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**Health Survey for England**

**2011**

# 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



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Designed by Davenport Associates

# Health Survey for England – 2011 trend tables

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## Introduction

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. The 2011 survey introduced a major new core topic of social care. Core topics include:

<b>Each year</b>	<b>Alternate years</b>
General health	Fruit and vegetable consumption
Social care	GHQ 12
Smoking	EQ-5D
Drinking	Adult urine samples
Height	Adult saliva samples
Weight	
Blood pressure 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 2011, there was a focus on CVD, with questions on associated conditions, hypertension and diabetes. Additional modules of questions were also included, covering chronic pain, attitudes to personal health and lifestyle, well-being, and dental health.

Each year there is a general population sample 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 2011, there was a general population sample of 8,610 adults and 2,007 children. There was no child boost in 2011, so base sizes may be small for some categories compared with recent years.

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. 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 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.

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.ic.nhs.uk/pubs/hse06trends](http://www.ic.nhs.uk/pubs/hse06trends) .

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.ic.nhs.uk/pubs/hse06trends](http://www.ic.nhs.uk/pubs/hse06trends)) 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 concomitant 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 2003-2011, 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.ic.nhs.uk/pubs/hse06trends](http://www.ic.nhs.uk/pubs/hse06trends).

The prevalence of hypertension in 2011 was at 31% among men and 28% among women, remaining at a similar level over the last few years. Between 2003 and 2011, the proportion of the population with controlled hypertension increased from 5% to 11% among men, and from 6% to 10% among women. The proportion of adults with untreated hypertension decreased from 2003 to 2011 for both sexes (20% to 14% 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. Between 1993 and 2011, mean height varied little from year to year, although across every age group the mean height in 2011 is slightly higher than in 1993.

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

Table 3 shows the pattern of mean weight from 1993 to 2011. Over this period, mean weight increased from 78.9kg to 83.9kg among men and from 66.6kg to 71.0kg among women.

Among men, mean weight increased least among younger age groups (an increase of around 2.0kg for those aged 16-24 between 1993 and 2011), and most among those aged 45 and over. Similarly among women, there was least increase among those aged 16-24 (2.7kg over the period), but there was a less clear pattern across other age groups.

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

### Obesity

Overweight or obesity occurs when energy intakes exceed energy expenditure (through metabolism and daily physical activity). Obesity represents a significant public health problem because it is a major risk factor for disease and mortality, including cardiovascular disease. Obesity is also associated with increased risk of certain cancers, disability during older age and decreased life expectancy, as well as serious chronic conditions such as Type 2 diabetes, hypertension and hyperlipidaemia (high levels of fat in the blood that can lead to narrowing and blockages of blood vessels).

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. 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>10</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>11</sup> and the challenges ahead are to achieve a reduction in child obesity and to tackle adult obesity.<sup>12</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>13</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>14</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 2011, from 41% to 34% among men and from 49% to 39% among women. Among both men and women there has been little change in the proportion that was overweight over the period (41% of men and 33% of women in 2011).

Between 1993 and 2011, there has been a marked increase in the proportion that was obese. This increased from 13% of men in 1993 to 24% in 2011 and from 16% of women in 1993 to 26% in 2011. The rate of increase in obesity prevalence has been slower in the second half of the period than the first half, and there are indications that the trend may be flattening out, at least temporarily. However, obesity in women in 2010 and 2011 was at its highest level since 1993.

Estimates of the number of adults in the population for BMI categories from 2003-2011 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, 2005-2011.<sup>15</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>16</sup>). Among men, the mean has risen from 93.2cm in 1993 to 97.1cm in 2011, and among women from 81.7cm to 88.5cm over the same period. The proportion of men with a raised waist circumference (more than 102cm) rose from 20% in 1993 to 34% in 2011, while for women the proportion with a raised waist circumference (more than 88cm) rose from 26% to 47%.

**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>17</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 as 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. Between



1993 and 2011, the proportion at high risk rose from 11% to 15% of men and from 12% to 18% of women. The equivalent figures for the very high risk category were from 11% to 21% for men and from 14% to 26% 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, 2012* 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. These included around 37,400 deaths from cancers, 22,500 deaths from respiratory diseases, 18,100 deaths from circulatory diseases and 1,100 of deaths from diseases of the digestive system. It is also estimated that around 5% (459,900) of all hospital admissions in England among adults aged 35 and over in 2010/2011 were attributable to smoking.<sup>18</sup> The cost to the NHS of treating smoking related illness was estimated to be £5.2 billion per year in 2005/2006.<sup>19</sup>

Since 1998, when *Smoking kills: a White Paper on tobacco* was published, cigarette smoking prevalence among adults has gradually declined from 28% to 21%. *Smoking kills* 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.<sup>20</sup> 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>21</sup> 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 1st October 2008, and raising the minimum age for sale of cigarettes from 16 to 18 from 1st October 2007.

More recently, in February 2010, the then government published their comprehensive tobacco control strategy entitled *A Smokefree Future*. 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>19</sup>

Table 7 shows self-reported cigarette 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 had never regularly smoked cigarettes (from 39% in 1993 to 49% in 2011). Correspondingly, the proportion of men who were current smokers declined overall from 28% in 1993 to 23% in 2011, as did the proportion who used to smoke regularly (from 33% to 28%). The proportion of men who smoked 20 or more cigarettes per day fell from 11% in 1993 to 5% in 2011. The proportion who smoked fewer than 10 cigarettes or 10 to 19 cigarettes per day showed no significant change (9% in each case in 2011).

The proportion of women who had never regularly smoked increased from 52% in 1993 to 59% in 2011, while the proportion of current smokers decreased overall in the same period, falling from 26% to 19%. As with men, there were no significant changes in the proportion of women who smoked fewer than 10 cigarettes per day (7% in 2011). Among women there was a significant decrease in those who smoked 10 to 19 cigarettes per day (11% in 1993 to 8% in 2011) and in those who smoked 20 or more cigarettes per day (from 8% to 3% over the same time period).

It is notable that while the prevalence of cigarette smoking has decreased among most age groups among both men and women, there has been no significant change over the period among men aged 25-34, the group most likely to be current smokers in 2011. In contrast, the largest decrease in prevalence of smoking has taken place among women aged 16-34, 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 2003-2011 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. Following a wide-ranging review of the current extent and nature of alcohol-related harms, the *Alcohol Harm Reduction Strategy for England* was published in 2004, with a further report, *Safe. Sensible. Social. The next steps in the national alcohol strategy in 2007*.<sup>22,23,24</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>25,26</sup> The annual cost to the NHS of alcohol misuse has been estimated as £2.7 billion at 2007 prices.<sup>27</sup> Both hospital admissions for conditions specifically related to alcohol and deaths attributed to alcohol increased substantially between the early 2000s and 2010/11.<sup>28</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 declined to 10.2 litres in 2009.<sup>29</sup>

Over time, as households' disposable incomes have increased, alcohol has become more affordable; taking 1980 as a baseline, in 2011, the affordability of alcohol had increased by 45%.<sup>28</sup> Over the same period, the proportion of household expenditure spent on alcohol fell from 9.6% to 4.7%.<sup>29</sup> The pricing of alcohol has recently moved to the centre of public debate.

Trends in alcohol consumption between 1998 and 2011 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>30</sup> In 2011, questions about usual weekly drinking were included in the HSE again, together with 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>31</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>32</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>33</sup> From 2006, changes were made in the way the HSE and other surveys estimate alcohol consumption.<sup>34</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>35</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>36</sup>

Current government guidelines advise that daily drinking should not regularly exceed four units for men and three units for women. The proportion of men consuming more than four units on the heaviest day's drinking in the last week did not show substantial change between 2006 and 2011 (39% in 2011), and similarly the proportion of men that drank more than twice the recommended amount showed little change over the period (22% in 2011). The picture was different among women: there was a decrease between 2006 and 2011 both in the proportion consuming more than three units on the heaviest day's drinking last week (from 33% to 28%), and in the proportion drinking more than twice the recommended amount (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>36</sup>

Revising the way surveys calculate adults' alcohol consumption enables a better understanding of how much adults in England currently drink, but it is important to note that the difference between the original and revised measures do not reflect actual changes in consumption.

Estimates of the number of adults in the population for alcohol consumption (on the heaviest drinking day in the last week) from 2003-2011 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>37</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>38</sup> Dietary goals to prevent chronic diseases emphasise eating more fresh vegetables, fruits, and pulses.<sup>39</sup> The '5 A DAY' guidelines were developed based on the recommendation from the WHO that consuming 400g fruit and vegetables a day can reduce risks of chronic diseases, e.g. heart disease, stroke, and some cancers.<sup>40</sup> These guidelines state that everyone should eat at least five portions of a variety of fruit and vegetables every day.<sup>41</sup> Fruit and vegetables may also play an important role in weight management when combined with reduced fat intake,<sup>42</sup> and may reduce the risk of Type 2 diabetes<sup>43</sup> and impaired cognitive function.<sup>44</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>

**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.

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>45</sup> and has also been reported to be predictive of functional decline.<sup>46</sup>

Between 1993 and 2011, the proportion reporting very good and good general health has fluctuated between 74% and 78% among men and between 73% and 76% among women (77% and 76% respectively in 2011), 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.

Personal care plans were introduced in 2006 as part of a strategy to support and empower people with long term conditions.<sup>47</sup> The aim was to offer them to everybody with a longstanding illness by the end of 2010, and the strategy sought to place the patient at the centre of their care. The intention was that those with longstanding conditions should be able to make informed decisions about the treatment that they receive and be supported to live as independently as possible for as long as they can.

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. Among women, prevalence increased from 40% in 1993 to 47% in 2004, but has since decreased and was 41% in 2011.

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 2011.

**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>48</sup> In 1999, CHD was made a government priority,<sup>49</sup> with the introduction of the National Service Framework for CHD following in 2000.<sup>50</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>51</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>48</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>52</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>52</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.

**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 and possible failure of many organs, especially the eyes, kidneys, nerves, heart, and blood vessels. Diabetes substantially increases the risk of cardiovascular disease (CVD), 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 diabetes. Diabetes mellitus (including Types 1 and 2 and, among women, gestational diabetes) 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>53</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>54</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 2009 a new website was set up for NHS Diabetes,<sup>55</sup> which aimed to ensure the delivery of the Diabetes National Service Framework and raise the quality of diabetes care in England by supporting and working with the healthcare community and people with diabetes. 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>56</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>57,58,59</sup> and some adults with Type 2 diabetes are now prescribed insulin therapy,<sup>60,61</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 2011, with some year-on-year fluctuation, from 2.9% to 7.0% 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 2011, prevalence rose from 7.5% to 20.0% among men aged 75 and over, and from 5.2% to 13.9% 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>62</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>63</sup>

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

## Physical activity

Physical activity has become an increasingly important public health issue as governments attempt to curb the levels of child and adult obesity. The health benefits of a physically active lifestyle have been well documented.<sup>64,65</sup> Physical inactivity is associated with many chronic conditions, including ischaemic heart disease,<sup>66</sup> diabetes,<sup>67</sup> osteoporosis,<sup>68</sup> certain types of cancer,<sup>69,70</sup> as well as obesity, which itself contributes to many of these diseases.<sup>64</sup>

In England, physical inactivity was estimated in 2002 to cost £8.2 billion a year.<sup>71</sup> The World Health Organisation (WHO) rated physical inactivity as one of the leading causes of death in developed countries. The time spent sedentary is at least as important as moderate-intensity physical activity as a disease risk factor: sedentary behaviours are also associated with increased risk of obesity and cardiovascular disease independently of moderate to vigorous activity levels.<sup>72</sup>

Increasing physical activity among adults has been a subject of public health promotion policies and government health strategies in England since the early 1990s.<sup>64,71,73,74,75</sup>

Guidelines for physical activity for maintaining optimal health have been available since the mid to late 1970s.<sup>76</sup> Recent National Institute for Health and Clinical Excellence (NICE) guidance highlights the contribution of regular physical activity to promoting the health of communities.<sup>77</sup> In 2004, the Chief Medical Officer (CMO) published recommendations that adults should be active at moderate or greater intensity for at least 30 minutes a day either in one session or through shorter bouts of activity of 10 minutes or longer, on at least five days a week; these guidelines were updated in 2011.<sup>78</sup> The recommended targets can be achieved through lifestyle activity, or structured exercise or sports, or a combination of these.

In 2008, the Department for Culture, Media and Sport published *Playing to Win*, which focuses on increasing sport participation by 2012, the London Olympics, particularly among children and young people.<sup>79</sup> The government has also produced policy, programmes and additional targets in an attempt to increase levels of activity in the general population. The Department of Health recently published *Be active, be healthy: A plan for getting the nation moving*, which outlined strategies to increase physical activity.<sup>80</sup>

Table 14 shows the proportion achieving different levels of physical activity in 1997, 1998, 2003, 2004, 2006 and 2008; 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>81</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, and allowing bouts of 10 minutes of activity to be accrued towards meeting government physical activity recommendations. Two estimates are shown for 2008 in Table 14, the first using the 'original' method and showing results directly comparable with those in previous years, and the second using the 'revised' method based on the enhanced questionnaire.

In previous years the physical activity levels have been labelled high, medium and low; in 2008 the categories have been 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 these categories are as follows:

- Meets recommendations: 30 minutes or more of moderate or vigorous activity on at least five days per week
- Some activity: 30 minutes or more of moderate or vigorous activity on one to four days per week
- Low activity: lower levels of activity.

Using the original method to obtain directly comparable measures between 1997 and 2008, it is evident that the proportion meeting recommendations for levels of physical activity has increased among both men and women. This has been a gradual increase over the period, from 32% in 1997 to 42% in 2008 for men, and from 21% to 31% for women. 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 provided slightly lower estimates of the proportion of adults meeting government recommendations for physical activity. The revised method indicated that 39% of men and 29% of women had met recommendations, compared with 42% and 31% respectively using the original method.

An objective measure of physical activity, using accelerometry, was also obtained in 2008. Details are provided in Chapter 3 of the 2008 report.<sup>82</sup>

Estimates of the number of adults in the population for physical activity categories for 2003, 2004, 2006 and 2008 are available in the number estimate tables;<sup>3</sup> for 2008 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 2011 (ages 2-15) and 2001 to 2008 (ages 0-15). Note that in 2009 to 2011, 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 2011 at 134.6cm for boys and 132.5cm 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 2003-2011 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 2011 (apart from 2004), being 33.5kg in 2011. Among girls aged 0-15, mean weight in 2009-2011 was closer to the 2001 level than the 2003 level, being 32.1kg in 2011.

**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>83</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>84,85,86,87,88</sup>

Tackling obesity among children has been a government priority for some time and commitments for action on obesity, including stemming the rise in obesity among children below the age of 11 years, were outlined in the previous government’s white paper *Choosing Health: Making healthier choices easier*.<sup>21</sup> Leading on from this white paper, the Public Service Agreement for obesity among children was announced by the then government in September 2007 which aimed to ‘Reduce the proportion of overweight and obese children to 2000 levels by 2020 in the context of tackling obesity across the population’.<sup>89</sup>

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>90</sup> The UK National BMI percentiles have been used to define overweight and obesity in children as at or above the 85th and 95th BMI percentiles respectively of the 1990 reference population.<sup>91</sup>

Among boys aged 2-15, mean BMI increased between 1995 and 2011 by 0.6kg/m<sup>2</sup> (from 17.7kg/m<sup>2</sup> to 18.3kg/m<sup>2</sup>); the increase was 0.5kg/m<sup>2</sup> among girls (from 18.1kg/m<sup>2</sup> to 18.6kg/m<sup>2</sup>). With fluctuations from year to year, overall increases in mean BMI were evident for both sexes during this period. Looking at the more recent period between 2001 and 2011, there was no significant change for either boys or girls aged 2-15; mean BMI for boys was 18.2kg/m<sup>2</sup> in 2001 and 18.3kg/m<sup>2</sup> in 2011, and for girls it was 18.6kg/m<sup>2</sup> in both years. However, among both boys and girls the mean peaked between 2003 and 2005, and has dropped back slightly since then.

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 has 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 2011.

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

While the trends in obesity in Table 4 show yearly fluctuations between 1995 and 2011, the prevalence of obesity among boys aged 2-15 has increased by 6 percentage points (from 11% to 17%), and the equivalent increase for girls was 4 percentage points (from 12% to 16%). However, the pattern has not been one of uniform increase over that period. The prevalence of obesity increased steadily in most years up to around 2004 and 2005, and since then the pattern has been slightly different for boys and girls. Among boys the proportion who were obese has remained at a similarly high level, between 16% and 19%, since 2001. Among girls, there was a significant decrease in obesity between 2005 and 2006, and levels have been maintained at this slightly lower level between 2006 and 2011.

The lack of significant change in proportion of children who were obese in the most recent five to six years suggests that the trend in obesity seems to be flattening out. It will be important to continue to monitor the trends in future, using HSE data to confirm whether this plateau is maintained, or whether there may be the beginning of a downward trend if government ambitions are realised.



Estimates of the number of children in the population in the BMI categories from 2003-2010 are available in the number estimate tables.<sup>3</sup>

Table 4 also shows data for children aged 2-10 and 11-15. Among boys, there was a broadly similar pattern of increase for both age groups up to 2005; since 2006 among those aged 2-10 the proportion who were obese has decreased from 17% to 12%. However, among boys aged 11-15, there has not been any decrease, and the proportion obese in 2011 was 24%, one of the highest levels recorded. While this was not a significant increase from 2010, it remains to be seen whether the upward trend is starting again or whether this is a temporary fluctuation in the data.

Among girls aged 2-10 and 11-15, the overall pattern was similar to that among older boys. Among the older girls, the prevalence of obesity increased between 1995 and 2003 (16% to 22%); since then, apart from an apparently anomalous result in 2004,<sup>92</sup> there has been no significant year on year change. The proportion of girls in this age group who were obese in 2010 and 2011 (17% each year) was at a level similar to that in 1995 (16%), and it would seem that the trend has been flattening over the most recent few years. Among younger girls aged 2-10, the proportion obese has remained similar over the last six years.

**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>93</sup> There is also evidence of an association between children smoking and other risky behaviours such as using alcohol or drugs.<sup>94</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>94,95</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>20</sup> set a target to reduce smoking prevalence among 11-15 year olds to 9% by 2010. The Health Act 2006,<sup>96</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>97</sup> The 2009 Health Act<sup>98</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 2011, 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 9% in 2011, and from 20% to 8% of girls. On average over survey years, the proportion of boys and girls who had ever tried smoking increased with age.

**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>24</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>99,100</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>24,101</sup>

The Department for Children, Schools and Families (DCSF) published the *Youth Alcohol Action Plan*<sup>102</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>103</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 2011, 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 27% in 2011. 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 25% in 2011.

**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>40</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>104</sup> By late 2009, more than 76% of schools had achieved 'Healthy School Status', based on accreditation criteria set by the government at the time.

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>105</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>106</sup>

Following the 1997 white paper *Excellence in Schools*,<sup>107</sup> and 2003 Green Paper *Every Child Matters*,<sup>108</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 National School Fruit Scheme, breakfast clubs and fruit tuck shops. The School Fruit and Vegetable Scheme was introduced in 2004 to reinforce messages about improving children's diets and to minimise the health inequalities experienced by some groups of the population. In 2007 the (then) Department for Education and Skills and the Department of Health launched the Food in Schools programme to assist

schools across England in implementing a 'whole-school' approach to healthier eating and drinking.<sup>109</sup>

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>110</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 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 to 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 with different levels of fruit and vegetable consumption from 2003-2011 are available in the number estimate tables.<sup>3</sup>

**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 2011, 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 2011, from 90% to 94% among boys and from 92% to 94% 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>111</sup> 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 2011 from 23% to 16% among boys, and from 20% to 12% among girls. Limiting longstanding illness declined from 1996 to 2011 from 10% to 6% in boys, and from 9% to 6% in girls.

**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 2011.

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

### Physical activity

The importance of physical activity for the health of children and young people is well

documented. Establishing a physically active lifestyle during childhood can bring health benefits for the individual, and at a population level this can result in reduced overweight and obesity, improved psychological well-being, social interaction and self-esteem, and reduced prevalence of other health related risk factors.<sup>112,113</sup> Establishing physical activity as a habit at an early age can also help lead to a physically active lifestyle in adulthood, thus extending its health benefits across the life course.<sup>64,114</sup>

Physical inactivity among children and young people has been an important government focus for some time, due to its association with rising levels of obesity in England. Although the exact degree to which inactivity has contributed to rising levels of childhood obesity is not known, physical activity has become a vital policy area in the attempt to reverse the current trends in obesity by 2020.<sup>10</sup> The Chief Medical Officer (CMO) of England recommends that children and young people should do a minimum of 60 minutes of at least moderate intensity physical activity each day, including activities that improve bone health, muscle strength and flexibility.<sup>78</sup> A number of initiatives have been launched relating to different types of sports and activities to encourage children and families to meet this guidance, including:

- In 2003, the *Travelling to School initiative*, with the aim of getting all schools in England to develop approved school travel plans by 2010;<sup>115</sup>
- In 2008, the first National Play Strategy with the aim to provide more safe outdoor play areas for children throughout the country;<sup>116</sup>
- In 2009, the Department of Health framework *Be active, be healthy: A plan for getting the nation moving*;<sup>80</sup>
- The *PE and Sports Strategy for Young People* aiming to give all children aged 5-16 the opportunity to take part in five hours of PE or sport during the school week;<sup>117</sup>
- Initiatives such as the *Change4life* campaign, providing families with information, tips and advice about how they can become more physically active.<sup>13</sup>

Table 11 shows the proportion of children in different physical activity categories for 2002, 2006 and 2007. In previous years the levels have been labelled high, medium and low; in 2008 the categories for physical activity 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. Definitions of these categories are 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

These categories were based on the Chief Medical Officer's (CMO's) recommendations for physical activity of at least moderate intensity for children and young people. Participants reported on physical activity in the last week (with parents answering on behalf of children aged 2-12).

There was little variation across years in the proportions of children in each of the levels of physical activity, with 72% of boys and 63% of girls meeting recommendations in 2007, and 15% of boys and 19% of girls in the low activity category. Among girls, the proportion meeting recommendations decreased with age.

Estimates of the number of children aged 2-15 in the population for physical activity categories for 2006 and 2007 are available in the number estimate tables.<sup>3</sup>

The physical activity questionnaire for children was extensively revised in 2008, and new estimates for levels of self-reported physical activity have been derived; these are not shown as they are not comparable with the earlier years' data. An objective measure of physical activity, using accelerometry, was also obtained in 2008. Details are available in the 2008 report.<sup>118</sup>

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

**Table 11** Children's physical activity levels, by survey year, age 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.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles-related-surveys/health-survey-for-england](http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles-related-surveys/health-survey-for-england)), 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 2011 Trend Tables at [www.ic.nhs.uk/pubs/hse11trends](http://www.ic.nhs.uk/pubs/hse11trends)
- 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.
- 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.
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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 2.5
	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

- 35 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
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## **NatCen Social Research**

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

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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. The department has a strong interdisciplinary structure. The Department houses 180 staff in 12 main research groups, including the Joint Health Surveys Unit, part of the Health and Social Surveys Research Group. Collaborative research is conducted through the International Institute for Society and Health and across UCL. The Department's research programme is concerned particularly with social factors in health and illness and inequalities in these, including national cross-sectional surveys of health and behaviour (such as diet), longitudinal studies of cardiovascular disease (Whitehall studies) and the English Longitudinal Study of Ageing (ELSA); international studies of cardiovascular disease and diabetes; socio-dental indicators of need; and the socio-economic and policy implications of an ageing population.

The NHS logo consists of the letters 'NHS' in a bold, white, sans-serif font, centered within a blue rectangular background.The logo for The Information Centre features the words 'The Information Centre' in a white, sans-serif font, stacked vertically and centered within a teal rectangular background.

for health and social care