

Statistical bulletin

Risk factors for pre-diabetes and undiagnosed type 2 diabetes in England: 2013 to 2019

Analysis of risk factors for pre-diabetes and undiagnosed type 2 diabetes in adults living in private households, using the Health Survey for England 2013 to 2019.

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1 . Main points

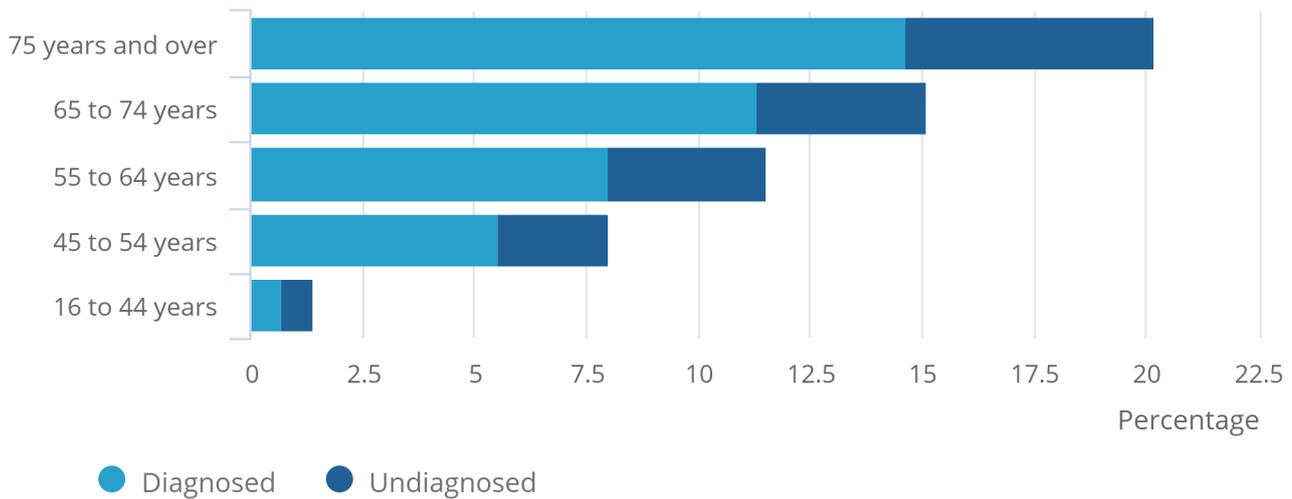
- An estimated 7% of adults in England showed evidence of type 2 diabetes, and 3 in 10 (30%) of those were undiagnosed; this equates to approximately 1 million adults with undiagnosed type 2 diabetes.
- Older adults were more likely to have type 2 diabetes, but younger adults were more likely to be undiagnosed if they did have type 2 diabetes (Figure 1); 50% of those aged 16 to 44 years with type 2 diabetes were undiagnosed compared with 27% of those aged 75 years and over.
- Those with type 2 diabetes were also more likely to be undiagnosed if they were in better general health, and women were more likely to be undiagnosed if they had a lower body mass index (BMI), lower waist circumference, or were not prescribed antidepressants.
- Pre-diabetes affected around 1 in 9 adults in England (12%), which equates to approximately 5.1 million adults.
- Groups most at risk of having pre-diabetes were those with known risk factors for type 2 diabetes, such as older age or being in the BMI categories “overweight” or “obese”; however, there was also considerable prevalence in groups typically considered “low risk”, for example, 4% of those aged 16 to 44 years and 8% of those who were not overweight or obese had pre-diabetes.
- Black and Asian ethnic groups had more than double the prevalence of pre-diabetes (22%) compared with White, Mixed and Other ethnic groups (10%); the overall prevalence of undiagnosed type 2 diabetes was also higher in Black and Asian ethnic groups (5%) compared with White, Mixed and Other ethnic groups (2%).
- Among those who were found to have type 2 diabetes, there was no difference between ethnic groups, with similar percentages of people who were undiagnosed found in both Black and Asian, and White, Mixed and Other ethnic groups.

Figure 1: Older adults had higher prevalence of type 2 diabetes, but younger adults were more likely to be undiagnosed if they did have type 2 diabetes

Percentage of adults with type 2 diabetes by age group, 2013 to 2019, England

Figure 1: Older adults had higher prevalence of type 2 diabetes, but younger adults were more likely to be undiagnosed if they did have type 2 diabetes

Percentage of adults with type 2 diabetes by age group, 2013 to 2019, England



Source: Health Survey for England (HSE) from NHS Digital

Notes:

1. Base population: all adults.
2. Data weighted following methods described in Health Survey for England 2019 methods report.

Official estimates from NHS Digital showed that 7% to 10% of adults in England had diabetes each year from 2013 to 2019. Our estimates are not directly comparable to these official estimates as we focus on type 2 diabetes, and we report an overall estimate for 2013 to 2019 combined.

2 . Pre-diabetes and undiagnosed type 2 diabetes in England data

[Risk factors for pre-diabetes and undiagnosed type 2 diabetes in England](#)

Dataset | Released 19 February 2024

Analysis of risk factors for pre-diabetes and undiagnosed type 2 diabetes in adults in England, using the Health Survey for England 2013 to 2019.

3 . Glossary

Diabetes

Diabetes is a chronic condition that affects how the body regulates blood sugar, leading to high blood sugar levels. There are two main types of diabetes: type 1 and type 2. Type 1 diabetes is an auto-immune condition where the cells that produce insulin are destroyed. Type 2 diabetes occurs when the body stops producing enough insulin, or the insulin produced does not work effectively. Because of distinct differences in risk profiles and prevalence between type 1 and type 2, this analysis is restricted to type 2 diabetes.

Glycated haemoglobin (HbA1c)

HbA1c tests show a person's average blood sugar levels over the previous two to three months and can be used to diagnose type 2 diabetes and pre-diabetes. HbA1c values below 42 millimoles per mole (mmol/mol, a scientific unit of measurement) are considered healthy and represent a low risk of developing type 2 diabetes. HbA1c values of 48mmol/mol or above are in the diabetic range.

This analysis used respondents' HbA1c measurements, in addition to responses to survey questions regarding diabetes, to categorise individuals into two groups of interest: undiagnosed type 2 diabetes and pre-diabetes.

Pre-diabetes

Individuals with pre-diabetes, also called non-diabetic hyperglycaemia (NDH), have elevated blood sugar levels but do not meet the threshold for diabetes diagnosis. People with pre-diabetes are at an increased risk of developing type 2 diabetes, however, diet and lifestyle changes can reduce this risk. In this analysis, individuals with a HbA1c value between 42 and 47mmol/mol and no previous diagnosis of diabetes were categorised as having pre-diabetes.

Undiagnosed type 2 diabetes

Individuals were categorised as having undiagnosed type 2 diabetes if they had no prior diagnosis of diabetes and their HbA1c measurement was greater than or equal to 48mmol/mol.

4 . Measuring the data

Health Survey for England (HSE)

The HSE is an annual cross-sectional survey of the general population living in England. The survey has two stages: first, an interview where all participants provide demographic information and answer questions about their health; second, a nurse visit, offered to a proportion of participants, during which blood and saliva samples are taken.

Coverage and sampling

The Health Survey for England is designed to be representative of the population living in private households in England. It uses multi-stage stratified random probability sampling, first drawing a random sample of primary sampling units (PSU) based on postcode sectors and then a random sample of postal addresses within each PSU. To boost sample size, we combined data from the 2013 to 2019 surveys. We restricted the analytical sample to adults aged 16 years and over who were not pregnant and who had valid diabetes and blood sample data. The total sample size was 26,751 adults.

Weighting

The analysis accounts for the complex survey design and uses weights that make the estimates representative of the target population. These adjust for differential probabilities of household selection and are calibrated to ensure the weighted distribution of participants match Office for National Statistics (ONS) mid-year population estimates for sex and age groups, and region. Weights are then additionally adjusted for non-response bias where participants refuse a nurse visit. Full details of the sampling and weighting methods are available on the resources tab of [NHS Digital's web page](#).

Population estimates

Population estimates describe the prevalence trends found in the data as estimates of the numbers of people in the population in England that they represent. Population estimates were calculated following the method described in the HSE 2019 Methods report, which involves applying weighted estimated proportions to the Office for National Statistics mid-year population estimate for each age and sex group, adjusted to represent adults living in private households.

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5 . Related links

[Risk factors for undiagnosed high blood pressure in England: 2015 to 2019](#)

Article | Released 27 April 2023

Analysis of risk factors for undiagnosed high blood pressure among adults living in private households, using the Health Survey for England 2015 to 2019.

[Inequalities in mortality involving common physical health conditions, England](#)

Statistical bulletin | Released 31 August 2023

Rates of mortality involving cancers, cardiovascular diseases, chronic kidney disease, dementia, diabetes, and respiratory diseases, by Census 2021 variables. Experimental Statistics.

[Health Survey for England – Health, social care and lifestyles](#)

Web page | Updated 20 February 2023

Overview of the Health Survey for England published by NHS Digital.

[Health Survey for England 2019 – NHS Digital](#)

Web page | Released 15 December 2020

A summary of findings from the 2019 Health Survey for England.

[Type 2 diabetes in adults: management](#)

Web page | Released 2 December 2015

National Institute for Health and Care Excellence (NICE) guidance for healthcare professionals for the care and management of adults with type 2 diabetes.

6 . Cite this statistical bulletin

Office for National Statistics (ONS), released 19 February 2024, ONS website, statistical bulletin, [Risk factors for pre-diabetes and undiagnosed type 2 diabetes in England: 2013 to 2019](#)