

Adult anthropometric measures, overweight and obesity

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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.
- Body mass index (BMI), defined as weight in kilograms divided by the square of the height in metres (kg/m^2), was used to assign adult participants into categories such as overweight and obese.
- Mean BMI was 27.4kg/m^2 in men and 27.1kg/m^2 in women. Generally mean BMI increased with age in both sexes, but dropped back slightly among those in the oldest age group.
- More than a quarter of adults were obese (26% of both sexes). 68% of men and 58% of women were overweight or obese.
- Mean BMI increased in both sexes between 1993 and 2010. Mean BMI increased from 25.9kg/m^2 in 1993 to 27.4kg/m^2 in 2010 among men, and from 25.7kg/m^2 in 1993 to 27.1kg/m^2 in 2010 among women.
- The prevalence of obesity increased from 13% in 1993 to 26% in 2010 in men, and from 16% in 1993 to 26% in 2010 in women. While the rate of increase in obesity was slower in the second half of the period, in 2010 obesity was at its highest level since 1993, and in men the 2010 level was also significantly higher than in the period between 2000 and 2005.
- Among both men and women the proportion that was classified as overweight did not change significantly between 1993 and 2010 (42% and 32% in men and women respectively in 2010).
- Mean waist circumference was 97.7cm in men and 88.3cm in women. A higher proportion of women than men had a raised waist circumference (46% and 34% respectively). The prevalence of raised waist circumference increased with age between the age groups 16-24 and 65-74 in both sexes.
- The age-standardised prevalence of obesity and raised waist circumference were higher in women in households in lower quintiles of equivalised household income. These measures were not related to income in men, but men from households in the highest two income quintiles had a greater prevalence of being overweight.
- National Institute for Health and Clinical Excellence (NICE) guidelines recommend a combination of BMI and waist circumference to assess health risks from obesity. The guidelines define low, high and very high waist measurements for men and women. A high or very high waist circumference is associated with increased health risks for those with a BMI below 35kg/m^2 ; health risks are very high for those with a BMI of 35kg/m^2 or more regardless of waist circumference.
- Most men and women who were overweight or obese tended also to have a high or very high waist circumference, and according to the NICE classification were therefore at increased health risk. Using combined categories of BMI and waist circumference, 22% of men were estimated to be at increased risk, 12% at high risk and 23% at very high risk. The equivalent proportions for women were 14% at increased risk, 19% at high risk and 25% at very high risk.

10.1 Introduction

10.1.1 Contents of the chapter

The anthropometric measures presented in this chapter for adults (aged 16 and over) focus on measurements relevant to obesity. Height and weight data have been collected in each year of the Health Survey series, and waist circumference in most years. Height and weight data were used to calculate body mass index (BMI); waist circumference was used to assess central obesity. The methods and definitions of these measurements are described in Section 10.2. Relationships are examined between BMI, overweight, obesity and raised waist circumference prevalence, and age and sex, Strategic Health Authority, equivalised household income and Spearhead Primary Care Trust (PCT) status. Participants are classified according to the National Institute for Health and Clinical Excellence (NICE) obesity categories for health risk using both BMI and waist circumference. Previous HSE reports have included more detailed exploration of the factors associated with obesity measures. The 2007 report included a regression analysis of the risk factors for those classified as 'most at risk' according to the NICE categories using BMI and waist circumference criteria;¹ the 2006 report included a regression analysis exploring the risk factors associated with a raised waist circumference;² and the 2003 report included a regression analysis of risk factors associated with overweight and obesity.³

10.1.2 Context

Overweight or obesity occurs when energy intakes exceed energy expenditure (through metabolism and daily physical activity) and are of particular interest because they are major risk factors for disease and mortality. A number of studies have established that overweight or obesity are associated with cardiovascular risk, cardiovascular-related mortality, cancer, disability during older age, and decreased life expectancy.^{4,5,6,7} Furthermore, obesity is associated with serious chronic conditions such as Type 2 diabetes, hypertension, and hyperlipidaemia (i.e. high levels of fat in the blood that can lead to narrowing and blockages of blood vessels), which are major risk factors for cardiovascular disease.⁸

It is generally recognised that the central deposition of fat (abdominal or visceral obesity) is closely associated with chronic diseases and is a key constituent of the metabolic syndrome,^{9,10} a disorder characterised by increased risk of developing diabetes and cardiovascular disease. Through increasing the risk of these diseases, a BMI of 30-35kg/m² leads to a decrease in median survival by 2-4 years. For a BMI of 40-45kg/m², the reduction is 8-10 years.¹¹ It was highlighted in a World Health Organisation (WHO) report in 2000¹² that the co-morbidities of obesity would be more easily predicted if intra-abdominal fat were also monitored, in addition to BMI, by simple measures such as waist circumference. The NICE guidance in 2006¹³ includes a combination of BMI and waist circumference to classify health risk from obesity.

Worldwide, the number of overweight individuals has more than doubled since 1980: there were 1.5 billion overweight adults (aged 20 and over) in 2008. Of these, more than 200 million men and nearly 300 million women were classified as obese.¹⁴ Although the rise in the last few years has been less than in the 1990s, the prevalence of obesity in England has been increasing at all ages; almost two thirds of adults and a third of children are either overweight or obese.¹⁵ In 2009, 44% of men and 32% of women were overweight and 22% of men and 24% of women were classified as obese, i.e. 66% of men and 57% of women were either overweight or obese.¹⁶ England has some of the highest levels of obesity reported in Europe.¹⁷

Using the HSE data from 1994 to 2004, the Foresight report estimated that by 2015, 36% of men and 28% of women (aged between 21 and 60) will be obese; by 2025, 47% of men and 36% of women will be obese; and by 2050, 60% of men and 50% of women - and 25% of children (aged between 6 and 20) will be obese.¹⁷ Recently data from the HSE suggests that the obesity trends may have started to flatten out¹⁶; re-forecasting obesity trends using more recent data shows lower estimates of future obesity rates.¹⁸

There is a general consensus that the increase in prevalence of obesity in the United Kingdom is mostly due to two major lifestyle factors: the energy content of modern diet and an increasingly sedentary lifestyle.¹⁹ Overwhelming evidence indicates that the incorporation of physical activity into individual lifestyles will result in health benefits, such as reduced risk of Type 2 diabetes and cardiovascular disease.¹³ This was acknowledged by the government in 2004 through its obesity strategy.²⁰

In England there is an increased government interest in healthy lifestyles. In 2008, the government at the time announced its ambition via the *Healthy Weight, Healthy Lives* programme to be the first major country to reverse the rising tide of obesity and overweight in the population. With an initial focus on children, the aim was to reduce the prevalence of overweight and obesity in children to the 2000 levels by 2020.¹⁹ There has been encouraging progress made on achieving the original ambition to halt the rise in child obesity expressed in the PSA target set out in 2004,²¹ and the challenges ahead are to achieve a reduction in child obesity and to tackle adult obesity.²² As part of the *Healthy Weight, Healthy Lives* strategy, the Change4Life campaign was launched in January 2009, with the aim of preventing people from becoming overweight by encouraging them to eat healthily and move more.²³

This chapter examines 2010 data in detail, and also looks at trends in obesity and overweight since 1993. Trend data on adult and child obesity, and other key measures, can also be found in *Health Survey for England 2010 trend tables* on The NHS Information Centre website.²⁴

10.2 Methods and definitions

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.²⁵

10.2.1 Methods

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.²⁶ The reading was recorded to the nearest millimetre. Participants who were pregnant, unable to stand or were unsteady on their feet were not measured.

Weight

Weight was measured using Soehnle, Seca and Tanita electronic scales with a digital display. 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 130kg were asked for their estimated weight because the scales are inaccurate above this level. These estimated weights were included in the analysis.

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

Waist circumference

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, and was recorded to the nearest millimetre. Those whose two waist measurements differed by more than 3cm had a third

measurement 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) were 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. For men, the response rates for height and weight measurements were between 74% and 90%; the equivalent figures for women were 69% to 90%. The response was significantly lower among men aged 75 and over and among women aged 65 and over, reflecting a greater proportion that were unable to be measured, rather than unwillingness.²⁷ Response to waist measurements was very high among every age group (99% of men and 97% of women).

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, the body mass index (BMI), defined as weight in kilograms divided by the square of the height in metres (kg/m²), has been used for this purpose in the HSE series.

BMI was calculated for all those participants for whom both a valid height and weight measurement were recorded. Adult participants were classified into the following BMI groups according to the WHO BMI classification.²⁸

Table 10A	
BMI (kg/m ²)	Description
Less than 18.5	Underweight
18.5 to less than 25	Normal
25 to less than 30	Overweight
30 or more	Obese
40 or more	Morbidly obese

BMI categories of overweight and obese have frequently been combined to show the proportion who are either overweight or obese. As in previous years' reports, a subset of the obese category has also been defined, namely those with morbid obesity (BMI 40kg/m² or more), who are at highest risk of morbidity and mortality.²⁹

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 postulated that waist circumference may be a better measure than BMI or waist to hip ratio (WHR) to identify those with a health risk from being overweight.³⁰

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.³¹ These levels identified people at risk of the metabolic syndrome. It has been shown recently that these levels corresponded fairly closely to the 95th percentile of waist circumference for healthy people, indicating that few healthy people have a waist circumference above these thresholds.³²

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 in primary care.¹³ 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/m². The NICE guidance states that '*waist circumference is a valid measure of abdominal fat mass and disease risk in individuals with a BMI less than 35. If BMI is 35 or more, waist circumference adds little to the absolute measure of risk provided by BMI*'. The NICE categories are defined as follows:

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

Source: NICE guidelines¹³

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/m²) and Obesity III (40kg/m² or more). For adults with a BMI of 35kg/m² or more, risks are assumed to be very high with any waist circumference.¹³

Note that these combined measures (shown in Table 10.10) are based on all adults with valid height, weight and also waist circumference measurements. The data may therefore vary slightly from those presented in Table 10.2 for mean BMI and BMI categories which are based on adults with valid height and weight measurements.

10.3 Prevalence of obesity, overweight and raised waist circumference

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

Table 10.2 shows mean BMI and BMI status by age and sex. Overall, mean BMI was significantly higher in men than women (27.4kg/m² and 27.1kg/m² respectively). Generally mean BMI increased with age in both sexes, but dropped back slightly in participants in the oldest age group.

A similar proportion of men and women were obese (26%). However, a higher proportion of men than women were overweight (42% and 32% respectively). Thus 68% of men and 58% of women were overweight or obese and a lower proportion of men than women had a BMI in the normal range (31% and 40% respectively). Figure 10A shows the prevalence of overweight and obesity by age. Among both men and women, prevalence of overweight and obesity was lowest in the 16–24 age group, and generally increased in the older groups, but as with mean BMI prevalence was slightly lower among those aged 75 and over.

Table 10.2, Figure 10A

Table 10.6 shows mean waist circumference and prevalence of raised waist circumference by age and sex. Mean waist circumference was 97.7cm in men and 88.3cm in women, and increased with age in both men and women. Women were significantly more likely than men to have a raised waist circumference (46% and 34% respectively). As with mean waist circumference, prevalence of a raised waist circumference increased substantially with age between the age groups 16–24 and 65–74 (from 13% to 49% in men and from 18% to 64% in women).

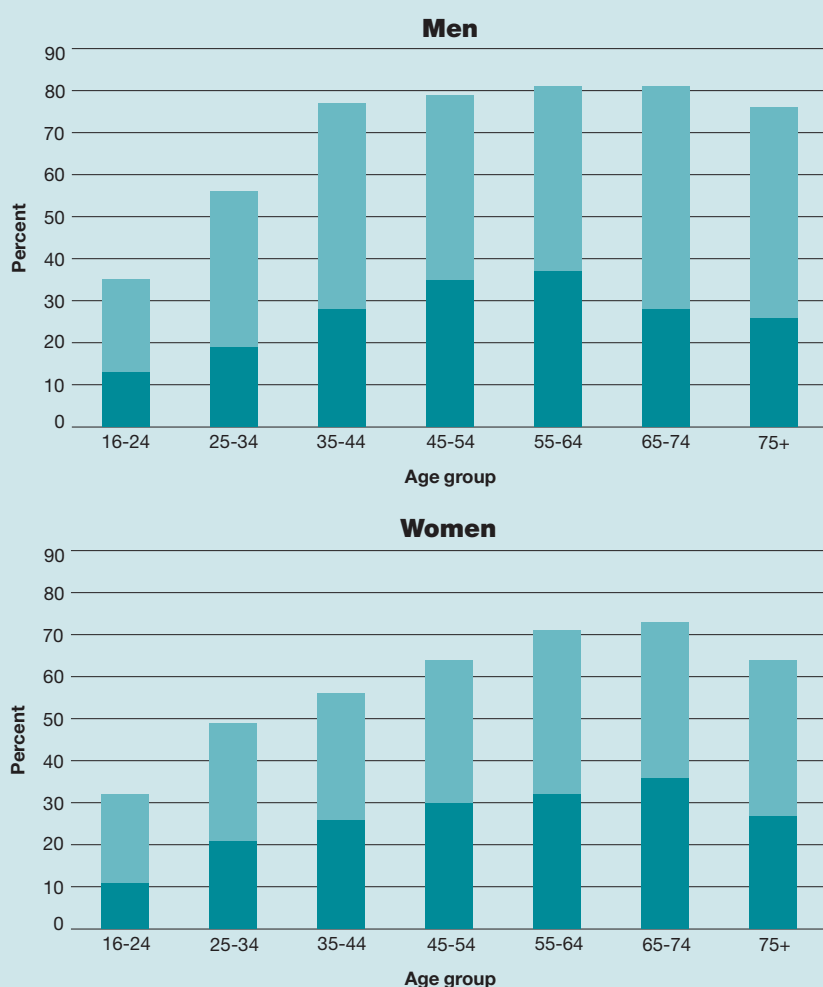
Table 10.6

Figure 10A

Prevalence of obesity and overweight, by age and sex

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

Overweight
Obese



10.3.2 Prevalence of obesity, overweight and raised waist circumference, by Strategic Health Authority

Table 10.3 presents the observed and age-standardised prevalence of overweight and obesity by Strategic Health Authority (SHA). There was no significant difference by SHA in age-standardised mean BMI, prevalence of obesity, or overweight.

The distribution of waist circumference by SHA is presented in Table 10.7. There was also no significant variation by SHA in the distribution of age-standardised mean waist circumference, nor in the age-standardised prevalence of raised waist circumference.

Tables 10.3, 10.7

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

Table 10.4 shows age-standardised BMI by equivalised household income. For women, mean BMI increased as household income decreased (mean BMI 25.8kg/m² in the highest and 28.2kg/m² in the lowest income quintile). Mean BMI did not vary by income in men.

Figure 10B shows the prevalence of overweight and obesity by equivalised household income for men and women. The prevalence of obesity showed an inverse relationship with income in women, ranging from 33%-34% among those in the lowest two income quintiles to 17% among those in the highest income quintile. This was not seen in men, for whom there was no clear pattern.

Among men, the prevalence of overweight was lower in the lower income quintiles and higher in the higher quintiles (35-38% in the lower three income quintiles and 46-47% in the highest two quintiles). Among women, the prevalence of overweight varied little by income.

Table 10.4, Figure 10B

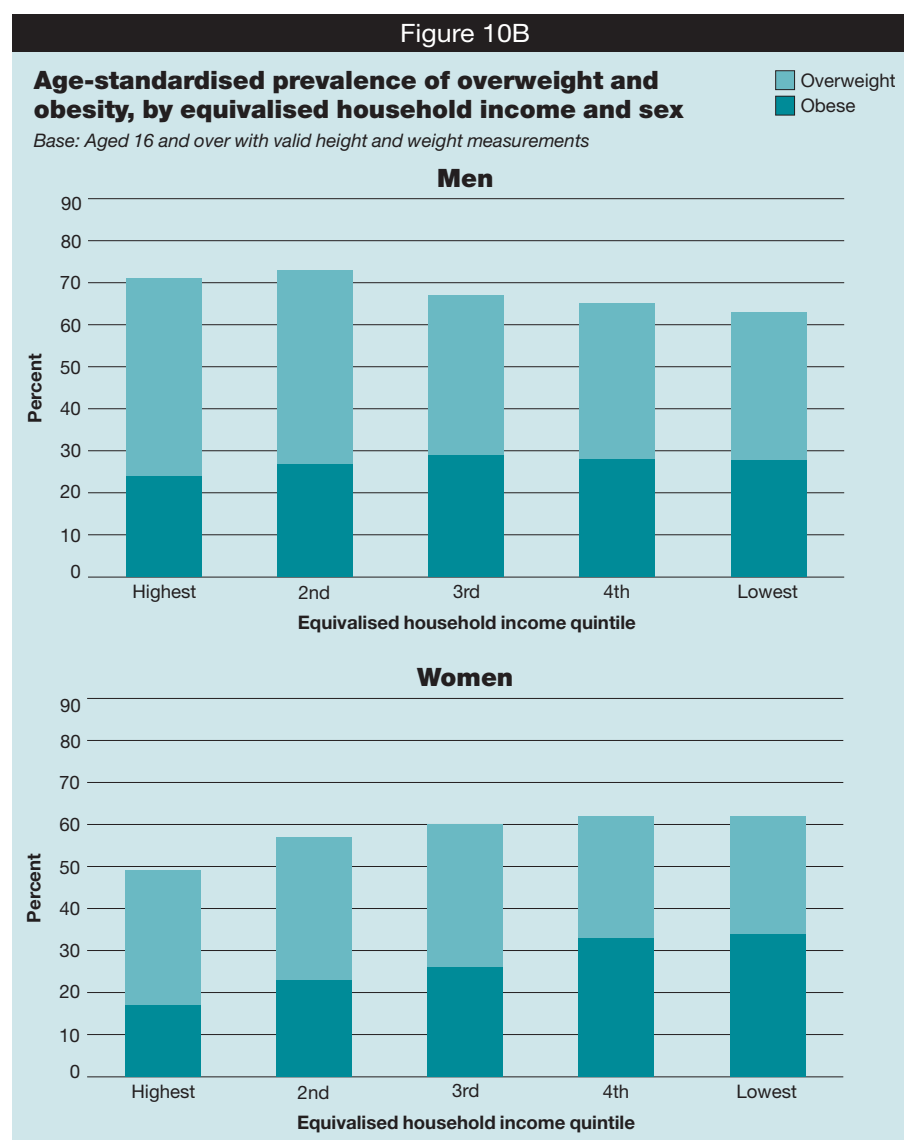


Table 10.8 shows age-standardised mean waist circumference and the prevalence of raised waist circumference by equivalised household income. There were no significant differences in mean waist circumference by equivalised household income in men. Mean waist circumference in women was highest for those in the lowest two income quintiles (90.4 - 90.5cm) and lowest in those in the highest income quintile (84.7cm).

The prevalence of raised waist circumference by equivalised household income is shown in Figure 10C. As with obesity and mean waist circumference, the proportion of women with raised waist circumference differed significantly by income. The prevalence was highest among women in the lowest quintiles (52% in the 4th income quintile and 53% in the lowest income quintile) and lowest in women in the highest quintile of income (36%). There was no equivalent pattern in men.

Table 10.8, Figure 10C

10.3.4 Prevalence of obesity, overweight and raised waist circumference, by Spearhead status

Spearhead PCTs are the most health deprived areas of England. They are defined as the local authority areas that are in the bottom fifth nationally for three or more indicators relating to life expectancy at birth, cancer and cardiovascular disease (CVD) mortality rates, and the index of multiple deprivation.

Figure 10C

Age-standardised prevalence of raised waist circumference, by equivalised household income and sex

Base: Aged 16 and over with a valid waist circumference measurement

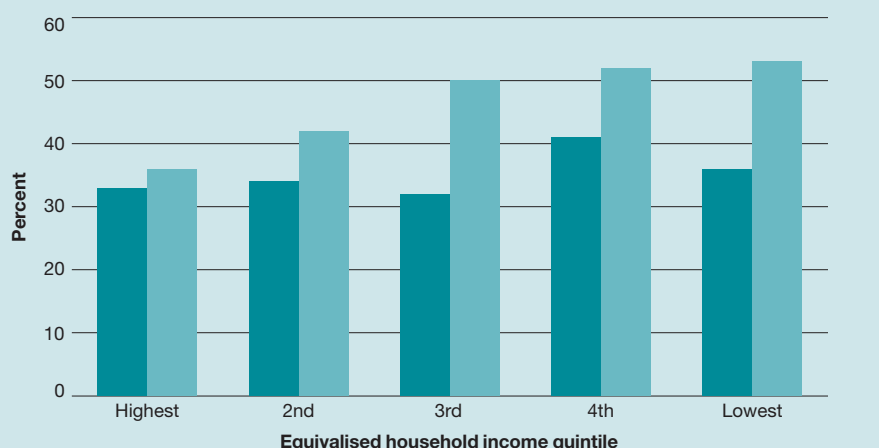


Table 10.5 shows that there was no significant variation in mean BMI in men but among women, those living in Spearhead PCTs had a higher mean BMI than those in non-Spearhead PCTs (27.6kg/m² and 26.9kg/m² respectively). There was no significant variation in the prevalence of obesity in men or women according to whether they lived in Spearhead or non-Spearhead PCTs.

Table 10.9 shows that mean waist circumference did not vary by Spearhead status for men or women. The prevalence of a raised waist circumference was higher for women living in Spearhead PCTs than those living in non-Spearhead PCTs (49% and 45%, respectively), while in men the association was not significant.

Tables 10.5, 10.9

10.4 Health risk category with overweight, obesity and waist circumference

NICE recommends using both BMI and waist circumference as assessment tools to identify the risk of co-morbidities; different levels of health risk have been defined for different combinations of these two measures (as outlined in section 10.2.2). The NICE guidance states that for those with a BMI of 35 or more, waist circumference adds little to the absolute measure of risk provided by BMI.¹³ Table 10.10 shows the proportion by age and sex that were in different health risk categories, as determined by these two measures. Using combined categories of BMI and waist circumference to assess risk, 22% of men were at increased risk, 12% at high risk and 23% at very high risk. The equivalent proportions for women were 14% at increased risk, 19% at high risk and 25% at very high risk. Around two in five were not at increased risk (43% of men and 41% of women).

Figure 10D shows the risk categories by age. The proportion of those at high or very high risk generally increased with age up to the 65-74 age group.

Table 10.10, Figure 10D

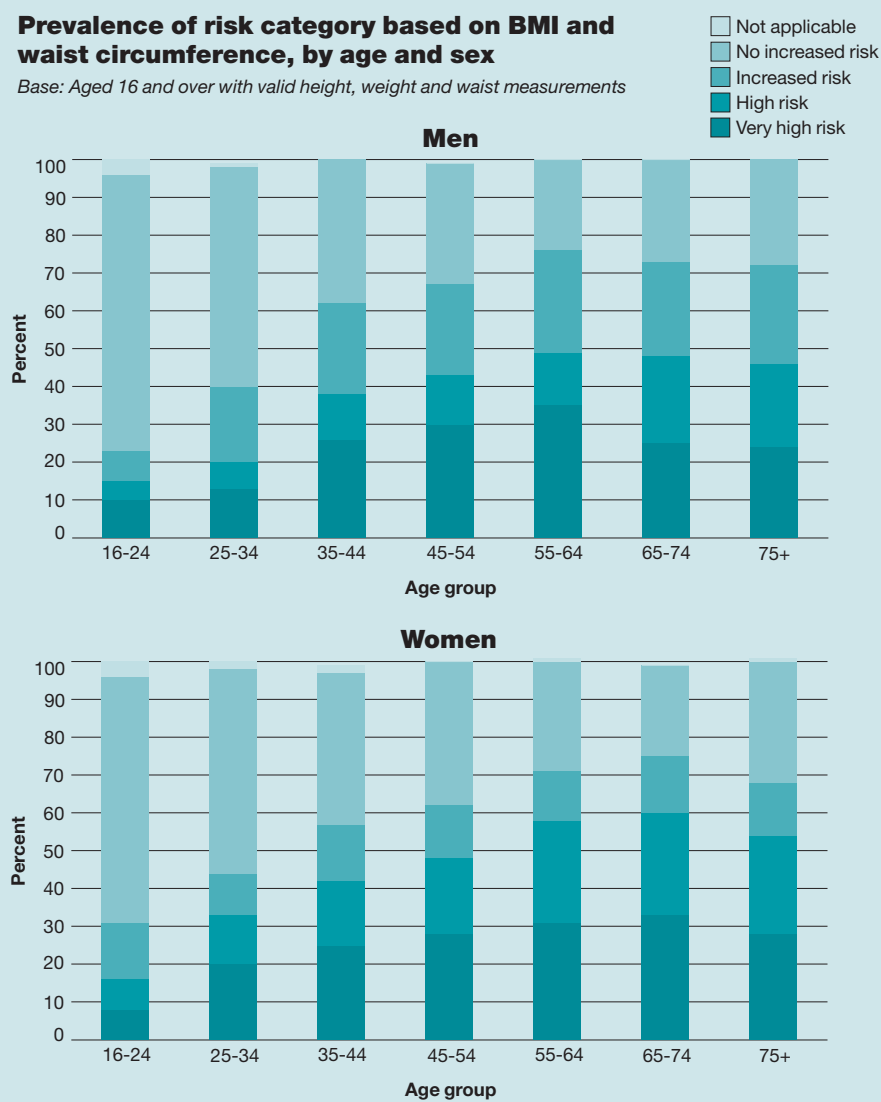
Those who were overweight and had a high waist circumference were defined as being at **increased risk** of health problems from obesity. This category also included the very small proportions who were normal weight but with a very high waist circumference (fewer than 1% of men and 2% of women), or obese I but with a low waist circumference (fewer than 1% of both men and women). Among men, the prevalence of increased risk was lowest among the youngest age groups.

Those who were overweight with a very high waist circumference (10% of men and 18% of women) were defined as being at **high risk** of health problems. In addition small proportions that were in the obesity I group with a high waist circumference (2% of men and 1% of women) were also defined as high risk. Prevalence increased with age up to the age group 65-74 among men, and up to the age group 55-64 among women.

Figure 10D

Prevalence of risk category based on BMI and waist circumference, by age and sex

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



As indicated above, those who were obese (category I) had **increased health risks**, even with a low waist circumference (less than 1% of men and women). 2% of men and 1% of women were categorised as obese I with a high waist circumference (**high risk**). A further 17% of men and 15% of women were categorised as obese I with a very high waist circumference (**very high risk**).

People who were obese II or III (BMI 35 and over) are defined as being at **very high risk** of health problems, regardless of their waist circumference. 5% of men and 6% of women were in the obese II group; 2% of men and 4% of women were in the obese III group.

10.5 Trends in obesity

Mean BMI and prevalence of obesity increased in both sexes between 1993 and 2010.²⁴ Mean BMI increased from 25.9kg/m² in 1993 to 27.4kg/m² in 2010 among men, and from 25.7kg/m² in 1993 to 27.1 kg/m² in 2010 among women.²⁴ Among both men and women, there has been little change in mean BMI over the last five or six years.

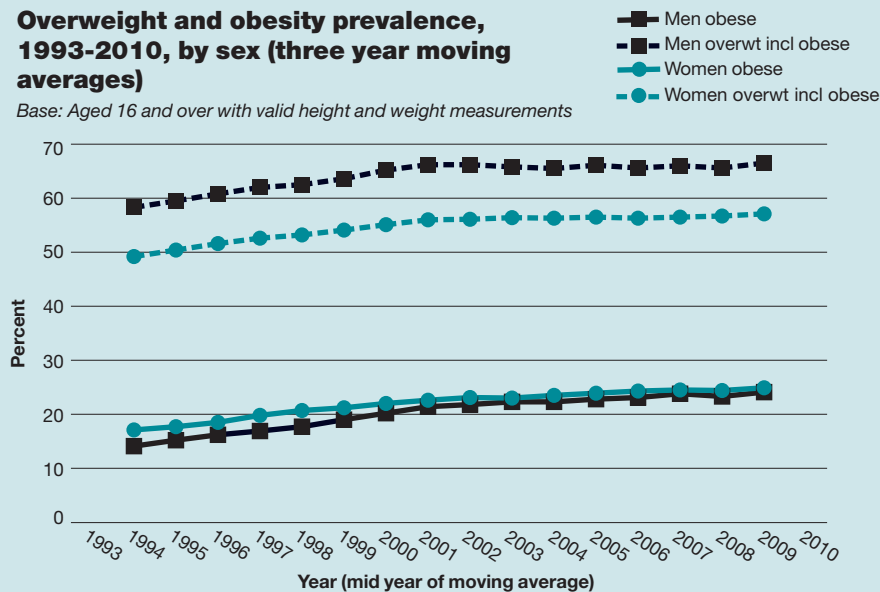
Figure 10E shows the trends in obesity and overweight including obesity from 1993 to 2010, using three year moving averages to smooth out any unusually high or low values in individual years.

There has been a marked increase in the proportion who were obese (BMI 30kg/m² or over) between 1993 and 2010. 13% of men were categorised as obese in 1993, compared with

Figure 10E

Overweight and obesity prevalence, 1993-2010, by sex (three year moving averages)

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



Note: Data from 1993 to 2002 are unweighted. Data from 2003 onwards are weighted for non-response. In these moving averages, some points combine weighted and unweighted estimates

26% in 2010, and among women, 16% were obese in 1993 and 26% were obese in 2010. The rate of increase in obesity prevalence has been slower in the second half of the period than the first half, and there are indications that the trend may have been flattening out in recent years. However, obesity in men and women in 2010 was at its highest level since 1993, and in men the 2010 level was also significantly higher than in the period between 2000 and 2005.

Among men and women, the proportion who were overweight (BMI 25 to less than 30kg/m²) has changed very little between 1993 and 2010, fluctuating between 41% and 47% in men and between 31% and 34% in women.

Table 10.11, Figure 10E

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- 10.1 Response to anthropometric measurements, by age and sex
- 10.2 Body mass index (BMI), overweight and obesity prevalence, by age and sex
- 10.3 Body mass index (BMI), overweight and obesity prevalence (observed and age-standardised), by Strategic Health Authority and sex
- 10.4 Body mass index (BMI), overweight and obesity prevalence (age-standardised), by equivalised household income and sex
- 10.5 Body mass index (BMI), overweight and obesity prevalence (age-standardised), by Spearhead status and sex
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- 10.8 Waist circumference (age-standardised), by equivalised household income and sex
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- 10.10 Health risk category associated with overweight and obesity based on body mass index (BMI) and waist circumference, by age and sex
- 10.11 Trends in overweight and obesity prevalence, 1993 to 2010, by age and sex

Table 10.1

Response to anthropometric measurements, by age and sex*Aged 16 and over who were interviewed/had a nurse visit*

2010

Proportion providing valid measurements	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Height	90	89	87	87	87	87	74	86
Weight	89	87	85	84	87	88	81	86
BMI	88	87	85	83	85	86	73	84
Waist circumference	100	100	98	99	99	98	96	99
Women								
Height	88	90	90	89	88	84	69	86
Weight	86	89	87	86	86	83	75	85
BMI	85	89	87	86	85	81	68	83
Waist circumference	99	98	98	98	98	96	95	97
<i>Bases (unweighted)</i>								
<i>Men</i>								
Height, weight, BMI (interviewed)	379	493	643	625	642	518	402	3702
Waist circumference (saw nurse)	208	291	422	413	431	361	271	2397
<i>Women</i>								
Height (interviewed)	476	695	820	874	723	566	564	4718
Weight, BMI (interviewed) ^a	454	628	795	874	723	566	564	4604
Waist circumference (saw nurse) ^a	270	388	561	621	526	394	362	3122
<i>Women</i>								
Height (interviewed)	610	686	760	730	631	470	442	4329
Weight, BMI (interviewed) ^a	585	616	737	730	631	470	442	4210
Waist circumference (saw nurse) ^a	379	416	492	483	414	310	292	2785

^a Excluding pregnant women.

Table 10.2

Body mass index (BMI), overweight and obesity prevalence, by age and sex*Aged 16 and over with both valid height and weight measurements**2010*

BMI (kg/m ²) and BMI status (%) ^a	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Men								
Mean BMI (kg/m ²)	24.4	26.3	28.1	28.8	28.9	28.3	27.8	27.4
Standard error of the mean	0.27	0.26	0.21	0.22	0.21	0.19	0.23	0.11
% Underweight	5	2	0	0	0	0	-	1
% Normal	61	41	24	21	19	18	24	31
% Overweight	22	37	49	44	44	53	50	42
% Obese, excluding morbidly obese	12	17	26	33	34	27	25	25
% Morbidly obese	0	2	2	2	2	1	1	2
% Overweight, including obese	35	57	76	78	81	81	76	68
% Obese	13	19	28	35	37	28	26	26
Women								
Mean BMI (kg/m ²)	24.2	26.2	27.2	28.0	28.4	29.0	27.4	27.1
Standard error of the mean	0.28	0.23	0.26	0.25	0.23	0.27	0.26	0.11
% Underweight	6	2	2	0	1	0	2	2
% Normal	62	49	42	36	29	26	33	40
% Overweight	21	28	30	34	39	37	37	32
% Obese, excluding morbidly obese	9	18	22	26	28	32	25	22
% Morbidly obese	2	3	4	5	4	5	2	4
% Overweight, including obese	32	49	56	64	71	74	65	58
% Obese	11	21	26	30	32	37	27	26
Bases (unweighted)								
Men	334	431	553	533	552	446	295	3144
Women	387	559	693	750	613	460	381	3843
Bases (weighted)								
Men	564	611	651	619	516	368	235	3563
Women	500	544	643	631	529	378	297	3523

^a Underweight: less than 18.5 kg/m²Normal weight : 18.5 to less than 25 kg/m²Overweight: 25 to less than 30 kg/m²Obese, excluding morbidly obese: 30 to less than 40 kg/m²Morbidly obese: 40 kg/m² or moreOverweight, including obese: 25 kg/m² or moreObese: 30 kg/m² or more

Table 10.3

Body mass index (BMI), overweight and obesity prevalence (observed and age-standardised), by Strategic Health Authority^a and sex

Aged 16 and over with both valid height and weight measurements

2010

BMI (kg/m ²) and BMI status (%) ^b	Strategic Health Authority ^a									
	North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East Coast	South Central	South West
	%	%	%	%	%	%	%	%	%	%
Men										
Observed										
Mean BMI (kg/m ²)	27.5	27.4	27.4	27.9	27.8	27.5	27.3	27.0	27.6	27.2
Standard error of the mean	0.39	0.27	0.35	0.38	0.35	0.29	0.35	0.35	0.34	0.31
% Underweight	2	2	2	3	1	0	1	2	-	0
% Normal	28	30	30	28	27	33	35	29	33	34
% Overweight	43	41	42	40	45	40	40	46	40	41
% Obese, excluding morbidly obese	25	25	25	27	25	24	24	22	27	24
% Morbidly obese	2	1	1	3	3	3	1	1	1	2
% Overweight, including obese	69	67	68	69	72	67	64	69	67	66
% Obese	27	26	26	29	28	27	25	23	27	25
Standardised										
Mean BMI (kg/m ²)	27.6	27.4	27.5	27.7	27.8	27.5	27.4	27.1	27.5	27.3
Standard error of the mean	0.40	0.27	0.35	0.40	0.35	0.30	0.32	0.34	0.34	0.32
% Underweight	2	2	1	3	1	0	1	2	-	0
% Normal	27	30	29	30	26	33	33	28	34	33
% Overweight	43	41	43	38	45	40	41	47	40	40
% Obese, excluding morbidly obese	26	25	26	26	25	24	25	22	26	24
% Morbidly obese	2	1	1	3	3	3	1	1	1	2
% Overweight, including obese	70	67	70	66	73	67	67	70	66	66
% Obese	28	27	27	28	27	27	26	23	26	26
Bases (unweighted)										
Men	249	425	296	309	317	363	302	270	279	334
Bases (weighted)										
Men	167	473	350	320	367	414	505	295	281	392

^a This table provides data for regional analysis by the configuration of Strategic Health Authorities (SHAs) in place from July 2006.

^b Underweight: less than 18.5 kg/m²
 Normal weight : 18.5 to less than 25 kg/m²
 Overweight: 25 to less than 30 kg/m²
 Obese, excluding morbidly obese: 30 to less than 40 kg/m²
 Morbidly obese: 40 kg/m² or more
 Overweight, including obese: 25 kg/m² or more
 Obese: 30 kg/m² or more

Continued...

Table 10.3 continued

Aged 16 and over with both valid height and weight measurements

2010

BMI (kg/m ²) and BMI status (%) ^b	Strategic Health Authority ^a									
	North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East Coast	South Central	South West
	%	%	%	%	%	%	%	%	%	%
Women										
Observed										
Mean BMI (kg/m ²)	27.7	27.0	27.8	28.1	27.1	27.1	26.8	26.1	27.4	26.8
Standard error of the mean	0.43	0.28	0.44	0.34	0.27	0.35	0.37	0.33	0.43	0.35
% Underweight	2	1	1	3	1	1	4	2	1	2
% Normal	38	40	38	34	39	46	40	48	37	41
% Overweight	31	33	32	33	35	28	32	28	36	31
% Obese, excluding morbidly obese	27	21	24	25	23	21	21	21	21	22
% Morbidly obese	3	4	6	5	2	4	4	1	5	4
% Overweight, including obese	60	58	61	63	60	53	56	50	61	56
% Obese	30	25	30	30	25	25	24	22	26	26
Standardised										
Mean BMI (kg/m ²)	27.5	26.9	27.9	28.0	27.1	27.0	26.9	26.2	27.4	26.8
Standard error of the mean	0.44	0.28	0.42	0.35	0.28	0.34	0.39	0.32	0.43	0.34
% Underweight	2	2	1	3	1	1	4	2	1	2
% Normal	40	42	37	35	39	46	39	48	37	42
% Overweight	30	33	32	33	35	28	32	27	36	31
% Obese, excluding morbidly obese	26	20	25	24	23	21	20	21	21	22
% Morbidly obese	3	4	6	5	3	4	4	1	5	4
% Overweight, including obese	58	57	63	62	60	53	57	50	62	56
% Obese	28	24	30	29	25	25	24	22	26	26
Bases(unweighted)										
Women	341	497	363	374	374	418	381	362	338	395
Bases (weighted)										
Women	179	467	359	312	352	392	484	324	270	383

^a This table provides data for regional analysis by the configuration of Strategic Health Authorities (SHAs) in place from July 2006.

^b Underweight: less than 18.5 kg/m²
 Normal weight: 18.5 to less than 25 kg/m²
 Overweight: 25 to less than 30 kg/m²
 Obese, excluding morbidly obese: 30 to less than 40 kg/m²
 Morbidly obese: 40 kg/m² or more
 Overweight, including obese: 25 kg/m² or more
 Obese: 30 kg/m² or more

Table 10.4

Body mass index (BMI), overweight and obesity prevalence (age-standardised), by equivalised household income and sex
Aged 16 and over with both valid height and weight measurements 2010

BMI (kg/m ²) and BMI status (%) ^a	Equivalised household income quintile				
	Highest	2nd	3rd	4th	Lowest
Men					
Mean BMI (kg/m ²)	27.5	27.8	27.6	27.4	27.2
Standard error of the mean	0.24	0.20	0.27	0.27	0.31
% Underweight	1	1	1	1	4
% Normal	28	26	31	34	34
% Overweight	47	46	38	37	35
% Obese, excluding morbidly obese	23	26	26	26	25
% Morbidly obese	1	1	3	2	3
% Overweight, including obese	71	73	67	65	63
% Obese	24	27	29	28	28
Women					
Mean BMI (kg/m ²)	25.8	26.7	27.4	28.0	28.2
Standard error of the mean	0.24	0.22	0.26	0.30	0.31
% Underweight	3	1	1	2	2
% Normal	48	42	38	36	36
% Overweight	32	34	34	29	28
% Obese, excluding morbidly obese	16	20	23	28	28
% Morbidly obese	2	2	4	5	6
% Overweight, including obese	49	57	60	63	62
% Obese	17	23	26	33	34
<i>Bases (unweighted)</i>					
Men	617	587	543	482	353
Women	643	674	651	644	548
<i>Bases (weighted)</i>					
Men	681	667	607	515	419
Women	596	629	581	571	497

^a Underweight: less than 18.5 kg/m²
 Normal weight : 18.5 to less than 25 kg/m²
 Overweight: 25 to less than 30 kg/m²
 Obese, excluding morbidly obese: 30 to less than 40 kg/m²
 Morbidly obese: 40 kg/m² or more
 Overweight, including obese: 25 kg/m² or more
 Obese: 30 kg/m² or more

Table 10.5

Body mass index (BMI), overweight and obesity prevalence (age-standardised), by Spearhead status^a and sex

Aged 16 and over with both valid height and weight measurements

2010

BMI (kg/m ²) and BMI status (%) ^b	Spearhead status	
	Non-Spearhead PCT	Spearhead PCT
Men		
Mean BMI (kg/m ²)	27.4	27.6
Standard error of the mean	0.13	0.18
% Underweight	1	2
% Normal	32	28
% Overweight	41	43
% Obese, excluding morbidly obese	25	24
% Morbidly obese	1	2
% Overweight, including obese	67	70
% Obese	26	26
Women		
Mean BMI (kg/m ²)	26.9	27.6
Standard error of the mean	0.14	0.20
% Underweight	2	2
% Normal	42	36
% Overweight	31	33
% Obese, excluding morbidly obese	22	23
% Morbidly obese	3	5
% Overweight, including obese	56	62
% Obese	25	28
<i>Bases (unweighted)</i>		
Men	1981	1163
Women	2368	1457
<i>Bases (weighted)</i>		
Men	2323	1240
Women	2272	1251

^a Spearhead PCTs are the most health deprived areas of England. They are areas in the bottom fifth nationally for three or more indicators relating to life expectancy at birth, cancer and cardiovascular disease (CVD) mortality and the index of multiple deprivation.

^b Underweight: less than 18.5 kg/m²
 Normal weight : 18.5 to less than 25 kg/m²
 Overweight: 25 to less than 30 kg/m²
 Obese, excluding morbidly obese: 30 to less than 40 kg/m²
 Morbidly obese: 40 kg/m² or more
 Overweight, including obese: 25 kg/m² or more
 Obese: 30 kg/m² or more

Table 10.6

Waist circumference, by age and sex

Aged 16 and over with a valid waist measurement								2010
Waist circumference (cm) and raised waist circumference (%)	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Men								
Mean waist circumference (cm)	86.3	92.9	98.8	101.5	103.5	102.8	102.4	97.7
Standard error of the mean	0.84	0.86	0.67	0.76	0.60	0.62	0.67	0.36
% with raised waist circumference ^a	13	17	35	42	50	49	47	34
Women								
Mean waist circumference (cm)	79.7	83.6	88.1	90.2	93.0	93.4	91.7	88.3
Standard error of the mean	0.79	0.68	0.64	0.65	0.62	0.71	0.70	0.31
% with raised waist circumference ^a	18	34	45	50	62	64	59	46
Bases (unweighted)								
Men	207	291	415	410	427	355	259	2364
Women	266	381	548	608	514	377	343	3037
Bases (weighted)								
Men	418	458	489	471	396	278	201	2710
Women	374	409	482	472	405	297	275	2713

^a Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.7

Waist circumference (observed and age-standardised), by Strategic Health Authority^a and sex

Aged 16 and over with a valid waist measurement

2010

Waist circumference (cm) and raised waist circumference (%) ^b	Strategic Health Authority									
	North East	North West	Yorkshire & the Humber	East Midlands	West Midlands	East of England	London	South East Coast	South Central	South West
Men										
Observed										
Mean waist circumference (cm)	96.9	97.7	97.9	98.3	97.6	97.8	96.9	98.8	97.5	97.9
Standard error of the mean	1.15	1.00	1.28	0.98	1.04	0.89	1.27	1.06	1.12	1.15
% with raised waist circumference ^b	33	36	37	37	32	35	32	36	34	31
Standardised										
Mean waist circumference (cm)	96.8	97.7	98.3	96.8	97.8	97.6	97.5	98.9	97.4	97.5
Standard error of the mean	1.18	1.03	1.29	1.13	0.88	0.92	1.20	1.09	1.16	1.25
% with raised waist circumference ^b	33	36	38	35	32	34	33	35	34	30
Women										
Observed										
Mean waist circumference (cm)	88.8	88.7	88.9	88.7	88.2	89.6	87.0	87.5	88.8	87.6
Standard error of the mean	0.99	0.84	1.21	0.88	0.82	0.97	0.89	0.98	1.28	0.87
% with raised waist circumference ^b	50	46	48	47	45	50	43	45	49	44
Standardised										
Mean waist circumference (cm)	87.9	88.5	88.9	88.0	88.2	89.0	87.9	87.4	89.0	87.2
Standard error of the mean	1.04	0.86	1.21	0.91	0.85	0.98	0.86	0.98	1.37	0.86
% with raised waist circumference ^b	47	45	49	44	46	48	46	45	49	43
Bases (unweighted)										
Men	213	299	232	251	232	284	194	203	207	249
Women	306	366	300	299	292	349	287	266	258	314
Bases (weighted)										
Men	135	361	274	241	293	315	375	222	224	271
Women	145	358	280	230	282	301	409	231	204	272

^a This table provides data for regional analysis by the configuration of Strategic Health Authorities (SHAs) in place from July 2006.^b Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.8

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

Aged 16 and over with a valid waist measurement

2010

Waist circumference (cm) and raised waist circumference (%) ^a	Equivalised household income quintile				
	Highest	2nd	3rd	4th	Lowest
Men					
Mean waist circumference (cm)	97.8	97.9	97.0	98.3	98.2
Standard error of the mean	0.91	0.71	0.87	1.08	1.03
% with raised waist circumference ^a	33	34	32	41	36
Women					
Mean waist circumference (cm)	84.7	87.0	89.0	90.4	90.5
Standard error of the mean	0.73	0.61	0.69	0.75	0.77
% with raised waist circumference ^a	36	42	50	52	53
<i>Bases (unweighted)</i>					
Men	474	459	427	372	283
Women	514	535	546	490	438
<i>Bases (weighted)</i>					
Men	522	535	479	395	355
Women	448	480	468	424	393

^a Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.9

Waist circumference (age-standardised), by Spearhead status^a and sex

Aged 16 and over with a valid waist measurement

2010

Waist circumference (cm) and raised waist circumference (%) ^b	Spearhead status	
	Non-Spearhead PCT	Spearhead PCT
Men		
Mean waist circumference (cm)	97.7	97.7
Standard error of the mean	0.43	0.52
% with raised waist circumference ^b	34	35
Women		
Mean waist circumference (cm)	87.8	88.8
Standard error of the mean	0.41	0.40
% with raised waist circumference ^b	45	49
<i>Bases (unweighted)</i>		
Men	1499	865
Women	1888	1149
<i>Bases (weighted)</i>		
Men	1770	940
Women	1746	967

^a Spearhead PCTs are the most health deprived areas of England. They are areas in the bottom fifth nationally for three or more indicators relating to life expectancy at birth, cancer and cardiovascular disease (CVD) mortality and the index of multiple deprivation.^b Raised waist circumference: greater than 102cm in men and greater than 88cm in women.

Table 10.10

Health risk category associated with overweight and obesity based on body mass index (BMI) and waist circumference, by age and sex
Aged 16 and over with valid height, weight and waist circumference measurements^a

2010

BMI ^b and waist circumference classification ^c	Health risk category ^d	Age group							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
Men									
Underweight									
Low waist circumference	Not applicable	4	1	-	0	0	0	-	1
High waist circumference	Not applicable	-	-	-	-	-	-	-	-
Very high waist circumference	Not applicable	-	-	-	-	-	-	-	-
<i>All underweight</i>		4	1	-	0	0	0	-	1
Normal									
Low waist circumference	No increased risk	60	39	22	14	12	14	13	27
High waist circumference	No increased risk	1	2	2	5	6	5	7	4
Very high waist circumference	Increased risk	-	1	-	0	1	0	1	0
<i>All normal</i>		61	41	24	20	18	20	21	31
Overweight									
Low waist circumference	No increased risk	12	18	14	13	6	7	8	12
High waist circumference	Increased risk	7	19	24	24	27	25	25	21
Very high waist circumference	High risk	3	3	9	11	13	22	20	10
<i>All overweight</i>		22	40	47	48	46	54	52	43
Obesity I									
Low waist circumference	Increased risk	1	1	-	-	-	-	-	0
High waist circumference	High risk	2	4	3	2	1	1	3	2
Very high waist circumference	Very high risk	8	9	18	21	26	18	19	17
<i>All obese I</i>		10	14	21	23	27	19	21	19
Obesity II									
Low waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	-	-	-	-
Very high waist circumference	Very high risk	1	2	5	8	7	5	4	5
<i>All obese II</i>	<i>Very high risk</i>	1	2	5	8	7	5	4	5
Obesity III									
Low waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	-	-	-	-
Very high waist circumference	Very high risk	0	2	3	1	2	1	1	2
<i>All obese III</i>	<i>Very high risk</i>	0	2	3	1	2	1	1	2
Men – Overall risk^d									
	Not applicable	4	1	-	0	0	0	-	1
	No increased risk	73	58	38	32	24	27	28	42
	Increased risk	8	20	24	24	27	25	26	22
	High risk	5	7	12	13	14	23	22	12
	Very high risk	10	13	26	30	35	25	24	23
Bases (unweighted)									
<i>Men</i>		196	275	384	383	392	329	219	2178
Bases (weighted)									
<i>Men</i>		396	432	452	439	360	256	170	2506

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

^b BMI categories according to National Institute for Health and Clinical Excellence (NICE) guidelines: Underweight: Less than 18.5kg/m², Normal: 18.5 to less than 25kg/m², Overweight: 25 to less than 30kg/m², Obesity I: 30 to less than 35kg/m², Obesity II: 35 to less than 40kg/m², Obesity III: 40kg/m² or more.

^c 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

^d Health risk category according to NICE Guidelines.

Continued...

Table 10.10 continued

Aged 16 and over with valid height, weight and waist circumference measurements^a

2010

BMI ^b and waist circumference classification ^c	Health risk category ^d	Age group							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
Women									
Underweight									
Low waist circumference	Not applicable	4	2	2	0	1	0	1	1
High waist circumference	Not applicable	-	-	0	-	-	-	-	0
Very high waist circumference	Not applicable	-	-	-	-	-	-	-	-
<i>All underweight</i>		4	2	2	0	1	0	1	2
Normal									
Low waist circumference	No increased risk	53	38	29	22	14	14	17	27
High waist circumference	No increased risk	10	8	9	12	11	9	13	10
Very high waist circumference	Increased risk	1	2	3	1	4	4	4	3
<i>All normal</i>		64	48	41	36	29	26	34	40
Overweight									
Low waist circumference	No increased risk	2	7	3	3	3	2	2	3
High waist circumference	Increased risk	14	9	12	13	9	11	9	11
Very high waist circumference	High risk	7	11	16	19	25	26	25	18
<i>All overweight</i>		23	27	30	35	38	39	37	32
Obesity I									
Low waist circumference	Increased risk	-	-	0	-	-	1	-	0
High waist circumference	High risk	1	2	2	1	1	1	0	1
Very high waist circumference	Very high risk	4	12	15	18	19	20	19	15
<i>All obese I</i>		5	14	17	19	20	22	19	16
Obesity II									
Low waist circumference	Very high risk	-	-	0	-	-	-	-	0
High waist circumference	Very high risk	-	-	0	-	-	-	-	0
Very high waist circumference	Very high risk	2	5	5	7	8	10	6	6
<i>All obese II</i>	<i>Very high risk</i>	2	5	6	7	8	10	6	6
Obesity III									
Low waist circumference	Very high risk	-	-	-	-	-	-	-	-
High waist circumference	Very high risk	-	-	-	-	-	-	-	-
Very high waist circumference	Very high risk	3	3	4	4	5	3	3	4
<i>All obese III</i>	<i>Very high risk</i>	3	3	4	4	5	3	3	4
Women - Overall risk^d									
	Not applicable	4	2	2	0	1	0	1	2
	No increased risk	65	54	40	38	29	24	32	41
	Increased risk	15	11	15	14	13	15	14	14
	High risk	8	13	17	20	27	27	26	19
	Very high risk	8	20	25	28	31	33	28	25
Bases (unweighted)									
<i>Women</i>		241	360	504	564	467	340	268	2744
Bases (weighted)									
<i>Women</i>		341	383	446	439	363	266	215	2453

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

^b BMI categories according to National Institute for Health and Clinical Excellence (NICE) guidelines: Underweight: Less than 18.5kg/m², Normal: 18.5 to less than 25kg/m², Overweight: 25 to less than 30kg/m², Obesity I: 30 to less than 35kg/m², Obesity II: 35 to less than 40kg/m², Obesity III: 40kg/m² or more.

^c 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

^d Health risk category according to NICE Guidelines.

Table 10.11

Trends in overweight and obesity prevalence, 1993 to 2010, by age and sex

Aged 16 and over with both valid height and weight measurements

1993-2010

BMI status ^a	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Men	%	%	%	%	%	%	%	%
1993								
Overweight	21	39	48	52	51	54	46	44
Obese	5	10	14	17	20	15	11	13
1994								
Overweight	25	40	46	51	51	53	48	44
Obese	6	10	16	17	18	18	15	14
1995								
Overweight	24	40	47	49	51	50	49	44
Obese	6	12	16	19	22	18	14	15
1996								
Overweight	22	43	48	49	51	52	47	45
Obese	6	13	16	21	24	20	16	16
1997								
Overweight	22	43	48	52	47	56	50	45
Obese	5	13	18	22	27	18	12	17
1998								
Overweight	23	40	48	52	52	55	48	46
Obese	5	16	17	21	23	21	16	17
1999								
Overweight	21	39	46	49	52	49	52	44
Obese	6	16	21	23	21	22	18	19
2000								
Overweight	18	41	48	49	53	50	52	45
Obese	9	20	21	25	26	24	17	21
2001								
Overweight	27	44	48	51	51	52	52	47
Obese	10	16	23	26	27	24	18	21
2002								
Overweight	21	42	47	48	47	52	52	43
Obese	9	18	24	28	28	26	19	22
2003 (weighted)^b								
Overweight	23	41	47	48	50	49	50	43
Obese	9	18	25	28	27	29	21	22
2004								
Overweight	23	41	50	48	48	48	54	44
Obese	8	18	25	30	30	28	19	23
2005								
Overweight	24	44	46	47	47	47	49	43
Obese	8	17	27	28	29	28	17	22
2006								
Overweight	25	41	48	48	47	49	51	43
Obese	9	21	25	28	33	31	18	24
2007								
Overweight	24	39	47	40	48	49	50	41
Obese	9	16	25	35	31	28	22	24
2008								
Overweight	25	41	46	44	44	50	49	42
Obese	8	18	26	31	34	33	23	24
2009								
Overweight	29	38	50	45	49	52	49	44
Obese	6	13	21	34	32	30	23	22
2010								
Overweight	22	37	49	44	44	53	50	42
Obese	13	19	28	35	37	28	26	26

^a Overweight: 25 to less than 30kg/m²; Obese, including morbidly obese: 30kg/m² or more.

^b From 2003 onwards, data have been weighted for non-response.

Continued...

Table 10.11 continued

Aged 16 and over with both valid height and weight measurements 1993-2010

BMI status ^a	Age group							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Women	%	%	%	%	%	%	%	%
1993								
Overweight	20	25	29	37	39	41	42	32
Obese	8	11	17	19	24	22	16	16
1994								
Overweight	20	25	28	36	39	41	36	31
Obese	8	13	17	18	26	25	16	17
1995								
Overweight	19	25	31	36	42	45	41	33
Obese	8	13	17	22	23	24	17	18
1996								
Overweight	19	28	30	39	41	43	40	34
Obese	8	15	18	19	28	25	20	18
1997								
Overweight	19	27	32	36	37	44	41	33
Obese	9	15	18	23	30	25	22	20
1998								
Overweight	17	27	30	36	39	41	35	32
Obese	11	16	21	24	29	29	21	21
1999								
Overweight	19	27	34	35	40	40	40	33
Obese	10	16	19	26	29	30	20	21
2000								
Overweight	22	27	31	36	41	41	41	34
Obese	9	16	19	24	29	30	23	21
2001								
Overweight	22	26	31	36	38	41	41	33
Obese	12	19	22	28	31	30	20	23
2002								
Overweight	21	27	34	38	36	38	43	34
Obese	11	21	23	25	29	28	22	23
2003 (weighted)^b								
Overweight	18	28	33	33	39	41	40	33
Obese	13	18	22	26	28	30	26	23
2004								
Overweight	24	31	30	36	37	40	46	34
Obese	12	17	24	27	32	29	21	23
2005								
Overweight	19	27	30	35	37	42	40	32
Obese	12	19	25	28	28	34	26	24
2006								
Overweight	20	29	30	35	36	38	42	32
Obese	12	18	24	27	30	35	27	24
2007								
Overweight	22	25	35	32	37	37	40	32
Obese	10	19	24	30	31	32	27	24
2008								
Overweight	20	27	31	35	38	38	40	32
Obese	14	19	25	29	31	33	26	25
2009								
Overweight	23	27	29	36	39	44	35	33
Obese	17	16	24	27	29	31	26	24
2010								
Overweight	21	28	30	34	39	37	37	32
Obese	11	21	26	30	32	37	27	26

^a Overweight: 25 to less than 30kg/m²; Obese, including morbidly obese: 30kg/m² or more.

^b From 2003 onwards, data have been weighted for non-response.

Table 10.11 continued

Aged 16 and over with both valid height and weight measurements

1993-2010

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

^a Overweight: 25 to less than 30kg/m²; Obese, including morbidly obese: 30kg/m² or more.

^b From 2003 onwards, data have been weighted for non-response.