



**Health Survey for England**

**2012**

**Trend tables**

A survey carried out on behalf of the Health and  
Social Care Information Centre

*Joint Health Surveys Unit*

**NatCen**  
Social Research that works for society



Department of Epidemiology and Public Health,  
University College London

Published by the Health and Social Care Information Centre.

The summary booklet and full text of this publication has been made available to you on the Internet at [www.hscic.gov.uk/pubs/hse2012](http://www.hscic.gov.uk/pubs/hse2012)

**For queries about the report:**

**Mail, telephone & e-mail**

The Health and Social Care Information Centre  
1 Trevelyan Square, Boar Lane, Leeds LS1 6AE  
General enquiries: 0845 300 6016  
E-mail: [enquiries@hscic.gov.uk](mailto:enquiries@hscic.gov.uk)

HSCIC Responsible Statistician  
Paul Eastwood, Lifestyles Statistics Section Head  
Contact via [enquiries@hscic.gov.uk](mailto:enquiries@hscic.gov.uk) , tel: 0845 300 6016

**For hard copy requests:**

**Mail, telephone & e-mail**

Enquiries  
NatCen Social Research  
35 Northampton Square, London EC1V 0AX  
Telephone orders/General enquiries: 020 7250 1866  
E-mail: [info@natcen.ac.uk](mailto:info@natcen.ac.uk)

Copyright © 2013, the Health and Social Care Information Centre. All rights reserved.

All data from studies earlier than 2004 re-used with permission of the Department of Health.

This work remains the sole and exclusive property of the Health and Social Care Information Centre and may only be reproduced where there is explicit reference to the ownership of the Health and Social Care Information Centre.

This work may only be reproduced in a modified format with the express written permission of the Health and Social Care Information Centre.

First published 18 December 2013.

# Health Survey for England – 2012 trend tables

Tables	Contents	Years available
<b>Adults</b>		
1	Blood pressure level using Omron values and 2003 definition, by survey year, age and sex	2003, 2005-2012
2	Mean height, by survey year, age and sex	1993-2012
3	Mean weight, by survey year, age and sex	1993-2012
4	Body mass index (BMI), by survey year, age and sex	1993-2012
5	Mean waist circumference and proportion with raised waist circumference, by survey year, age and sex	1993, 1994, 1997, 1998, 2000-2003, 2005-2012
6	Body mass index (BMI), waist circumference and health risk, by survey year and sex	1993, 1994, 1997, 1998, 2000-2003, 2005-2012
7	Self-reported cigarette smoking status, by survey year and sex	1993-2012
8	Self-reported cigarette smoking status, by survey year, age and sex	1993-2012
9	Estimated alcohol consumption on heaviest drinking day in the last week, by survey year, age and sex	1998-2012
10	Fruit and vegetable consumption, by survey year, age and sex	2001-2011
11	General health, longstanding illness and acute sickness, by survey year and sex	1993-2012
12	Prevalence of IHD, stroke, IHD or stroke (ever), by survey year, age and sex	1994, 1998, 2003, 2006, 2011
13	Prevalence of diabetes, by survey year, age and sex	1994, 1998, 2003, 2006, 2009-2012
14	Levels of physical activity, by survey year, age and sex	1997, 1998, 2003, 2004, 2006, 2008, 2012

<b>Tables</b>	<b>Contents</b>	<b>Years available</b>
<b>Children</b>		
1	Children's mean height, by survey year, age and sex	1995-2012
2	Children's mean weight, by survey year, age and sex	1995-2012
3	Children's mean body mass index (BMI), by survey year, age and sex	1995-2012
4	Children's overweight and obesity prevalence, by survey year, age group and sex	1995-2012
5	Children's self-reported cigarette smoking status, by survey year, age and sex	1997-2012
6	Children's self-reported experience of alcohol, by survey year, age and sex	1999-2012
7	Children's fruit and vegetable consumption, by survey year, age and sex	2001-2011
8	Children's general health, by survey year, age and sex	1995-2012
9	Children's longstanding illness, by survey year, age and sex	1995-2009, 2011, 2012
10	Children's acute sickness, by survey year, age and sex	1995-2012
11	Children's physical activity levels (new questionnaire), by survey year, age group and sex	2008, 2012

# Introduction

## The Health Survey for England

The Health Survey for England is a series of annual surveys designed to measure health and health-related behaviours in adults and children living in private households in England. The survey is currently commissioned by the Health and Social Care Information Centre (HSCIC), and before April 2005 was commissioned by the Department of Health. Since 1994, the survey has been carried out by NatCen Social Research and the Research Department of Epidemiology and Public Health at UCL (University College London).

The survey consists of an interview and nurse visit. It has a series of core elements that are included every year or alternate years, and special topics that are included in selected years. Core topics include:

Each year	Alternate years
General health	Fruit and vegetable consumption
Social care	GHQ-12
Smoking	EQ-5D
Drinking	Adult urine samples
Height measurements	Adult saliva samples
Weight measurements	
Blood pressure measurements	
Waist and hip measurements	
Adult blood samples	
Child saliva samples	

Special topics include, for example, cardiovascular disease (CVD), physical activity, accidents, lung function measurement and certain blood analytes. In 2012, there was a focus on physical activity. Additional modules of questions were also included, covering average weekly alcohol consumption, gambling, well-being and sexual health.

Each year there is a sample of the general population in which adults and children in selected households are eligible for inclusion. Adults aged 16 and over have been included since the start of the survey; children aged 2-15 were first included in 1995; and infants aged 0-1 have been included since 2001. In some years a boost sample is used to increase the proportion of participants from certain population groups, such as in 2002 when a boost sample of children and young adults was included, and 2005 when a boost of older people aged 65 and over was included. Boost samples of children were included in 2005 to 2010. In 2012, there was a sample of 8,291 adults and 2,043 children. There was no child boost in 2012, so base sizes may be small for some categories compared with recent years.

### Trend tables

The trend tables focus on key changes in core topics and measurements. Trend tables present the results within the general population sample, although in some years boost sample data are included. For example, 2002 and 2005 - 2010 trends among children and young people are calculated on the basis of data from children and young adults in the boost and general population samples, to increase the precision of the results. The boost sample of older people in 2005 is included in the trend estimates for people aged 65 and over, but excluded in the estimates for all men/women/adults. Data from older people in care homes collected for the 2000 survey were not included in trend tables as there were likely to be significant differences in the health of older people living in private households and in care homes.

The trend tables were revised and reformatted in 2006, and some new tables were introduced while others were not continued in the trend tables series. Full details of the changes are given in the commentary to the 2006 tables, available at [www.hscic.gov.uk/catalogue/PUB00480](http://www.hscic.gov.uk/catalogue/PUB00480).

The following commentary focuses on key trends in the health of adults and children since 1993, or the earliest year for which comparable data are available. Only statistically significant differences (at the 95% level) are reported. As results are based on survey data they are affected by sampling error. In 2003, non-response weighting was introduced for the first time in the HSE series. Since the weighted data provide more accurate information for the individual years for which they are available, the following analysis of trends focuses on the weighted estimates for 2003 onwards.<sup>1</sup> For children, data for all years have been weighted to adjust for the probabilities of selection, since a maximum of two children are included in each household; from 2003, children's data have also included non-response weighting.

The 2006 adults' trend tables (available at [www.hscic.gov.uk/catalogue/PUB00480](http://www.hscic.gov.uk/catalogue/PUB00480)) present unweighted (directly comparable with previous years) and weighted estimates for 2003-2006. Children's results in the 2006 tables are presented both with selection weighting only (directly comparable with previous years) and with selection and non-response weighting.<sup>2</sup>

As well as the prevalence trend tables for adults and children, separate tables have been produced for key variables showing estimates of the numbers of people in the population. These number estimate tables are available for adults for body mass index (BMI) categories, smoking, alcohol consumption, fruit and vegetable consumption and physical activity, and for children for BMI categories, fruit and vegetable consumption and physical activity. An introduction to these tables, with a technical note explaining how they are produced, is available in the number estimate tables.<sup>3</sup>

In the tables, '-' represents zero, and '0.0' represents a percentage less than 0.05 but not zero.

## Commentary

### Adults

#### Blood pressure<sup>4</sup>

Hypertension is an important public health challenge worldwide because of its high prevalence and the associated increase in risk of other disease. It is one of the most important modifiable risk factors for cardiovascular, cerebrovascular and renal disease, and one of the most preventable and treatable causes of premature deaths worldwide.<sup>5</sup>

Clinical guidelines for hypertension emphasise the importance of physicians providing advice on modifiable lifestyle risk factors to reduce the overall rise<sup>6</sup> of serious cardiovascular events.<sup>7</sup> Hypertension, cholesterol and smoking together account for 80% of all cardiovascular (CVD) events.<sup>8</sup> Management of people with hypertension, diabetes, or otherwise at substantial CVD risk includes assessing their risk of CVD and addressing other modifiable risk factors. Initially this involves lifestyle changes (smoking cessation, reducing alcohol consumption, increasing physical activity, weight loss if overweight, improved diet), followed by drug treatment of hypercholesterolaemia (high blood cholesterol), hyperglycaemia (high blood sugar levels), and/or hypertension, as appropriate.

Table 1 shows blood pressure level by survey year, age and sex. High blood pressure is defined as a systolic blood pressure at or above 140mmHg or diastolic blood pressure at or above 90mmHg or on medication prescribed for high blood pressure, as described in the 2003 report.<sup>9</sup> Data are presented for 2003-2012, using the Omron monitor to measure blood pressure, and using the 2003 survey definition. Before 2003, blood pressure was measured using a Dinamap monitor, and the definition included use of medication which affects blood pressure, rather than medication for blood pressure, as used since 2003. The 2006 trend tables presented blood pressure using Dinamap values (with a conversion from Omron to

Dinamap from 2003-2006) and the earlier definition; these tables can be found at [www.hscic.gov.uk/catalogue/PUB00480](http://www.hscic.gov.uk/catalogue/PUB00480).

The prevalence of hypertension in 2012 was at 31% among men and 27% among women, remaining at a similar level over the last few years. Between 2003 and 2012, the proportion of the population with controlled hypertension increased from 5% among men, and 6% among women to 9% among both sexes. The proportion of adults with untreated hypertension decreased from 2003 to 2012 for both sexes (20% to 16% among men and 16% to 11% among women).

There are no general population figures for blood pressure in 2004 as only the boost sample was measured in that year.

**Table 1** Blood pressure level using Omron values and 2003 definition, by survey year, age and sex

### Height and weight

Table 2 shows mean height, by survey year, age and sex. In 2012 the mean height of men was 175.3cm, and of women was 161.9cm. Between 1993 and 2012, mean height varied little from year to year, although across every age group the mean height in 2012 was slightly higher than in 1993.

**Table 2** Mean height, by survey year, age and sex

Table 3 shows the pattern of mean weight, by survey year, age and sex. Over this period, mean weight increased from 78.9kg to 84.1kg among men and from 66.6kg to 70.7kg among women.

Among men, mean weight increased least among younger age groups (an increase of around 3kg for those aged 16-34 between 1993 and 2012), and most among those aged 45 and over. Among women, there was less variation in the increase across age groups.

**Table 3** Mean weight, by survey year, age and sex

### Obesity

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>

In England there has been increasing 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.<sup>14</sup> 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.<sup>14</sup> There has been encouraging progress made on achieving the original ambition to halt the rise in child obesity expressed in the target set out in 2004,<sup>15</sup> and the challenges ahead are to achieve a reduction in child obesity and to tackle adult obesity.<sup>16</sup> 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.<sup>17</sup>

Table 4 shows categories of body mass index (BMI) by survey year, age and sex. BMI is defined as weight in kilograms divided by the square of height in metres. Adult participants can be classified into the following BMI groups:<sup>18</sup>

BMI (kg/m <sup>2</sup> )	Description
Under 18.5	Underweight
18.5 to less than 25	Normal
25 to less than 30	Overweight
30 and over	Obese

A further category, 40kg/m<sup>2</sup> and over, representing those morbidly obese, is also shown.

The proportion of adults with a normal BMI decreased between 1993 and 2012, from 41% to 32% among men and from 49% to 41% among women. Among both men and women there has been little change in the proportion that was overweight over the period (42% of men and 32% of women in 2012).

Between 1993 and 2012, there has been a marked increase in the proportion that was obese. This increased from 13% of men in 1993 to 24% in 2012 and from 16% of women in 1993 to 25% in 2012. The rate of increase in obesity prevalence has been slower in the second half of the period than the first half. 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%.

Estimates of the number of adults in the population for BMI categories from 2003-2012 are available in the number estimate tables.<sup>3</sup>

**Table 4** Body mass index (BMI), by survey year, age and sex

Waist circumference, a measure of central adiposity (body fat), has been measured in the core sample in a number of years of HSE: 1993-4, 1997-8, 2001-2003, 2005-2012.<sup>19</sup> Following the same pattern as for BMI, there have been significant increases for both men and women in mean waist circumference, and in the proportion with a raised waist circumference (using the definition of abdominal obesity used by the USA's National Institute of Health Adult Treatment Panel III<sup>20</sup>). Among men, the mean has risen from 93.2cm in 1993 to 97.0cm in 2012, and among women from 81.7cm to 87.6cm over the same period. The proportion of men with a raised waist circumference (more than 102cm) rose from 20% in 1993 to 34% in 2012, while for women the proportion with a raised waist circumference (more than 88cm) rose from 26% to 45%.

**Table 5** Mean waist circumference and proportion with raised waist circumference, by survey year, age and sex

Guidance from the National Institute of Health and Clinical Excellence (NICE)<sup>21</sup> currently states that the assessment of the health risks associated with overweight and obesity should be based both on BMI and waist circumference in adults follows:

BMI classification	Waist circumference		
	Low	High	Very high
Normal weight	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

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. Note that for adults with a BMI of 35kg/m<sup>2</sup> or more, risks are assumed to be very high with any waist circumference.

Table 6 shows combined categories of BMI and waist circumference by survey year and sex. Using these categories to assess risk, there have been significant increases for both



men and women in the proportion found to be at high risk, and at very high risk. The proportion of men at high risk in 2012, at 12%, was similar to the proportion in 1993 (11%), although it had risen to 15% in 2011; among women the proportion at high risk increased between 1993 and 2012 from 12% to 18%. There was a significant increase among both men and women for the very high risk category over the period, rising from 11% to 22% for men and from 14% to 24% for women.

**Table 6** Body mass index (BMI), waist circumference and health risk, by survey year and sex

### Cigarette smoking

Smoking is the single greatest cause of preventable illness and premature death in the UK. Figures from the report *Statistics on Smoking: England, 2013* showed that in England in 2011 smoking contributed to around 79,100 deaths, accounting for 22% of deaths in men and 14% of deaths in women aged 35 and over.<sup>22</sup> These included around 37,400 deaths from cancers, 22,500 deaths from respiratory diseases, 18,100 deaths from circulatory diseases and 1,100 deaths from diseases of the digestive system. It is also estimated that around 5% (462,900) of all hospital admissions in England among adults aged 35 and over in 2011/2012 were attributable to smoking.<sup>22</sup> The cost to the NHS of treating smoking related illness was estimated to be £5.2 billion per year in 2005/2006.<sup>23</sup>

Since 1998, when *Smoking kills: a White Paper on tobacco* was published,<sup>24</sup> cigarette smoking prevalence among adults has gradually declined from 28% to 20%. In 2004, the government of the time set out its strategy to tackle smoking and the effects of smoking on other people in the white paper, *Choosing Health: Making healthy choices easier*.<sup>25</sup> This stated that smoking rates among adults should be 21% or lower by 2010, with a reduction in prevalence among routine and manual occupational groups to 26% or less. Since then, a number of proposed initiatives have been implemented, including the introduction of smokefree legislation in England from the 1st July 2007, the introduction of picture health warnings on cigarette packets from the 1st October 2008, and raising the minimum age for sale of cigarettes from 16 to 18 from the 1st October 2007.

More recently, in 2010, the then government published their comprehensive tobacco control strategy entitled *A Smokefree Future*.<sup>23</sup> This contained a number of aspirations for the forthcoming decade, including reducing adult smoking rates to 10% or lower by 2020 and halving current smoking prevalence rates among routine and manual groups and among those living in the most disadvantaged areas.<sup>23</sup> In 2011, the Department of Health published a tobacco control plan for England, which included commitments to implement legislation relating to displays of tobacco in shops, look at cigarette packaging, maintain the high price of tobacco at levels that impact on smoking prevalence, and to encourage more smokers to quit.<sup>26</sup>

Table 7 shows self-reported smoking status, by survey year and sex and Table 8 shows self-reported cigarette smoking status, by survey year, age and sex.

Among men there was an increase overall in the proportion who never regularly smoked cigarettes (from 39% in 1993 to 51% in 2012). Correspondingly, the proportion of men who were current smokers declined overall from 28% in 1993 to 22% in 2012, as did the proportion who used to smoke regularly (from 33% to 26%). The proportion of men who smoked 20 or more cigarettes per day fell from 11% in 1993 to 5% in 2012. The proportion who smoked fewer than 10 cigarettes or 10 to 19 cigarettes per day showed no significant change (8% and 9% respectively in 2012).

The proportion of women who had never regularly smoked increased from 52% in 1993 to 61% in 2012, while the proportion of current smokers decreased overall in the same period, falling from 26% to 18%. As with men, there were no significant changes in the proportion of women who smoked fewer than 10 cigarettes per day (7% in 2012). Among women there was a significant decrease in those who smoked 10 to 19 cigarettes per day (11% in 1993 to 8% in 2012) and in those who smoked 20 or more cigarettes per day (from 8% to 3% over the same time period).

Up to 2011, the prevalence of cigarette smoking was highest among men aged 25-34, with no significant decrease in prevalence since 1993 (34%). In 2012 there are indications that prevalence has decreased in this group, with 28% reporting current smoking. The prevalence of cigarette smoking has decreased between 1993 and 2012 in most age groups among both men and women. The largest decrease has taken place among women aged 16-44, although younger women remained more likely to smoke than those aged 55 and over.

Estimates of the number of adults in the population for self-reported cigarette smoking status from 2003-2012 are available in the number estimate tables.<sup>3</sup>

**Table 7** Self-reported cigarette smoking status, by survey year and sex

**Table 8** Self-reported cigarette smoking status, by survey year, age and sex

## Alcohol consumption

Drinking alcohol is generally recognised as an established part of British culture and most British adults drink alcohol, at least occasionally. Yet concern has increased in recent years among policy makers, health professionals and the general public about the damage caused by excessive drinking to individuals, communities and society as a whole. In the last ten years, governments have published successive strategies for promoting sensible drinking and reducing alcohol-related harm: the 2004 *Alcohol Harm Reduction Strategy for England*;<sup>27</sup> *Safe. Sensible. Social. The next steps in the national alcohol strategy* in 2007;<sup>28</sup> and *The Government's Alcohol Strategy* in 2012.<sup>29</sup>

Alcohol has been identified as a causal factor in more than 60 medical conditions, including mouth, throat, stomach, liver and breast cancers; hypertensive disease (high blood pressure), cirrhosis and depression.<sup>30,31</sup> The annual cost to the NHS of alcohol misuse has been estimated as £2.7 billion at 2007 prices.<sup>32</sup> In England, hospital admissions related to alcohol consumption more than doubled in the last decade from 510,700 in 2002/3 to 1,220,300 in 2011/12; this includes an increase in the proportion of those that were wholly attributable to alcohol from 131,100 to 304,200.<sup>33</sup> These trends have been ascribed to a long-term increase in the amount of alcohol drunk in this country. From 1990, the average amount drunk each year increased from 9.8 litres of pure alcohol per head to a peak of 11.6 litres in 2004, though it has since returned to 1990 levels (9.7 litres in 2012).<sup>34</sup>

Over time, as households' disposable incomes have increased, alcohol has become more affordable; in 2012, alcoholic drinks were estimated to be 61% more affordable than in 1980.<sup>33</sup> The pricing of alcohol has recently moved to the centre of public debate.

Trends in alcohol consumption between 1998 and 2012 are shown in Table 9, based on the heaviest drinking day in the last week. Up to 2002, questions were also asked about usual weekly alcohol consumption, and trend tables from 1992-2002 based on these questions were included in the 2005 trend tables.<sup>35</sup> In 2011 and 2012, questions about usual weekly drinking were included in the HSE again, and in 2011 there was also a seven day drinking diary. While results are not shown in the trend tables, both interview and diary estimates of weekly drinking, and comparisons between the two, are presented in the 2011 report<sup>36</sup>; and interview estimates of weekly drinking are included in the 2012 report.<sup>37</sup>

In the trend tables for 2006 onwards, the thresholds for drinking at recommended levels, and at twice recommended levels have been revised for all survey years to correspond to those used by the General Household Survey (GHS) and other surveys. For recommended levels, the tables show the proportion drinking up to and including four units for men and three units for women (rather than up to but below four or three units as in previous tables). For drinking at twice the recommended levels, the thresholds have changed to more than eight units for men and more than six units for women (rather than eight or more and six or more as in previous tables).

The method used by the HSE to convert drinks to units remained essentially unchanged from 1991 until 2005, based on assumptions introduced by the General Household Survey

(GHS) in 1990.<sup>38</sup> In recent years, it has become clear that these assumptions are no longer valid. The average strengths of beers and wines have increased in the intervening years, and pubs, bars and restaurants now serve drinks in a broader range of measures.<sup>39</sup> From 2006, changes have been made in the way the HSE and other surveys estimate alcohol consumption.<sup>40</sup> The changes have an impact on the estimated consumption of beer, wine and alcopops; the most significant of these is the revision to the unit equivalent of a glass of wine. In 2006, the conversion for a glass of wine was changed from one unit to two units; in 2007, a further adjustment was made and separate conversion rates were used for 125ml, 175ml and 250ml wine glasses.<sup>41</sup> Table 9 shows both the original and revised estimates for 2006, and the revised estimates for 2007 onwards; the revised methodology has been used to measure trends in subsequent years.<sup>42</sup>

Current government guidelines advise that daily drinking should not regularly exceed 4 units for men and 3 units for women. The proportion of men consuming more than 4 units on the heaviest day's drinking in the last week was significantly lower in 2012 (37%) than in 2006 (41%); there has been a gradual year-on-year decline from a peak of 43% in 2009. Similarly the proportion of men that drank more than twice the recommended amount dropped from 24% in 2006 to 21% in 2012, with the same gradual decline since 2009. There was the same pattern of decrease among women: between 2006 and 2012 the proportion consuming more than 3 units on the heaviest day's drinking last week dropped from 33% to 28%, and in the proportion drinking more than twice the recommended amount dropped from 16% to 13%. See the 2006 trend tables for discussion of trends up to that year based on the original method of conversion to units.<sup>42</sup>

Estimates of the number of adults in the population for alcohol consumption (on the heaviest drinking day in the last week) from 2003-2012 are available in the number estimate tables.<sup>3</sup>

**Table 9** Estimated alcohol consumption on heaviest drinking day in the last week, by survey year, age and sex

### Fruit and vegetable consumption

In 2002 the World Health Organisation (WHO) began to develop a global strategy on diet, physical activity and health in the context of the rising burden of chronic diseases. Diseases like cardiovascular disease, stroke, diabetes and cancer present a major challenge to public health, particularly in developed countries. These diseases, and the associated unhealthy behaviours, cluster among poor communities and contribute to social and economic inequalities.<sup>43</sup>

A 2005 report estimated that food-related ill health in the UK is responsible for about 10% of deaths and illness, costing the NHS £6 billion annually. The vast majority of this burden is due to unhealthy diets rather than food-borne diseases.<sup>44</sup> Dietary goals to prevent chronic diseases emphasise eating more fresh vegetables, fruits, and pulses.<sup>45</sup> The 5 A DAY guidelines were developed based on the recommendation from WHO that consuming 400g fruit and vegetables a day can reduce risks of chronic diseases, e.g. heart disease, stroke, and some cancers.<sup>46</sup> These guidelines state that everyone should eat at least five portions of a variety of fruit and vegetables every day.<sup>47</sup> Fruit and vegetables may also play an important role in weight management when combined with reduced fat intake,<sup>48</sup> and may reduce the risk of Type 2 diabetes<sup>49</sup> and impaired cognitive function.<sup>50</sup>

Questions about fruit and vegetable consumption were first included in the HSE in 2001, and are designed to assess fruit and vegetable consumption in terms of portions per day (roughly 80g per portion). For both men and women, the proportion that consumed five or more portions per day increased significantly to a peak in 2006, from 22% in 2001 to 28% in 2006 among men, and from 25% to 32% among women. However, the proportion of adults consuming five or more portions a day was significantly lower in 2008, when 25% of men and 29% of women reported consuming five or more portions. The 2011 results are at a level comparable with 2008 (24% and 29% respectively).

Estimates of the number of adults in the population with different levels of fruit and vegetable consumption from 2003-2011 are available in the number estimate tables.<sup>3</sup>

There are no figures available for fruit and vegetable consumption in 2012.

**Table 10** Fruit and vegetable consumption, by survey year, age and sex

## General health

Table 11 shows trends in general health, longstanding illness and acute sickness, by survey year and sex.

Self-assessed general health is an important indicator of the general health of the population. It is a valid measure for predicting future health outcomes and can be used to project use of health services and provide information useful for policy development. In older people, self-assessment of poor overall health has been associated with increased risk of mortality,<sup>51</sup> and has also been reported to be predictive of functional decline.<sup>52</sup>

Between 1993 and 2012, the proportion reporting very good and good general health has fluctuated between 74% and 78% among men and between 73% and 76% among women (78% and 74% respectively in 2012), with no clear pattern of variation. The prevalence of very bad or bad general health has ranged from 4% to 8% across both sexes over the same period.

Like self-reported general health, longstanding illness is a valuable indicator of the health of the population, and is also an important indicator of inequalities, with strong links between poverty, social class and self-assessed longstanding illness. As the population ages, the number of people with a longstanding illness or condition is expected to rise.

In 2012, the questions on longstanding illness were changed to be consistent with the harmonised disability questions designed for use in social surveys, as recommended by the proposed Disability, Health and Carers Primary Standards in 2011.<sup>53</sup> Further details are provided in the HSE 2012 report, Volume 2, Chapter 3, Section 3.4 and in Appendix D to Volume 2. The new questions explicitly ask about physical and mental health, separate the concept of disability from illnesses or health conditions, and refer to illnesses or conditions 'lasting or expected to last 12 months or more' rather than 'over a period of time'.

The prevalence of longstanding illness among men increased overall from 40% in 1993 to around 44% between 1997 and 2003, but appears to have decreased gradually over the last few years; it was 38% in 2011, with the directly comparable questions, and 35% in 2012 with the new questions. Among women, prevalence increased from 40% in 1993 to 47% in 2004, but has since decreased and was 41% in 2011; it was also 41% in 2012 using the new questions.

Acute sickness is defined as any illness or injury (including any longstanding condition) that has caused the participant to cut down in the last two weeks on things they usually did. The prevalence of acute sickness ranged from 12% to 16% of men and from 14% to 19% of women over the period 1993 to 2012.

**Table 11** General health, longstanding illness and acute sickness, by survey year and sex

## Cardiovascular disease

Cardiovascular disease (CVD) is one of the leading contributors to the global disease burden. The single most common cardiovascular disease is ischaemic heart disease (IHD, also called coronary heart disease (CHD) or coronary artery disease (CAD)). IHD includes myocardial infarction (MI, heart attacks) and angina (chest pain on exertion due to inadequate blood flow to the heart muscle). The vast majority of CVD in England is caused by atherosclerosis ('furring' of the arteries). This is not only the case for IHD and for stroke, the two main diseases, but also for aortic aneurysm and peripheral vascular disease, with impaired blood flow to the limbs.

Over the second half of the 20th century, there was a fairly steady decrease in mortality due to CVD in England and Wales.<sup>54</sup> In 1999, CHD was made a government priority,<sup>55</sup> with the introduction of the *National Service Framework for CHD* following in 2000.<sup>56</sup> The goal was to reduce death from CHD and related illnesses in the under 75s by 40% by the year 2010. This target was reached ahead of schedule.<sup>57</sup> Between 2000 and 2010, age-standardised CVD mortality rates in England and Wales for males and females fell by 40% and 38% respectively.<sup>54</sup> Despite a reduction in deaths from CVD, these diseases remain the most common cause of death and still cause a large proportion of morbidity in this country. In England and Wales in 2011, CVD accounted for 29% of all deaths.<sup>58</sup> This includes the 16% of male deaths and 11% of female deaths which were due to IHD, the leading cause of death in both sexes. Stroke was the second leading cause of death for both males and females in England and Wales in 2011, accounting for 6% of male and 9% of female deaths. 25,122 men and 11,456 women under 75 died from CVD, 26% and 18% of deaths respectively in men and women under 75 in 2011.<sup>58</sup>

Table 12 presents variations between 1994, 1998, 2003, 2006 and 2011 in ischaemic heart disease (IHD), stroke, and IHD or stroke.

In both men and women there was an increase in prevalence of IHD between 1994 and 1998, when the highest prevalence of IHD was recorded (7.1% for men and 4.6% for women). Prevalence of IHD has generally fallen since then to 5.7% in men and 3.5% in women in 2011.

Prevalence of stroke in women followed a similar pattern, with an increase between 1994 and 1998 (from 1.6% to 2.1%); however prevalence has been fairly constant since then, being 2.1% in 2011. In contrast the prevalence of stroke in men has increased over time, rising by nearly one percentage point from 1.8% in 1994 to 2.7% in 2011.

There are no figures available for cardiovascular disease in 2012.

**Table 12** Prevalence of IHD, stroke, IHD or stroke (ever), by survey year, age and sex

## Diabetes

Diabetes is characterised by high blood glucose levels (hyperglycaemia). Untreated, hyperglycaemia is associated with damage to and possible failure of many organs, especially the eyes, kidneys, nerves, heart, and blood vessels. Diabetes substantially increases the risk of cardiovascular disease (CVD),<sup>59</sup> and tends to worsen the effect of other risk factors for CVD such as dyslipidaemia (abnormal levels of blood fats), hypertension, smoking and obesity. Being overweight or having a raised waist measurement are risk factors for Type 2 diabetes.<sup>60,61</sup> Diabetes mellitus (including Types 1 and 2) is a leading cause of avoidable mortality; it is estimated that 11.6% of all deaths among those aged 20–79 in England in 2005 were as a result of diabetes.<sup>62</sup>

The Department of Health's *National Service Framework for Diabetes*, published in 2003, set out a ten-year programme of change to deliver world class care and support for people with diabetes.<sup>63</sup> This recommended an agreed care plan, a personal diabetes record and named contact within the local service for all people diagnosed with diabetes, or with poor blood glucose control (glycated haemoglobin above 7.5%). In 2011, the National Institute for Health and Clinical Excellence (NICE) published quality standards for the care of people with diagnosed diabetes in addition to those set out in the National Service Framework.<sup>64</sup>

The HSE interview makes no distinction between Type 1 and Type 2 diabetes because of changing patterns of the disease. In previous years it was assumed that participants who reported having doctor-diagnosed diabetes before the age of 35 and who were having insulin therapy at the time of the survey had Type 1 diabetes, and all other participants with doctor-diagnosed diabetes were classified as having Type 2 diabetes. However, small but increasing numbers of people are now being diagnosed with Type 2 diabetes below the age of 35,<sup>65,66,67</sup> and some adults with Type 2 diabetes are now prescribed insulin therapy,<sup>68,69</sup> so these distinctions are no longer reliable.

Prevalence of doctor-diagnosed diabetes was measured in 1994, 1998, 2003, 2006, and

2009 onwards. Prevalence has increased significantly between 1994 and 2012, with some year-on-year fluctuation, from 2.9% to 6.7% among men and from 1.9% to 4.9% among women. There was a different pattern among younger and older adults. While there was relatively little change in prevalence over the period in those aged 16-24 (among whom diabetes has remained below 1% throughout), this substantial increase in prevalence was seen among every other age group. Between 1994 and 2012, prevalence rose from 7.5% to 17.5% among men aged 75 and over, and from 5.2% to 12.9% among women in this age group.

The trend of increasing prevalence over time of doctor-diagnosed diabetes is mostly related to an increase in diagnosis, and a smaller true increase in prevalence of diabetes.<sup>70</sup> Both are probably related to rising levels of obesity among the general population in England; obesity has increased substantially since the early 1990s (see Tables 4 and 5). This continuing increase in the prevalence of diabetes within HSE data is supported by findings taken from the Quality and Outcomes Framework (QOF) between 2006/7 and 2011/12.<sup>71</sup>

**Table 13** Prevalence of diabetes, by survey year, age and sex

### Physical activity

Lack of physical activity is the fourth most important risk factor worldwide for chronic, non-communicable diseases, after tobacco use, raised blood pressure, and hyperglycaemia (raised blood sugar).<sup>72</sup> Worldwide, it accounts for 6% of the burden of disease from ischaemic heart disease,<sup>73</sup> 7% of Type 2 diabetes, and 10% of breast and colon cancers. It is estimated to have caused more than 5.3 million premature deaths worldwide in 2008 (9% of all premature deaths).<sup>74</sup> In the UK, inactivity has been estimated to cause 3% of disability-adjusted years of life lost in 2002 and a direct cost to the NHS of £1.1 billion,<sup>75</sup> with indirect costs to society bringing this cost to a total of £8.2 billion.<sup>76</sup> Inactivity is particularly important in some groups. For example, inactivity was estimated in 2011 to account for at least 20% of the excess heart disease deaths seen in the South Asian community in Britain.<sup>77</sup>

As evidence accrues about the amount, type, and pattern of physical activity that is beneficial for health, the guidelines from expert groups and governments have been modified to take account of new knowledge. From 1994 the recommendation for adults in England was at least 30 minutes of activity that was of at least moderate intensity on at least five days each week.<sup>78</sup> This was modified in 2004 to allow the 30 minutes within a day to be accrued in bouts of at least 10 minutes' duration.<sup>79</sup> In 2011, the Chief Medical Officers of the four UK countries introduced revised guidelines for physical activity<sup>80</sup> that reflect current evidence on what is needed to benefit health and the incremental benefits from undertaking physical activity. Guidelines were revised to encourage adults to meet the recommendation through undertaking specified amounts of vigorous or moderate activity each week: at least 150 minutes of moderate activity, in bouts of 10 minutes or longer, or 75 minutes of vigorous activity, or a combination of the two. This should preferably be spread over the week, for example by being moderately active for 30 minutes on at least five days a week.<sup>81</sup> This recognises that the overall volume of physical activity is more important than the specific type of activity or frequency of sessions.<sup>80</sup> As well as the guidelines for aerobic activity there are also guidelines for muscle-strengthening activities; and activities to improve balance and co-ordination.

Table 14 shows the proportion achieving different levels of physical activity in 1997, 1998, 2003, 2004, 2006, 2008 and 2012; these levels are based on self-reported activities in the last four weeks. For 2008, the module of questions on physical activity was revised and an enhanced questionnaire was developed. Full details of the questionnaire revisions are provided in the 2008 report<sup>82</sup>; the main changes for 2008 were:

- Additional questions to provide more accurate data on occupational activity and sedentary time
- More detail about certain types of exercise
- Allowing bouts of 10 minutes of activity to be accrued towards meeting government physical activity recommendations.

Minor further revisions were made in 2012, as described in the 2012 report.<sup>83</sup> Results for 2008 and 2012 are calculated in two ways: using the 'original' method directly comparable with previous years and based on the previous government recommendations for physical activity; and in a 'revised' method using the enhanced questionnaire and the revised government recommendations.

In previous years the physical activity levels have been labelled high, medium and low; in 2008 the categories were renamed to describe more accurately what they represent. The category formerly labelled 'high' is in fact the group that meets government recommendations for the minimum level of activity to achieve health benefits (e.g. reduction in the relative risk for cardiovascular morbidity). Definitions of the categories are as follows for the original and revised estimates:

**Meets recommendations**

*Original:* 30 minutes or more of moderate or vigorous activity on at least five days per week

*Revised:* at least 150 minutes moderate or 75 minutes vigorous activity per week or an equivalent combination of these

**Some activity**

*Original:* 30 minutes or more of moderate or vigorous activity on one to four days per week

*Revised:* 60-149 minutes moderate or 30-74 minutes vigorous activity per week or an equivalent combination of these

**Low activity**

*Original/Revised:* lower levels of activity.

Using the original method to obtain directly comparable measures between 1997 and 2012, the proportion of adults meeting recommendations for levels of physical activity has increased among both men and women. There has been a steady increase over the period, from 32% in 1997 to 43% in 2012 for men, and from 21% to 32% for women. In both sexes, the proportion meeting the recommendation was similar in 2008 and 2012.

For both sexes the proportion reaching this level of activity decreased steadily as age increased.

The revised method for estimating adults' levels of physical activity, taking advantage of the 2008 questionnaire enhancements and using the new guidelines, provided higher estimates of the proportion of adults meeting government recommendations for physical activity. The revised method indicated that, in 2012, 66% of men and 54% of women aged 16 and over met these new guidelines, compared with 43% and 32% respectively using the original method and the previous guidelines.

As with the original method, revised results for 2008 and 2012 were very similar. There was the same pattern of decreasing proportions meeting the new recommendations as age increased.

An objective measure of physical activity, using accelerometry, was also obtained in 2008. Details are provided in Chapter 3 of the 2008 report.<sup>84</sup> The 2008 and 2012 reports also provide information about sedentary behaviour.<sup>82,83</sup>

Estimates of the number of adults in the population for physical activity categories for 2003, 2004, 2006, 2008 and 2012 are available in the number estimate tables<sup>3</sup>; for 2008 and 2012 estimates are provided using both the original and the revised methods.

There are no figures available for physical activity in 2009, 2010 and 2011.

**Table 14** Levels of physical activity, by survey year, age and sex

## Children

### Height and weight

Infants (aged 0-1) were first included in the survey in 2001. Therefore, trends in height, weight and obesity are examined separately for the periods 1995 to 2012 (ages 2-15) and 2001 to 2008 (ages 0-15). Note that in 2009 to 2012, while children aged 0-1 were included in the survey, infant length was not measured, and therefore there are no data for this age group in these years, nor for children aged 0-15 in height and BMI tables.

Table 1 shows children's mean height, by survey year, age and sex. Overall, mean height for children aged 2-15 increased between 1995 and around 2003-2004. The increase was from 131.9cm in 1995 to 136.3cm in 2004 among boys, and from 130.6cm in 1995 to 135.4cm over the same period among girls. There has been no significant change in mean height for either sex since 2003, with mean height in 2012 at 136.4cm for boys and 133.8cm for girls.

Among children aged 0-15, there was a similar pattern, with an increase between 2001 and 2003 from 129.3cm to 132.3cm among boys, and from 128.1cm to 129.9cm among girls. From 2003 onwards there was little change, apart from in 2004 when the results appear to be anomalous (the results in this year being based on a smaller sample than in other years).

There was no clear pattern of trends within different age groups.

**Table 1** Children's mean height, by survey year, age and sex

Table 2 shows children's mean weight, by survey year, age and sex. Between 1995 and 2003, mean weight of children aged 2-15 increased overall from 33.0kg to 36.2kg among boys, and from 32.8kg to 35.6kg among girls; there was an apparently anomalous result in 2004 showing a further increase, but based on a very small sample. From 2003-2012 there was little variation in mean weight for boys or girls (apart from 2004). As with mean BMI and levels of obesity, shown in Tables 3 and 4, the trend appears to be flattening out after a period of increase, suggesting that the strategies to halt the rise in child obesity may be achieving their objectives.

Patterns for children aged 0-15 were similar to those for children aged 2-15. Between 2001 and 2003 there was an increase in mean weight for children aged 0-15, from 32.2kg to 33.7kg among boys, and from 32.1kg to 33.3kg among girls. The mean for boys changed little between 2003 and 2012 (apart from 2004), being 32.7kg in 2012. Among girls aged 0-15, mean weight in 2009-2012 was closer to the 2001 level than the 2003 level, being 32.0kg in 2012.

**Table 2** Children's mean weight, by survey year, age and sex

### Obesity

There is considerable evidence that childhood overweight and obesity can be linked with numerous long-term and immediate health risks. Childhood and adolescent obesity can persist into adulthood,<sup>85</sup> where the direct health risks of obesity are severe and well established, and childhood and adolescent overweight/obesity have been linked directly to middle-age mortality and morbidity.<sup>86,87,88</sup>

Over past years there have been many policies and strategies aimed at tackling obesity, such as the White Paper *Choosing Health: Making Healthier Choices Easier*, which aimed to prevent any further rises in obesity among children under 11.<sup>25</sup> In November 2010 the government announced an ongoing strategy to improve public health in its white paper *Healthy Lives, Healthy People: Our Strategy for Public Health in England*.<sup>89</sup> The paper set out key areas to focus on in its aim to improve the lives of people in the UK. Included in these were the continued support for school-aged children through the *Healthy Child Programme*,<sup>90</sup> and assistance with local services to tackle overweight and obesity through the *National Child Measurement Programme*.<sup>91</sup> Following this 2010 white paper, *The Public Health Responsibility Deal*<sup>92</sup> was announced in 2011, with a view to encouraging local businesses and the voluntary sector to support people to live healthier lives by informing



their lifestyle choices in areas such as healthy eating and physical activity. Preventative measures were also outlined in the 2009 Change4Life campaign<sup>17</sup> which focused on encouraging families to eat healthily and improve levels of physical activity.

In October 2011, these commitments were reinforced by a further pledge to tackle overweight and obesity in the context of the new structure of the NHS and Public Health England. *Healthy Lives, Healthy People: a call to action on obesity in England*<sup>93</sup> set out rigorous plans to engage people in healthier lifestyles across all life stages, starting from pre-conception through to old age. The degree to which obesity and overweight have become a problem was acknowledged in the paper and recommendations were centred around local and national level partnerships, with a view to reducing excess weight by 2020.

Body mass index (BMI) is defined as weight in kilograms divided by the square of height in metres. Mean BMI by survey year, age and sex is shown in Table 3 and the prevalence of obesity and overweight among children aged 2-15 is shown in Table 4.<sup>94</sup> The UK National BMI centiles have been used to define overweight and obesity in children as at or above the 85th and 95th BMI centiles respectively of the 1990 reference population.<sup>95</sup>

Mean BMI increased between 1995 and 2012 by 0.4kg/m<sup>2</sup> among boys aged 2-15 (from 17.7kg/m<sup>2</sup> to 18.1kg/m<sup>2</sup>), and by 0.3kg/m<sup>2</sup> for girls (from 18.1kg/m<sup>2</sup> to 18.4kg/m<sup>2</sup>). With fluctuations from year to year, overall increases in mean BMI were evident for both sexes during this period, although for the last few years mean BMI has been slightly lower than the peak around 2004/2005.

Among children aged 0-15, mean BMI rose between 2001 and 2004 from 18.1kg/m<sup>2</sup> to 18.6kg/m<sup>2</sup> among boys and from 18.4kg/m<sup>2</sup> to 19.3kg/m<sup>2</sup> among girls, though it dropped back to 18.3kg/m<sup>2</sup> and 18.6kg/m<sup>2</sup> respectively in 2008, not significantly different from 2001. There are no figures available for children aged 0-15 in 2009 to 2012.

**Table 3** Children's mean body mass index (BMI), by survey year, age and sex

Table 4 shows trends in obesity and overweight among children aged 2-15 between 1995 and 2012. Childhood obesity has increased significantly since 1995, when 11% of boys and 12% of girls were obese. The prevalence of obesity increased steadily in most years up to around 2004 and 2005, where it peaked at 18% to 19% among both boys and girls. Levels have been slightly lower than this peak in the last few years, with 17% of boys and 16% of girls obese in 2011. The levels in 2012, at 14% for boys and 13% for girls, were lower than in 2011 though not statistically significantly so; bases for the last two years are smaller in the absence of a child boost, and margins of error are therefore wider. It will be important to continue to monitor the trends in future, using HSE data to confirm whether this is the beginning of a gradual downward shift or simply fluctuation in the flattening trend.

Estimates of the number of children in the population for BMI categories from 2003-2012 are available in the number estimate tables.<sup>3</sup>

Table 4 also shows data for children aged 2-10 and 11-15. Among both age groups for both boys and girls, there was a similar pattern of increase in obesity up to the peak around 2004/2005. Since then the proportion who were obese in the 11-15 age group has remained at a broadly similar level (with some fluctuation) among both boys and girls. Among those aged 2-10 the proportion who were obese has decreased from 17% of both boys and girls in 2005 to 11% of boys and 10% of girls in 2012.

**Table 4** Children's overweight and obesity prevalence, by survey year, age group and sex

## Cigarette smoking

Many children suffer ill-health from smoking, which includes respiratory illness and increased risk of cancer and cardiovascular disease.<sup>96</sup> There is also evidence of an association between children smoking and other risky behaviours such as using alcohol or drugs.<sup>97</sup> Those who start smoking during childhood are more likely to continue smoking as adults, and less likely to give up than those who start smoking in later life. They are also likely to consume more cigarettes and suffer from a greater addiction to tobacco.<sup>97,98</sup>

In addition to targets to reduce overall smoking prevalence among adults that have been set out in Department of Health publications over the last decade, the 1998 White Paper *Smoking Kills*<sup>24</sup> set a target to reduce smoking prevalence among 11-15 year olds to 9% by 2010. The Health Act 2006,<sup>99</sup> as well as introducing smokefree legislation, introduced a further change in the law aimed at reducing the prevalence of smoking among young people. As a result, from October 2007 it became illegal to sell cigarettes to anyone under the age of 18.<sup>100</sup> The 2009 Health Act<sup>101</sup> included measures to prohibit the display of tobacco products at the point of sale and create powers to control the sale of tobacco from vending machines. The intention is to reduce further the impact of tobacco on the health of the public and future generations, by protecting children and young people from the harmful effects of smoking.

Table 5 shows children's self-reported cigarette smoking status, by survey year, age and sex. Trends are examined between 1997 and 2012, as the questions were changed in 1997.

The proportion of children aged 8-15 who had ever smoked decreased overall from 18% of boys in 1997 to 10% in 2012, and from 20% to 7% of girls. Over the survey years, the proportion of boys and girls who had ever tried smoking generally increased with age, being much higher among those aged 14 and 15 than among younger children.

**Table 5** Children's self-reported cigarette smoking status, by survey year, age and sex

### Alcohol consumption

The 2007 Home Office report *Safe. Sensible. Social. The next steps in the Alcohol Harm Reduction Strategy* reviewed progress since the Government's Alcohol Harm Reduction Strategy was launched in 2004, and outlined renewed proposals to tackle the problems associated with alcohol misuse.<sup>28</sup> The report identified underage drinkers as one of three problem groups to be specifically targeted. The objectives for young people focused on educating them about making responsible choices about alcohol and restricting the supply of alcohol to underage drinkers. Proposed measures included tougher law enforcement to prevent underage sales and clearer guidelines to young people and parents about the effects of youth alcohol use.

England has been identified as having one of the highest rates of regular drinking and drunkenness among young people in Europe.<sup>102,103</sup> Although there has been no clear trend in the prevalence of drinking among under-16s in recent years, consumption levels appear to be on the rise among those who do drink. Particular concern has been raised about increasing levels of consumption within the 11-13 age group and among adolescent girls.<sup>28,104</sup>

The Department for Children, Schools and Families (DCSF) published the *Youth Alcohol Action Plan*<sup>105</sup> in 2008, and in 2009, the Department of Health published guidance from the Chief Medical Officer of England on alcohol consumption by children and young people.<sup>106</sup> This includes a recommendation that children under the age of 15 do not drink any alcohol at all and that alcohol consumption for 15 to 17 year olds should be under the supervision of a parent or carer.

Table 6 shows children's reported experience of drinking alcohol, by survey year, age and sex. Trends for children aged 8-15 are examined between 1999 and 2012, as the questions were changed in 1998 and questions on alcopops were added for children aged 8 to 12 in 1999. The prevalence of boys aged 8-15 ever having had a proper alcoholic drink (including alcopops) ranged from 42% to 47% between 1999 and 2003, dropping in the following years to 23% in 2012. The proportion of girls aged 8-15 who had ever had a proper alcoholic drink varied between 39% and 43% from 1999 to 2004, and following the same pattern as for boys has dropped since then to 24% in 2012.

**Table 6** Children's self-reported experience of alcohol, by survey year, age and sex

## Fruit and vegetable consumption

The protective health benefits of a diet rich in fruit and vegetables have been long recognised for both adults and children. Diet plays a key role in shaping children's health both now and later in life. A childhood diet abundant in fruit and vegetables can ensure an adequate intake of many essential nutrients and can help displace foods high in saturated fats, sugar and salt.<sup>46</sup>

Many government papers have raised concerns about children's diet and a number of initiatives have been launched to educate children about healthier food options. For example, *The National Healthy Schools Standard*, part of the *National Healthy Schools Programme*, was implemented in 1998 and was designed to encourage schools to consider diet and nutrition in a variety of aspects of school life.<sup>107</sup>

The (then) Department for Education and Skills' 2004 paper *Starting early: food and nutrition education of young children* states that for positive attitudes to develop, messages about healthy lifestyles, including diet, need to be clear and concise and delivered in such a way that children get involved.<sup>108</sup> Similarly, the 2003 Food Standards Agency paper *Getting to Grips with Grub* outlines key nutritional competencies children should meet prior to leaving school, such as an understanding of fruit and vegetable consumption and portion size.<sup>109</sup>

Following the 1997 white paper *Excellence in Schools*,<sup>110</sup> and 2003 Green Paper *Every Child Matters*,<sup>111</sup> in which the government pledged to help all schools to become healthy, there has been a focus on implementing initiatives in schools which aim to educate and provide children with healthy food options, in particular wider access to fruit and vegetables. These include the *School Fruit and Vegetable Scheme*,<sup>112</sup> breakfast clubs and fruit tuck shops. The *School Fruit and Vegetable Scheme* was introduced in 2004 as part of the 5 A DAY programme to reinforce messages about improving children's diets and to minimise the health inequalities experienced by some groups of the population.

In an attempt to remove the inequalities that exist in accessing a healthy nutritious diet, the government's 2005 *Food and Health Action Plan*<sup>113</sup> set out a strategy to promote a healthy balanced diet. This framework focused on improving access to, and increasing the average consumption of a variety of fruit and vegetables to at least five portions per day. The 5 A DAY programme, introduced in 2000, is aimed at encouraging the population to increase their consumption of fruit and vegetables.

Between 2001 and 2004, there were no significant changes in mean portions of fruit and vegetables consumed among children aged 5-15, but there was an increase in 2005 both in the average number of portions of fruit and vegetables eaten daily and the proportion of children eating five or more portions per day (meeting the recommended guidelines). There was a further significant increase among girls in 2006. This reflects increases in fruit and vegetable consumption reported by adults (see Adults Table 10). There was no significant change in the proportion of children eating the recommended five or more portions per day between 2006 and 2011, despite a slight decrease in the proportion of adults meeting recommendations between 2007 and 2008.

In 2011, boys aged 5-15 consumed an average of 3.0 portions of fruit and vegetables per day and girls an average of 3.3, compared with an average of between 2.4 and 2.7 portions per day among boys and between 2.6 and 2.7 portions per day among girls between 2001 and 2004. 16% of boys and 20% of girls consumed at least five portions per day in 2011, compared with 10% to 13% between 2001 and 2004. There were no clear trends in the proportion of children in different consumption bands, or trends by age.

Estimates of the number of children aged 5-15 in the population for fruit and vegetable consumption from 2003-2011 are available in the number estimate tables.<sup>3</sup>

There are no figures available for fruit and vegetable consumption in 2012.

**Table 7** Children's fruit and vegetable consumption, by survey year, age and sex

## General health

Table 8 shows the prevalence of very good or good general health, by survey year, age and sex. Over the period from 1995 to 2012, at least 90% of boys and girls reported very good or good general health. The proportion of children reporting very good or good health increased overall between 1995 and 2012, from 90% to 94% among boys and from 92% to 96% among girls.

**Table 8** Children's general health, by survey year, age and sex

Table 9 shows the prevalence of longstanding illness, by survey year, age and sex. There are no figures available for longstanding illness among children in 2010, and results for 2011 are based only on 3 months' data, so bases are small.<sup>114</sup> The questions on longstanding illness were changed in 2012, as described in the section on adult longstanding illness.

While year on year changes were generally small, the prevalence of both longstanding and limiting longstanding illnesses appears to be decreasing gradually. Longstanding illness declined between 1995 and 2012 from 23% to 17% among boys, and from 20% to 10% among girls (results were similar in 2011 and 2012 despite the change in questions). Limiting longstanding illness among boys was at a similar level in 1996 and 2012 (10% and 9% respectively), while the proportion among girls declined over the period from 9% to 4%.

**Table 9** Children's longstanding illness, by survey year, age and sex

Table 10 shows the prevalence of acute sickness, by survey year, age and sex. Acute sickness is defined as any illness or injury (including any longstanding condition) that has caused the participant to cut down in the last two weeks on things they usually did. Prevalence of acute sickness varied between 8% and 14% for boys and 10% to 14% for girls, but there were no obvious trends in acute sickness between 1995 and 2012.

**Table 10** Children's acute sickness, by survey year, age and sex

## Physical activity

Physical activity is important for children. Obesity is a major adverse health consequence of physical inactivity, although not the only one. It is not always appreciated that physical inactivity in childhood also has direct health consequences, both in the short- and mid-term. In pre-school children, physical activity is critical for reduced adiposity, improved bone and muscle strength, motor development, and psychosocial health, as well as being important for cardio-metabolic health (blood pressure, blood lipids (fats) and insulin sensitivity).<sup>115,116</sup>

In school-aged children, periodic physical activity can increase academic achievement (and at worst, not reduce it), increase attention, and improve behaviour and attitudes, as well as increasing physical health.<sup>117</sup> This may be through improving cognitive control, enhancing choice instead of impulse.<sup>118</sup> Greater physical fitness is also related to better brain function and reduced reaction times.<sup>118</sup>

Physical activity sufficient to improve aerobic fitness can reduce blood pressure in children with hypertension, reduce blood lipids, and reduce adverse metabolic profiles; muscle-strengthening exercise has similar but lesser effects.<sup>119</sup> Physical activity alone can improve insulin resistance risk, even without weight loss.<sup>120</sup>

The 2011 report from all four Chief Medical Officers across the UK *Start Active, Stay Active*<sup>80</sup> included a call for a concerted effort 'to create environments and conditions that make it easier for people to be more active and less sedentary'. Such actions included prioritising cycling as a mode of travel; involving town and transport planners to facilitate safe walking and cycling to school; community-level programmes, including parks and playgrounds; programmes aimed at reducing sedentary behaviour, including leisure-time screen use; promoting movement in children in the early years, through interventions with nursery professionals; and programmes to stimulate play in young people, including low-cost play schemes open to all.

The evidence on the benefits of physical activity and the amount of activity recommended for health was reviewed in 2010<sup>81</sup> for the Chief Medical Officers of the four UK countries, who published new recommendations in 2011.<sup>80</sup> For the first time, guidelines were published for children under five. Those able to walk unaided are recommended to be active for at least 180 minutes (3 hours) per day, spread throughout the day.<sup>121</sup> The 2011 recommendations for children aged 5 to 18 are twofold. As previously, it is recommended that children should be at least moderately active for at least 60 minutes every day, though it is stated specifically that this is a minimum. It is also recommended that vigorous intensity activity, including muscle- and bone-strengthening activities, should be undertaken at least three days each week.<sup>122</sup>

Table 11 shows the proportion of children aged 5-15 in different physical activity categories for 2008 and 2012, based on reported physical activity in the last week (with parents answering on behalf of children aged 5-12). Results are based on a new questionnaire introduced in 2008, which is the preferred method. There was concern about the accuracy of the data collected from the previous physical activity questions, given the high proportions of children that were found to be meeting government recommendations according to the assumptions on which the analysis was based.<sup>123</sup>

For the 2008 survey, the children's physical activity questions were extensively revised to allow more accurate estimation of children's activity.<sup>124</sup> The key changes were:

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

The 2012 questionnaire was identical to that used in 2008.

Summary activity levels are used in the analysis, based on the Chief Medical Officer's (CMO's) recommendations for physical activity of at least moderate intensity for children and young people, and are defined as follows:

- Meets recommendations: active for at least 60 minutes on seven days
- Some activity: active for 30-59 minutes on seven days
- Low activity: lower level of activity than that described above

Among boys, there was a significant decrease in the proportion meeting physical activity recommendations between 2008 and 2012, falling from 28% in 2008 to 21% in 2012. The corresponding change among girls was not significant, with 19% in 2008 and 16% in 2012 meeting recommendations.

Among both boys and girls, the decrease in the proportion meeting recommendations was particularly marked in the oldest age group. 28% of boys and 14% of girls aged 13-15 met the current guidelines in 2008, compared with 14% and 8% respectively in 2012. It should be noted that (in both years) these estimates exclude both activities during school hours and active travel to and from school, and thus potentially underestimate the proportion of children meeting current recommendations.

An objective measure of physical activity, using accelerometry,<sup>125</sup> was also obtained in 2008. Details are available in the 2008 report.<sup>124,126</sup>

Estimates of the number of children aged 5-15 in the population for physical activity categories for 2008 and 2012 are available in the number estimate tables.<sup>3</sup>

There are no figures available for physical activity in 2009, 2010 and 2011.

**Table 11** Children's physical activity levels (new questionnaire), by survey year, age group and sex

## References and notes

- 1 In 2003, key survey variables using weighted and unweighted estimates were compared. This comparison showed that there are small differences between weighted and unweighted results, which are generally larger for men than women. See Blake, M. *Weighting the data*. Section 7.4.2, in Sproston K, Primatesta P (eds). *Health Survey for England 2003. Volume 3: Methodology and documentation*. The Stationery Office, London, 2004.
- 2 Standard errors of the mean, shown in some tables, have been calculated using the statistical package STATA, as in previous years. In the 2007 and subsequent reports ([www.hscic.gov.uk/searchcatalogue?q=title%3A%22Health+Survey+for+England%22&area=&size=10&sort=Relevance](http://www.hscic.gov.uk/searchcatalogue?q=title%3A%22Health+Survey+for+England%22&area=&size=10&sort=Relevance)), standard errors have been calculated using the SPSS Complex Samples module, and while prevalences and means are identical in each case there are some instances where the standard errors in these two packages differ by 0.01-0.02. The explanation is that the two software packages deal differently with the situation where a stratification cell/category only contains one Primary Sampling Unit (PSU). This problem can arise when the estimation focuses on a small subset of the HSE data (e.g. adults with valid BMI or children aged 8-15 with smoking data). In any case where the difference in the standard errors produced in the two packages would determine statistical significance, users should exercise caution about interpreting significance so close to the benchmark 5%.
- 3 Health Survey for England – 2012 Trend Tables at [www.hscic.gov.uk/pubs/hse2012trend](http://www.hscic.gov.uk/pubs/hse2012trend)
- 4 In 2003, a new automated device, the Omron HEM 907, was introduced to measure blood pressure, as a replacement for the Dinamap 8100, which had become obsolete. In previous trend tables the Omron values for 2003-2006 were translated into Dinamap values to allow comparison with previous years. From 2007 the tables only present Omron values, for 2003 onwards.
- 5 World Health Organization. *The World Health report 2002; reducing risks, promoting healthy life*. WHO, Geneva, 2002. [www.who.int/whr/2002/en/](http://www.who.int/whr/2002/en/) (Accessed 1st November 2013)
- 6 Giuseppe M, De Backer G, Donniczak A et al. *Guidelines for the Management of Arterial Hypertension: The Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC)*. *J Hypertens*. 2007;**25**:6:1105-1187.
- 7 National Institute for Health and Clinical Excellence (NICE). *Hypertension: clinical management of primary hypertension in adults*. Clinical Guideline No 127. NICE, London, 2011. <http://publications.nice.org.uk/hypertension-cg127> (Accessed 19th November 2013)
- 8 National Institute for Health and Clinical Excellence (NICE). *Cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease*. NICE, London, 2008. [www.nice.org.uk/guidance/CG67](http://www.nice.org.uk/guidance/CG67) (Accessed 1st November 2013)
- 9 Sproston K, Primatesta P (eds). *Health Survey for England 2003. Volume 3: Methodology and documentation*. The Stationery Office, London, 2004.
- 10 World Health Organization. *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 29th August 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 Cross-Government Obesity Unit. *Healthy Weight, Healthy Lives: a Cross-Government Strategy for England*. Department of Health, London, 2008. [http://webarchive.nationalarchives.gov.uk/20100407220245/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_084024.pdf](http://webarchive.nationalarchives.gov.uk/20100407220245/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_084024.pdf) (Accessed 1st November 2013)
- 15 National Audit Office. *Tackling Child Obesity – First Steps*. Report by the Comptroller and Auditor General, prepared jointly by the Audit Commission, the Healthcare Commission and the National Audit Office [www.nao.org.uk/publications/0506/tackling\\_child\\_obesity.aspx](http://www.nao.org.uk/publications/0506/tackling_child_obesity.aspx) (Accessed 1st November 2013)
- 16 Cross-Government Obesity Unit. *Healthy Weight, Healthy Lives: Two Years On*. Department of Health, London, 2010. [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_113486](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_113486) (Accessed 1st November 2013)
- 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) (Accessed 1st November 2013)
- 18 In HSE 2003, the categorisation of BMI changed to reflect recent medical opinion which now regards it as more appropriate to define 18.5 to under 25kg/m<sup>2</sup> as desirable or 'normal' and less than 18.5 as undesirable or underweight. Reports for HSE 2003 onwards have used this revised definition, and for the purpose of trends analysis the revised definition has also been used for 1993 to 2002. This replaces the earlier definition of desirable weight of over 20 to 25kg/m<sup>2</sup>. See Hirani V, Chapter 6: *Anthropometric measures, overweight, and obesity* in Sproston K, Primatesta P (eds). *Health Survey for England 2003. Volume 2: Risk factors for cardiovascular disease*. The Stationery Office, London, 2004.
- 19 Waist circumference was also measured among adults aged 65 and over in 2000.

- 20 National Institute of Health (USA). *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.
- 21 National Institute of Health and Clinical Excellence (NICE). *Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children*. NICE, London, 2006. <http://www.nice.org.uk/nicemedia/pdf/cg43niceguideline.pdf> (Accessed 1st November 2013)
- 22 *Statistics on Smoking in England, 2013*. Health and Social Care Information Centre, Leeds, 2013. [www.hscic.gov.uk/catalogue/PUB11454](http://www.hscic.gov.uk/catalogue/PUB11454) (Accessed 1st November 2013)
- 23 Department of Health. *A smokefree future: a comprehensive tobacco control strategy*. DH, London, 2010. [http://webarchive.nationalarchives.gov.uk/20100509080731/http://dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_111749](http://webarchive.nationalarchives.gov.uk/20100509080731/http://dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_111749) (Accessed 1st November 2013)
- 24 Department of Health. *Smoking kills: a White Paper on tobacco*. DH, London, 1998. [http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4006684](http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4006684) (Accessed 1st November 2013)
- 25 Department of Health. *Choosing Health: Making healthy choices easier*. DH, London, 2004. [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/@ps/documents/digitalasset/dh\\_133489.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_133489.pdf) (Accessed 1st November 2013)
- 26 Department of Health. *Healthy Lives, Healthy People: a tobacco control plan for England*. DH, London, 2011. [www.gov.uk/government/publications/the-tobacco-control-plan-for-england](http://www.gov.uk/government/publications/the-tobacco-control-plan-for-england) (Accessed 1st November 2013)
- 27 Strategy Unit. *Alcohol Harm Reduction Strategy for England*. Cabinet Office, London, 2004.
- 28 Department of Health, Home Office et al. *Safe. Sensible. Social. The next steps in the national alcohol strategy*. DH, London, 2007. [http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/PublicHealth/Healthimprovement/Alcoholmisuse/DH\\_085386](http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/PublicHealth/Healthimprovement/Alcoholmisuse/DH_085386) (Accessed 10th October 2013)
- 29 HM Government. *The Government's Alcohol Strategy*. TSO, London, 2012. [www.gov.uk/government/publications/alcohol-strategy](http://www.gov.uk/government/publications/alcohol-strategy) (Accessed 10th October 2013)
- 30 Department of Health. *Sensible drinking: the report of an inter-departmental working group*. London, 1995. [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/documents/digitalasset/dh\\_4084702.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4084702.pdf) (Accessed 1st November 2013)
- 31 Rehm J, Room R, Graham K et al. *The relationship of average volume of consumption and patterns of drinking to burden of disease: an overview*. *Addiction* 2003;**98**:1209-1228.
- 32 Donaldson L. *Passive drinking: the collateral damage from alcohol in 150 years of the Annual Report of the Chief Medical Officer: on the state of public health*. Department of Health, London, 2009. [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_096229.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_096229.pdf) (Accessed 1st November 2013)
- 33 Health and Social Care Information Centre. *Statistics on alcohol: England 2013*. HSCIC, Leeds, 2013. [www.hscic.gov.uk/searchcatalogue?productid=11719&topics=1%2fPublic+health%2flifestyle&sort=Relevance&size=10&page=1#top](http://www.hscic.gov.uk/searchcatalogue?productid=11719&topics=1%2fPublic+health%2flifestyle&sort=Relevance&size=10&page=1#top) (Accessed 10th October 2013)
- 34 British Beer and Pub Association. *Statistical Handbook*. Brewing Publications, London, 2013. Consumption figures relate to the UK population aged 15 and over. The figure is based on HMRC releases of alcohol for sale in the UK and does not account for legal or illegal personal imports.
- 35 Health Survey for England – 2005, Latest trends. [www.hscic.gov.uk/catalogue/PUB01178](http://www.hscic.gov.uk/catalogue/PUB01178)
- 36 Ng Fat L, Fuller E. *Drinking patterns* and Boniface S, Fuller E. *Drinking diary*. Chapters 6 and 7 in Craig R, Mindell J (eds). *Health Survey for England 2011*. Health and Social Care Information Centre, Leeds, 2012. [www.hscic.gov.uk/catalogue/PUB09300](http://www.hscic.gov.uk/catalogue/PUB09300)
- 37 Fuller E. *Alcohol consumption*. Chapter 6 in Craig R, Mindell J (eds). *Health Survey for England 2012*. Health and Social Care Information Centre, Leeds, 2013. [www.hscic.gov.uk/pubs/hse2012](http://www.hscic.gov.uk/pubs/hse2012)
- 38 Smyth M, Browne F. *General Household Survey 1990*. HMSO, 1992.
- 39 Goddard E. *Estimating alcohol consumption from survey data: improved method of converting volume to units*. ONS, 2007. [www.ons.gov.uk/ons/search/index.html?newquery=Estimating+Alcohol+Consumption+from+Survey+Data%3A+Updated+method+of+converting+volumes+to+units](http://www.ons.gov.uk/ons/search/index.html?newquery=Estimating+Alcohol+Consumption+from+Survey+Data%3A+Updated+method+of+converting+volumes+to+units) (Accessed 1st November 2013)
- 40 The table below shows the original conversion factors used by the HSE until 2005 and the revised conversion factors used from 2006.

Type of drink	Measure	Original equivalent units of alcohol	Revised equivalent units of alcohol
Normal strength beer, lager, stout, cider, shandy (less than 6% ABV)	Pint	2	2
	Can or bottle	Amount in pints multiplied by 2	Amount in pints multiplied by 2
	Small cans (size unknown)	1	1.5
	Large cans or bottles (size unknown)	2	2
Strong beer, lager, stout, cider (6% ABV or more)	Pint	3	4
	Can or bottle	Amount in pints multiplied by 3	Amount in pints multiplied by 4
	Small cans (size unknown)	1.5	2
	Large cans or bottles (size unknown)	3	3
Spirits and liqueurs	Glass (single measure)	1	1
Sherry, vermouth and other fortified wines	Glass	1	1
Wine	Glass	1	2
Alcopops	Small can or bottle	1	1.5

<sup>a</sup>In previous years, this table has shown an incorrect conversion factor of 2.5. The correct conversion factor has been used in analysis in all survey years.

- 41 From 2007 the unit conversions for glasses of wine were as follows:  
 Large glass 250ml 3.0 units  
 Standard glass 175ml 2.0 units  
 Small glass 125ml 1.5 units
- 42 For information on trends using the original method, and differences between the original and revised estimates for 2006, see the 2006 trend tables commentary, available at [www.hscic.gov.uk/catalogue/PUB00480](http://www.hscic.gov.uk/catalogue/PUB00480)
- 43 World Health Organization. *Global strategy on diet, physical activity and health*. The Fifty-seventh World Health Assembly, World Health Organization, Geneva, 2004. [www.who.int/dietphysicalactivity/strategy/eb11344/strategy\\_english\\_web.pdf](http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy_english_web.pdf) (Accessed 1st November 2013)
- 44 Rayner M, Scarborough P. *The burden of food related ill health in the UK*. J Epidemiol Community Health 2005;**59**:1054-1057.
- 45 Commission on Social Determinants of Health. *Closing the gap in a generation: health equity through action on the social determinants of health*. Final Report of the Commission on Social Determinants of Health. World Health Organization, Geneva, 2008. [www.who.int/social\\_determinants/thecommission/finalreport/en/index.html](http://www.who.int/social_determinants/thecommission/finalreport/en/index.html) (Accessed 1st November 2013)
- 46 *Diet, nutrition and the prevention of chronic diseases: report of a Joint FAO/WHO Expert Consultation*. WHO Technical Report Series, No. 916. World Health Organization, Geneva, 2003. [http://whqlibdoc.who.int/trs/who\\_trs\\_916.pdf](http://whqlibdoc.who.int/trs/who_trs_916.pdf) (Accessed 1st November 2013)
- 47 [www.nhs.uk/livewell/5aday/pages/5adayhome.aspx/](http://www.nhs.uk/livewell/5aday/pages/5adayhome.aspx/) (Accessed 1st November 2013)
- 48 Tohill B. *Dietary intake of fruit and vegetables and management of body weight*. Background paper for the Joint FAO/WHO Workshop on Fruit and Vegetables for Health, World Health Organization, 2004. [www.who.int/dietphysicalactivity/publications/f&v\\_weight\\_management.pdf](http://www.who.int/dietphysicalactivity/publications/f&v_weight_management.pdf) (Accessed 1st November 2013)
- 49 Bazzano L, Li T, Kamudi J, Hu F. *Intake of Fruit, Vegetables, and Fruit Juices and Risk of Diabetes in Women*. Diabetes Care 2008;**31**:7:1311-1317. <http://care.diabetesjournals.org/content/31/7/1311.abstract> (Accessed 1st November 2013).
- 50 Sabia S, Marmot M, Dufouil C, Singh-Manoux A. *Smoking history and cognitive function in middle age from the Whitehall II study*. Arch Intern Med 2008;**168**:11:1165-1173. [www.ncbi.nlm.nih.gov/pmc/articles/PMC2696613/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2696613/) (Accessed 1st November 2013)
- 51 Mossey JM, Shapiro E. *Self-rated health: a predictor of mortality among the elderly*. Am J Public Health 1982;**72**:800-808.
- 52 Idler EL, Kasl SV. *Self-ratings of health: do they also predict change in functional ability?* J Gerontol. Soc Sci. 1995;**50B**:S344-S353.
- 53 Office for National Statistics. *Harmonised Concepts and Questions for Social Data Sources: Primary Standards. Long-lasting Health Conditions and Illnesses; Impairments and Disability*. ONS, Newport, 2011. [www.ons.gov.uk/ons/guide-method/harmonisation/primary-set-of-harmonised-concepts-and-questions/index.html](http://www.ons.gov.uk/ons/guide-method/harmonisation/primary-set-of-harmonised-concepts-and-questions/index.html) (Accessed 1st November 2013)



- 54 National Statistics. *Mortality Statistics: Deaths registered in England and Wales 2010*. Office for National Statistics, 2011. [www.ons.gov.uk/ons/rel/vsob1/mortality-statistics--deaths-registered-in-england-and-wales--series-dr-/2010/stb-deaths-by-cause-2010.html](http://www.ons.gov.uk/ons/rel/vsob1/mortality-statistics--deaths-registered-in-england-and-wales--series-dr-/2010/stb-deaths-by-cause-2010.html) (Accessed 1st November 2013)
- 55 Department of Health. *Saving lives: Our Healthier Nation*. DH, London, 1999. <http://www.archive.official-documents.co.uk/document/cm43/4386/4386-00.htm>
- 56 Department of Health. *National Service Framework for CHD*. DH, London, 2000. [www.gov.uk/government/publications/quality-standards-for-coronary-heart-disease-care](http://www.gov.uk/government/publications/quality-standards-for-coronary-heart-disease-care) (Accessed 1st November 2013)
- 57 Department of Health Coronary Heart Disease Policy Team. *The Coronary Heart Disease National Service Framework: Building on excellence, maintaining progress*. Progress report for 2008. Department of Health, London, 2009. [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_096556.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_096556.pdf) (Accessed 1st November 2013)
- 58 National Statistics. *Death Registrations Summary Statistics, England and Wales 2011. Provisional figures*. [www.ons.gov.uk/ons/rel/vsob1/death-reg-sum-tables/2011--provisional-/index.html](http://www.ons.gov.uk/ons/rel/vsob1/death-reg-sum-tables/2011--provisional-/index.html) (Accessed 1st November 2013)
- 59 Garcia MJ, McNamara PM, Gordon T, Kannel WB. *Morbidity and mortality in the Framingham population. Sixteen year follow-up*. *Diabetes* 1974;**23**:105-111.
- 60 Diabetes UK. *Are you at risk of type 2 diabetes?* [www.diabetes.org.uk/upload/How%20we%20help/catalogue/At%20Risk%20DL\\_web2.pdf](http://www.diabetes.org.uk/upload/How%20we%20help/catalogue/At%20Risk%20DL_web2.pdf) (Accessed 1st November 2013)
- 61 Klein S, Allison DB, Heymsfield SB et al. *Waist circumference and cardiometabolic risk: a consensus statement from Shaping America's Health: Association for Weight Management and Obesity Prevention; NAASO, The Obesity Society; the American Society for Nutrition; and the American Diabetes Association*. *Am J Clin Nutr*. 2007;**85**:5:1197-202.
- 62 *Diabetes Attributable Deaths: Estimating the excess deaths among people with diabetes*. Yorkshire and Humber Public Health Observatory, 2008. [www.yhpho.org.uk/resource/item.aspx?RID=9909](http://www.yhpho.org.uk/resource/item.aspx?RID=9909) (Accessed 1st November 2013)
- 63 Department of Health. *National Service Framework for Diabetes: Delivery Strategy*. London, 2003. [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/documents/digitalasset/dh\\_4058937.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4058937.pdf) (Accessed 1st November 2013)
- 64 National Institute for Health and Clinical Excellence. *NICE Quality Standard Programme: Diabetes in adults*. <http://publications.nice.org.uk/diabetes-in-adults-quality-standard-qs6> (Accessed 1st November 2013)
- 65 Ehtisham S, Barrett TG, Shaw NJ. *Type 2 diabetes mellitus in UK children – an emerging problem*. *Diabetic Medicine*, 2000;**17**:867-71.
- 66 Drake A, Smith A, Betts P et al. *Type 2 diabetes in obese white children*. *Archives of disease in childhood* 2002;**86**:207-8.
- 67 Diabetes UK. *Diabetes in the UK 2010: key statistics on diabetes*. London, 2010. [www.diabetes.org.uk/Documents/Reports/Diabetes\\_in\\_the\\_UK\\_2010.pdf](http://www.diabetes.org.uk/Documents/Reports/Diabetes_in_the_UK_2010.pdf) (Accessed 1st November 2013)
- 68 Barnett A, Begg A, Dyson P et al. *Insulin for type 2 diabetes: choosing a second-line insulin regimen*. *International Journal of Clinical Practice* 2008;**62**:1647-53.
- 69 Rubino A, McQuay LJ, Gough SJ et al. *Delayed initiation of subcutaneous insulin therapy after failure of oral glucose-lowering agents in patients with Type 2 diabetes: a population-based analysis in the UK*. *Diabetic Medicine* 2007;**24**:1412-8.
- 70 Moody A. *Diabetes and hyperglycaemia*. Chapter 4 in Craig R, Mindell J (eds). *Health Survey for England 2011*. Health and Social Care Information Centre, Leeds, 2012. [www.hscic.gov.uk/catalogue/PUB09300](http://www.hscic.gov.uk/catalogue/PUB09300) (Accessed 1st November 2013)
- 71 *Quality and Outcomes Framework, Achievement, prevalence and exceptions data, 2011/12*. Health and Social Care Information Centre, Leeds, 2012. [www.hscic.gov.uk/article/2021/WebsiteSearch?productid=9046&q=Quality+and+Outcomes+Framework%2c+2011%2f12.&sort=Relevance&size=10&page=1&area=both#top](http://www.hscic.gov.uk/article/2021/WebsiteSearch?productid=9046&q=Quality+and+Outcomes+Framework%2c+2011%2f12.&sort=Relevance&size=10&page=1&area=both#top) (Accessed 1st November 2013)
- 72 World Health Organization. *Global health risks. Mortality and burden of disease attributable to selected major risks*. WHO, Geneva, 2009. [www.who.int/healthinfo/global\\_burden\\_disease/GlobalHealthRisks\\_report\\_full.pdf](http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf) (Accessed 1st November 2013)
- 73 Ischaemic Heart Disease, or IHD, is also called coronary heart disease (CHD) or coronary artery disease (CAD).
- 74 Lee IM, Shiroma EJ, Lobelo F et al. *Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy*. *Lancet* 2012;**380**:219-29.

- 75 Allender S, Foster C, Scarborough P et al. *The burden of physical activity-related ill health in the UK*. *J Epidemiol Community Health* 2007;**61**:344-8.
- 76 Department of Culture, Media and Sports. *Game Plan: A strategy for delivering the government's sports and physical activity objectives*. Strategy Unit, DCMS, London, 2002. [www.gamesmonitor.org.uk/files/game\\_plan\\_report.pdf](http://www.gamesmonitor.org.uk/files/game_plan_report.pdf) (Accessed 1st November 2013)
- 77 Williams ED, Stamatakis E, Chandola T, Hamer M. *Physical activity behaviour and coronary heart disease mortality among South Asian people in the UK: an observational longitudinal study*. *Heart* 2011;**97**:655-9.
- 78 Killoran A, Fentem P, Caspersen C (eds). *Moving on. International perspective on promoting physical activity*. Health Education Authority, London, 1994. [www.nice.org.uk/nicemedia/documents/moving\\_on.pdf](http://www.nice.org.uk/nicemedia/documents/moving_on.pdf) (Accessed 1st November 2013)
- 79 Department of Health. *A Report of the Chief Medical Officer: At least five a week: evidence on the impact of physical activity and its relationship to health*. HM Government, London, 2004. [http://webarchive.nationalarchives.gov.uk/+/dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh\\_4080994](http://webarchive.nationalarchives.gov.uk/+/dh.gov.uk/en/publicationsandstatistics/publications/publicationspolicyandguidance/dh_4080994) (Accessed 1st November 2013)
- 80 Department of Health. *Start Active, Stay Active. A report on physical activity for health from the four home countries' Chief Medical Officers*. DH, London, 2011. <https://www.gov.uk/government/publications/start-active-stay-active-a-report-on-physical-activity-from-the-four-home-countries-chief-medical-officers> (Accessed 1st November 2013)
- 81 Bull FC, Expert Working Groups. *Physical Activity Guidelines in the UK: Review and Recommendations*. Loughborough University, Loughborough, 2010. [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/213743/dh\\_128255.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213743/dh_128255.pdf) (Accessed 1st November 2013)
- 82 Roth M. *Self-reported physical activity in adults* Chapter 2 in Craig R, Mindell J, Hirani V (eds). *Health Survey for England 2008. Volume 1: Physical activity and fitness*. Health and Social Care Information Centre, Leeds, 2009. [www.hscic.gov.uk/catalogue/PUB00430](http://www.hscic.gov.uk/catalogue/PUB00430)
- 83 Scholes S, Mindell J. *Physical activity in adults*. Chapter 2 in Craig R, Mindell J (eds). *Health Survey for England 2012*. Health and Social Care Information Centre, Leeds, 2013. [www.hscic.gov.uk/pubs/hse2012](http://www.hscic.gov.uk/pubs/hse2012)
- 84 Chaudhury M, Esliger D. *Accelerometry in adults*. Chapter 3 in Craig R, Mindell J, Hirani V (eds). *Health Survey for England 2008. Volume 1: Physical activity and fitness*. Health and Social Care Information Centre, Leeds, 2009. [www.hscic.gov.uk/catalogue/PUB00430](http://www.hscic.gov.uk/catalogue/PUB00430)
- 85 Steinbeck K. *The importance of physical activity in the prevention of overweight and obesity in childhood: a review and an opinion*. *Obesity Reviews* 2001;**2**:117-130.
- 86 Rhoads GG, Kagan A. *The relation of coronary-disease, stroke, and mortality to weight in youth and in middle-age*. *Lancet* 1983;**1**:492-495.
- 87 Gunnell D, Frankel S, Nanchahal K, Peters TJ, Smith GD. *Childhood obesity and adult cardiovascular mortality: a 57-y follow-up study based on the Boyd Orr cohort*. *American Journal of Clinical Nutrition* 1998;**67**:1111-1118.
- 88 Must A, Jacques PF, Dallal GE, Bajema CJ, Dietz WH. *Long-term morbidity and mortality of overweight adolescents – a follow-up of the Harvard growth study of 1922 to 1935*. *New England Journal of Medicine* 1992;**327**:1350-1355.
- 89 Department of Health. *Healthy Lives, Healthy People: Our Strategy for Public Health in England*. HMSO, London, 2010. [www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_121941](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_121941) (Accessed 1st November 2013)
- 90 Department of Health. *Healthy Child Programme from 5 to 19 years old*. DH, London, 2009. [http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_107566](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_107566) (Accessed 1st November 2013)
- 91 Health and Social Care Information Centre. *National Child Measurement Programme*. HSCIC, Leeds, 2013. [www.hscic.gov.uk/ncmp](http://www.hscic.gov.uk/ncmp) (Accessed 1st November 2013)
- 92 *Public Health Responsibility Deal*. Department of Health, 2011. <https://responsibilitydeal.dh.gov.uk/> (Accessed 1st November 2013)
- 93 Department of Health. *Healthy Lives, Healthy People: A call to action on obesity in England*. HMSO, London, October 2011. <https://www.gov.uk/government/publications/healthy-lives-healthy-people-a-call-to-action-on-obesity-in-england> (Accessed 1st November 2013)
- 94 In 2008, the definitions for children who were overweight or obese were revised from those used in previous years to correct an error which meant that small numbers of children that should have been classified as either 'overweight' or 'obese' were omitted from these categories because of rounding of age and BMI thresholds. The revised percentages of those overweight or obese in each year differ by less than 0.1 – 1.1 percentage points from those originally published, and 0.3% - 1.2% of children in each year were misclassified. In no cases were results significantly different from those presented

previously. Some percentages appeared to have increased because of rounding. Data for 1995-2007 have been corrected in the trend tables.

- 95 Cole TJ, Freeman JV, Preece MA. *Body mass index reference curves for the UK, 1990*. Archives of Disease in Childhood 1995;**73**:25-29.
- 96 The Royal College of Physicians. *Smoking and the Young*. RCP Publications, London, 1992.
- 97 US Department of Health and Human Services. *Preventing Tobacco Use Among Young People: A Report of the Surgeon General*. National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, 1994.  
[www.cdc.gov/mmwr/PDF/rr/rr4304.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr4304.pdf) (Accessed 1st November 2013)
- 98 Chen J, Millar WJ. *Age of smoking initiation: implications for quitting*. Health Reports 1998; **9**: 39-46.
- 99 Office of Public Sector Information. *The Health Act 2006*.  
[www.opsi.gov.uk/ACTS/acts2006/ukpga\\_20060028\\_en\\_1](http://www.opsi.gov.uk/ACTS/acts2006/ukpga_20060028_en_1) (Accessed 1st November 2013)
- 100 Office of Public Sector Information. *The Children and Young Persons (Sale of Tobacco etc.) Order 2007*. Statutory Instruments 2007 No. 767  
[www.opsi.gov.uk/si/si2007/ukxi\\_20070767\\_en\\_1](http://www.opsi.gov.uk/si/si2007/ukxi_20070767_en_1) (Accessed 1st November 2013)
- 101 Department of Health. *Health Act 2009*. Gateway Reference 11194, 12676.  
[www.legislation.gov.uk/ukpga/2009/21/contents](http://www.legislation.gov.uk/ukpga/2009/21/contents) (Accessed 1st November 2013)
- 102 Hibell B et al. *The ESPAD Report 2003: alcohol and other drug use among students in 35 European countries*. Swedish Council for Information on Alcohol and Other Drugs, Stockholm, 2004.  
[www.drugsandalcohol.ie/5923/7/ESPAD\\_2003\\_report\\_part\\_one.pdf](http://www.drugsandalcohol.ie/5923/7/ESPAD_2003_report_part_one.pdf) (Accessed 1st November 2013)
- 103 Currie C et al (eds). *Young People's Health in Context: international report from the HBSC 2001/02 survey*. WHO Policy Series: Health policy for children and adolescents, Issue 4. WHO Regional Office for Europe, Copenhagen, 2004.  
[www.euro.who.int/\\_data/assets/pdf\\_file/0008/110231/e82923.pdf](http://www.euro.who.int/_data/assets/pdf_file/0008/110231/e82923.pdf) (Accessed 1st November 2013)
- 104 Alcohol Concern. *Young People's Drinking*. Acquire: Alcohol Concern's Quarterly Information and Research Bulletin. Alcohol Concern, London, 2006.
- 105 Department for Children, Schools and Families. *Youth Alcohol Action Plan*. The Stationery Office, London, 2008.  
<http://webarchive.nationalarchives.gov.uk/20130401151715/https://www.education.gov.uk/publications/eOrderingDownload/Cm%207387.pdf> (Accessed 1st November 2013)
- 106 Department of Health. *Guidance on the consumption of alcohol by children and young people. A report by the Chief Medical Office*. DH, London, 2009.  
[http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/documents/digitalasset/dh\\_110256.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_110256.pdf) (Accessed 1st November 2013)
- 107 NHS and Department for Children, Schools and Families. *National Healthy Schools Programme*.  
<http://dera.ioe.ac.uk/6798/1/Introduction.pdf> (Accessed 1st November 2013)
- 108 Department for Education and Skills. *Starting early: food and nutrition education in young children*. Ofsted Publication Centre, London, 2004.  
[www.ofsted.gov.uk/resources/starting-early-food-and-nutrition-education-of-young-children](http://www.ofsted.gov.uk/resources/starting-early-food-and-nutrition-education-of-young-children) (Accessed 1st November 2013)
- 109 Food Standards Agency and Department for Education and Skills. *Getting to grips with grub: food and nutrition competencies of 14-16 year olds*. London, 2003.  
[www.food.gov.uk/multimedia/pdfs/grubgrips.pdf](http://www.food.gov.uk/multimedia/pdfs/grubgrips.pdf) (Accessed 1st November 2013)
- 110 Department for Education and Skills White Paper. *Excellence in Schools*. Cm 3681. The Stationery Office, London, 1997.  
[www.educationengland.org.uk/documents/wp1997/excellence-in-schools.html](http://www.educationengland.org.uk/documents/wp1997/excellence-in-schools.html) (Accessed 1st November 2013)
- 111 Department for Education and Skills Green Paper. *Every Child Matters*. Cm 5860. The Stationery Office, London, 2003.  
[www.education.gov.uk/consultations/downloadableDocs/EveryChildMatters.pdf](http://www.education.gov.uk/consultations/downloadableDocs/EveryChildMatters.pdf) (Accessed 1st November 2013)
- 112 Department of Health. *School Fruit and Vegetable Scheme*.  
[http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/PublicHealth/HealthImprovement/FiveADay/FiveADaygeneralinformation/DH\\_4002149](http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/PublicHealth/HealthImprovement/FiveADay/FiveADaygeneralinformation/DH_4002149) (Accessed 1st November 2013)
- 113 Department of Health. *Choosing a Better Diet: a food and health action plan*. DH, London, 2005.  
[http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod\\_consum\\_dh/groups/dh\\_digitalassets/@dh/@en/documents/digitalasset/dh\\_4105709.pdf](http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4105709.pdf) (Accessed 1st November 2013)
- 114 Questions on longstanding illness were not asked of children in the survey in 2010 due to a routing error in the questionnaire. The error was corrected from October 2011. Results for 2011 are therefore based on small numbers, and margins of error are relatively wide, so the data should be interpreted with caution. No age breakdown is available for 2011.
- 115 Timmons BW, LeBlanc AG, Carson V et al. *Systematic review of physical activity and health in the early years (aged 0-4 years)*. Appl Physiol Nutr Metab. 2012;**37**:773-92.

- 116 Loprinzi PD, Cardinal BJ, Loprinzi KL et al. *Benefits and environmental determinants of physical activity in children and adolescents*. *Obes Facts* 2012;**5**:597-610.
- 117 Burkhalter TM, Hillman CH. *A narrative review of physical activity, nutrition, and obesity to cognition and scholastic performance across the human lifespan*. *Adv Nutr*. 2011;**2**:201S-6S.
- 118 Chaddock L, Pontifex MB, Hillman CH et al. *A review of the relation of aerobic fitness and physical activity to brain structure and function in children*. *J Int Neuropsychol Soc*. 2011;**17**:975-85.
- 119 Andersen LB, Riddoch C, Kriemler S, Hills AP. *Physical activity and cardiovascular risk factors in children*. *Br J Sports Med*. 2011;**45**:871-6.
- 120 Tompkins CL, Moran K, Preedom S, Brock DW. *Physical activity-induced improvements in markers of insulin resistance in overweight and obese children and adolescents*. *Curr Diabetes Rev*. 2011;**7**:164-70.
- 121 Chief Medical Officers of the UK. *Factsheet 2. Physical activity guidelines for early years (under 5s) – for children who are capable of walking*. [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/135114/dh\\_128143.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/135114/dh_128143.pdf) (Accessed 1st November 2013)
- 122 Chief Medical Officers of the UK. *Factsheet 3. Physical activity guidelines for children and young people (5-18 years)*. [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/213739/dh\\_128144.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/213739/dh_128144.pdf) (Accessed 1st November 2013)
- 123 The 2011 trend tables presented physical activity results for 2002, 2006 and 2007, using the old questionnaire; these tables can be found at [www.hscic.gov.uk/catalogue/PUB09302](http://www.hscic.gov.uk/catalogue/PUB09302).
- 124 Pickup D, Gunning N. *Self-reported physical activity in children*. Chapter 5 in Craig R, Mindell J, Hirani V (eds). *Health Survey for England 2008*. Health and Social Care Information Centre, Leeds, 2009. [www.hscic.gov.uk/catalogue/PUB00430](http://www.hscic.gov.uk/catalogue/PUB00430)
- 125 Accelerometry is widely used in research into physical activity as it provides an objective measure of activity levels. Measurements are recorded by accelerometers, small devices which can be worn by individuals as they go about their daily lives, which measure movement in one or more planes. The advantage of accelerometry is that it provides accurate information on the frequency, intensity, and duration of both physical activity and sedentary behaviour which is difficult to capture with retrospective self-report questions.
- 126 Hall J, Esliger D. *Accelerometry in children*. Chapter 6 in Craig R, Mindell J, Hirani V (eds). *Health Survey for England 2008. Volume 1: Physical activity and fitness*. Health and Social Care Information Centre, Leeds, 2009. [www.hscic.gov.uk/catalogue/PUB00430](http://www.hscic.gov.uk/catalogue/PUB00430)

## **NatCen Social Research**

[www.natcen.ac.uk](http://www.natcen.ac.uk)

NatCen Social Research is the largest independent social research institute in Britain, carrying out research that works for society. NatCen specialises in research in public policy fields such as health and well-being, society and social change, children and young people, income and work, crime and justice. We offer the full range of quantitative and qualitative research services. Our team includes survey methodologists, data analysts and policy sector specialists. As well as research staff, NatCen has a national panel of over 1,000 interviewers and 150 nurses who work on health-related surveys.

## **Research Department of Epidemiology and Public Health, UCL (University College London)**

[www.ucl.ac.uk/epidemiology](http://www.ucl.ac.uk/epidemiology)

The Research Department of Epidemiology and Public Health, chaired by Professor Richard Watt, is a leading centre for research into the social determinants of health, and has a strong interdisciplinary structure. The Department houses 180 staff in 11 main research groups, including the Joint Health Surveys Unit, part of the Health and Social Surveys Research Group (HSSRG). The HSSRG studies population health (including health behaviours and treatments) and inequalities in health. Much of the group's research is carried out using large population surveys that collect data on health, economic and social issues, using a variety of survey methods and statistical techniques, while qualitative methods are also used by the group. The group is multidisciplinary, with epidemiology, sociology, statistics, public health nutrition, demography and geography all represented.

The **Joint Health Surveys Unit** has been created by NatCen Social Research and the Health and Social Surveys Research Group within the Research Department of Epidemiology and Public Health at UCL. The JHSU enables collaborative working, combining the strengths and talents of each organisation, to carry out major health surveys such as the Health Survey for England.



Health & Social Care  
Information Centre