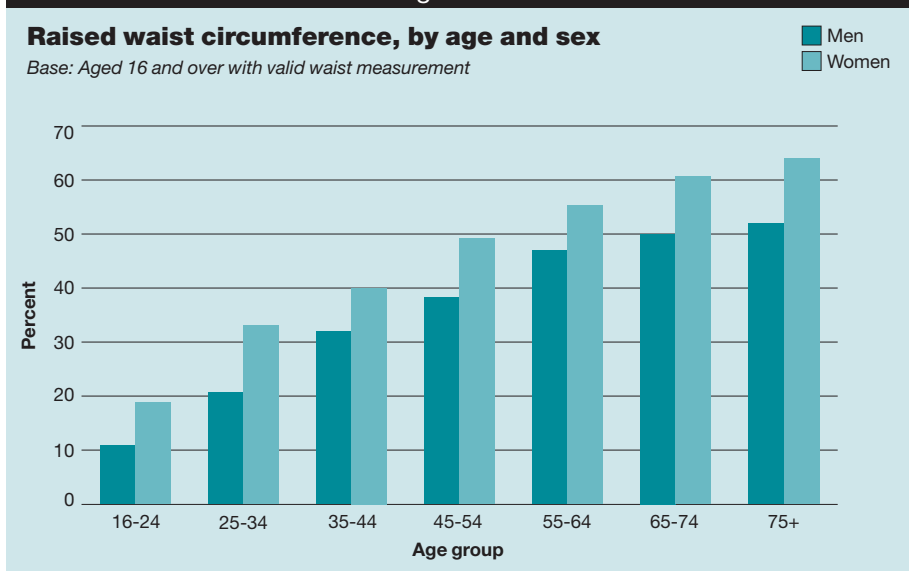


Figure 10E



taking into account those who were overweight as well as those who were obese, there was significant variation by region. It was lowest in London where 58% of men were overweight including obese, and highest in the West Midlands (73%). Among women the prevalence was notably lower in London (51%) than in many other areas: it was 60-61% in five of the nine regions.

The proportion of men and women with a raised waist circumference appeared to vary by region (28% to 39% among men, 41% to 48% among women), but this variation was not statistically significant.

Table 10.4, 10.9

### 10.4.3 Prevalence of obesity, overweight and raised waist circumference by equivalised household income

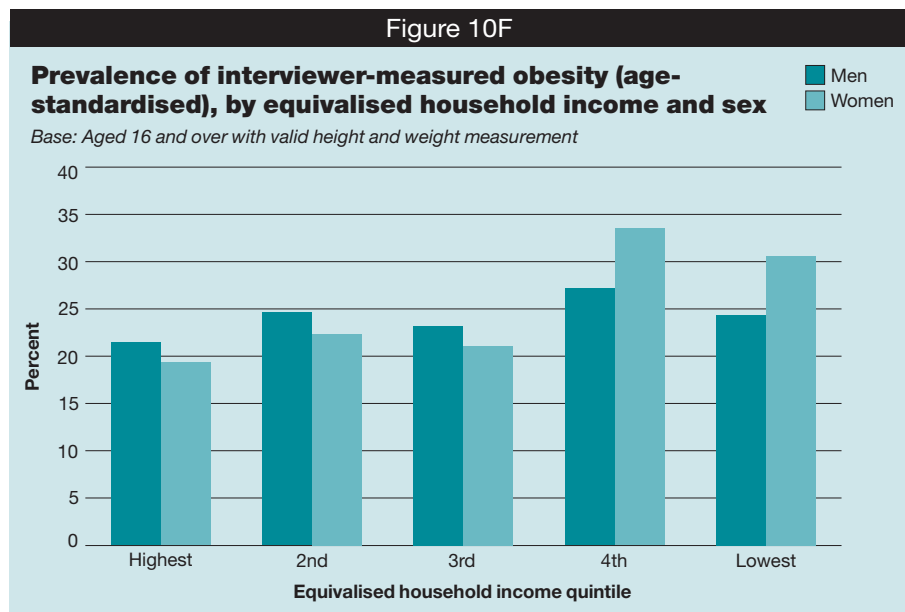
#### Mean BMI

Mean body mass index varied significantly by equivalised income quintile. Mean BMI was highest among those in the fourth lowest income quintile (27.6kg/m<sup>2</sup> in men, 28.3kg/m<sup>2</sup> in women) and lowest among those in the highest income quintile (27.2kg/m<sup>2</sup> for men and 26.0kg/m<sup>2</sup> for women).

## Obesity and overweight

The relationship between obesity and income was different for men and women. Among women, the pattern was similar to previous years, with obesity highest in the bottom two income quintiles. Among men there was no significant difference in the prevalence of obesity or overweight.

Table 10.5, Figure 10F



## Waist circumference

Mean waist circumference varied by income group. It was highest in the lowest income quintile for men (97.6cm), and in the lowest two quintiles for women (89.6cm in the lowest quintile, and 90.3cm in the fourth quintile). It was lowest in the highest income quintile for both sexes (96.3cm for men and 85.5cm for women). The proportion with a raised waist circumference followed the same pattern as mean waist circumference and was highest among men in the lowest income quintile (36%) and women in the lowest two income quintiles (52-53%).

Table 10.10

## 10.5 Health risk category with obesity, overweight and waist circumference

By combining a measure of overall obesity (BMI) and central obesity (waist circumference), it is possible to assign a health risk category, as recommended by NICE guidelines.<sup>6</sup> Figure 10G shows the risk categories by age group.

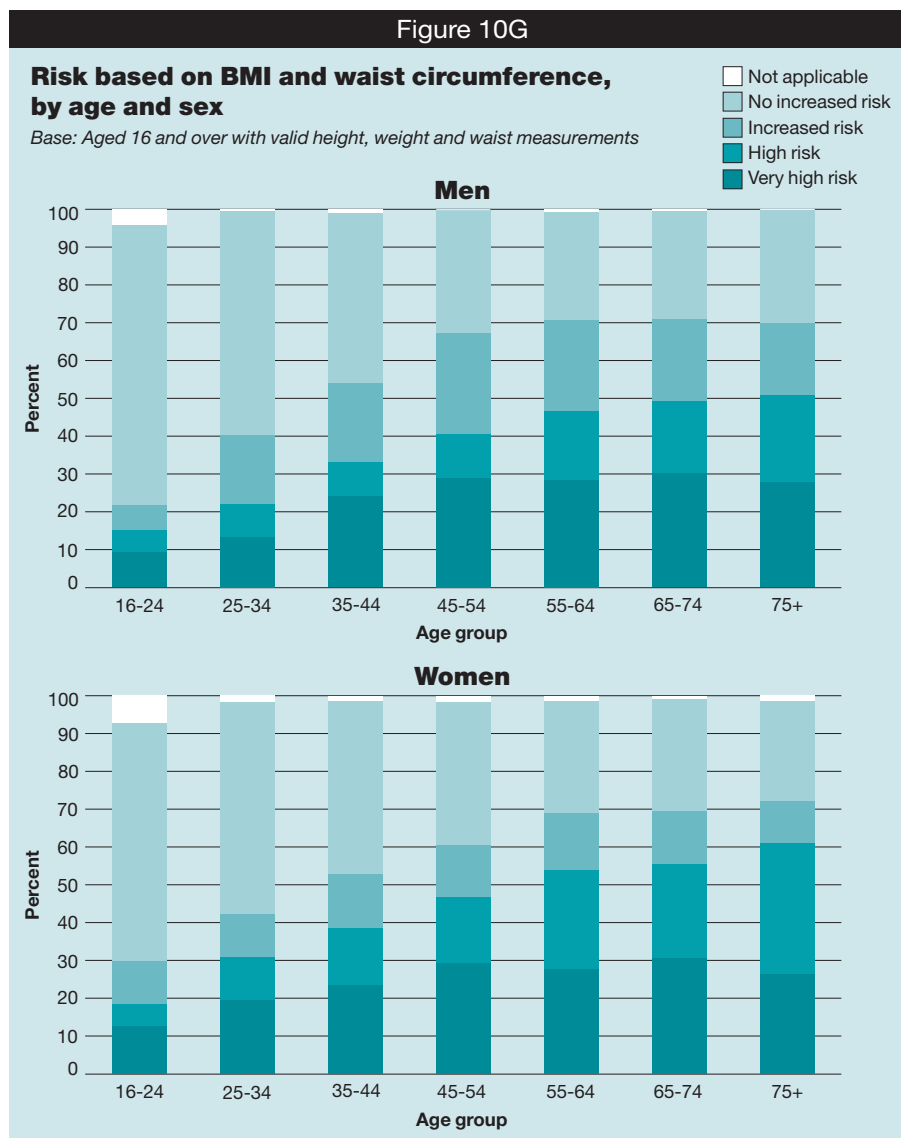
Among men, the most common BMI group was overweight (BMI 25 to less than 30kg/m<sup>2</sup>), with 42% in this category. This includes 13% of men with a low waist circumference and no increased risk, 19% with a high waist circumference and increased risk, and 10% with a very high waist circumference and high risk. Most of the men in the normal category had a low waist circumference, and thus were at no increased risk (29%), while 2% had a high waist circumference, though still at no increased risk. Conversely, most men in the Obese I category had a very high waist circumference, and thus a very high risk (16%), while 2% had a high waist circumference, and high risk. All men in the Obese II and Obese III categories (5% and 2% respectively) had very high waist circumferences, and were very high risk (as they would be, regardless of waist circumference).

Overall, 45% of men had no increased risk: this decreased from 74% of those aged 16-24 to 30% of those aged 75 and over. 20% had increased risk, 12% had high risk, and 22% had very high risk. The proportion in the higher risk categories increased with age among young adults but changed little in those aged 45 and over: very high risk increased from 10% of those aged 16-24 to 28-30% of those aged 45 and over.

Among women, the most common BMI group was normal, including 41% of women. Compared with men, a higher proportion within this group had high or very high waist measurements: overall 28% had a low waist measurement, 11% a high waist measurement (both no increased risk), and 2% a very high waist measurement so increased risk. Of a total of 32% of women who were overweight, 17% had a very high waist measurement and thus were high risk, 11% a high waist circumference and increased risk, and only 4% had no increased risk. As with men, almost all women in the obese categories had very high waist measurements, including 14% in Obese I, 6% in Obese II and 3% in Obese III, all with very high risk.

Compared with men, a smaller proportion of women had no increased risk (42%), though similarly to men this decreased with age from 63% of women aged 16-24 to 26% of women aged 75 and over. 13% of women had increased risk, 18% high risk, and 24% a very high risk. The proportion with high risk increased with age, from 6% aged 16-24 to 35% aged 75 and over. As with men, the proportion in the very high risk category increased with age among younger adults but varied less in women aged 45 and over, being 27-31%.

Table 10.11, Figure 10G



## 10.6 Trends in obesity and overweight

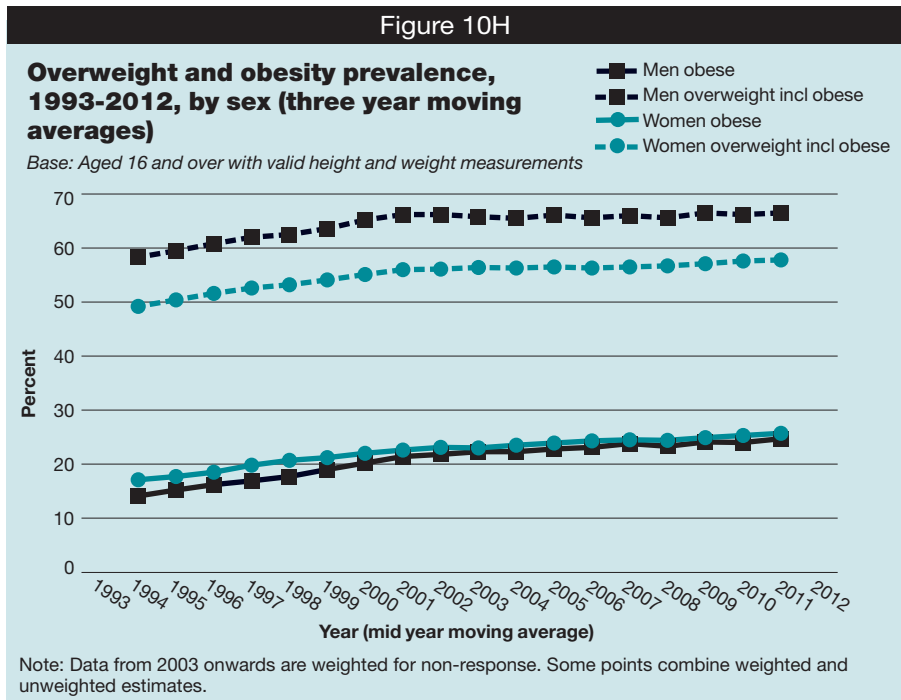
Obesity prevalence in men rose steadily through the 1990s, from 13% in 1993 to 19% in 1999; since then, the increase has been more gradual, fluctuating around 24% from 2006 to 2012. The pattern has been similar in women, with obesity rising from 16% in 1993 to 21%

from 1998 to 2000, and more gradual increase since then. From 2005 to 2012, obesity prevalence has been 24-26%.

There has been little change in the proportion of adults who were overweight (excluding obese). Between 1993 and 2001, 44-47% of men were overweight, falling to 41-44% since 2002. In women, the prevalence of overweight has remained at 31-34% throughout the period from 1993 to 2012.

The proportion of men and women who were overweight or obese in 2012 was similar to the previous two years, and showed a similar relationship between sex, age, and overweight/obesity.

Table 10.12, Figure 10H



## 10.7 Health status by obesity, overweight and waist circumference

### Hypertension

Hypertension was strongly associated with BMI, with prevalence doubling from 21% of men and 18% of women of normal weight to 43% of obese men and 38% of obese women. The increase was seen in all three categories of hypertension: controlled (with blood pressure below 140/90mmHg due to medication), uncontrolled (on medication for hypertension, but systolic blood pressure above 140mmHg and/or diastolic above 90mmHg) and untreated (not on medication for hypertension, despite blood pressure over 140mmHg systolic and/or 90mmHg diastolic). Among those who were obese, 23% of men and 17% of women had untreated hypertension; 7% of men and 8% of women had uncontrolled hypertension, and 13% of each sex had controlled hypertension.

A similar relationship was shown with waist circumference: all categories of hypertension were higher among those with a raised waist circumference. Overall, 43% of men and 32% of women with a raised waist circumference had hypertension, compared with 24% of men and 19% of women without a raised waist circumference.

Tables 10.13, 10.14

### General health and longstanding illness

Overall, 78% of men and 74% of women reported that their health was very good or good. As obesity and waist circumference increased, the proportion of both men and women reporting very good health decreased, and the proportion reporting fair, bad or very bad health increased. For example, among women (in whom the difference was greater than for men), bad or very bad health increased from 4% of normal weight women to 11% of obese

women. Combined with an increase in fair health (from 14% to 24%), this reduced the proportion in very good or good health from 83% of normal weight women to 65% of obese women. Among normal weight men, 4% reported bad or very bad health, and 13% fair health; this rose to 7% of obese men in bad or very bad health, and 20% whose health was fair. Bad or very bad health was also more common among men and women with a raised waist circumference (8% of men and 10% of women) than those with a normal waist measurement (4% of whom had bad or very bad health).

Similar patterns were seen in men and women for prevalence of limiting longstanding illness.<sup>37</sup> 19% of men and 24% of women reported a limiting longstanding illness, and this was more common in obese individuals, particularly in women (21% of obese men and 33% of obese women, compared with 15% and 17% respectively in the normal BMI group).

A raised waist circumference was also associated with limiting longstanding illness; the pattern seen in men and women did not differ significantly (22% of men and 29% of women with a raised waist circumference had a longstanding illness, compared with 17% and 18% respectively with a normal waist circumference). There was no such variation for non-limiting longstanding illness, for either obesity or waist circumference.

Tables 10.15-10.18

### Mental health

Psychological disturbance or mental ill health, defined as a score of 4 or more on the GHQ-12, was more common in obese men (13%) and women (21%) than it was among those of a normal weight (11% and 15% respectively), or those who were overweight (10% and 16% respectively). However among women, the proportion with GHQ-12 scores of 4 or more was highest in the underweight group (32%); bases sizes were too small to make the same comparison for men. Similarly, mental ill health was more common in men and women with raised waist circumference than those without.

Tables 10.19, 10.20

## 10.8 Discussion

The 2012 HSE provides data on interviewer-measured height and weight, BMI and obesity categories derived from these, and nurse-measured waist measurements. These data have shown that overweight and obesity appear to be continuing at a similar level to the last few years, presently neither increasing nor decreasing. All measures of overweight, obesity, and central obesity remain high, representing a large risk to health and future burden on health and social care services. The reasons for the continuing obesity problem may include underestimation of BMI, through overestimation of height and/or underestimation of weight. The 2012 data showed that this issue continues to be present, contributing to a difference of around one unit between measured and estimated BMI.

The 2012 data showed for the first time how appropriate or otherwise adults thought that their weight was for their height. There was a significant discrepancy between participants' own assessment and their BMI category, which was greater among men than women. This lends support to the idea that a high prevalence of overweight and obesity in the population has led to a greater bodyweight/size becoming the norm.

### References and notes

- 1 Sutton R. *Adult anthropometric measures, overweight and obesity*. Chapter 10 in Craig R, Mindell J (eds). *Health Survey for England 2011. Volume 1: Health, social care and lifestyles*. Health and Social Care Information Centre, Leeds, 2012. <http://www.hscic.gov.uk/catalogue/PUB09300>
- 2 Kuczmarski M, Kuzmarsi R, Najjar M. *Effects of age on validity of self-reported height, weight and body mass index: findings from the Third National Health and Nutrition Examination Survey, 1988-1994*. *Journal of the American Dietetic Association*. 2001;**101**:28-34.
- 3 Keith SW, Fontaine KR, Pajewski NM, Mehta T, Allison D. *Use of self-reported height and weight biases the body mass index-mortality association*. *International Journal of Obesity*. 2011;**35**:401-8.
- 4 Merrill RM, Richardson JS. *Validity of Self-Reported Height, Weight, and Body Mass Index: Findings from the National Health and Nutrition Examination Survey, 2001-2006*. *Preventing Chronic Disease*. 2009;**6**:1-10.

- 5 Shiely F, Hayes K, Perry I, Kelleher C. *Height and Weight Bias: The Influence of Time*. PLOS ONE 2013;**8**:e54386.
- 6 National Institute for Health and Clinical Excellence. *Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children*. NICE, London, 2006. [www.nice.org.uk/guidance/CG43](http://www.nice.org.uk/guidance/CG43) page 4 (Accessed 18/08/2013).
- 7 Tabassum F. *Adult anthropometric measures, overweight and obesity*. Chapter 3 in Craig R, Shelton N (eds). *Health Survey for England 2007. Volume 1: Healthy lifestyles: knowledge, attitudes and behaviour*. Health and Social Care Information Centre, Leeds, 2008. [www.hscic.gov.uk/pubs/hse07healthylifestyles](http://www.hscic.gov.uk/pubs/hse07healthylifestyles) (Accessed 25/09/2013)
- 8 Hirani V, Ali A. *BMI, overweight, and obesity*. Chapter 5 in Craig R, Mindell J (eds). *Health Survey for England 2006, Volume 1: Cardiovascular disease and risk factors in adults*. Health and Social Care Information Centre, Leeds, 2008. [www.hscic.gov.uk/pubs/hse06cvdandriskfactors](http://www.hscic.gov.uk/pubs/hse06cvdandriskfactors) (Accessed 25/09/2013)
- 9 Hirani V. *Anthropometric measures, overweight and obesity*. Chapter 6 in Primates P, Erens B, Prior G (eds). *Health Survey for England 2003*. The Stationery Office, London, 2005. [www.archive2.official-documents.co.uk/document/deps/doh/survey03/cardd/cardd05.htm](http://www.archive2.official-documents.co.uk/document/deps/doh/survey03/cardd/cardd05.htm)
- 10 World Health Organisation. *Fact Sheet No 311 Obesity and Overweight*. WHO, Geneva, 2012. [www.who.int/mediacentre/factsheets/fs311/en/index.html](http://www.who.int/mediacentre/factsheets/fs311/en/index.html) (Accessed 29/08/2013)
- 11 Prospective Studies Collaboration. *Body-mass index and cause-specific mortality in 900,000 adults: collaborative analyses of 57 prospective studies*. The Lancet. 2009;**373**:1083-96.
- 12 Calle E, Rodriguez C et al. *Overweight, Obesity, and Mortality from Cancer in a Prospectively Studied Cohort of U.S. Adults*. New England Journal of Medicine. 2003;**348**:1625-38.
- 13 Butland B, Jebb S, McPherson K et al. *Tackling Obesities: Future Choices – Project report*. Government Office for Science, London, 2007.
- 14 Health and Social Care Information Centre. *Health Survey for England – 2011, Trend tables*. Health and Social Care Information Centre, Leeds, 2012. [www.hscic.gov.uk/catalogue/PUB09302](http://www.hscic.gov.uk/catalogue/PUB09302)
- 15 Health and Social Care Information Centre. *Statistics on Obesity, Physical Activity and Diet – England, 2013*. Health and Social Care Information Centre, Leeds, 2013. <https://catalogue.ic.nhs.uk/publications/public-health/obesity/obes-phys-acti-diet-eng-2013/obes-phys-acti-diet-eng-2013-rep.pdf>
- 16 NHS *Atlas of Risk*. [www.nhs.uk/Tools/Pages/NHSAtlasofrisk.aspx](http://www.nhs.uk/Tools/Pages/NHSAtlasofrisk.aspx)
- 17 NHS *Change4Life campaign*. [www.nhs.uk/Change4Life/Pages/why-change-for-life.aspx](http://www.nhs.uk/Change4Life/Pages/why-change-for-life.aspx)
- 18 Department of Health. *Public Health Responsibility Deal*. Department of Health, London, 2011. <https://responsibilitydeal.dh.gov.uk/wp-content/uploads/2012/03/The-Public-Health-Responsibility-Deal-March-20111.pdf>
- 19 *NHS Health Check*. [www.nhs.uk/Planners/NHSHealthCheck/Pages/Thecheck.aspx](http://www.nhs.uk/Planners/NHSHealthCheck/Pages/Thecheck.aspx)
- 20 Department of Health. *Living Well for Longer*. Department of Health, London, 2013 [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/181103/Living\\_well\\_for\\_longer.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/181103/Living_well_for_longer.pdf)
- 21 Gorber SC, Tremblay M, Moher D, Gorber B. *A comparison of direct vs. self-report measures for assessing height, weight and body mass index: a systematic review*. Obesity Reviews. 2007;**8**:307–26.
- 22 Johnson F, Cooke L, Croker H et al. *Changing perceptions of weight in Great Britain: comparison of two population surveys*. BMJ 2008; **337**:a494.
- 23 Shiely F, Perry IJ, Lutomski J et al. *Temporal trends in misclassification patterns of measured and self-report based body mass index categories – findings from three population surveys in Ireland*. BMC Public Health. 2010;**10**:560.
- 24 Johnston D, Lordan G. *Weight perceptions, weight control and income: An analysis using British data*. Economics and Human Biology, 2013 e-publication ahead of print. [www.sciencedirect.com/science/article/pii/S1570677X13000270](http://www.sciencedirect.com/science/article/pii/S1570677X13000270)
- 25 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.
- 26 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.
- 27 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](http://www.dhsspsni.gov.uk/efa-2010-001a.pdf) (Accessed 29/08/2013)



- 28 World Health Organisation body mass index (BMI) classification. [www.who.int/bmi/index.jsp?introPage=intro\\_3.html](http://www.who.int/bmi/index.jsp?introPage=intro_3.html) (Accessed 29/08/2013).
- 29 NHS Consensus Development Conference. *Gastrointestinal surgery for severe obesity*. Nutrition. 1996;**12**:397-402.
- 30 National Institute for Health and Care Excellence. *Body mass index and waist circumference thresholds for intervening to prevent ill health among black, Asian and other minority ethnic groups*. Public health guidance, PH46. NICE, London, 2013. [www.nice.org.uk/nicemedia/live/14201/64332/64332.pdf](http://www.nice.org.uk/nicemedia/live/14201/64332/64332.pdf) (Accessed 25/09/2013)
- 31 Lean M, Han T, Morrison C. *Waist circumference as a measure for indicating need for weight management*. BMJ 1995;**311**:158-61.
- 32 Schneider HJ, Friedrich N, Klotsche J et al. *The Predictive Value of Different Measures of Obesity for Incident Cardiovascular Events and Mortality*. The Journal of Clinical Endocrinology & Metabolism 2010;**95**(4):1777–1785.
- 33 National Institutes of Health. *Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)*. NIH Publication 01-3670. NIH, Bethesda, Md, 2001.
- 34 Flegal KM. *Waist circumference of healthy men and women in the United States*. Int J Obes. 2007;**31**:1134-9.
- 35 National Institute for Health and Clinical Excellence. *Hypertension: clinical management of primary hypertension in adults in primary care*. NICE Clinical Guideline no 127. NICE, London, 2011. [www.nice.org.uk/nicemedia/live/13561/56008/56008.pdf](http://www.nice.org.uk/nicemedia/live/13561/56008/56008.pdf) (Accessed 25/09/2013)
- 36 Williams B, Poulter NR, Brown MJ et al. *Guidelines for management of hypertension: report of the fourth working party of the British Hypertension Society, 2004-BHS IV*. J Hum Hypertens. 2004;**18**:139-85. [www.bhsoc.org/pdfs/BHS\\_IV\\_Guidelines.pdf](http://www.bhsoc.org/pdfs/BHS_IV_Guidelines.pdf) (Accessed 25/09/2013)
- 37 The questions on longstanding illness changed in HSE 2012, from the wording used in the previous years 'long-standing illness, disability or infirmity' to 'any physical or mental health conditions or illnesses'. The reference to a time period was also changed from 'anything that has troubled you over a period of time, or that is likely to affect you over a period of time' to 'lasting or expected to last 12 months or more'.

## Tables

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### 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

<b>Response to anthropometric measurements, by age and sex</b>									
<i>Aged 16 and over who were interviewed/had a nurse visit</i>									2012
Proportion providing valid measurements	Age group								Total
	16-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	
	%	%	%	%	%	%	%	%	%
<b>Men</b>									
Height	88	86	89	86	87	85	80	62	86
Weight	88	86	88	85	88	87	84	67	86
BMI	87	85	88	85	86	85	79	61	85
Waist circumference	99	98	98	98	98	97	97	93	98
<b>Women</b>									
Height	91	88	89	87	86	85	78	55	86
Weight	90	85	87	85	85	84	82	65	85
BMI	89	84	86	84	84	82	76	54	83
Waist circumference	98	99	98	98	97	97	97	95	98
<i>Bases (unweighted)</i>									
<i>Men</i>									
<i>Height, weight, BMI (interviewed)</i>	379	485	593	615	624	596	305	84	3681
<i>Waist circumference (saw nurse)</i>	200	254	356	412	447	448	213	54	2384
<i>Women</i>									
<i>Height (interviewed)</i>	467	695	768	819	688	638	396	139	4610
<i>Weight, BMI (interviewed)<sup>a</sup></i>	451	651	748	818	688	638	396	139	4529
<i>Waist circumference (saw nurse)<sup>a</sup></i>	273	382	476	574	504	471	273	82	3035

<sup>a</sup> Excluding pregnant women.

Table 10.2

### Interviewer-measured and self-reported mean height and weight, by age and sex

Aged 16 and over

2012

Mean height (m) and weight (kg)	Age group								Total
	16-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	
<b>Men</b>									
<b>Mean height (m)</b>									
Interviewer-measured	177.0	177.8	176.3	175.3	173.9	172.3	171.5	166.9	175.3
Standard error of the mean	0.42	0.34	0.30	0.32	0.33	0.31	0.44	0.72	0.15
Self-reported	178.1	178.6	177.4	176.8	175.7	174.9	174.8	172.5	176.9
Standard error of the mean	0.43	0.33	0.31	0.31	0.32	0.31	0.40	0.64	0.15
<b>Mean weight (kg)</b>									
Interviewer-measured	76.4	82.2	86.2	88.6	86.7	84.7	82.6	74.1	84.0
Standard error of the mean	0.95	0.84	0.73	0.78	0.73	0.59	0.84	1.84	0.33
Self-reported	74.7	81.0	84.5	87.0	84.6	83.3	80.6	73.3	82.4
Standard error of the mean	0.85	0.78	0.65	0.80	0.67	0.55	0.73	1.38	0.31
<b>Women</b>									
<b>Mean height (m)</b>									
Interviewer-measured	164.5	163.3	162.8	162.7	160.9	159.5	156.4	153.1	161.9
Standard error of the mean	0.33	0.32	0.23	0.24	0.28	0.29	0.38	0.72	0.12
Self-reported	164.9	163.7	163.6	163.3	161.8	161.3	159.7	158.9	162.8
Standard error of the mean	0.34	0.31	0.25	0.25	0.29	0.28	0.33	0.63	0.11
<b>Mean weight (kg)</b>									
Interviewer-measured	66.5	70.2	71.5	73.6	72.8	71.5	68.2	62.3	70.7
Standard error of the mean	0.72	0.78	0.64	0.66	0.66	0.60	0.76	1.36	0.29
Self-reported	63.7	67.9	69.4	71.3	70.0	69.3	66.3	61.6	68.3
Standard error of the mean	0.58	0.66	0.57	0.61	0.60	0.54	0.69	1.04	0.25
<b>Bases (unweighted)</b>									
<b>Men</b>									
Interviewer-measured height <sup>a</sup>	334	415	530	528	542	509	244	52	3154
Self-reported height	366	478	586	607	618	596	300	80	3631
Interviewer-measured weight <sup>a</sup>	332	416	522	525	547	518	256	56	3172
Self-reported weight	343	465	566	585	589	579	294	73	3494
<b>Women</b>									
Interviewer-measured height <sup>a</sup>	423	611	686	715	594	542	309	76	3956
Self-reported height	452	687	759	811	684	634	389	131	4547
Interviewer-measured weight <sup>a</sup>	404	553	649	692	586	533	326	90	3833
Self-reported weight	414	635	717	765	626	590	371	122	4240
<b>Bases (weighted)</b>									
<b>Men</b>									
Interviewer-measured height <sup>a</sup>	540	591	644	616	520	367	195	43	3515
Self-reported height	582	688	715	709	591	429	240	65	4018
Interviewer-measured weight <sup>a</sup>	538	590	635	612	524	373	205	46	3524
Self-reported weight	546	668	692	685	563	416	235	59	3863
<b>Women</b>									
Interviewer-measured height <sup>a</sup>	545	615	659	635	526	397	247	60	3684
Self-reported height	579	697	723	719	612	461	312	104	4206
Interviewer-measured weight <sup>a</sup>	522	554	623	615	519	390	262	71	3555
Self-reported weight	532	649	687	677	558	428	297	97	3924

<sup>a</sup> Based on those with valid height measurement or valid weight measurement.

Table 10.3

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

Aged 16 and over

2012

BMI (kg/m <sup>2</sup> ) and BMI status (%) <sup>a</sup>	Age group								Total
	16-24	25-34	35-44	45-54	55-64	65-74	75-84	85+	
<b>Men</b>									
<b>Interviewer-measured</b>									
Mean BMI (kg/m <sup>2</sup> )	24.4	26.0	27.7	28.8	28.6	28.5	28.0	26.2	27.3
Standard error of the mean	0.30	0.24	0.22	0.22	0.21	0.20	0.24	0.52	0.10
% Underweight	5	2	1	-	1	0	0	2	1
% Normal	59	44	27	19	22	21	24	39	32
% Overweight	24	39	47	49	46	46	49	41	42
% Obese, excluding morbidly obese	11	14	23	30	29	31	27	19	23
% Morbidly obese	1	1	2	2	2	1	0	-	2
% Overweight, including obese	36	54	72	81	77	78	76	59	67
% Obese	12	15	25	32	31	33	27	19	24
<b>Self-reported</b>									
Mean BMI (kg/m <sup>2</sup> )	23.5	25.4	26.8	27.8	27.4	27.2	26.4	24.5	26.3
Standard error of the mean	0.26	0.23	0.19	0.24	0.18	0.17	0.21	0.38	0.09
% Underweight	7	2	1	0	1	1	0	1	2
% Normal	66	52	35	27	30	32	38	58	40
% Overweight	17	35	44	48	46	45	48	34	40
% Obese, excluding morbidly obese	9	11	19	23	22	21	13	7	17
% Morbidly obese	0	1	1	2	2	1	0	-	1
% Overweight, including obese	27	47	64	73	70	68	61	40	58
% Obese	9	12	20	25	24	22	13	7	18
<b>Women</b>									
<b>Interviewer-measured</b>									
Mean BMI (kg/m <sup>2</sup> )	24.6	26.3	27.0	27.8	28.1	28.1	27.8	26.5	27.0
Standard error of the mean	0.26	0.26	0.23	0.24	0.24	0.23	0.28	0.59	0.11
% Underweight	7	2	1	1	1	1	2	2	2
% Normal	57	50	43	35	30	31	28	40	41
% Overweight	22	27	31	34	39	35	42	39	32
% Obese, excluding morbidly obese	12	18	21	25	26	29	26	16	22
% Morbidly obese	2	3	4	4	3	3	2	3	3
% Overweight, including obese	36	48	56	63	69	68	71	58	57
% Obese	14	21	25	29	30	33	28	18	25
<b>Self-reported</b>									
Mean BMI (kg/m <sup>2</sup> )	23.4	25.3	26.0	26.7	26.8	26.7	26.0	24.6	25.8
Standard error of the mean	0.21	0.23	0.21	0.23	0.22	0.20	0.25	0.42	0.09
% Underweight	9	3	2	2	2	2	3	5	3
% Normal	66	54	49	43	42	40	44	55	49
% Overweight	16	28	31	30	32	35	35	28	29
% Obese, excluding morbidly obese	8	14	16	22	21	21	17	12	17
% Morbidly obese	0	2	3	2	3	2	1	-	2
% Overweight, including obese	25	43	49	54	57	58	52	40	48
% Obese	8	16	18	25	24	23	18	12	19
<b>Bases (unweighted)</b>									
Men – interviewer-measured <sup>b</sup>	329	413	522	521	537	504	241	51	3118
Men – self-reported	338	460	563	582	588	579	291	72	3473
Women – interviewer-measured <sup>b</sup>	403	550	644	687	578	522	301	75	3760
Women – self-reported	406	630	712	760	623	588	368	117	4204
<b>Bases (weighted)</b>									
Men – interviewer-measured <sup>b</sup>	533	587	635	608	514	363	192	42	3475
Men – self-reported	539	661	687	681	562	416	232	58	3837
Women – interviewer-measured <sup>b</sup>	521	551	618	610	513	382	241	59	3495
Women – self-reported	521	644	682	673	555	426	294	93	3889

<sup>a</sup> Underweight: less than 18.5 kg/m<sup>2</sup>  
 Normal weight: 18.5 to less than 25 kg/m<sup>2</sup>  
 Overweight: 25 to less than 30 kg/m<sup>2</sup>  
 Obese, excluding morbidly obese: 30 to less than 40 kg/m<sup>2</sup>  
 Morbidly obese: 40 kg/m<sup>2</sup> or more  
 Overweight, including obese: 25 kg/m<sup>2</sup> or more  
 Obese: 30 kg/m<sup>2</sup> or more

<sup>b</sup> Based on those with both valid height and weight measurements.

Table 10.4

**Interviewer-measured and self-reported overweight and obesity prevalence (observed and age-standardised), by region<sup>a</sup> and sex**

Aged 16 and over

2012

BMI status (%) <sup>b</sup>	Region								
	North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East	South West
	%	%	%	%	%	%	%	%	%
<b>Men</b>									
<b>Observed</b>									
<b>Interviewer-measured</b>									
Overweight including obese	65	72	68	68	72	62	56	69	68
Obese	25	27	23	28	27	23	18	26	24
<b>Self-reported</b>									
Overweight including obese	57	60	57	60	66	53	48	61	63
Obese	18	19	15	22	24	18	13	18	18
<b>Standardised</b>									
<b>Interviewer-measured</b>									
Overweight including obese	65	70	68	68	73	62	58	69	67
Obese	25	26	23	29	27	23	19	26	24
<b>Self-reported</b>									
Overweight including obese	56	59	57	59	65	52	50	60	61
Obese	17	18	15	22	23	18	14	18	17
<b>Women</b>									
<b>Observed</b>									
<b>Interviewer-measured</b>									
Overweight including obese	62	60	58	60	59	61	50	54	59
Obese	29	27	27	24	26	28	23	23	24
<b>Self-reported</b>									
Overweight including obese	54	49	50	49	52	51	41	45	48
Obese	23	19	19	16	22	21	14	20	19
<b>Standardised</b>									
<b>Interviewer-measured</b>									
Overweight including obese	60	60	58	60	60	61	51	54	56
Obese	28	27	27	24	26	29	24	23	23
<b>Self-reported</b>									
Overweight including obese	52	49	50	49	52	52	42	45	46
Obese	22	19	19	16	22	22	14	19	18
<i>Bases (unweighted)</i>									
<i>Men – interviewer-measured<sup>c</sup></i>	229	468	313	281	329	356	344	461	337
<i>Men – self-reported</i>	273	516	349	317	349	397	390	530	352
<i>Women – interviewer-measured<sup>c</sup></i>	289	523	372	310	405	418	462	604	377
<i>Women – self-reported</i>	347	592	403	358	428	459	521	691	405
<i>Bases (weighted)</i>									
<i>Men – interviewer-measured<sup>c</sup></i>	166	482	352	297	374	379	501	529	394
<i>Men – self-reported</i>	196	534	390	330	392	421	564	601	408
<i>Women – interviewer-measured<sup>c</sup></i>	172	454	354	284	379	380	531	583	357
<i>Women – self-reported</i>	203	517	383	326	400	423	595	654	388

<sup>a</sup> Regions defined as the former Government Office Regions.<sup>b</sup> Overweight: 25 to less than 30kg/m<sup>2</sup>; Obese, including morbidly obese: 30kg/m<sup>2</sup> or more.<sup>c</sup> Based on those with both valid height and weight measurements.

Table 10.5

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

Aged 16 and over

2012

BMI (kg/m <sup>2</sup> ) and BMI status (%) <sup>a</sup>	Equivalised household income quintile				
	Highest	2nd	3rd	4th	Lowest
<b>Men</b>					
<b>Interviewer-measured</b>					
Mean BMI (kg/m <sup>2</sup> )	27.2	27.4	27.2	27.6	27.1
Standard error of the mean	0.24	0.19	0.22	0.31	0.24
% Underweight	1	0	1	1	3
% Normal	31	30	35	34	33
% Overweight	47	45	42	38	40
% Obese, excluding morbidly obese	20	24	22	24	23
% Morbidly obese	2	1	2	3	1
% Overweight, including obese	68	70	65	65	65
% Obese	21	25	23	27	24
<b>Self-reported</b>					
% Overweight, including obese	57	61	56	59	56
% Obese	16	17	17	21	20
<b>Women</b>					
<b>Interviewer-measured</b>					
Mean BMI (kg/m <sup>2</sup> )	26.0	26.6	26.6	28.3	27.9
Standard error of the mean	0.23	0.24	0.24	0.28	0.27
% Underweight	1	2	2	2	2
% Normal	49	43	42	32	36
% Overweight	31	33	34	33	32
% Obese, excluding morbidly obese	17	20	19	28	25
% Morbidly obese	2	2	2	6	6
% Overweight, including obese	51	55	56	66	62
% Obese	19	22	21	33	31
<b>Self-reported</b>					
% Overweight, including obese	41	47	46	55	54
% Obese	13	17	16	26	24
<b>Bases (unweighted)</b>					
Men – interviewer-measured <sup>b</sup>	539	643	526	424	444
Men – self-reported	587	688	576	463	483
Women – interviewer-measured <sup>b</sup>	567	653	623	607	641
Women – self-reported	646	723	669	657	673
<b>Bases (weighted)</b>					
Men – interviewer-measured <sup>b</sup>	599	704	573	447	507
Men – self-reported	648	755	622	478	546
Women – interviewer-measured <sup>b</sup>	539	614	564	536	584
Women – self-reported	612	680	608	577	605

<sup>a</sup> Underweight: less than 18.5 kg/m<sup>2</sup>  
 Normal weight : 18.5 to less than 25 kg/m<sup>2</sup>  
 Overweight: 25 to less than 30 kg/m<sup>2</sup>  
 Obese, excluding morbidly obese: 30 to less than 40 kg/m<sup>2</sup>  
 Morbidly obese: 40 kg/m<sup>2</sup> or more  
 Overweight, including obese: 25 kg/m<sup>2</sup> or more  
 Obese: 30 kg/m<sup>2</sup> or more

<sup>b</sup> Based on those with both valid height and weight measurements.

Table 10.6

**Comparison of interviewer-measured and self-reported body mass index (BMI) status (age-standardised), by sex**

Aged 16 and over with both self-reported and interviewer-measured height and weight

2012

Self-reported BMI status <sup>a</sup>	Interviewer-measured BMI status <sup>a</sup>		
	Not overweight	Overweight	Obese
	%	%	%
<b>Men</b>			
Not overweight	95	26	1
Overweight	5	72	29
Obese	0	2	70
<i>Overweight, including obese</i>	5	74	99
<b>Women</b>			
Not overweight	97	29	1
Overweight	3	68	26
Obese	0	2	72
<i>Overweight, including obese</i>	3	71	99
<i>Bases (unweighted)</i>			
Men	890	1320	763
Women	1464	1152	877
<i>Bases (weighted)</i>			
Men	1095	1394	806
Women	1423	1038	782

<sup>a</sup> Not overweight: less than 25kg/m<sup>2</sup>  
 Overweight: 25 to less than 30kg/m<sup>2</sup>  
 Obese: 30kg/m<sup>2</sup> or more  
*Overweight, including obese: 25kg/m<sup>2</sup> or more.*

Table 10.7

**Interviewer-measured and self-reported body mass index (BMI), overweight and obesity prevalence (age-standardised), by perception of own weight and sex**

Aged 16 and over

2012

BMI (kg/m <sup>2</sup> ) and BMI status (%) <sup>a</sup>	Perception of own weight		
	About right weight	Too heavy	Too light
<b>Men</b>			
<b>Interviewer-measured</b>			
Mean BMI (kg/m <sup>2</sup> )	25.2	30.8	21.2
Standard error of the mean	0.09	0.16	0.21
% Underweight	0	-	12
% Normal	49	4	82
% Overweight	45	46	6
% Obese, excluding morbidly obese	5	46	-
% Morbidly obese	-	4	-
<i>% Overweight, including obese</i>	50	96	6
<i>% Obese</i>	5	50	-
<b>Self-reported</b>			
<i>% Overweight, including obese</i>	36	93	5
<i>% Obese</i>	3	41	10
<b>Women</b>			
<b>Interviewer-measured</b>			
Mean BMI (kg/m <sup>2</sup> )	23.5	30.6	19.3
Standard error of the mean	0.08	0.15	0.28
% Underweight	1	-	37
% Normal	74	12	62
% Overweight	22	42	-
% Obese, excluding morbidly obese	3	40	1
% Morbidly obese	0	6	-
<i>% Overweight, including obese</i>	25	88	1
<i>% Obese</i>	3	46	1
<b>Self-reported</b>			
<i>% Overweight, including obese</i>	15	82	1
<i>% Obese</i>	2	37	-
<i>Bases (unweighted)</i>			
Men – interviewer-measured <sup>b</sup>	1375	1211	146
Men – self-reported	1484	1266	158
Women – interviewer-measured <sup>b</sup>	1445	1729	104
Women – self-reported	1565	1845	117
<i>Bases (weighted)</i>			
Men – interviewer-measured <sup>b</sup>	1561	1300	183
Men – self-reported	1663	1352	197
Women – interviewer-measured <sup>b</sup>	1367	1581	102
Women – self-reported	1475	1678	111

<sup>a</sup> Underweight: less than 18.5 kg/m<sup>2</sup>  
 Normal weight : 18.5 to less than 25 kg/m<sup>2</sup>  
 Overweight: 25 to less than 30 kg/m<sup>2</sup>  
 Obese, excluding morbidly obese: 30 to less than 40 kg/m<sup>2</sup>  
 Morbidly obese: 40 kg/m<sup>2</sup> or more  
*Overweight, including obese: 25 kg/m<sup>2</sup> or more*  
*Obese: 30 kg/m<sup>2</sup> or more*

<sup>b</sup> Based on those with both valid height and weight measurements.



Table 10.8

Waist circumference, by age and sex								
<i>Aged 16 and over with a valid waist measurement</i>								2012
Waist circumference (cm) and raised waist circumference (%) <sup>a</sup>	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
<b>Men</b>								
Mean waist circumference (cm)	85.5	92.2	97.5	100.1	102.2	102.9	103.0	97.0
Standard error of the mean	1.07	0.81	0.76	0.67	0.60	0.58	0.66	0.37
% with raised waist circumference	11	21	32	38	47	50	52	34
<b>Women</b>								
Mean waist circumference (cm)	79.5	84.1	86.5	89.7	91.0	92.2	92.4	87.6
Standard error of the mean	0.84	0.79	0.66	0.65	0.60	0.65	0.68	0.30
% with raised waist circumference	19	33	40	49	55	61	64	45
<i>Bases (unweighted)</i>								
<i>Men</i>	197	250	349	403	439	436	256	2330
<i>Women</i>	268	377	468	563	491	458	342	2967
<i>Bases (weighted)</i>								
<i>Men</i>	381	433	459	457	382	270	194	2575
<i>Women</i>	367	411	460	460	385	294	268	2645

<sup>a</sup> Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.9

Raised waist circumference (observed and age-standardised), by region <sup>a</sup> and sex									
<i>Aged 16 and over with a valid waist measurement</i>									2012
Waist circumference <sup>b</sup>	Region								
	North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East	South West
	%	%	%	%	%	%	%	%	%
<b>Men</b>									
<b>Observed</b>									
Raised waist circumference	30	37	29	39	37	33	25	40	31
<b>Standardised</b>									
Raised waist circumference	30	36	29	38	38	33	28	39	30
<b>Women</b>									
<b>Observed</b>									
Raised waist circumference	48	44	48	45	44	49	42	42	44
<b>Standardised</b>									
Raised waist circumference	48	44	46	45	45	48	44	41	41
<i>Bases (unweighted)</i>									
<i>Men</i>	207	322	221	224	244	262	239	349	262
<i>Women</i>	259	400	267	263	308	323	319	512	316
<i>Bases (weighted)</i>									
<i>Men</i>	129	346	267	229	270	284	384	387	277
<i>Women</i>	133	356	258	226	273	292	390	462	255

<sup>a</sup> Regions defined as the former Government Office Regions.

<sup>b</sup> Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.10

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

Aged 16 and over with a valid waist measurement

2012

Waist circumference (cm) and raised waist circumference (%) <sup>a</sup>	Equivalised household income quintile				
	Highest	2nd	3rd	4th	Lowest
<b>Men</b>					
Mean waist circumference (cm)	96.3	96.7	96.6	96.8	97.6
Standard error of the mean	0.92	0.67	0.87	1.09	1.00
% with raised waist circumference	31	31	32	34	36
<b>Women</b>					
Mean waist circumference (cm)	85.5	86.8	86.3	90.3	89.6
Standard error of the mean	0.74	0.69	0.69	0.83	0.81
% with raised waist circumference	37	43	39	53	52
<i>Bases (unweighted)</i>					
<i>Men</i>	399	497	432	327	320
<i>Women</i>	468	513	532	484	474
<i>Bases (weighted)</i>					
<i>Men</i>	439	540	449	350	375
<i>Women</i>	417	451	454	417	430

<sup>a</sup> Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.11

### 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<sup>a</sup>

2012

BMI and waist circumference classification <sup>b</sup>	Health risk category <sup>c</sup>	Age group							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
<b>Men</b>									
<b>Underweight (BMI less than 18.5kg/m<sup>2</sup>)</b>									
Low waist circumference	Not applicable	4	0	1	-	1	0	0	1
High waist circumference	Not applicable	-	-	-	-	-	-	-	-
Very high waist circumference	Not applicable	-	-	-	-	-	-	-	-
<i>All underweight</i>		4	0	1	0	1	0	0	1
<b>Normal (BMI 18.5 to less than 25kg/m<sup>2</sup>)</b>									
Low waist circumference	No increased risk	60	40	26	19	16	16	18	29
High waist circumference	No increased risk	1	1	1	2	5	5	5	2
Very high waist circumference	Increased risk	-	-	0	0	2	0	1	0
<i>All normal</i>		60	41	26	21	22	22	25	32
<b>Overweight (BMI 25 to less than 30kg/m<sup>2</sup>)</b>									
Low waist circumference	No increased risk	14	18	19	12	8	7	6	13
High waist circumference	Increased risk	6	18	20	26	23	22	17	19
Very high waist circumference	High risk	2	7	7	9	16	18	23	10
<i>All overweight</i>		22	43	46	48	47	46	47	42
<b>Obesity I (BMI 30 to less than 35 kg/m<sup>2</sup>)</b>									
Low waist circumference	Increased risk	0	1	0	-	-	-	-	0
High waist circumference	High risk	4	1	2	2	2	1	-	2
Very high waist circumference	Very high risk	6	9	16	20	20	23	23	16
<i>All obese I</i>		10	11	19	22	21	25	23	18
<b>Obesity II (BMI 35 to less than 40kg/m<sup>2</sup>)</b>									
Low waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	-	-	-	-
Very high waist circumference	Very high risk	3	4	5	7	7	6	5	5
<i>All obese II</i>		3	4	5	7	7	6	5	5
<b>Obesity III (BMI 40kg/m<sup>2</sup> or more)</b>									
Low waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	-	-	-	-
Very high waist circumference	Very high risk	1	1	3	2	2	1	0	2
<i>All obese III</i>		1	1	3	2	2	1	0	2
<b>Men – Overall risk<sup>c</sup></b>									
	Not applicable	4	0	1	-	1	0	0	1
	No increased risk	74	59	45	33	28	29	30	45
	Increased risk	7	18	21	27	24	22	19	20
	High risk	6	9	9	12	18	19	23	12
	Very high risk	10	13	24	29	29	30	28	22
<i>Bases (unweighted)</i>									
<i>Men</i>		186	239	333	374	410	399	217	2158
<i>Bases (weighted)</i>									
<i>Men</i>		367	417	438	420	355	248	164	2411

<sup>a</sup> 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 10.3.

<sup>b</sup> BMI categories according to National Institute for Health and Clinical Excellence (NICE) guidelines: Underweight: Less than 18.5kg/m<sup>2</sup>, Normal: 18.5 to less than 25kg/m<sup>2</sup>, Overweight: 25 to less than 30kg/m<sup>2</sup>, Obesity I: 30 to less than 35kg/m<sup>2</sup>, Obesity II: 35 to less than 40kg/m<sup>2</sup>, Obesity III: 40kg/m<sup>2</sup> or more.

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

<sup>c</sup> Health risk category according to NICE Guidelines. See note 6.

Continued...

Table 10.11 continued

Aged 16 and over with valid height, weight and waist circumference measurements<sup>a</sup>

2012

BMI and waist circumference classification <sup>b</sup>	Health risk category <sup>c</sup>	Age group							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
<b>Women</b>									
<b>Underweight (BMI less than 18.5kg/m<sup>2</sup>)</b>									
Low waist circumference	Not applicable	7	2	1	2	1	1	1	2
High waist circumference	Not applicable	-	-	-	-	-	-	0	0
Very high waist circumference	Not applicable	-	-	-	-	-	-	-	-
<i>All underweight</i>		7	2	1	2	1	1	1	2
<b>Normal (BMI 18.5 to less than 25kg/m<sup>2</sup>)</b>									
Low waist circumference	No increased risk	48	38	32	24	18	16	14	28
High waist circumference	No increased risk	10	10	10	11	10	13	11	11
Very high waist circumference	Increased risk	1	2	2	2	2	5	5	2
<i>All normal</i>		58	50	44	37	30	33	30	41
<b>Overweight (BMI 25 to less than 30kg/m<sup>2</sup>)</b>									
Low waist circumference	No increased risk	5	7	3	3	1	1	1	4
High waist circumference	Increased risk	11	10	12	12	13	9	7	11
Very high waist circumference	High risk	5	11	14	17	26	24	34	17
<i>All overweight</i>		21	28	30	32	40	35	41	32
<b>Obesity I (BMI 30 to less than 35kg/m<sup>2</sup>)</b>									
Low waist circumference	Increased risk	-	-	0	0	-	-	-	0
High waist circumference	High risk	1	1	2	1	1	0	1	1
Very high waist circumference	Very high risk	6	9	14	18	18	21	18	14
<i>All obese I</i>		7	10	16	18	18	21	19	15
<b>Obesity II (BMI 35 to less than 40kg/m<sup>2</sup>)</b>									
Low waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	0	-	-	0
Very high waist circumference	Very high risk	5	7	5	7	7	7	5	6
<i>All obese II</i>	<i>Very high risk</i>	5	7	5	7	7	7	5	6
<b>Obesity III (BMI 40kg/m<sup>2</sup> or more)</b>									
Low waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	-	-	-	-
Very high waist circumference	Very high risk	1	3	4	4	2	3	3	3
<i>All obese III</i>	<i>Very high risk</i>	1	3	4	4	2	3	3	3
<b>Women – Overall risk<sup>c</sup></b>									
	Not applicable	7	2	1	2	1	1	1	2
	No increased risk	63	56	46	38	29	30	26	42
	Increased risk	11	11	14	14	15	14	11	13
	High risk	6	12	15	17	26	25	35	18
	Very high risk	13	20	23	29	28	31	27	24
<i>Bases (unweighted)</i>									
<i>Women</i>		244	348	430	523	455	410	274	2684
<i>Bases (weighted)</i>									
<i>Women</i>		337	383	426	429	358	263	215	2411

<sup>a</sup> 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 10.3.

<sup>b</sup> BMI categories according to National Institute for Health and Clinical Excellence (NICE) guidelines: Underweight: Less than 18.5kg/m<sup>2</sup>, Normal: 18.5 to less than 25kg/m<sup>2</sup>, Overweight: 25 to less than 30kg/m<sup>2</sup>, Obesity I: 30 to less than 35kg/m<sup>2</sup>, Obesity II: 35 to less than 40kg/m<sup>2</sup>, Obesity III: 40kg/m<sup>2</sup> or more.

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

<sup>c</sup> Health risk category according to NICE Guidelines. See note 6.

Table 10.12

### Trends in overweight and obesity prevalence, 1993 to 2012, by age and sex

Aged 16 and over with both valid height and weight measurements 1993-2012

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

<sup>a</sup> Overweight: 25 to less than 30kg/m<sup>2</sup>; Obese, including morbidly obese: 30kg/m<sup>2</sup> or more.

<sup>b</sup> In HSE years before 2003, data were not weighted for non-response.

Continued...

Table 10.12 continued

Aged 16 and over with both valid height and weight measurements 1993-2012

BMI status <sup>a</sup>	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>2009</b>								
Overweight	29	38	50	45	49	52	49	44
Obese	6	13	21	34	32	30	23	22
<b>2010</b>								
Overweight	22	37	49	44	44	53	50	42
Obese	13	19	28	35	37	28	26	26
<b>2011</b>								
Overweight	23	39	48	44	44	49	47	41
Obese	9	17	21	32	31	30	29	24
<b>2012</b>								
Overweight	24	39	47	49	46	46	47	42
Obese	12	15	25	32	31	33	25	24
<i>Bases (unweighted)</i>								
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
<i>Bases (weighted)<sup>b</sup></i>								
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

<sup>a</sup> Overweight: 25 to less than 30kg/m<sup>2</sup>; Obese, including morbidly obese: 30kg/m<sup>2</sup> or more.

<sup>b</sup> In HSE years before 2003, data were not weighted for non-response.

Continued...

Table 10.12 continued

Aged 16 and over with both valid height and weight measurements 1993-2012

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

<sup>a</sup> Overweight: 25 to less than 30kg/m<sup>2</sup>; Obese, including morbidly obese: 30kg/m<sup>2</sup> or more.

<sup>b</sup> In HSE years before 2003, data were not weighted for non-response.

Continued...

Table 10.12 continued

Aged 16 and over with both valid height and weight measurements 1993-2012

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

<sup>a</sup> Overweight: 25 to less than 30kg/m<sup>2</sup>; Obese, including morbidly obese: 30kg/m<sup>2</sup> or more.

<sup>b</sup> In HSE years before 2003, data were not weighted for non-response.



Table 10.13

**Hypertension categories (age-standardised), by interviewer-measured body mass index (BMI) status and sex**Aged 16 and over with three valid BP measurements and valid height and weight measurements<sup>a</sup>

2012

Hypertension categories <sup>b</sup>	BMI status <sup>c</sup>				Total <sup>a</sup>
	Underweight	Normal	Overweight	Obese	
	%	%	%	%	%
<b>Men</b>					
Normotensive untreated	d	79	70	57	70
Hypertensive controlled	d	6	8	13	9
Hypertensive uncontrolled	d	3	5	7	5
Hypertensive untreated	d	12	17	23	16
<i>All with hypertension</i>	<i>d</i>	<i>21</i>	<i>30</i>	<i>43</i>	<i>30</i>
<b>Women</b>					
Normotensive untreated	[80]	82	76	62	74
Hypertensive controlled	[-]	6	8	13	9
Hypertensive uncontrolled	[6]	4	6	8	6
Hypertensive untreated	[14]	8	9	17	11
<i>All with hypertension</i>	<i>20</i>	<i>18</i>	<i>24</i>	<i>38</i>	<i>26</i>
<i>Bases (unweighted)</i>					
<i>Men</i>	<i>13</i>	<i>482</i>	<i>810</i>	<i>497</i>	<i>1955</i>
<i>Women</i>	<i>38</i>	<i>891</i>	<i>774</i>	<i>582</i>	<i>2560</i>
<i>Bases (weighted)</i>					
<i>Men</i>	<i>13</i>	<i>616</i>	<i>828</i>	<i>506</i>	<i>2115</i>
<i>Women</i>	<i>44</i>	<i>824</i>	<i>667</i>	<i>501</i>	<i>2260</i>

<sup>a</sup> The total column includes those without a valid height or weight measurement.

<sup>b</sup> 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.*

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

<sup>d</sup> 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<sup>a</sup>

2012

Hypertension categories <sup>b</sup>	Waist circumference <sup>c</sup>		Total <sup>a</sup>
	Non raised waist circumference %	Raised waist circumference %	
<b>Men</b>			
Normotensive untreated	76	57	70
Hypertensive controlled	7	12	9
Hypertensive uncontrolled	4	6	5
Hypertensive untreated	13	25	16
<i>All with hypertension</i>	24	43	30
<b>Women</b>			
Normotensive untreated	81	68	74
Hypertensive controlled	7	10	9
Hypertensive uncontrolled	4	8	6
Hypertensive untreated	8	14	11
<i>All with hypertension</i>	19	32	26
<i>Bases (unweighted)</i>			
<i>Men</i>	1173	749	1955
<i>Women</i>	1323	1191	2560
<i>Bases (weighted)</i>			
<i>Men</i>	1371	717	2115
<i>Women</i>	1232	988	2260

<sup>a</sup> The total column includes those without a valid waist measurement.

<sup>b</sup> 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.*

<sup>c</sup> Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.15

**Self-reported general health (age-standardised), by interviewer-measured body mass index (BMI) status and sex**
Aged 16 and over with valid height and weight measurements<sup>a</sup>

2012

Self-reported general health	BMI status <sup>b</sup>				Total <sup>a</sup> %
	Underweight %	Normal %	Overweight %	Obese %	
<b>Men</b>					
Very good	[18]	43	37	28	36
Good	[43]	40	43	46	42
Fair	[18]	13	16	20	16
Bad	[20]	3	3	4	4
Very bad	[1]	1	1	3	2
<i>Good/very good</i>	<i>[61]</i>	<i>82</i>	<i>80</i>	<i>74</i>	<i>78</i>
<i>Bad/very bad</i>	<i>[21]</i>	<i>4</i>	<i>4</i>	<i>7</i>	<i>6</i>
<b>Women</b>					
Very good	28	41	34	20	33
Good	44	41	43	45	42
Fair	17	14	18	24	18
Bad	9	3	4	9	6
Very bad	1	1	1	2	2
<i>Good/very good</i>	<i>72</i>	<i>83</i>	<i>77</i>	<i>65</i>	<i>74</i>
<i>Bad/very bad</i>	<i>10</i>	<i>4</i>	<i>5</i>	<i>11</i>	<i>7</i>
<i>Bases (unweighted)</i>					
<i>Men</i>	<i>33</i>	<i>905</i>	<i>1379</i>	<i>800</i>	<i>3679</i>
<i>Women</i>	<i>73</i>	<i>1466</i>	<i>1242</i>	<i>979</i>	<i>4610</i>
<i>Bases (weighted)</i>					
<i>Men</i>	<i>45</i>	<i>1114</i>	<i>1468</i>	<i>847</i>	<i>4081</i>
<i>Women</i>	<i>79</i>	<i>1418</i>	<i>1121</i>	<i>877</i>	<i>4270</i>

<sup>a</sup> The total column includes those without a valid height or weight measurement.

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

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

Table 10.16

**Self-reported general health (age-standardised), by waist circumference and sex**
*Aged 16 and over with valid waist measurement<sup>a</sup>* 2012

Self-reported general health	Waist circumference <sup>b</sup>		Total <sup>a</sup>
	Non raised waist circumference	Raised waist circumference	
	%	%	
<b>Men</b>			
Very good	42	26	36
Good	40	47	42
Fair	14	19	16
Bad	3	6	4
Very bad	2	2	2
<i>Good/very good</i>	<i>82</i>	<i>73</i>	<i>78</i>
<i>Bad/very bad</i>	<i>4</i>	<i>8</i>	<i>6</i>
<b>Women</b>			
Very good	40	24	33
Good	42	44	42
Fair	14	23	18
Bad	3	8	6
Very bad	1	2	2
<i>Good/very good</i>	<i>81</i>	<i>67</i>	<i>74</i>
<i>Bad/very bad</i>	<i>4</i>	<i>10</i>	<i>7</i>
<i>Bases (unweighted)</i>			
<i>Men</i>	<i>1435</i>	<i>895</i>	<i>3679</i>
<i>Women</i>	<i>1563</i>	<i>1404</i>	<i>4610</i>
<i>Bases (weighted)</i>			
<i>Men</i>	<i>1708</i>	<i>867</i>	<i>4081</i>
<i>Women</i>	<i>1467</i>	<i>1178</i>	<i>4270</i>

<sup>a</sup> The total column includes those without a valid waist measurement.

<sup>b</sup> Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.17

**Longstanding illness (age-standardised), by interviewer-measured body mass index (BMI) status and sex**Aged 16 and over with valid height and weight measurements<sup>a</sup>

2012

Longstanding illness	BMI status <sup>b</sup>				Total <sup>a</sup> %
	Underweight %	Normal %	Overweight %	Obese %	
<b>Men</b>					
Limiting longstanding illness	[29]	15	17	21	19
Non-limiting longstanding illness	[2]	15	17	18	16
No longstanding illness	[69]	71	67	61	65
<b>Women</b>					
Limiting longstanding illness	17	17	21	33	24
Non-limiting longstanding illness	10	18	18	18	17
No longstanding illness	73	65	62	49	59
<i>Bases (unweighted)</i>					
Men	33	904	1377	799	3676
Women	73	1465	1242	976	4604
<i>Bases (weighted)</i>					
Men	45	1113	1466	846	4077
Women	79	1417	1121	874	4265

<sup>a</sup> The total column includes those without a valid height or weight measurement.<sup>b</sup> Underweight: less than 18.5kg/m<sup>2</sup>  
Normal weight: 18.5 to less than 25kg/m<sup>2</sup>  
Overweight: 25 to less than 30kg/m<sup>2</sup>  
Obese, including morbidly obese: 30kg/m<sup>2</sup> or more.

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

Table 10.18

**Longstanding illness (age-standardised), by waist circumference and sex**Aged 16 and over with valid waist measurement<sup>a</sup>

2012

Longstanding illness	Waist circumference <sup>b</sup>		Total <sup>a</sup> %
	Non raised waist circumference %	Raised waist circumference %	
<b>Men</b>			
Limiting longstanding illness	17	22	19
Non-limiting longstanding illness	16	19	16
No longstanding illness	67	59	65
<b>Women</b>			
Limiting longstanding illness	18	29	24
Non-limiting longstanding illness	18	18	17
No longstanding illness	64	52	59
<i>Bases (unweighted)</i>			
Men	1434	894	3676
Women	1561	1402	4604
<i>Bases (weighted)</i>			
Men	1707	866	4077
Women	1465	1176	4265

<sup>a</sup> The total column includes those without a valid waist measurement.<sup>b</sup> Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.19

**GHQ-12 score (age-standardised), by interviewer-measured body mass index (BMI) status and sex**Aged 16 and over with valid height and weight measurements<sup>a</sup> 2012

GHQ-12 score <sup>b</sup>	BMI status <sup>c</sup>				Total <sup>a</sup> %
	Underweight %	Normal %	Overweight %	Obese %	
<b>Men</b>					
Score 0	d	67	70	64	66
Score 1-3	d	23	20	23	22
Score 4 or more	d	11	10	13	12
<b>Women</b>					
Score 0	55	60	61	50	57
Score 1-3	14	25	23	29	25
Score 4 or more	32	15	16	21	18
<i>Bases (unweighted)</i>					
<i>Men</i>	29	840	1260	740	3200
<i>Women</i>	63	1370	1139	902	4057
<i>Bases (weighted)</i>					
<i>Men</i>	40	1034	1338	785	3539
<i>Women</i>	68	1328	1028	808	3757

<sup>a</sup> The total column includes those without a valid height or weight measurement.

<sup>b</sup> A score of 4 or more is referred to as a 'high GHQ-12 score', indicating probable psychological disturbance or mental ill health.

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

<sup>d</sup> Data not shown because the base is too small.

Table 10.20

**GHQ-12 score (age-standardised), by waist circumference and sex**Aged 16 and over with valid waist measurement<sup>a</sup> 2012

GHQ-12 score <sup>b</sup>	Waist circumference <sup>c</sup>		Total <sup>a</sup>
	Non raised waist circumference %	Raised waist circumference %	
<b>Men</b>			
Score 0	64	61	66
Score 1-3	24	24	22
Score 4 or more	12	15	12
<b>Women</b>			
Score 0	59	52	57
Score 1-3	24	28	25
Score 4 or more	17	20	18
<i>Bases (unweighted)</i>			
<i>Men</i>	<i>1318</i>	<i>823</i>	<i>3200</i>
<i>Women</i>	<i>1440</i>	<i>1284</i>	<i>4057</i>
<i>Bases (weighted)</i>			
<i>Men</i>	<i>1566</i>	<i>797</i>	<i>3539</i>
<i>Women</i>	<i>1353</i>	<i>1074</i>	<i>3757</i>

<sup>a</sup> The total column includes those without a valid waist measurement.

<sup>b</sup> A score of 4 or more is referred to as a 'high GHQ-12 score', indicating probable psychological disturbance or mental ill health.

<sup>c</sup> Raised waist circumference: greater than 102cm in men and greater than 88cm in women.