



Health Survey for England 2017

Adult health

Published 4 December 2018

This report looks at the general health of adults aged 16 and over and the prevalence of chronic pain, diabetes, high cholesterol and hypertension.

Key findings

- In 2017, 34% of all adults had chronic pain. This increased with age, ranging from 16% among adults aged 16 to 24 to 53% among adults aged 75 and over.
- The proportion of adults with doctor-diagnosed diabetes increased between 1994 and 2017, with some year-on-year fluctuation, from 3% to 8% among men and from 2% to 5% among women. The increase has been largest for those aged 45 and over.
- In 2017, 20% of adults with diabetes were undiagnosed (as measured by glycated haemoglobin levels).
- From 1998 to 2017, there has been a decline in the proportion of adults with raised total cholesterol from 67% to 48%. Throughout the period 1998 to 2017, the prevalence of raised total cholesterol peaked at an older age for women than men.
- The proportion of adults with untreated hypertension declined from 2003 to 2017 for both men (20% to 12%) and women (16% to 11%).
- In 2017, the detection rate (the proportion of participants with survey-defined hypertension who reported having doctor-diagnosed hypertension), was higher among older than younger age-groups (69% among those aged 75 and over compared with 54% among those aged 35 to 54).

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This report may be of interest to members of the public, policy officials, people working in public health and to commissioners of health and care services to see the general health status of adults in England and the prevalence of various health conditions.

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. More information about the survey can be found in the Quick Guide and in more detail in the Methods report at <https://digital.nhs.uk/pubs/hse2017>.

Each annual survey has covered the adult population aged 16 and over living in private households in England. In 2017, interviews were completed with 7,997 adults.

This report includes a combination of trend tables and HSE 2017 results. It covers general health, chronic pain (2017 only), height and weight, diabetes, cholesterol and hypertension. It provides more detail on hypertension than in the trend tables. Detection and management of high blood pressure, and diabetes are two of several opportunities identified by Public Health England, to prevent and manage cardiovascular disease in the population.

Trend tables on obesity, smoking, alcohol consumption, fruit and vegetable consumption, and physical activity can be found in the HSE 2017 Adult and Child Overweight and Obesity report and the HSE 2017 Adult Behaviours and Risk Factors report. The trend table on cardiovascular disease among adults can be found in the HSE 2017 Cardiovascular Disease report.¹

About the survey estimates

The commentary in this report focuses on key trends in the health of adults aged 16 and over since 1993, or the earliest year for which comparable data are available. The Health Survey for England, in common with other surveys, collects information from a sample of the population. The sample is designed to represent the whole population as accurately as possible within practical constraints, such as time and cost. Consequently, statistics based on the survey are estimates, rather than precise figures, and are subject to a margin of error, shown as a 95% confidence interval. For example the survey estimate might be 24% with a 95% confidence interval of 22% to 26%. A different sample might have given a different estimate, but we expect that the true value of the statistic in the population would be within the range given by the 95% confidence interval in 95 cases out of 100.

Where differences are commented on in this report, these reflect the same degree of certainty that these differences are real, and not just within the margins of sampling error. These differences can be described as statistically significant.²

Confidence intervals are quoted for key statistics within this report and are also shown in more detail in the Excel tables accompanying this report. Confidence intervals are affected by the size of the sample on which the estimate is based. Generally, the larger the sample, the smaller the confidence interval, and hence the more precise the estimate.

Additional technical information is given in the Appendix to this report.

¹ These and other reports from the Health Survey for England 2017 are available via the report website <https://digital.nhs.uk/pubs/hse2017>

² Statistical significance does not imply substantive importance; differences that are statistically significant are not necessarily meaningful or relevant.

Main findings

Self-reported general health

- From 1993 to 1995 the prevalence of very bad or bad general health was steady at 5%. From 1996 to 2017, the prevalence of very bad or bad general health fluctuated between 6% and 8%.

Chronic pain

- In 2017, 34% of all adults had chronic pain. Prevalence increased with age ranging from 16% among those aged 16 to 24 to 53% among those aged 75 and over. More women (38%) than men (30%) had chronic pain.
- Chronic pain was more prevalent among lower income groups: in 2017, 43% of adults in the lowest income quintile had chronic pain compared to 27% in the highest income quintile.

Diabetes

- The proportion of adults with doctor-diagnosed diabetes increased between 1994 and 2017, from 3% to 8% among men and from 2% to 5% among women, with some year-on-year fluctuation. The increase over the period has been largest for those aged 45 and over.
- In 2017, 20% of adults with diabetes were undiagnosed (as measured by glycated haemoglobin levels).

High blood cholesterol

- There was a decline in the proportion of adults with raised total cholesterol from 67% in 1998 to 48% in 2017.

High blood pressure

- The prevalence of hypertension among all adults was 31% in 2003 and remained between 29% and 30% between 2005 and 2014. Since 2014 there has been a slight decline to 27% in 2017. The proportion of adults with untreated hypertension declined over the same period for both men (20% to 12%) and women (16% to 11%).
- In 2017, high systolic blood pressure increased more steeply with age for women than men. 1% of women aged 25 to 34 had systolic blood pressure of 140 mmHg or above, rising to 39% of women aged 75 and over; among men these proportions were 10% and 31% respectively.
- Among adults aged 35 and over, 35% of adults with hypertension were not diagnosed and 41% were not on treatment.
- In 2017, the detection rate (the proportion of participants with survey-defined hypertension who reported having doctor-diagnosed hypertension), was higher among older than younger age-groups (69% among those aged 75 and over compared with 54% among those aged 35 to 54).
- In 2017, 67% of adults aged 45 and over on treatment for hypertension had their hypertension controlled (to below 140/90mmHg). This proportion declined with age from 71% among those aged 45 to 64 to 60% among those aged 75 and over.

Weight

- Between 1993 and 2017, mean weight increased from 78.9kg to 84.9kg among men, and from 66.6kg to 72.8kg among women.

General health

Introduction

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,³ and has also been reported to be predictive of functional decline.⁴

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 ONS harmonised disability questions designed for use in social surveys.⁵ 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'.⁶

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

Between 1993 and 2017, the proportion reporting very good and good general health fluctuated between 74% and 78% among men and between 73% and 76% among women with no clear pattern of variation. In 2017, the proportions were similar among men (77%) and women (75%). As explained in the Introduction to this report, survey estimates are subject to a margin of error. It is likely that in 2017 the proportion of adults in the population who assessed their general health as very good or good was between 75% and 78% of men and between 74% and 76% of women.

From 1993 to 1995 the prevalence of very bad or bad general health remained steady at 5%. From 1996 to 2017, the prevalence of very bad or bad general health fluctuated between 6% and 8% across the period, and was 7% in 2017.

In 2017, prevalence of longstanding illness was higher in women (45%) than men (41%).

The prevalence of longstanding illness among men increased overall from 40% in 1993 to around 44% between 1997 and 2003 but then decreased gradually.

³ Mossey JM, Shapiro E. *Self-rated health: a predictor of mortality among the elderly*. American Journal of Public Health 1982;**72**:800-808.

⁴ Idler EL, Kasl SV. *Self-ratings of health: do they also predict change in functional ability?* Journal of Gerontology: Social Sciences. 1995;**50B**:S344-S353.

⁵ This was recommended by the Disability, Health and Carers Primary Standards in 2011. See 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, 2015.

⁶ Further details about the change to the longstanding illness questions are provided in the 2012 report, Volume 2, Chapter 3, Section 3.4 and in Appendix D to Volume 2.

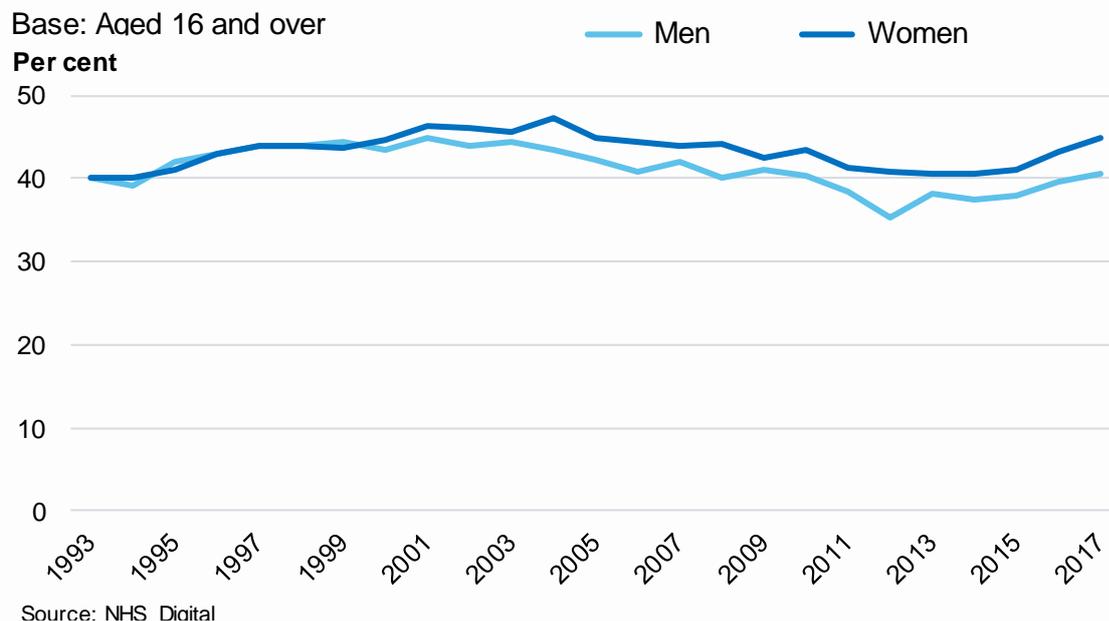
<http://content.digital.nhs.uk/catalogue/PUB13218>

The current question wording was introduced in 2012. There has been a gradual increase from 35% in 2012 to 41% in 2017. As explained in the Introduction to this report, survey estimates are subject to a margin of error. It is likely that in 2017 the proportion of adults in the population with longstanding illness was between 39% and 43% of men and between 43% and 47% of women.

Among women, prevalence of longstanding illness increased from 40% in 1993 to 47% in 2004 but decreased thereafter. Since 2012, the prevalence has increased from 41% in 2012 to 45% in 2017.

Figure 1, Table 1

Figure 1: Proportion of adults with at least one longstanding illness, by sex, 1993-2017



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. In 2017, 12% of men and 17% of women reported acute sickness. Prevalence has varied between 12% and 16% of men and between 14% and 19% of women over the period 1993 to 2017. It has been consistently higher in women than in men.

Chronic pain

Introduction

Chronic pain refers to pain, an unpleasant sensation associated with actual or potential tissue damage that typically endures for at least three months.⁷ A recent meta-analysis of population studies in the UK, estimated that up to 28 million adults may be affected by chronic pain, between one-third and one-half of the population.⁸ The Health Survey for England 2011 survey found more women than men experience chronic pain (31% of men and 37% of women), and that prevalence increased with age.⁹

Chronic pain has far-reaching consequences to its sufferers, including a lower quality of life, impacts on mental health, job losses, and can limit daily activities.^{10,11} It is estimated that there are almost five million GP appointments each year due to chronic pain,¹² with back-pain alone thought to cost the economy around £12.3 billion per year.¹⁰ In 2008, for the first time, the Government emphasised the need for better provision for pain management in the Chief Medical Officer's Annual report.¹⁰ *The NHS Five Year Forward view* in 2014 set out to support those with long term conditions and manage chronic pain through personalised care plans and support planning.¹³

Chronic pain in the Health Survey for England is defined as pain or discomfort that had troubled the participant all of the time, or on and off, for more than the last three months. This information was provided by participants during the main computer-assisted interview. Further details are given in the Appendix to this report.

⁷ Merskey H, Bogduk N (eds). *Classification of Chronic Pain*. International Association for the Study of Pain, Seattle, 1994. *Part III, Pain Terminology*, updated in 2011. www.iasp-pain.org/Content/NavigationMenu/Publications/Freebooks/default/htm

⁸ Fayaz A, Croft P, Langford RM et al. *Prevalence of chronic pain in the UK: a systematic review and meta-analysis of population studies*. *BMJ Open* 2016;**6**:e010364.

⁹ Bridges S. *Chronic pain*. Chapter 9 in Craig R, Mindell J (eds). *Health Survey for England 2011*. Health and Social Care information Centre, Leeds, 2012.

¹⁰ Donaldson L. *Pain: Breaking through the barrier. Chapter in 150 years of the Annual Report of the Chief Medical Officer: On the state of public health 2008*. DH, London, 2009. www.dh.gov.uk/en/Publicationsandstatistics/Publications/AnnualReports/DH_096206

¹¹ Breivik H, Collett B, Ventafridda V, et al. *Survey of chronic pain in Europe: Prevalence, impact on daily life and treatment*. *European Journal of Pain* 2006;**10**:287-333.

¹² Elliott AM, Smith BH, Penny KI, et al. *The epidemiology of chronic pain in the community*. *Lancet* 1999;**354**:1248–1252.

¹³ Care and Support Planning Working Group and Coalition for Collaborative Care. *Personalised care and support planning handbook: The journey to person-centred care*. NHS England, London 2015. <https://www.england.nhs.uk/wp-content/uploads/2016/04/core-info-care-support-planning-1.pdf>

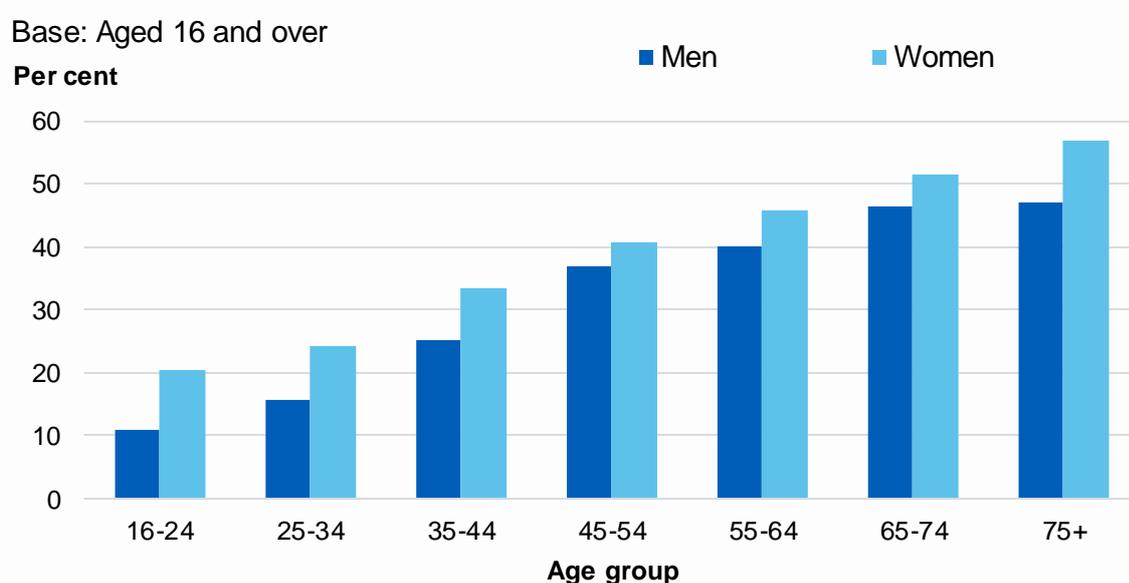
Prevalence of chronic pain, by age and sex

In 2017, 34% of all adults had chronic pain, with more women (38%) than men (30%) having chronic pain. As explained in the Introduction to this report, survey estimates are subject to a margin of error. It is likely that the proportion of adults in the population who reported having chronic pain was between 29% and 32% of men and between 37% and 40% of women.

The prevalence of chronic pain increased with age ranging from 16% among those aged 16 to 24 to 53% among those aged 75 and over.

Figure 2, Table 2

Figure 2: Prevalence of chronic pain, by age and sex, 2017

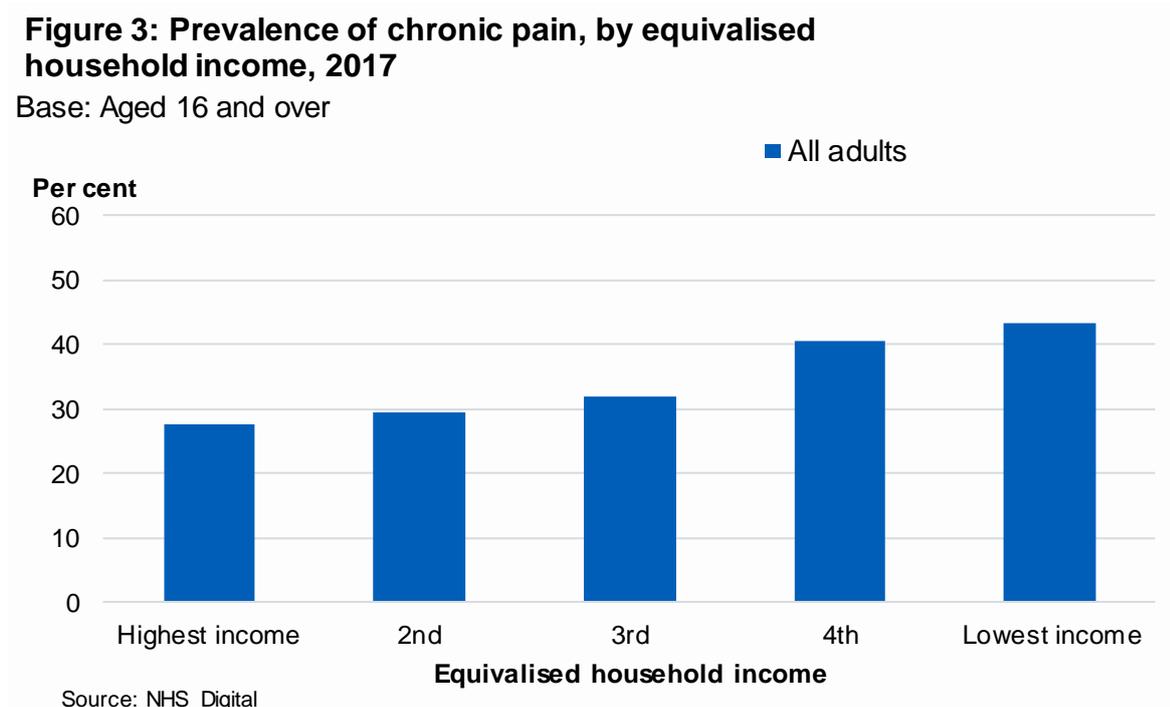


The prevalence of chronic pain in 2017 was similar to 2011 when 31% of men and 37% of women reported having chronic pain.

Prevalence of chronic pain, by quintile of equivalised household income and sex

In 2017, the prevalence of chronic pain was higher among those with lower incomes, increasing from 27% in adults in the highest income quintile to 43% in the lowest income quintile.

Figure 3, Table 3



Diabetes

Introduction

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),¹⁴ 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 very high waist measurement are risk factors for Type 2 diabetes.^{15,16} Diabetes mellitus (both Types 1 and 2) is a leading cause of avoidable mortality; the 2015/16 National Diabetes Audit report, which focused on complications and mortality, estimated that the additional risk of death each year among people with diabetes in England was 32%, with the highest risk amongst those with Type 1 diabetes.¹⁷

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.¹⁸ 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 Care Excellence (NICE) published quality standards for the care of people with diagnosed diabetes in addition to those set out in the National Service Framework.¹⁹

HSE measures diabetes in two ways. The prevalence of self-reported doctor-diagnosed diabetes is included in the main computer-assisted interview, and these findings are presented in Table 4.

Additionally, glycated haemoglobin (HbA_{1c}) levels are measured in blood samples collected at the nurse visit. HbA_{1c} reflects average blood sugar levels over the previous two to three months and can therefore be used both to monitor diabetic control in people with diagnosed diabetes, and to detect undiagnosed diabetes.^{20,21}

Prevalence of total diabetes, using glycated haemoglobin levels, are presented from 2011 onwards in Table 5, which is limited to participants with a nurse visit and a valid

¹⁴ Garcia MJ, McNamara PM, Gordon T, Kannel WB. *Morbidity and mortality in the Framingham population. Sixteen year follow-up.* Diabetes 1974;**23**:105-111.

¹⁵ Diabetes UK. *Preventing Type 2 diabetes.* <https://www.diabetes.org.uk/Preventing-Type-2-diabetes/>

¹⁶ 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.* American Journal of Clinical Nutrition. 2007;**85**:5:1197-1202.

¹⁷ National Diabetes Audit 2015-16. *Report 2a: complications and mortality.* NHS Digital 2017. <https://digital.nhs.uk/catalogue/PUB30030>

¹⁸ Department of Health. *National Service Framework for Diabetes: Delivery Strategy.* DH, London, 2002. www.yearofcare.co.uk/sites/default/files/images/national%20service%20-%20delivery%20strategy.pdf

¹⁹ National Institute for Health and Care Excellence. *NICE Quality Standard Programme: Diabetes in adults.* NICE, London, 2011. www.nice.org.uk/guidance/qs6

²⁰ World Health Organisation. *Use of Glycated Haemoglobin (HbA_{1c}) in the Diagnosis of Diabetes Mellitus: Abbreviated Report of a WHO Consultation.* www.who.int/diabetes/publications/diagnosis_diabetes2011/en

²¹ Moody A, Cowley G, Ng Fat L, et al. *Social inequalities in prevalence of diagnosed and undiagnosed diabetes and impaired glucose regulation in participants in the Health Surveys for England series.* BMJ Open. 2016;**6**:e010155. doi:10.1136/bmjopen-2015-010155

HbA_{1c} measurement. Total diabetes in the population includes all participants with an HbA_{1c} level of 48mmol/mol or above, diagnostic of diabetes, as well as those who reported having diabetes diagnosed by a doctor. Among those with total diabetes, participants with a raised HbA_{1c} who did not report having doctor-diagnosed diabetes are defined as having undiagnosed diabetes.^{22,23}

Further details are given in the Appendix to this report.

The HSE 2017 Adult and Child Overweight and Obesity report includes information on the associations between overweight, obesity and high waist circumference and the risk of developing diabetes.²⁴

Prevalence of doctor-diagnosed diabetes, by survey year, age and sex

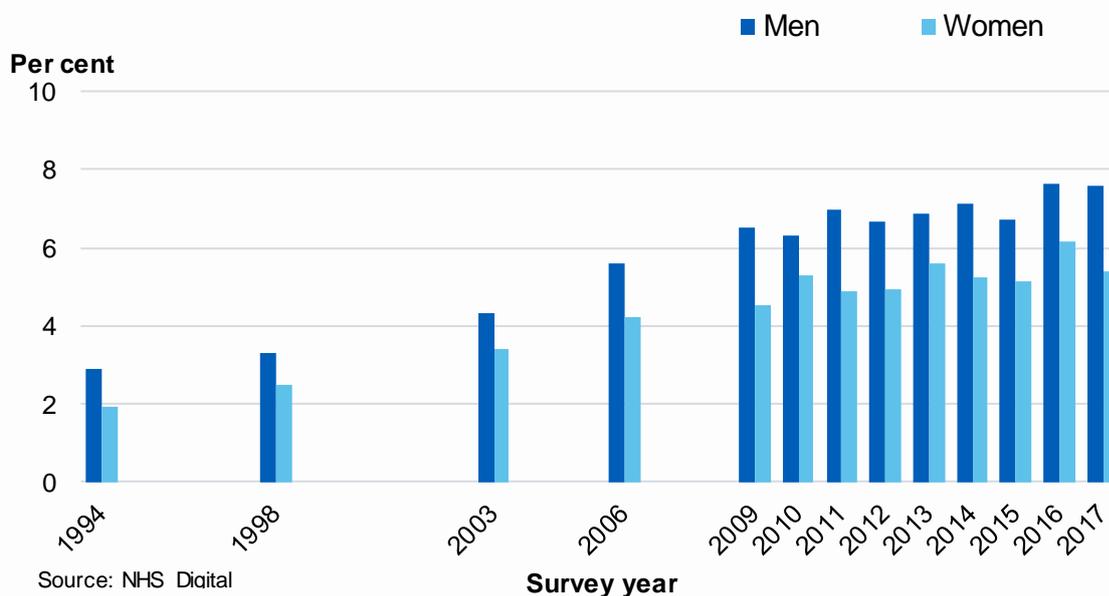
In 2017, 8% of men and 5% of women reported doctor-diagnosed diabetes. Prevalence increased with age and was more common in men than women. As explained in the Introduction to this report, survey estimates are subject to a margin of error. It is likely that the proportion of adults in the population with doctor-diagnosed diabetes was between 7% and 9% of men and between 5% and 6% of women.

The proportion of adults with doctor-diagnosed diabetes increased between 1994 and 2017, with some year-on-year fluctuation, from 3% to 8% among men and from 2% to 5% among women.

Figure 4, Table 4

Figure 4: Proportion of adults with doctor-diagnosed diabetes, by sex, 1994-2017

Base: Aged 16 and over



²² In Table 7, values of HbA_{1c} were adjusted in 2013, 2014, 2015, 2016 and 2017 to make them comparable to years before HSE 2013, due to changes in calibrators. The calibrator used after 19th September 2013 produced lower glycated haemoglobin results compared with the previous one.

²³ Full details of the HSE blood sample analytical methods and equipment can be found in the HSE 2017 Methods report at <https://digital.nhs.uk/pubs/hse2017>

²⁴ These and other reports from the Health Survey for England 2017 are available via the report website <https://digital.nhs.uk/pubs/hse2017>

Increases in doctor-diagnosed diabetes from 1994 to 2017 have been largest for those aged 45 and over. For example, among adults aged 45 to 54, the proportion with doctor-diagnosed diabetes increased more than threefold from 2% in 1994 to 7% in 2017. In absolute terms, the rise over this period has been largest among those aged 65 and over.

Prevalence of total diabetes, including undiagnosed, by survey year, age and sex

Table 5 shows estimates of the level of total diabetes as identified through HbA_{1c} levels and self-reported doctor-diagnosed diabetes. It is based on adults who provided a blood sample, and does not include all those who were interviewed. Consequently, the estimates of those with doctor-diagnosed diabetes vary slightly from those in Table 4, which shows the definitive estimates.

In 2017, 7.4% of adults had diabetes as identified through HbA_{1c} levels and doctor-diagnosed diabetes. This comprised 5.9% with doctor-diagnosed diabetes and a further 1.5% with undiagnosed diabetes.

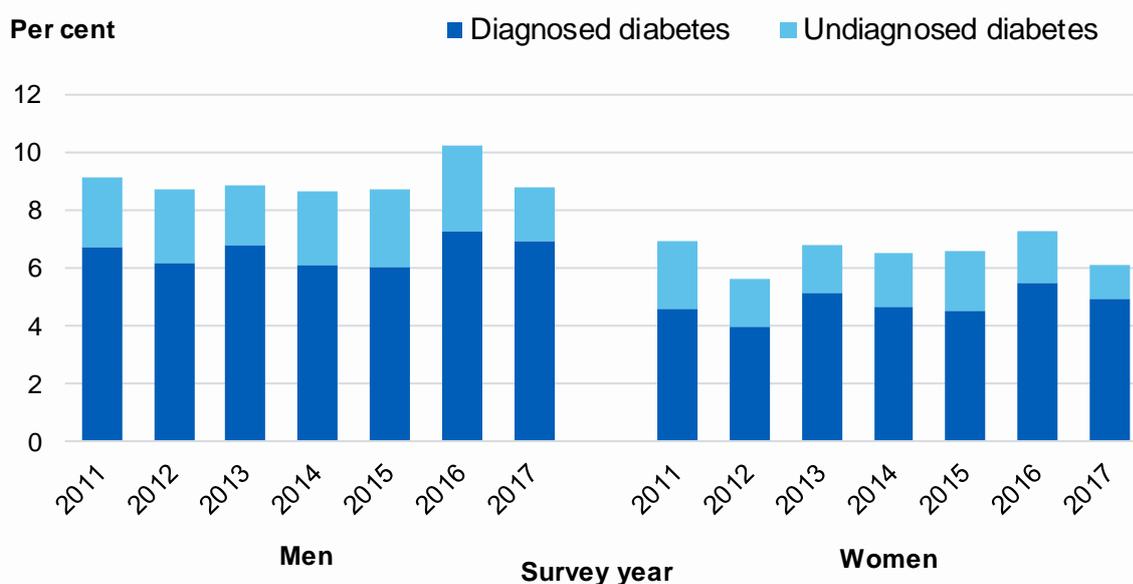
Levels of total diabetes have varied in the years 2011 to 2017 between 8.6% and 10.2% among men, and between 5.6% and 7.2% among women. These variations are not statistically significant.

The proportion of adults with undiagnosed diabetes has varied between 1.5% and 2.4% since 2011 with no clear pattern, and was 1.5% in 2017. Similarly, the proportion of those with total diabetes who were undiagnosed has varied since 2011, often being around 30% and in 2017 it was lower at 20%.

Figure 5, Table 5

Figure 5: Proportion of adults with diagnosed and undiagnosed diabetes, by sex, 2011-2017

Base: Aged 16 and over with a valid glycated haemoglobin measurement



Source: NHS Digital

Cholesterol

Introduction

Cholesterol, also referred to as lipids, is a fatty substance found in the blood, which is needed by the body to function. There are different types of cholesterol including LDL cholesterol (low density lipoprotein), VLDL cholesterol (very low density lipoprotein), and HDL cholesterol. HDL cholesterol is beneficial, as it carries cholesterol away from the arteries back to the liver where it can be excreted. Too much non-HDL cholesterol may be harmful as it can clog blood vessels causing them to become stiff and narrow.

High cholesterol is considered one of the risk factors for cardiovascular diseases, including narrowing of the arteries (atherosclerosis), heart attack, and stroke. Further information on cardiovascular diseases can be found in the HSE 2017 Cardiovascular disease report.²⁵

Cholesterol levels were measured via blood samples taken at the nurse visit. Raised total cholesterol is defined as total cholesterol equal to or greater than 5mmol/L. The prevalence of participants with raised total cholesterol is presented in Table 6 for years 1998, 2003, 2006, 2011, 2014 and 2017.^{26,27}

Prevalence of raised total cholesterol, by survey year, age and sex

In 2017, the prevalence of raised total cholesterol was 48%. Survey estimates are subject to a margin of error, and it is likely that the proportion of adults with raised total cholesterol varies between 46% and 50%.

From 1998 to 2017 there has been a decline in the proportion with raised total cholesterol from 66% to 46% among men, and from 67% to 50% among women. Taking into account the margin of error. It is likely that the proportions in the population with raised total cholesterol in 2017 were between 44% and 49% of men and between 47% and 52% of women. These figures include people taking lipid-lowering medication. There has been a large increase in the prescription of statins,²⁸ which is probably a major contributing factor to the decline in prevalence of raised total cholesterol.

Figure 6, Table 6

²⁵ This and other reports from the Health Survey for England 2017 are available via the report website <https://digital.nhs.uk/pubs/hse2017>

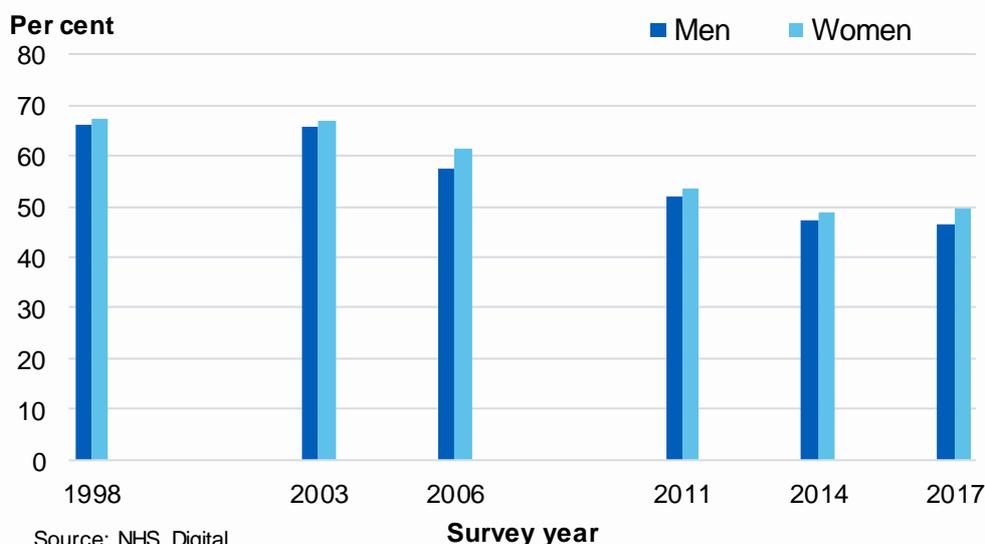
²⁶ Values from 2011 and 2014 have been adjusted to make the measurements comparable to measurements made before HSE 2010, where there was a change in calibrators.

²⁷ Full details of the HSE blood sample protocols, analytical methods and equipment can be found in the HSE 2017 Methods report at <https://digital.nhs.uk/pubs/hse2017>

²⁸ Keefe A, Nazareth I, Peterson I. *Time trends in the prescription of statins for the primary prevention of cardiovascular disease in the United Kingdom: a cohort study using The Health Improvement Network primary care data*. *Clinical Epidemiology*. 2016;**8**:123-132.

Figure 6: Proportion of adults with raised total cholesterol, by sex, 1998-2017

Base: Adults aged 16 and over with a valid cholesterol measurement



Throughout the period 1998 to 2017, the prevalence of raised total cholesterol peaked at an older age for women than men. This is likely to reflect three factors. First, rates of premature cardiovascular mortality are higher in men than in women among those with hypercholesterolaemia (high blood cholesterol).^{29,30} Second, risk-based indications for lipid-lowering treatment apply to men at younger ages than in women.^{31,32} Finally, the prescribing of statins to prevent CVD in women lags behind prescribing for men.³³ In 2017, raised total cholesterol was highest among women aged 55 to 64 (76%), and among men aged 35 to 54 (63%).

Figure 7, Table 6

²⁹ Mikkola T, Gissler M, Merikukka M et al. *Sex Differences in Age-Related Cardiovascular Mortality*. PLoS One 2013;**8**:e63347

³⁰ Bhatnagar P, Wickramasinghe K, Wilkins E, et al. *Trends in Epidemiology of cardiovascular disease in the UK*. Heart. 2016;**102**:1945-1952.

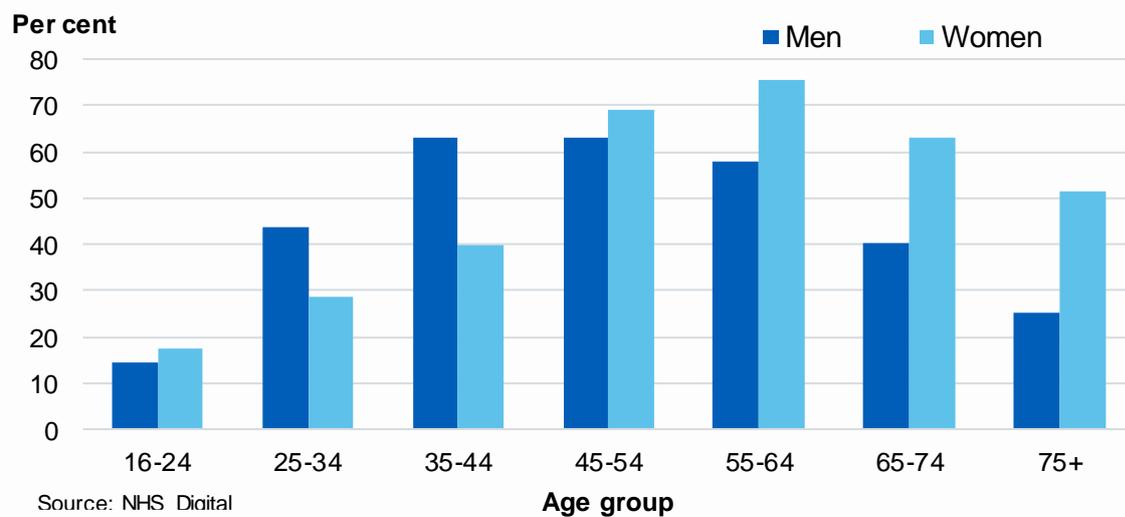
³¹ National Institute for Health and Care Excellence (NICE). *Cardiovascular disease: risk assessment and reduction, including lipid modification*. 2014; <https://www.nice.org.uk/guidance/cg181/resources/cardiovascular-disease-risk-assessment-and-reduction-including-lipid-modification-pdf-35109807660997>

³² National Institute for Health and Care Excellence (NICE), *CVD risk assessment and management*. 2014; <https://cks.nice.org.uk/cvd-risk-assessment-and-management#!scenario>

³³ Mindell J, Aresu M, Zaninotto P et al. *Improving lipid profiles and increasing use of lipid-lowering therapy in England: results from a national cross-sectional survey -2006*. Clinical Endocrinology. 2011;**86**:621-627.

Figure 7: Prevalence of raised total cholesterol, by age and sex, 2017

Base: Adults aged 16 and over with a valid cholesterol measurement



Blood pressure

Introduction

Hypertension (persistent high blood pressure) is an important public health challenge worldwide because of its high prevalence and the associated increase in risk of cardiovascular diseases. It is one of the most important modifiable risk factors for stroke, ischaemic heart disease (such as angina, heart attacks, and heart failure), and renal disease, and one of the most preventable and treatable causes of premature deaths worldwide.³⁴

Clinical guidelines for hypertension emphasise the importance of advice on modifiable lifestyle risk factors to reduce the overall risk³⁵ of serious cardiovascular events.³⁶ The environmental risk factors that have driven the epidemic of CVD include smoking; sedentary lifestyles; diets high in calories, saturated fats, carbohydrate and salt and low fruit and vegetable consumption; and alcohol.³⁷ Management of people with hypertension, diabetes, or otherwise at substantial CVD risk includes assessing their risk of CVD and addressing other modifiable risk factors. Lifestyle changes such as reducing alcohol consumption, increasing physical activity, and weight loss if overweight can reduce blood pressure; these changes together with smoking cessation and improved diet can further reduce CVD risk. These may be followed by drug treatment of hypertension, hypercholesterolaemia (high blood cholesterol), and/or hyperglycaemia (high blood sugar levels), as appropriate.

It has been estimated that more than 9,000 heart attacks and at least 14,000 strokes could be prevented over the next three years by improved diagnosis and management of high blood pressure, high cholesterol, and atrial fibrillation.^{38,39} These calculations assumed 5 million undiagnosed cases each of hypertension and diabetes in England and 40% of cases that were poorly controlled (hypertension) or did not receive all eight care processes (diabetes).

High blood pressure is defined for this report as a systolic blood pressure (SBP) at or above 140mmHg or diastolic blood pressure (DBP) at or above 90mmHg or on medication prescribed for high blood pressure, as described in the 2003 report⁴⁰

³⁴ World Health Organization. *Global Health Observatory (GHO) Data, Raised blood pressure: Situation and Trends. 2016*; http://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en/

³⁵ 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)*. *Journal of Hypertension*. 2007;**25**:6:1105-1187.

³⁶ National Institute for Health and Care Excellence (NICE). *Clinical management of primary hypertension in adults*. NICE Clinical Guideline 127. NICE, London, 2011 (updated 2016). <https://www.nice.org.uk/guidance/cg127>

³⁷ National Institute for Health and Care Excellence (NICE). *Cardiovascular disease: risk assessment and reduction, including lipid modification*. NICE Clinical Guideline 181. NICE, London, 2014 (updated 2016). <https://www.nice.org.uk/guidance/cg181>

⁵² Public Health England (PHE). *Action plan for cardiovascular disease (CVD) prevention: England*. London: PHE, England, 2017. (page 15) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/648190/cardiovascular_disease_prevention_action_plan_2017_to_2018.pdf

⁵³ NHS England. NHS launches new drive to save thousands of people from heart attacks and strokes. 2017 <https://www.england.nhs.uk/2017/09/nhs-launches-new-drive-to-save-thousands-of-people-from-heart-attacks-and-strokes/>

⁴⁰ Sproston K, Primatesta P (eds). *Health Survey for England 2003. Volume 3: Methodology and documentation*. The Stationery Office, London, 2004.

(referred to as 'survey-defined hypertension').⁴¹ Participants are classified into one of four groups as follows:

- Normotensive untreated: SBP below 140mmHg and DBP below 90mmHg, not currently taking medication for blood pressure.
- Hypertensive controlled: SBP below 140mmHg and DBP below 90mmHg, currently taking medication for blood pressure.
- Hypertensive uncontrolled: SBP at or greater than 140mmHg and/or DBP at or greater than 90mmHg, currently taking medication for blood pressure.
- Hypertensive untreated: SBP at or greater than 140mmHg and/or DBP at or greater than 90mmHg, not currently taking medication for blood pressure.

Prevalence of hypertension, by survey year, age and sex

Trend data on the prevalence of hypertension are presented from 2003 and 2005 onwards in Table 7,⁴² using measurements taken with the Omron HEM207 sphygmomanometer to measure blood pressure.⁴³ The prevalence of hypertension among all adults was 31% in 2003 and remained between 29% and 30% between 2005 and 2014. Since 2014 there has been a slight decline to 27% in 2017.

The prevalence of hypertension has fallen since 2014 from 32% to 28% among men but has remained relatively stable among women (from 27% to 25% across the period).

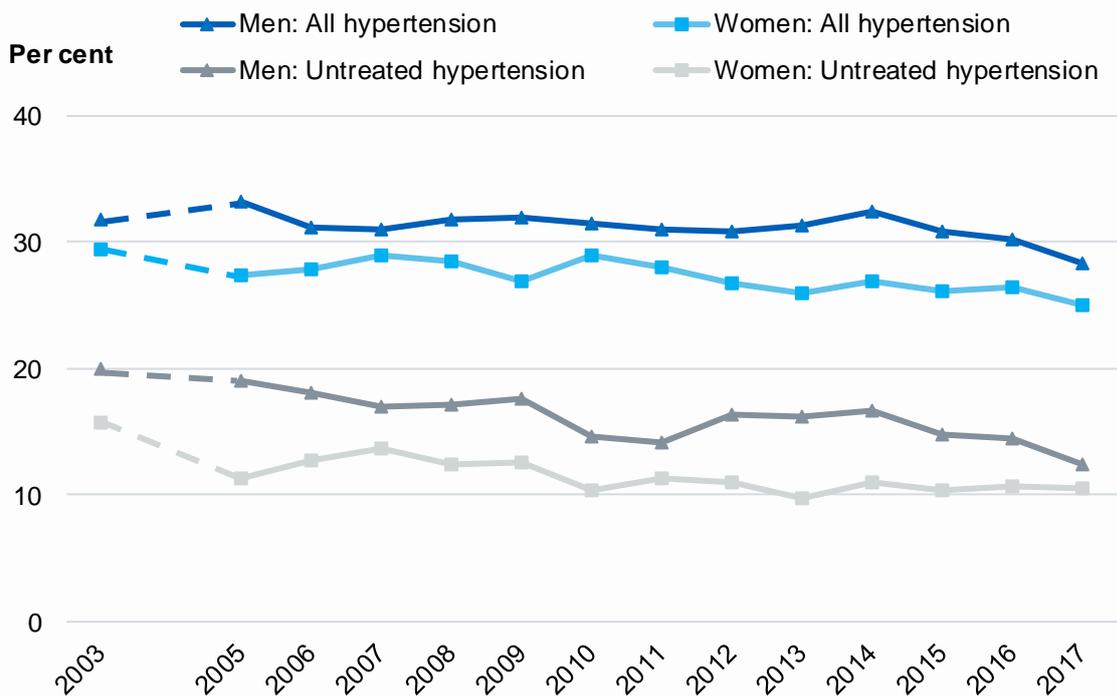
The proportion of adults with untreated hypertension decreased from 2003 to 2017 for both men (20% to 12%) and women (16% to 11%).

Figure 8, Table 7

⁴¹ The HSE cannot be completely accurate in identifying people with hypertension as the definition requires persistently raised blood pressure; HSE measures the blood pressure three times but on a single occasion.

Figure 8: Total and untreated hypertension by sex, 2003-2017

Base: Aged 16 and over with valid blood pressure measurements



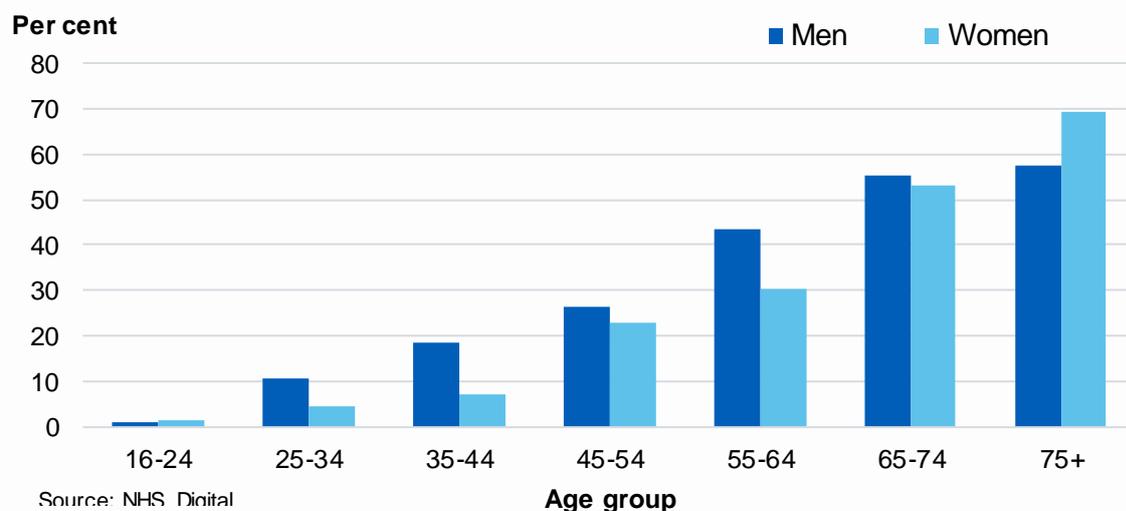
Source: NHS Digital

In 2017, more men (28%) than women (25%) had hypertension. As explained in the Introduction to this report, survey estimates are subject to a margin of error. It is likely that the proportion of men in the population with hypertension was between 26% and 31%, and the proportion of women was between 23% and 27%. As Figure 9 shows, the patterns for the increases in hypertension prevalence with age were different in men and women.

Figure 9, Table 7

Figure 9: Prevalence of hypertension, by age and sex, 2017

Base: Adults aged 16 and over with valid blood pressure measurements

**Prevalence of hypertension (observed and age-standardised), by region and sex**

There was no statistically significant variation in the prevalence of hypertension by region after age-standardisation.

Table 8

Prevalence of hypertension, by quintile of equivalised household income and sex

The prevalence of hypertension in 2017 was 24% in the highest income quintile and 28% in the lowest income quintile but these differences in the prevalence of hypertension are not statistically significant.

Table 9

Systolic blood pressure, by age and sex

In 2017, 15% of all adults had high blood pressure defined as systolic blood pressure of 140mmHg or above. This prevalence is lower than in Table 7, which looks at all hypertension (27%), including people taking medication for hypertension who have their hypertension controlled. Table 7 is limited to people with valid blood pressure measurements and data on medication, whereas Table 10 includes adults for whom medication data were not available. Consequently, Tables 7 and 10 are not directly comparable:

In addition, 17% of all adults had a systolic blood pressure reading of 130mmHg to less than 140mmHg. This was more common in men (22%) than women (13%). In younger age groups the proportion of women with this level was very low, being 4% or less of those aged under 35.

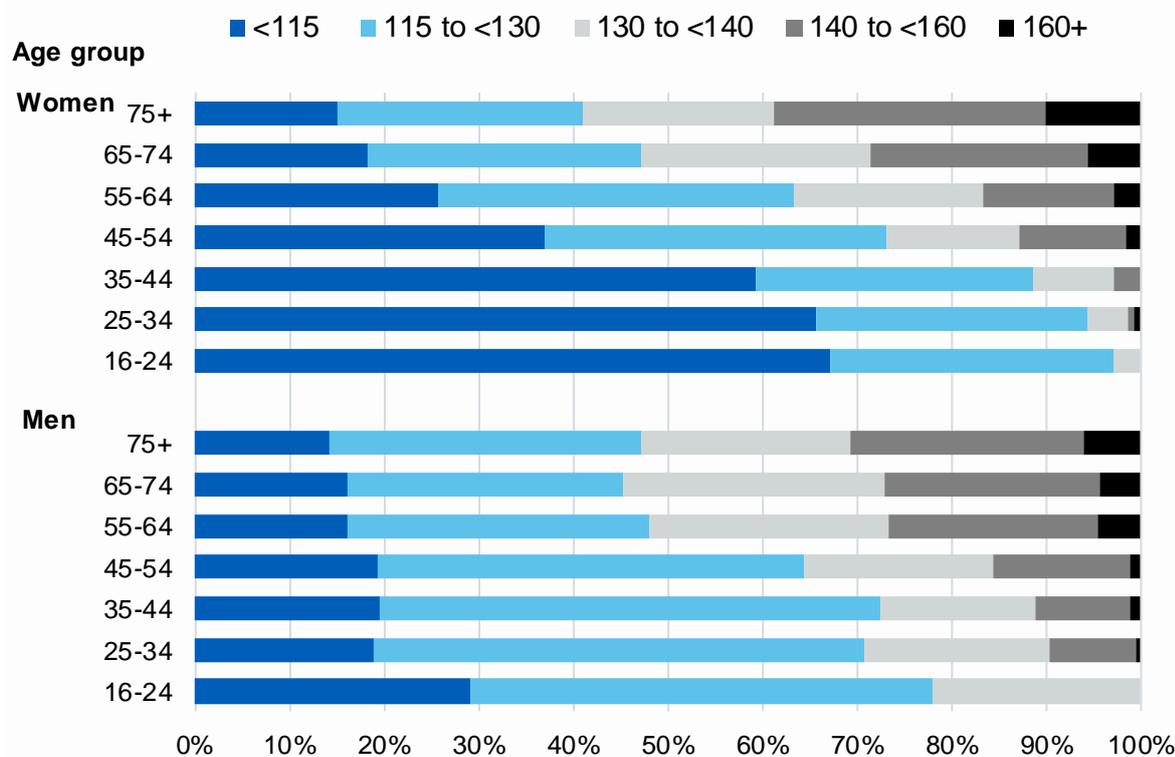
High systolic blood pressure increased more steeply with age for women than men. 1% of women aged 25 to 34 had systolic blood pressure of 140 mmHg or above, rising

to 39% of women aged 75 and over; among men these proportions were 10% and 31% respectively.

Figure 10, Table 10

Figure 10: Systolic blood pressure, by age and sex

Base: Aged 16 and over with valid blood pressure measurements



Source: NHS Digital

Detection and treatment of hypertension among participants with survey-defined hypertension, by age and sex

Among adults aged 35 and over, the proportion of those with survey-defined hypertension who reported doctor-diagnosed hypertension (the detection rate), and the proportion on treatment are presented in Table 11. This table is limited to adults aged 35 and over due to the small numbers with hypertension among adults aged under 35.

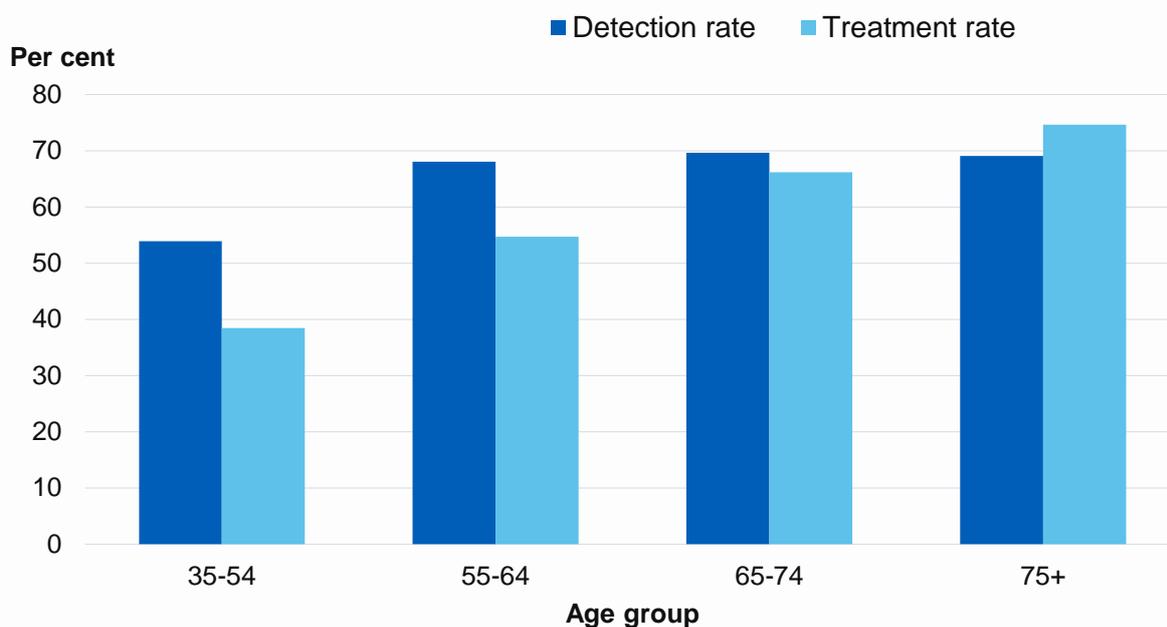
In 2017, 65% of adults aged 35 and over with survey-defined hypertension had their hypertension detected (the proportion who reported having doctor-diagnosed hypertension). The detection rate was higher among older than younger age groups (69% among those aged 75 and over compared with 54% among those aged 35 to 54).

The treatment rate is the proportion with survey-defined hypertension who were on treatment to reduce blood pressure and was 59% among adults aged 35 and over. It increased with age among all adults, from 38% among those aged 35 to 54 to 75% among those aged 75 and over.

Figure 11, Table 11

Figure 11: Detection and treatment of hypertension among participants with survey-defined hypertension, by age, 2017

Base: Aged 35 and over with survey-defined hypertension



Source: NHS Digital

Control of hypertension among participants on treatment for hypertension, by age and sex

Table 12 shows the proportion of adults aged 45 and over on treatment for hypertension whose hypertension was controlled to less than 140/90mmHg. This table is limited to adults aged 45 and over due to the small numbers on treatment for hypertension among adults aged under 45.

In 2017, 67% of adults aged 45 and over on treatment for hypertension had their hypertension controlled (to below 140/90mmHg). This proportion declined with age from 71% among those aged 45 to 64 to 60% among those aged 75 and over.

Table 12

Height and weight

Introduction

This report presents trends in mean height and mean weight by age and sex from 1993 onwards. Surveillance of height and weight was one of the original purposes of the Health Survey for England series. Their use to monitor obesity, by calculating body mass index (BMI) is reported in the HSE 2017 Adult and Child Overweight and Obesity report.⁴⁴

Mean height, by survey year, age and sex

In 2017 the mean height of men was 175.3cm, and of women was 161.9cm. Between 1993 and 2017, mean height varied little from year to year.

Table 15

Mean weight, by survey year, age and sex

Between 1993 and 2017, mean weight increased from 78.9kg to 84.9kg among men, and from 66.6kg to 72.8kg among women.

Among men, mean weight increased least among those aged 16 to 24 (an increase of 1.6kg, from 73.1kg to 74.7kg between 1993 and 2017), and most among those aged 45 to 54 (an increase of 7.9kg, from 81.5kg to 89.4kg between 1993 and 2017).

Among women, mean weight increased least among those aged 55 to 64 (an increase of 4.1kg, from 69.7kg to 73.8kg between 1993 and 2017), and most among those aged 25 to 34 (an increase of 8.2kg, from 65.5kg to 73.7kg).

Table 16

Appendix – Technical information

Methods

Further details of the protocols for collecting measurements and blood samples can be found in the HSE 2017 Methods report. Full questionnaires are included in the survey Documentation. Both of these are available via <https://digital.nhs.uk/pubs/hse2017>.

Chronic pain

All adult participants were asked in their interview if they were currently troubled by pain and discomfort either all of the time or on and off. If participants reported that they were, they were asked whether they had had the pain or discomfort for more than three months. Those who said yes to this question were classified as having 'chronic pain'.

Participants suffering from chronic pain were asked additional questions about their pain or discomfort, including:

- which areas of the body the pain was in;
- the intensity of their pain;

⁴⁴ This and other reports from the Health Survey for England 2017 are available via the report website <https://digital.nhs.uk/pubs/hse2017>

- how much their pain interfered with aspects of their life; and
- support or help they had received.

Further data on chronic pain sufferers can be found in the HSE2017 dataset.

Diabetes

HSE measures diabetes in two ways. The prevalence of self-reported doctor-diagnosed diabetes was included in the main computer-assisted interview in 1994, 1998, 2003, 2006, and each year from 2009 onwards, and these findings are presented in Table 4.

The HSE interview makes no distinction between Type 1 and Type 2 diabetes. In earlier years (up to HSE 2003) 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,^{45,46,47,48} and some adults with Type 2 diabetes are now prescribed insulin therapy,^{49,50} so these distinctions are no longer reliable.

In addition to the interview question, glycated haemoglobin (HbA_{1c}) levels are measured in blood samples collected at the nurse visit. HbA_{1c} reflects average blood sugar levels over the previous two to three months and can therefore be used both to monitor diabetic control in people with diagnosed diabetes, and to detect undiagnosed diabetes.^{51,52}

Prevalence of total diabetes is limited to participants with a nurse visit and a valid HbA_{1c} measurement. Total diabetes in the population includes all participants with an HbA_{1c} level of 48mmol/mol or above, diagnostic of diabetes, as well as those who reported having diabetes diagnosed by a doctor. Among those with total diabetes,

⁴⁵ Ehtisham S, Barrett TG, Shaw NJ. *Type 2 diabetes mellitus in UK children-an emerging problem*. Diabetic Medicine, 2000;**17**:867-71.

⁴⁶ Drake A, Smith A, Betts P et al. *Type 2 diabetes in obese white children*. Archives of Disease in Childhood, 2002;**86**:207-8.

⁴⁷ Diabetes UK. *Facts and stats*. London, 2016. https://diabetes-resources-production.s3-eu-west-1.amazonaws.com/diabetes-storage/migration/pdf/DiabetesUK_Facts_Stats_Oct16.pdf

⁴⁸ Wilmot E, Idris I. *Early onset type 2 diabetes: risk factors, clinical impact and management*. Therapeutic Advances in Chronic Disease. 2014;**5**:234-244.

⁴⁹ 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.

⁵⁰ 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.

⁵¹ World Health Organisation. *Use of Glycated Haemoglobin (HbA_{1c}) in the Diagnosis of Diabetes Mellitus: Abbreviated Report of a WHO Consultation*. www.who.int/diabetes/publications/diagnosis_diabetes2011/en

⁵² Moody A, Cowley G, Ng Fat L, et al. *Social inequalities in prevalence of diagnosed and undiagnosed diabetes and impaired glucose regulation in participants in the Health Surveys for England series*. BMJ Open. 2016;**6**:e010155. doi:10.1136/bmjopen-2015-010155

participants with a raised HbA_{1c} who did not report having doctor-diagnosed diabetes are defined as having undiagnosed diabetes.^{53,54}

Technical details

Trend tables present the results within the general population sample, although in some years boost sample data have been included. For example, some estimates for 2002 are based on data from young adults in both boost and general population samples to increase the precision of the results. For 2005, the boost sample of older people is included in the estimates for people aged 65 and over. In these years, boost sample cases have been excluded from the estimates for all men, all women and all adults.⁵⁵

Since 2013, standard errors (shown in some tables) have been calculated for all survey years using a complex samples module of the statistical package. In 2014, standard errors for adult estimates in years up to 2002 were also recalculated using the complex samples module. This complex samples module takes account of the complex survey design and weighting used in the HSE rather than assuming a simple random sample.⁵⁶ In the earlier trend tables, standard errors for years up to 2002 did not use a complex samples module, and therefore indicated narrower margins of error than those shown in the tables from 2013 onwards.

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 analysis of trends in this report focuses on the weighted estimates for 2003 onwards.⁵⁷

The impact of the weighting can be seen in the 2006 adults' trend tables, available at <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/health-survey-for-england-2006-latest-trends>. These present unweighted estimates (directly comparable with previous years) and weighted estimates for 2003 to 2006.

⁵³ In Table 7, values of HbA_{1c} were adjusted in 2013, 2014, 2015, 2016 and 2017 to make them comparable to years before HSE 2013, due to changes in calibrators. The calibrator used after 19th September 2013 produced lower glycated haemoglobin results compared with the previous one.

⁵⁴ Full details of the HSE blood sample analytical methods and equipment can be found in the HSE 2017 Methods report at <https://digital.nhs.uk/pubs/hse2017>

⁵⁵ Data from older people in care homes collected for the 2000 survey are not included in trend tables as there are likely to be significant differences in the health of older people living in private households and in care homes.

⁵⁶ Full details of the HSE sample can be found in the HSE 2017 Methods report available via <https://digital.nhs.uk/pubs/hse2017>

⁵⁷ 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.

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