Health Survey for England 2018 Adults' Health

Published 3 December 2019

This report looks at the general health of adults aged 16 and over, and the prevalence of diabetes, high cholesterol and hypertension. It also examines self-assessed health status using the EQ-5D instrument.

Key findings

- The proportion of adults with doctor-diagnosed diabetes increased between 1994 and 2018, with some year-on-year fluctuation, from 3% to 8% among men and from 2% to 6% among women. In 2018, more men (9%) than women (7%) had total diabetes (doctor-diagnosed diabetes or a glycated haemoglobin (HbA1c) level of 48mmol/mol or above).

- Hypertension prevalence in 2018 was higher among men (30%) than among women (26%). The proportion of adults with untreated hypertension decreased from 2003 to 2018 for both men (20% to 13%) and women (16% to 10%).

- In 2018, 41% of adults reported no health problems across the five dimensions of the EQ-5D instrument (mobility, self-care, usual activities, pain or discomfort, and anxiety or depression). More men (44%) than women (39%) reported no health problems.

- Problems were most commonly reported for pain or discomfort (44% of men, 48% of women) and for anxiety or depression (30% of men, 35% of women).

- Health status varied by household income. For example, the proportion of adults who reported problems with pain or discomfort increased from 40% of adults in the highest income quintile to 53% of adults in the lowest income quintile. The equivalent figures for anxiety or depression were 27% and 43%.

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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 (HSE) 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/hse2018.

Each annual survey has covered the adult population aged 16 and over living in private households in England.[1] In 2018, interviews were completed with 8,178 adults.

This report includes a combination of trend tables and HSE 2018 results. It covers general health, diabetes, cholesterol, and hypertension. In 2018, it also covers health status as measured by the EQ-5D instrument. It provides detail on the detection and management of diabetes; this is one of several opportunities identified by Public Health England to prevent and manage cardiovascular disease in the population.

Trend tables on obesity, smoking, alcohol consumption, and fruit and vegetable consumption can be found in the HSE 2018 Overweight and obesity in adults and children report and the HSE 2018 Adult health-related behaviours report.[2]

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.[3]

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.

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[1] Children aged 2 and over have been included in the HSE series since 1995, and infants under 2 since 2001.

[2] This and other reports from the Health Survey for England 2018 are available via the report website https://digital.nhs.uk/pubs/hse2018.

[3] 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 2018, the prevalence of very bad or bad general health fluctuated between 6% and 8%.

Diabetes
- The proportion of adults with doctor-diagnosed diabetes increased between 1994 and 2018, with some year-on-year fluctuation, from 3% to 8% among men and from 2% to 6% among women. In 2018, more men (9%) than women (7%) had total diabetes (doctor-diagnosed diabetes or an HbA$_{1c}$ level of 48mmol/mol or above).

High blood cholesterol
- There was a decline in the proportion of adults with raised total cholesterol (total cholesterol equal to or greater than 5mmol/L) between 1998 and 2018, from 66% to 44% among men, and from 67% to 49% among women.

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, it has fluctuated between 27% and 28%, being higher among men (30% in 2018) than women (26% in 2018). The proportion of adults in the population with untreated hypertension decreased from 2003 to 2018 for both men (20% to 13%) and women (16% to 10%).

Self-reported health status (assessed using the EQ-5D instrument)
- In 2018, 41% of adults reported no health problems across the five dimensions of the EQ-5D instrument (mobility, self-care, usual activities, pain or discomfort, and anxiety or depression). More men (44%) than women (39%) reported no health problems.

- The proportions reporting no problems decreased with age from 56% of men and 48% of women aged 16 to 24, to 22% of men and 19% of women aged 75 and over.

- Problems were most commonly reported for pain or discomfort (44% of men, 48% of women), and for anxiety or depression (30% of men, 35% of women).

- The proportion of participants who reported no health problems across the five EQ-5D dimensions decreased from 46% of adults in the highest income quintile to 33% of adults in the lowest income quintile. Similarly, this proportion decreased from 46% of adults in the least deprived areas to 37% of adults in the most deprived areas.

- The proportion of adults who reported problems with pain or discomfort increased from 40% of adults in the highest income quintile to 53% of adults in the lowest income quintile. The equivalent figures for anxiety or depression were 27% and 43%.

- Among adults aged 65 and over, 47% of adults with no longstanding illness reported no problems across the five dimensions, compared with 34% of adults with a non-limiting longstanding illness and 7% of adults with a limiting longstanding illness.

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,[4] and has also been reported to be predictive of functional decline.[5]

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 Office for National Statistics (ONS) harmonised disability questions designed for use in social surveys.[6] 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'.[7]

Self-assessed general health, longstanding illness and acute sickness, by survey year and sex

Between 1993 and 2018, the proportions reporting very good or good general health fluctuated between 74% and 78% among men and between 73% and 76% among women with no clear pattern of variation over time. In 2018, 76% of men and 74% of women reported having very good or good general health. As explained in the introduction to this report, survey estimates are subject to a margin of error. It is likely that in 2018 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 72% and 75% of women.[8]

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

[5] 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.

[6] 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.

[7] Prior to 2012, the question referred to 'an illness, disability or infirmity…that has troubled you over a period of time or that is likely to affect you over a period of time'. Since 2012 longstanding illness is defined as 'any physical or mental health condition or illness lasting or expected to last 12 months or more'. 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://digital.nhs.uk/catalogue/PUB13218
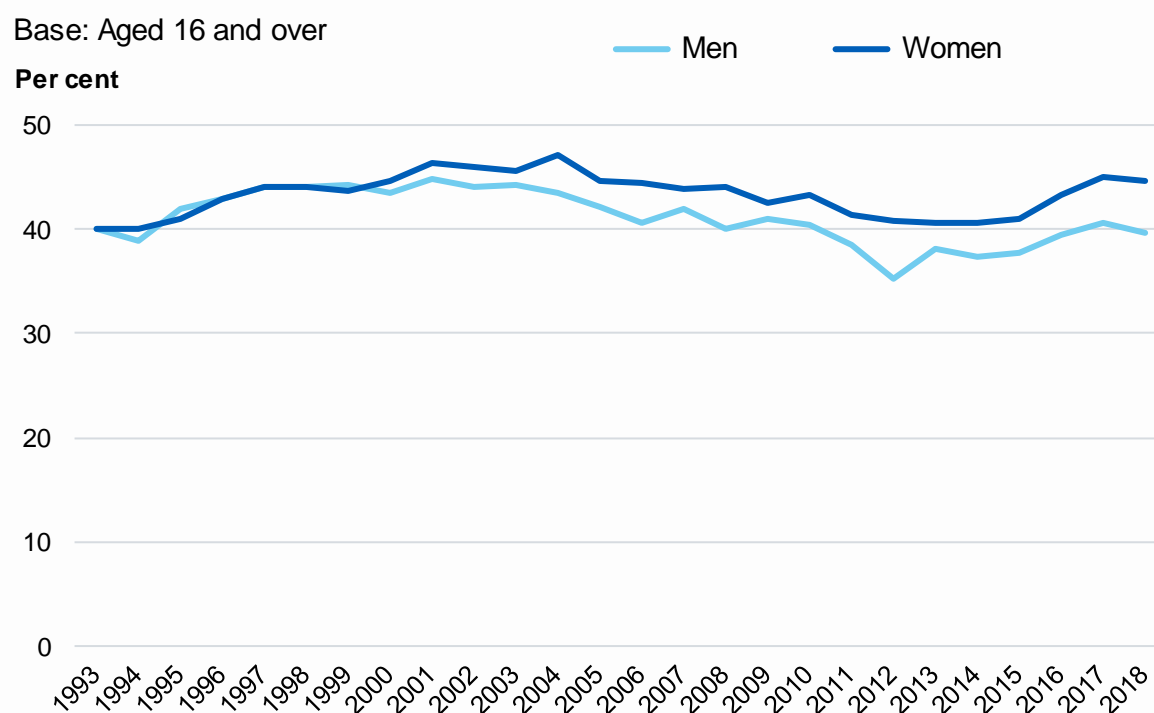
[8] Confidence intervals around estimates of the prevalence of general health are shown in more detail in Table A1.

From 1993 to 1995, the prevalence of very bad or bad general health among all adults remained steady at 5%. From 1996 to 2018, the prevalence of very bad or bad general health fluctuated between 6% and 8% across the period, and was 8% in 2018 in both men and women.

In 2018, the prevalence of longstanding illness was higher among women (45%) than among men (40%). Prevalence among all adults increased from 40% in 1993 to between 44% and 46% over the period 1997 to 2003. It was lower in subsequent years. The current question wording was introduced in 2012.[9] Since then, there has been a gradual increase in the prevalence of longstanding illness among men from 35% in 2012 to 41% in 2017, and it remained at a similar level (40%) in 2018. Among women, the prevalence of longstanding illness increased from 40% in 1993 to 47% in 2004 but decreased thereafter. Between 2012 and 2015 prevalence was stable, and has increased since from 41% in 2015 to 45% in 2017, and remained at that level in 2018.[10]

Figure 1, Table 1

Figure 1: Proportion of adults with at least one longstanding illness, by sex, 1993-2018

Base: Aged 16 and over

Source: NHS Digital

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 do. Prevalence has varied between 12% and 16% of men and between 14% and 19% of women over the period 1993 to 2018. It has been consistently higher in women than in men. In 2018, 12% of men and 17% of women reported acute sickness.

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[9] See reference 7 above.

[10] Longstanding illnesses are discussed in detail in the HSE 2018 Longstanding conditions report.

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),[11] 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.[12,13] 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 and Wales was 32%, with the highest risk amongst those with Type 1 diabetes.[14]

The Department of Health's National Service Framework for Diabetes, published in 2002, set out a ten-year programme of change to deliver world class care and support for people with diabetes.[15] 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% (58.5mmol/mol)). 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.[16]

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 2.

Additionally, glycated haemoglobin (HbA1c) levels are measured in blood samples collected at the nurse visit. HbA1c 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.[17,18]

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

[12] Diabetes UK. *Preventing Type 2 diabetes.* https://www.diabetes.org.uk/Preventing-Type-2-diabetes/.

[13] 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.

[14] National Diabetes Audit 2015-16. *Report 2a: complications and mortality.* NHS Digital, 2017. https://digital.nhs.uk/catalogue/PUB30030

[15] 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

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

[17] World Health Organization. *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

[18] 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.

Prevalence of total diabetes, using glycated haemoglobin levels, are presented from 2011 onwards in Table 3, which is limited to participants with a nurse visit and a valid HbA1c measurement. Total diabetes in the population includes all participants with an HbA1c 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 HbA1c who did not report having doctor-diagnosed diabetes are defined as having undiagnosed diabetes.[19,20]

Further details are given in the Appendix to this report.

The HSE 2018 Overweight and obesity in adults and children report includes information on the associations between being overweight, obese and having a high waist circumference and the risk of developing diabetes.[21]

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[19] In Table 3, values of HbA1c were adjusted in 2013, 2014, 2015, 2016, 2017 and 2018 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.

[20] Full details of the HSE blood sample analytical methods and equipment can be found in the HSE 2018 Methods report at https://digital.nhs.uk/pubs/hse2018.

[21] This and other reports from the Health Survey for England 2018 are available via the report website https://digital.nhs.uk/pubs/hse2018.

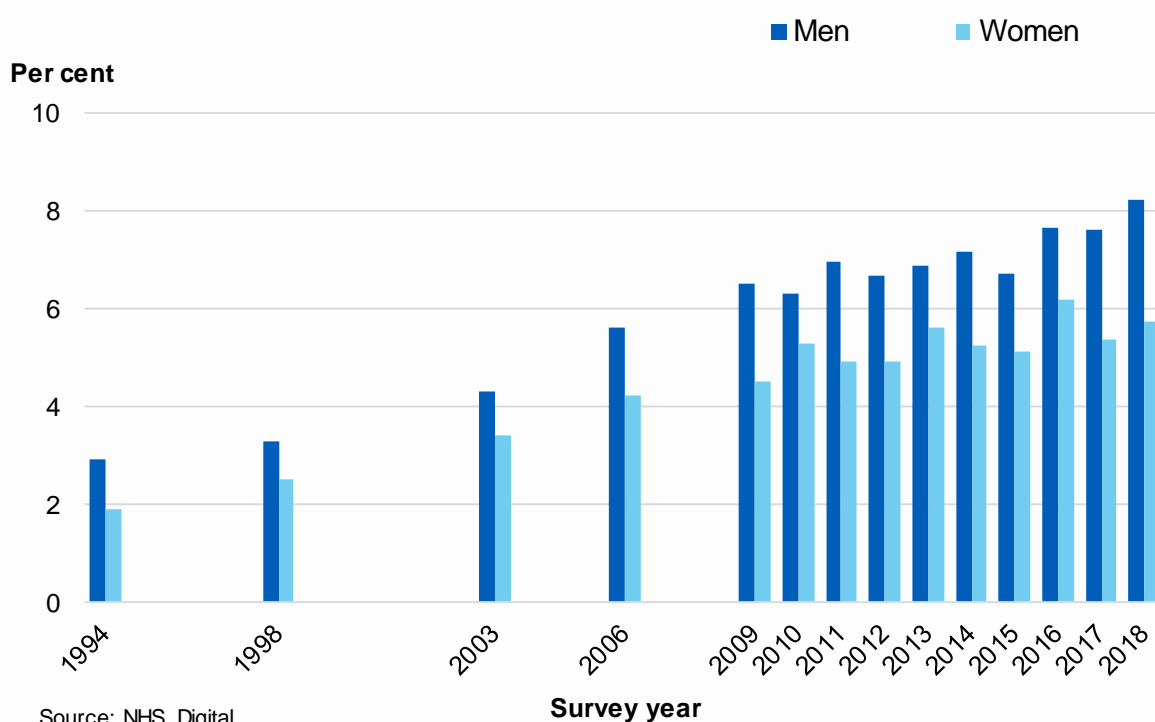## Prevalence of doctor-diagnosed diabetes, by survey year, age and sex

In 2018, 8% of men and 6% 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.[22]

The proportion of adults with doctor-diagnosed diabetes increased between 1994 and 2018, with some year-on-year fluctuation, from 3% to 8% among men and from 2% to 6% among women.

Figure 2, Table 2

Figure 2: Proportion of adults with doctor-diagnosed diabetes, by sex, 1994-2018

Base: Aged 16 and over

Source: NHS Digital

Increases in doctor-diagnosed diabetes from 1994 to 2018 have been largest for adults aged 45 and over. For example, among adults aged 45 to 54, the proportion with doctor-diagnosed diabetes increased fourfold from 2% in 1994 to 8% in 2018. In absolute terms, the rise over this period has been largest among adults aged 65 and over.

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[22] Confidence intervals around estimates of the prevalence of doctor-diagnosed diabetes are shown in more detail in Table A2.

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

Table 3 shows estimates of the level of total diabetes as identified through self-reported doctor-diagnosed diabetes and HbA1c levels. It is based on adults who provided a blood sample, and does not include everyone who was interviewed. Consequently, the estimates of those with doctor-diagnosed diabetes vary slightly from those in Table 2, which shows the definitive estimates.

In 2018, 8% of adults had diabetes as identified through doctor-diagnosed diabetes and HbA1c levels. This comprised 6% with doctor-diagnosed diabetes and a further 2% with undiagnosed diabetes. More men (9%) than women (7%) had total diabetes in 2018.
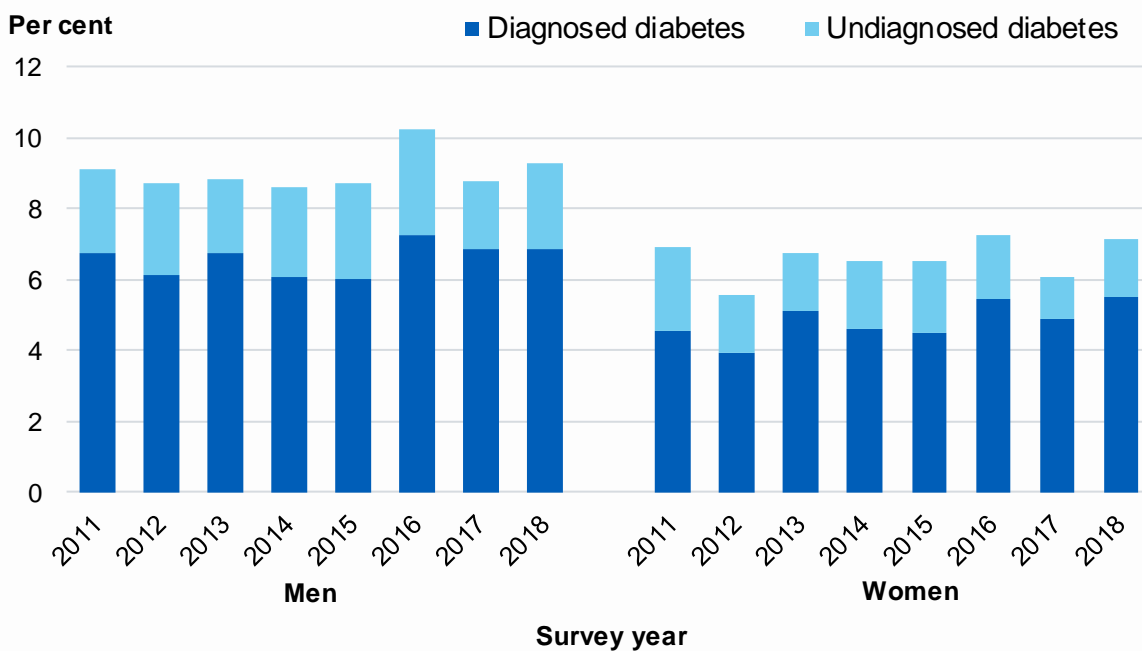
Levels of total diabetes have varied in the years 2011 to 2018 between 9% and 10% among men, and between 6% and 7% among women. These variations are not statistically significant.

The prevalence of undiagnosed diabetes in adults has remained around 2% since 2011 with no clear pattern. Similarly, the proportion of all adults with diabetes who were undiagnosed has varied since 2011 between 20% and 31%; in 2018, it was 25%.

Figure 3, Table 3

Figure 3: Proportion of adults with diagnosed and undiagnosed diabetes, by sex, 2011-2018

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

Source: NHS Digital

Cholesterol

Introduction

Cholesterol is a fatty substance (also referred to as a lipid) found in the blood, and is needed by the body to function. There are different types of cholesterol including LDL (low density lipoprotein) cholesterol, VLDL (very low density lipoprotein) cholesterol, and HDL (high density lipoprotein) 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 is harmful as it can clog blood vessels causing them to become stiff and narrow, reducing blood flow.

High cholesterol is one of the risk factors for cardiovascular (circulatory) diseases, including narrowing of the arteries (atherosclerosis), heart attack, and stroke.

In HSE, 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 raised total cholesterol is presented in Table 4 for years 1998, 2003, 2006, 2011, 2014, 2017 and 2018.[23,24]

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[23] 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.

[24] Full details of the HSE blood sample protocols, analytical methods and equipment can be found in the HSE 2018 Methods report at https://digital.nhs.uk/pubs/hse2018.

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Prevalence of raised total cholesterol, by survey year, age and sex
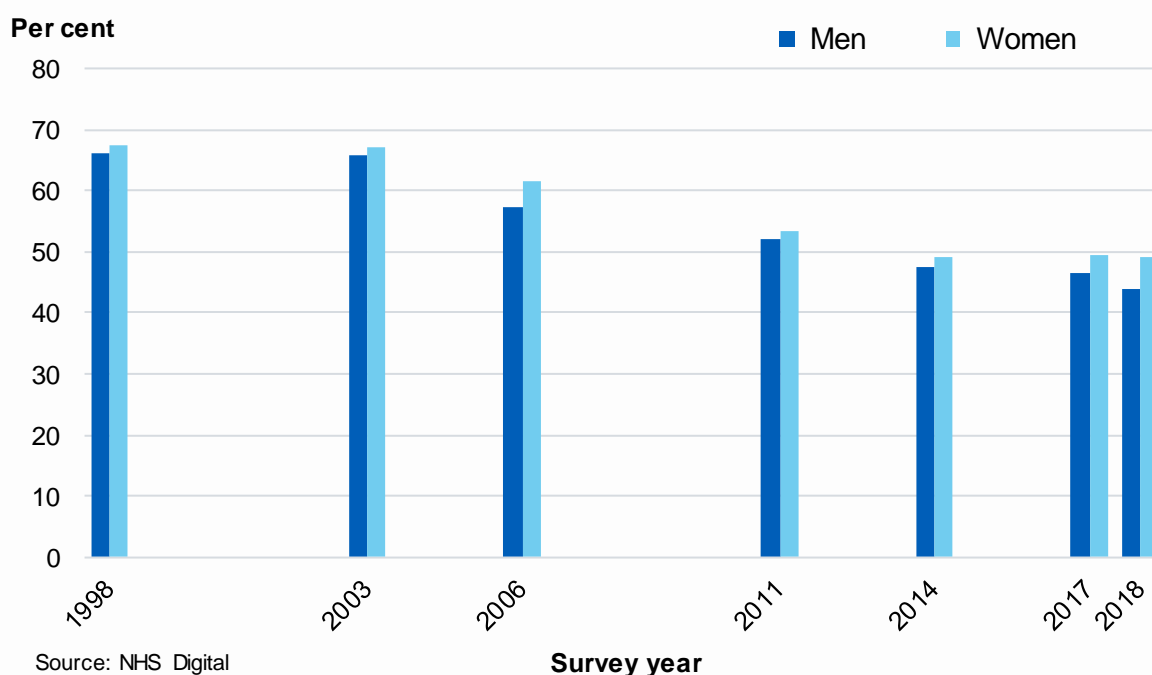
In 2018, the prevalence of raised total cholesterol was 47%. Survey estimates are subject to a margin of error, and it is likely that the proportion of adults with raised total cholesterol varies between 45% and 49%.[25]

From 1998 to 2018 there has been a decline in the proportion of adults with raised total cholesterol from 66% to 44% among men, and from 67% to 49% among women. Taking into account the margin of error, it is likely that the proportions in the population with raised total cholesterol in 2018 were between 41% and 47% of men and between 47% and 52% of women.[25] These figures include people taking lipid-lowering medication. There has been a large increase in the prescription of statins,[26] which is probably a major contributing factor to the decline in prevalence of raised total cholesterol.

Figure 4, Table 4

Figure 4: Proportion of adults with raised total cholesterol, by sex, 1998-2018

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

Source: NHS Digital

Throughout the period 1998 to 2018, the prevalence of raised total cholesterol peaked at an older age for women than men. In 2018, raised total cholesterol was highest among women aged 55 to 64 (73%), and was highest among men aged 45 to 54 (62%). This is likely to reflect three factors. First, rates of premature cardiovascular

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[25] Confidence intervals around estimates of the prevalence of raised total cholesterol are shown in more detail in Table A3.

[26] 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.

mortality are higher in men than in women among those with hypercholesterolaemia (high blood cholesterol).[27,28] Secondly, risk-based indications for lipid-lowering treatment apply to men at younger ages than in women.[29,30] Finally, the prescribing of statins to prevent CVD in women has lagged behind prescribing for men.[31]

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[27] Mikkola T, Gissler M, Merikukka M et al. *Sex differences in age-related cardiovascular mortality.* PLoS One 2013;**8**:e63347.

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

[29] National Institute for Health and Care Excellence. *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

[30] National Institute for Health and Care Excellence, *CVD risk assessment and management.* 2014 (revised 2019). https://cks.nice.org.uk/cvd-risk-assessment-and-management#!scenario

[31] 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.

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 is one of the most preventable and treatable causes of premature deaths worldwide.[32]

Clinical guidelines for hypertension emphasise the importance of advice on modifiable lifestyle risk factors to reduce the overall risk[33] of serious cardiovascular events.[34] The risk factors that have driven the epidemic of CVD include smoking; sedentary lifestyles; diets high in calories, saturated fats, carbohydrate and salt and low in fruit and vegetables; and alcohol.[35] 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 following three years by improved diagnosis and management of high blood pressure, high cholesterol, and atrial fibrillation.[36,37] 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 the recommended care processes (diabetes). The key care processes that NICE recommends that each patient with diabetes should receive each year include recording of smoking status, a foot examination, digital retinal screening, and

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[32] 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/

[33] Giuseppe M, De Backer G, Doniniczak 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.

[34] National Institute for Health and Care Excellence. *Hypertension in adults: diagnosis and management.* NICE guideline 136. NICE, London, 2019. https://www.nice.org.uk/guidance/ng136

[35] National Institute for Health and Care Excellence. *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

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

[37] NHS England news release 12/09/2017 https://www.england.nhs.uk/2017/09/nhs-launches-new-drive-to-save-thousands-of-people-from-heart-attacks-and-strokes

measurements of HbA1c, blood pressure, serum cholesterol, body mass index, and kidney function (urine albumin and serum creatinine).[38]

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 report[39] (referred to as 'survey-defined hypertension').[40] 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.

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[38] Health and Social Care Information Centre. *National Diabetes Audit 2017-18-Report 1: Care Processes and Treatment Targets.*
https://digital.nhs.uk/data-and-information/publications/statistical/national-diabetes-audit/report-1-care-processes-and-treatment-targets-2017-18-full-report

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

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

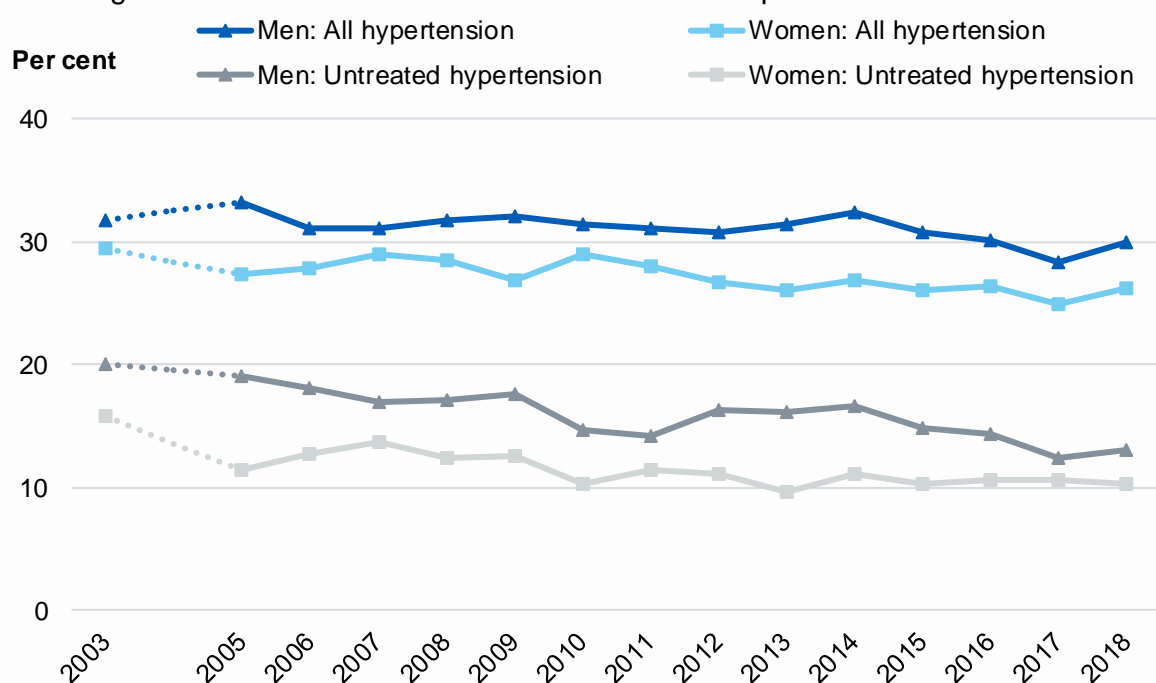## Prevalence of hypertension, by survey year, age and sex

Trend data on the prevalence of hypertension are presented from 2003 and 2005 onwards in Table 5, using measurements taken with the Omron HEM207 sphygmomanometer to measure blood pressure. The prevalence of hypertension among all adults was 31% in 2003 and remained between 29% and 30% between 2005 and 2014. From 2015 onwards, it has remained relatively stable between 27% and 28%. In 2018, more men (30%) than women (26%) had hypertension. Taking into account the margin of error, it is likely that the proportions in the population with hypertension in 2018 were between 28% and 32% of men and between 24% and 28% of women.[41]

The proportion of adults in the population with untreated hypertension decreased from 2003 to 2018 for both men (20% to 13%) and women (16% to 10%).

Figure 5, Table 5

Figure 5: Total and untreated hypertension by sex, 2003-2018

Base: Aged 16 and over with a nurse visit and valid blood pressure measurements

Source: NHS Digital

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[41] Confidence intervals around estimates of the prevalence of hypertension are shown in more detail in Table A4.

EQ-5D

Introduction

The EQ-5D is a well-known and widely used instrument within population health studies such as the HSE. It is a standardised instrument used for the measurement of a person's health status and comes in two parts: a descriptive system and a visual analogue scale (EQ VAS).[42] For the purposes of this report we focus only on the descriptive system.

The descriptive system consists of five dimensions: mobility, self-care, usual activities, pain or discomfort, and anxiety or depression. In the original version of the instrument, each dimension has three severity levels: having no problems, some problems, or severe problems. This version (known as EQ-5D-3L) was used in previous years of HSE, such as 2012.[43] In order to increase the instrument's sensitivity to changes in health, a new version of the instrument with five levels on each of the five dimensions was developed.[44] For each dimension, participants are asked to rate their health state 'today' according to the following scale: having no problems (1), having slight problems (2), having moderate problems (3), having severe problems (4), or having extreme problems (pain or discomfort, anxiety or depression), or being unable to perform activities such as walking about (mobility), wash or dress themselves (self-care), and do usual activities (5). This version (known as EQ-5D-5L) was first used in the HSE 2012 among a sub-sample of participants, and was administered to all participants for the first time in 2017.[45] In 2018 the EQ-5D-5L was administered in self-completion format to all HSE participants aged 16 and over.

This report presents the proportions of participants who reported no problems (a score of 1) across the five EQ-5D dimensions. Additionally, for each dimension, we combined the five levels described above to report the proportions of participants in three categories: no problem; a slight or moderate problem; or a severe or extreme problem or being unable to do the activity (hereafter referred to as having a severe problem). The overall and domain-specific proportions are compared by sex, age, household income, area-based deprivation (Index of Multiple Deprivation), and, among participants aged 65 and over, by limiting longstanding illness status.

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[42] The EQ VAS is used to document each participant's self-rated health according to a vertical, visual analogue scale. With a visual design akin to a thermometer with a scale from 0 to 100, the endpoints are labelled 'best imaginable health state' at the top, and 'worst imaginable health state' at the bottom. See: https://euroqol.org/eq-5d-instruments/

[43] Knott C. *General mental and physical health*. Chapter 4 in Craig R, Mindell J (eds). Health Survey for England 2012. Health and Social Care Information Centre, Leeds, 2013. https://files.digital.nhs.uk/publicationimport/pub13xxx/pub13218/hse2012-ch4-gen-health.pdf

[44] Herdman M, Gudex C, Lloyd A, et al. *Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L)*. Quality of Life Research 2011. **20**:1727-1736.

[45] For a comparison of the EQ-5D-5L and EQ-5D-3L instruments using HSE 2012 data see Fang Y, Devlin N, and Herdman M. *Assessing the health of the general population in England: how do the three- and five-level versions of EQ-5D compare?* Health and Quality of Life Outcomes 2015. **13**:171.

Proportion with no health problems, by age and sex

Overall, 41% of adults reported no health problems across any of the five dimensions. More men than women reported no health problems (44% of men and 39% of women). For both men and women this proportion declined with age, from 56% of men and 48% of women aged 16 to 24, to 22% of men and 19% of women aged 75 and over.
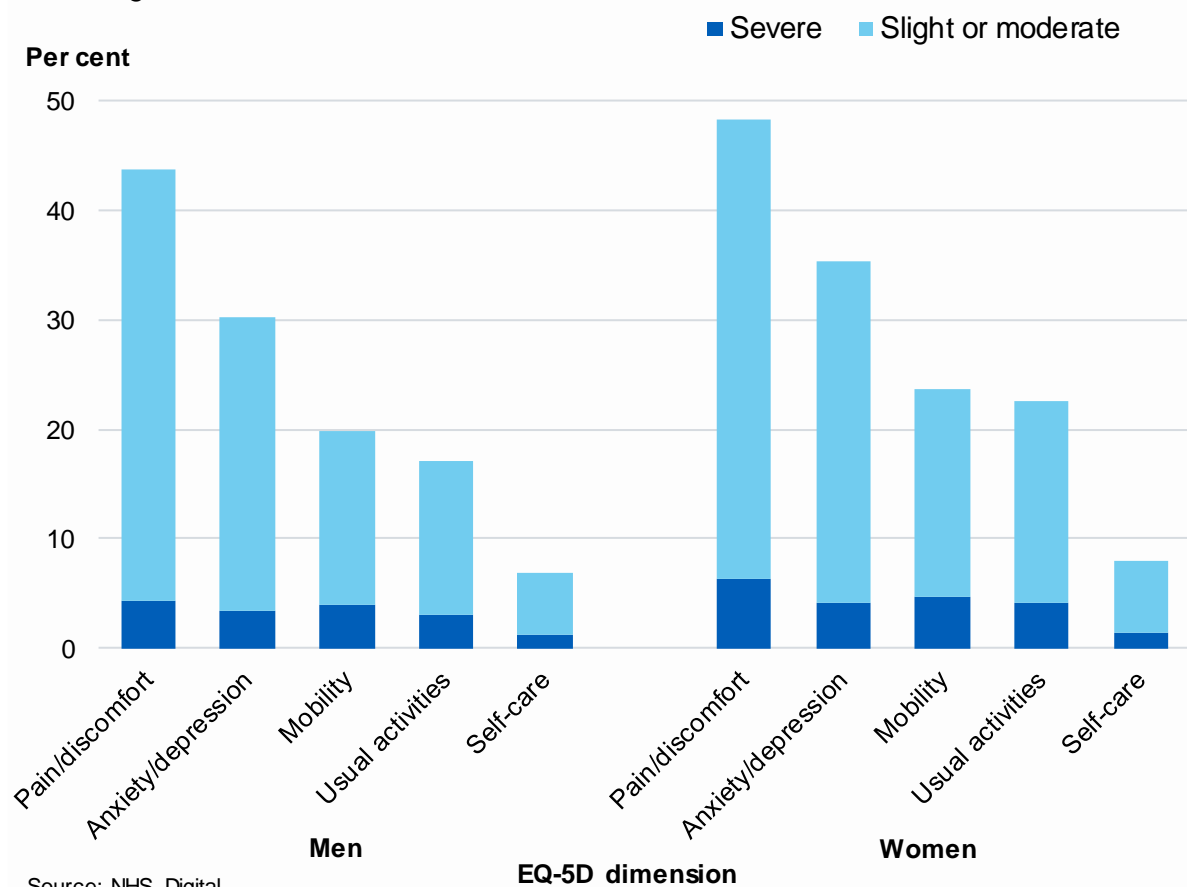
Table 6

EQ-5D dimensions, by age and sex

Problems were most commonly reported for pain or discomfort (44% of men, 48% of women), and anxiety or depression (30% of men, 35% of women). Problems were more prevalent in women than in men across all domains except for self-care, for which the prevalence of reported problems was low for both sexes (7% of men, 8% of women).

Figure 6, Table 7

Figure 6: EQ-5D dimensions by sex

Base: Aged 16 and over

Source: NHS Digital

Proportion with no health problems, by equivalised household income

The HSE uses the measure of equivalised household income, which takes into account the number of adults and dependent children in the household as well as overall household income. Households are divided into quintiles (fifths) based on this measure. The age profile of the income quintiles have been age-standardised to account for differences in age profiles between households.[46]

For information about how equivalised income is calculated, see Chapter 8 and Appendix B: Glossary in the HSE 2018 Methods report.

The proportion of participants who reported no health problems across the five domains of the EQ-5D instrument decreased from 46% of adults in the highest income quintile to 33% of adults in the lowest income quintile.

Figure 7, Table 8

Figure 7: Prevalence of no health problems (EQ-5D), by quintile of equivalised household income

Base: Aged 16 and over

Per cent

Source: NHS Digital

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[46] Age standardisation enables comparisons between groups after adjusting for the effects of any differences in their age distributions. When different sub-groups are compared in respect of a variable on which age has an important influence, any differences in age distributions between these sub-groups are likely to affect the observed differences in the proportions of interest. For information about the method used, see Section 8.6 of the HSE 2018 Methods report.
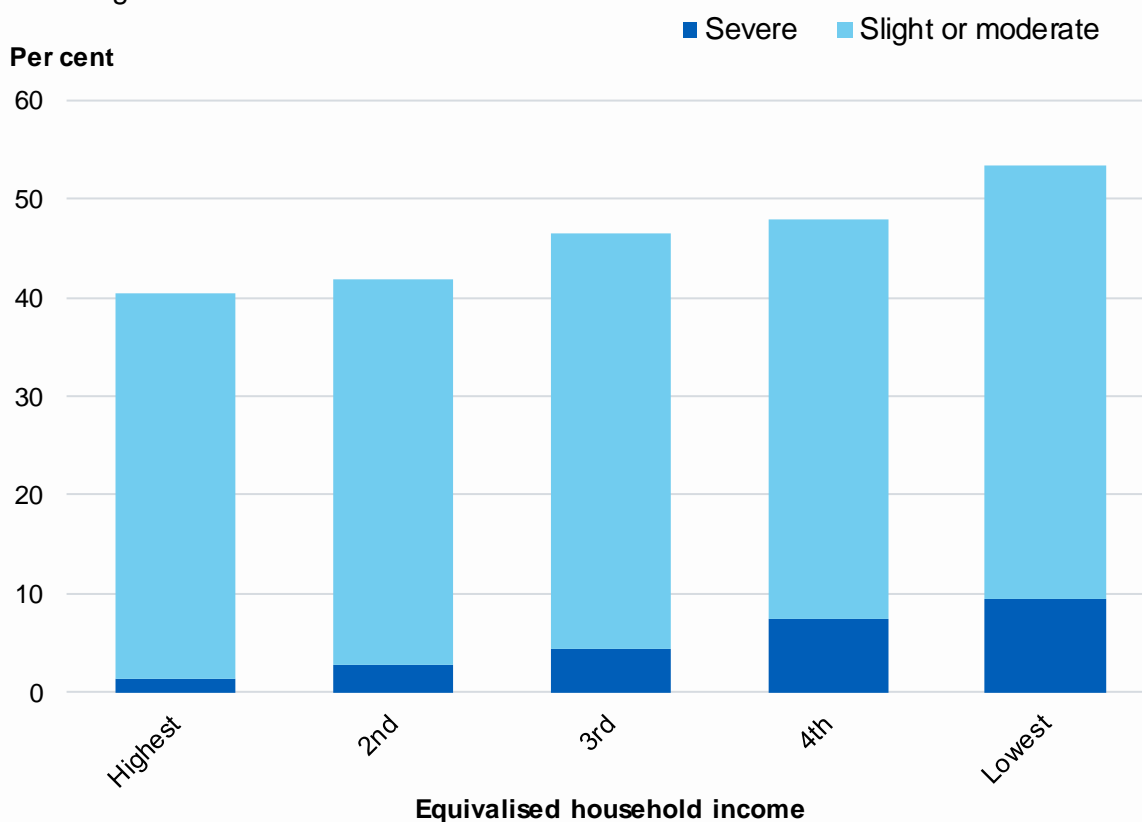
EQ-5D dimensions, by equivalised household income

Problems were more prevalent for both sexes in the lowest income quintiles on the dimensions of mobility, pain or discomfort, and anxiety or depression. 40% of adults in the highest income quintile reported problems for pain or discomfort compared with 53% of adults in the lowest income quintile. Similarly, 27% of adults in the highest income quintile reported problems for anxiety or depression compared with 43% of adults in the lowest income quintile.

Figures 8 and 9, Table 9

Figure 8: Proportion of reported problems for pain or discomfort, by household income quintile
Base: Aged 16 and over

Source: NHS Digital

Figure 9: Proportion of reported problems for anxiety or depression, by household income quintile
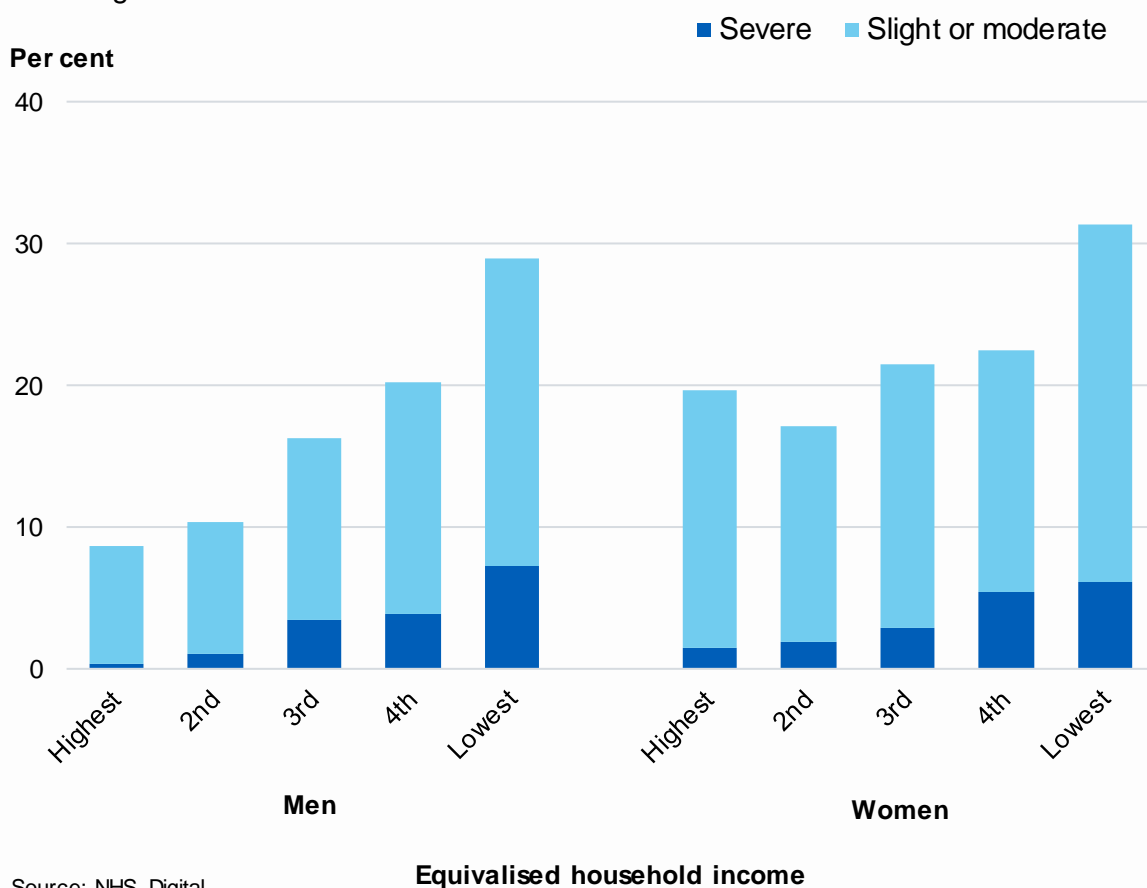
Base: Aged 16 and over

Problems with usual activities were more common among individuals in the lowest quintile of household income (30%) compared with the highest income quintile (14%). The variation by income was more pronounced among men than women. 29% of men and 31% of women in the lowest income quintile reported problems for usual activities compared with 9% of men and 20% of women in the highest income quintile.

Figure 10, Table 9

Figure 10: Proportion of reported problems for usual activities, by household income quintile

Base: Aged 16 and over

Source: NHS Digital

Proportion with no health problems, by Index of Multiple Deprivation (IMD)

The English Index of Multiple Deprivation (IMD) is a measure of area deprivation, based on 37 indicators, across seven domains of deprivation.[47] IMD is a measure of the overall deprivation experienced by people living in a neighbourhood, although not everyone who lives in a deprived neighbourhood will be deprived themselves. To enable comparisons, areas are classified into quintiles (fifths). The age profile of the IMD quintiles have been age-standardised to account for different area age profiles.[48]

For further information about the IMD, see Chapter 8 and Appendix B: Glossary in the HSE 2018 Methods report.
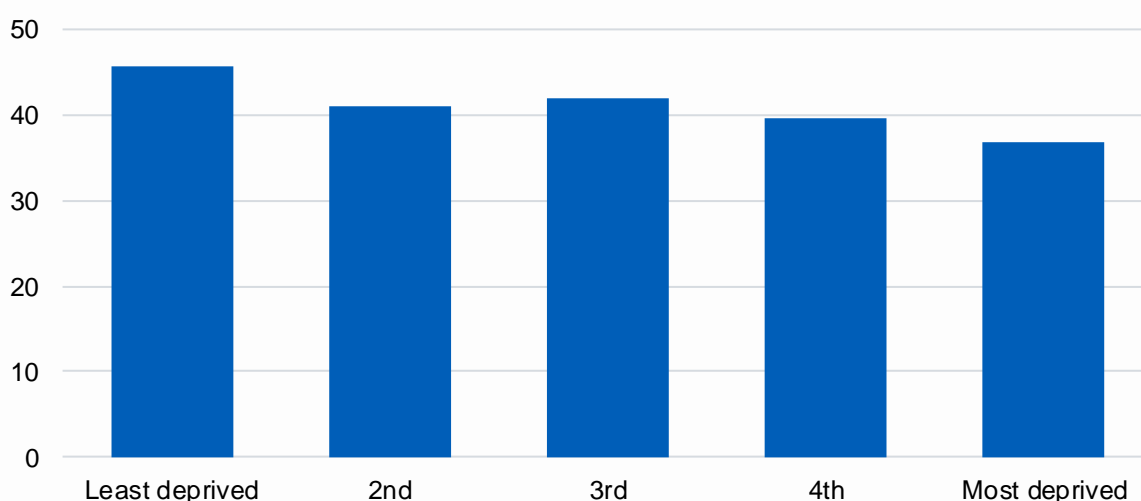
The proportion of participants who reported no health problems across the five domains of the EQ-5D instrument decreased from 46% of adults in the least deprived areas to 37% of adults in the most deprived areas.

Figure 11, Table 10

Figure 11: Prevalence of no health problems (EQ-5D), by Index of Multiple Deprivation

Base: Aged 16 and over

Per cent

Source: NHS Digital

Index of Multiple Deprivation (IMD) quintile

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[47] The seven domains used to calculate IMD are: income deprivation; employment deprivation; health deprivation and disability; education; skills and training deprivation; crime; barriers to housing and services; and living environment deprivation.

[48] Age standardisation enables comparisons between groups after adjusting for the effects of any differences in their age distributions. When different sub-groups are compared in respect of a variable on which age has an important influence, any differences in age distributions between these sub-groups are likely to affect the observed differences in the proportions of interest. For information about the method used, see Section 8.6 of the HSE 2018 Methods report.
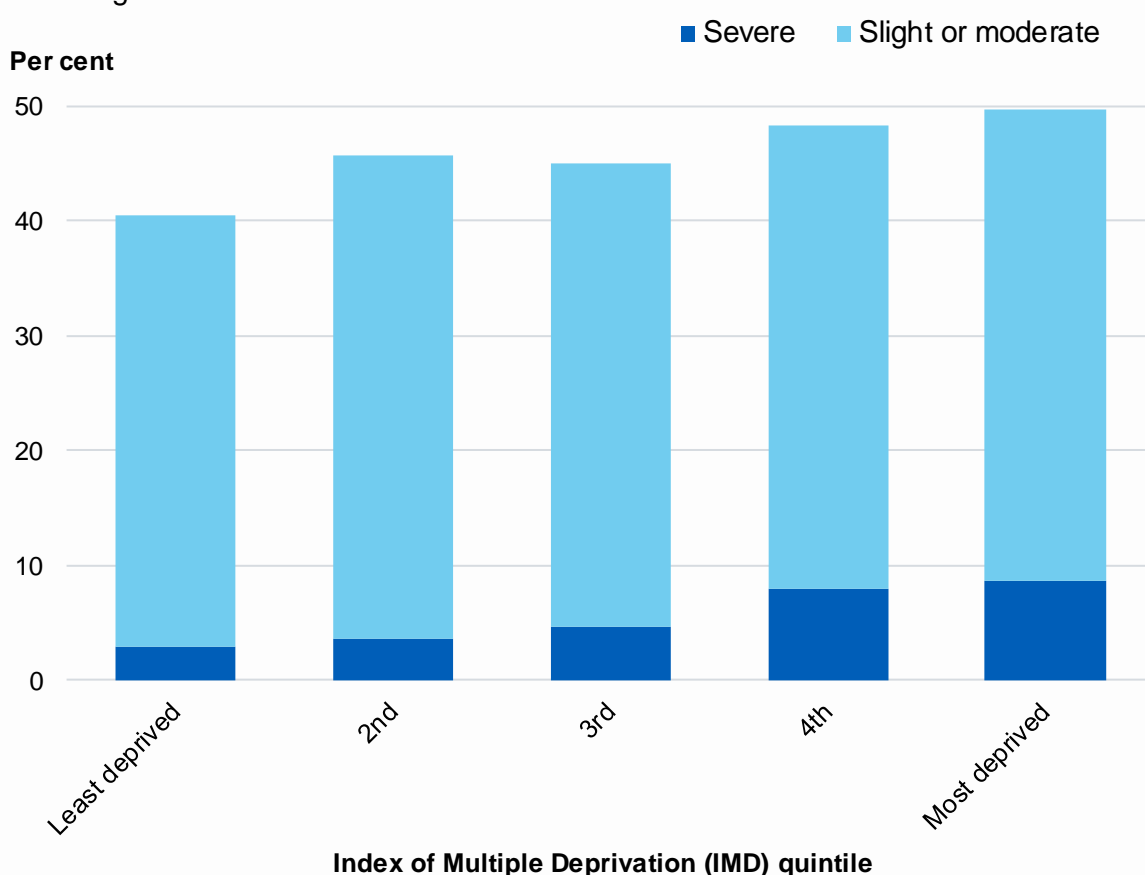
EQ-5D dimensions, by IMD

Problems were more prevalent for both sexes in the most deprived areas across all the EQ-5D domains. 40% of adults in the least deprived areas reported problems for pain or discomfort compared with 50% of adults in the most deprived areas. Similarly, as Figure 13 shows, 30% of adults in the least deprived areas reported problems for anxiety or depression compared with 39% of adults in the most deprived areas.

Figures 12 and 13, Table 11

Figure 12: Proportion of reported problems for pain or discomfort, by Index of Multiple Deprivation
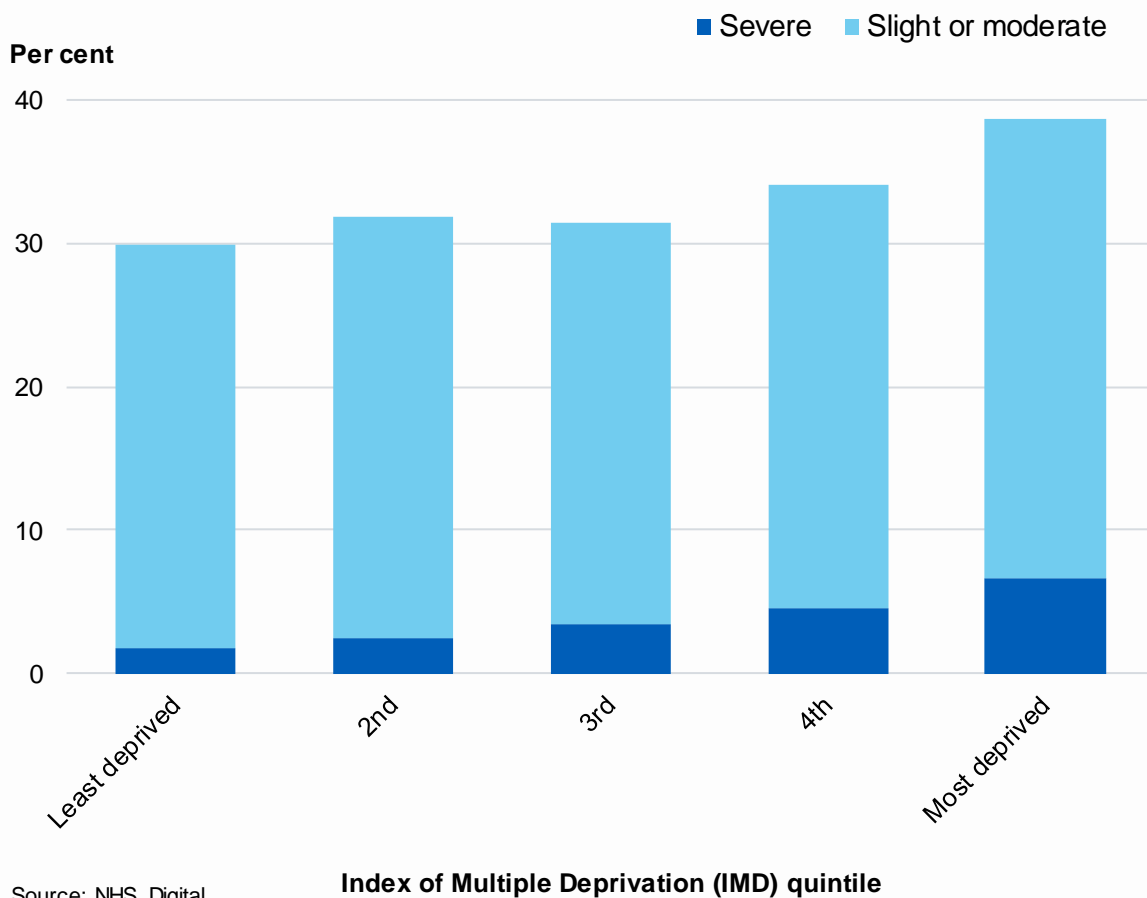Base: Aged 16 and over

Source: NHS Digital

Figure 13: Proportion of reported problems for anxiety or depression, by Index of Multiple Deprivation

Base: Aged 16 and over

Proportion with no health problems, by limiting longstanding illness

Because the prevalence of limiting longstanding illness is very low among younger and middle-aged adults, the following analyses in this report are based on adults aged 65 and over.
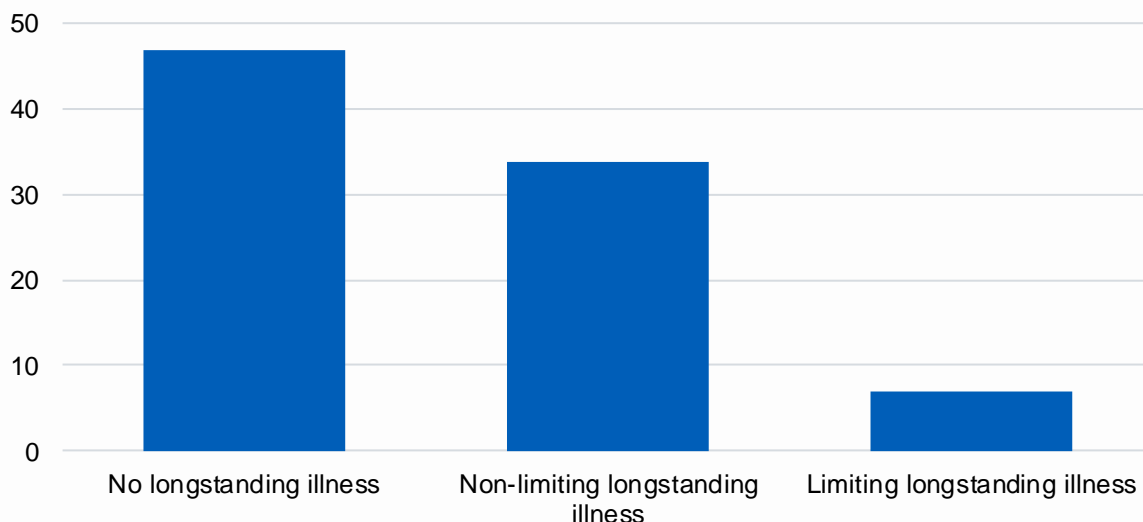
Overall, 28% of adults aged 65 and over reported no problems across all five domains. Among adults aged 65 and over, 47% of adults with no longstanding illness reported no problems, compared with 34% of adults with a non-limiting longstanding illness and 7% of adults with a limiting longstanding illness.

Figure 14, Table 12

Figure 14: Prevalence of no health problems (EQ-5D), by limiting longstanding illness

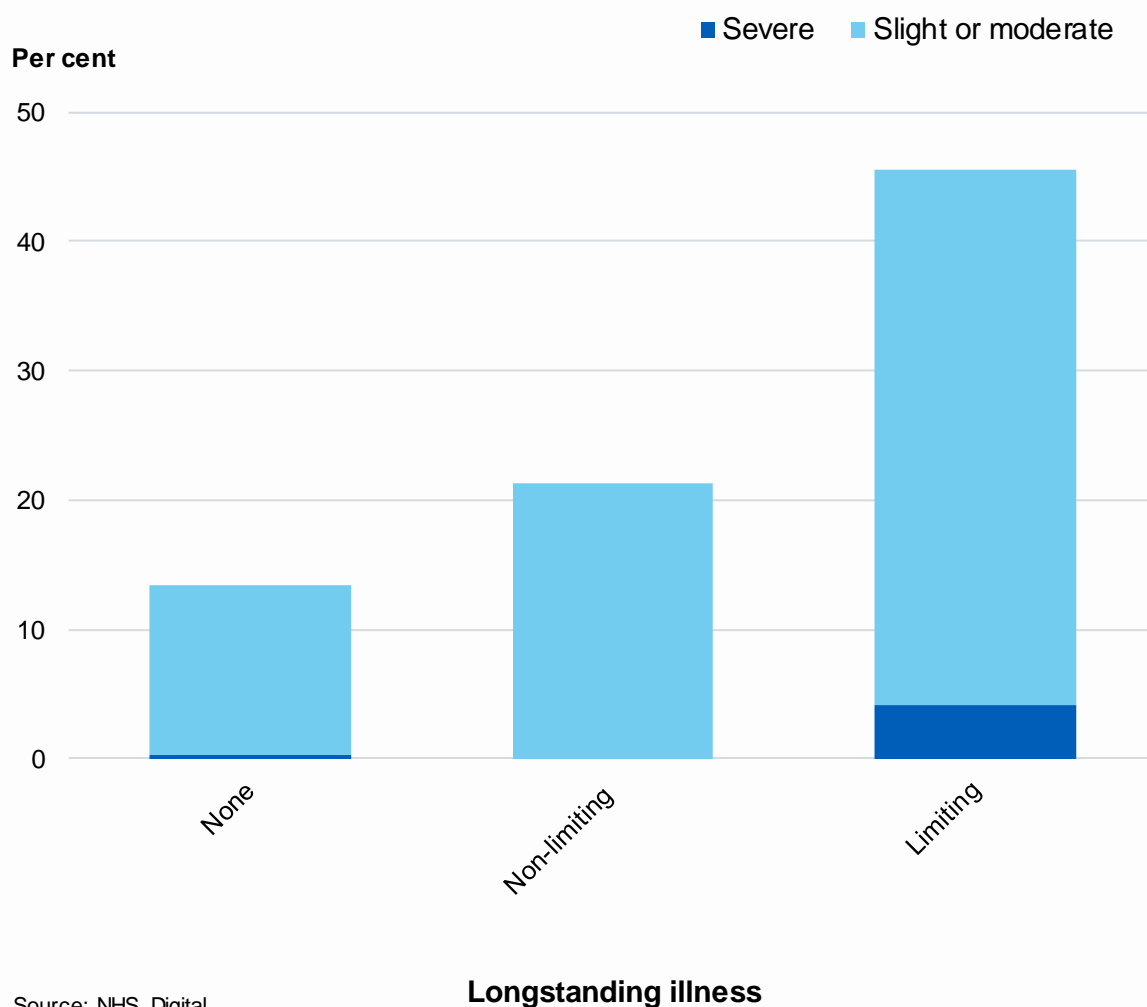Base: Aged 65 and over

Per cent

Source: NHS Digital

EQ-5D dimensions, by longstanding illness

Problems were more prevalent for adults with a non-limiting or limiting longstanding illness. For example, 13% of adults aged 65 and over with no longstanding illness reported problems with anxiety or depression, compared with 21% of adults aged 65 and over with a non-limiting longstanding illness and 46% of adults aged 65 and over with a limiting longstanding illness.

Figure 15, Table 13

Figure 15: Proportion of reported problems for anxiety or depression, by longstanding illness

Base: Aged 65 and over

Source: NHS Digital

Appendix – Technical information

Methods

Further details of the protocols for collecting measurements and blood samples can be found in the HSE 2018 Methods report. Full questionnaires are included in the survey documentation. Both of these are available via https://digital.nhs.uk/pubs/hse2018.

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 2.

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,[49,50,51,52] and some adults with Type 2 diabetes are now prescribed insulin therapy,[53,54] so these distinctions are no longer reliable.

In addition to the interview question, glycated haemoglobin (HbA1c) levels are measured in blood samples collected at the nurse visit. HbA1c 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.[55,56]

Prevalence of total diabetes is limited to participants with a nurse visit and a valid HbA1c measurement. Total diabetes in the population includes all participants with an HbA1c level of 48mmol/mol or above, diagnostic of diabetes, as well as those who

[49] Ehtisham S, Barrett TG, Shaw NJ. *Type 2 diabetes mellitus in UK children-an emerging problem. Diabetic Medicine*, 2000;**17**:867-871.

[50] Drake A, Smith A, Betts P et al. *Type 2 diabetes in obese white children.* Archives of Disease in Childhood, 2002;**86**:207-208.

[51] 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

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

[53] 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**:1647-1653.

[54] 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**:1412-1418.

[55] World Health Organization. *Use of Glycated Haemoglobin (HbA1c) in the Diagnosis of Diabetes Mellitus: Abbreviated Report of a WHO Consultation.* www.who.int/diabetes/publications/diagnosis_diabetes2011/en

[56] 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.

reported having diabetes diagnosed by a doctor. Among those with total diabetes, participants with a raised HbA1c who did not report having doctor-diagnosed diabetes are defined as having undiagnosed diabetes.[57,58]

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.[59]

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.[60] 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.[61]

The impact of the weighting can be seen in the 2006 adults' trend tables, which present unweighted estimates (directly comparable with previous years) and weighted estimates for 2003 to 2006.[62]

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[57] In Table 4, values of HbA1c were adjusted in 2013, 2014, 2015, 2016, 2017 and 2018 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.

[58] Full details of the HSE blood sample analytical methods and equipment can be found in the HSE 2018 Methods report at https://digital.nhs.uk/pubs/hse2018.

[59] 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.

[60] Full details of the HSE sample can be found in the HSE 2018 Methods report available via https://digital.nhs.uk/pubs/hse2018.

[61] 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.

[62] Available at https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/health-survey-for-england-2006-latest-trends

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