Office for National Statistics

Statistical bulletin

Suicides among people diagnosed with severe health conditions, England: 2017 to 2020

Suicide rates among people diagnosed with severe health conditions, based on mortality records linked to the 2011 Census and Hospital Episode Statistics (HES). Experimental Statistics.

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1 . Main points

- This bulletin contains new analysis on rates of suicide in patients diagnosed and treated for the following health conditions in England: chronic ischemic heart conditions, low survival cancer, and chronic obstructive pulmonary disease (COPD).

- A diagnosis or first treatment for the selected health conditions is associated with an elevated rate of death due to suicide when compared with study participants with similar socio-demographic characteristics; participants known as matched controls.

- One year after diagnosis for low survival cancers, the suicide rate for patients (22.2 deaths per 100,000 people) was 2.4 times higher than the suicide rate for the matched controls (9.1 deaths per 100,000 people).

- One year after diagnosis for COPD, the suicide rate for patients (23.6 deaths per 100,000 people) was 2.4 times higher than the suicide rate for the matched controls (9.7 deaths per 100,000 people).

- One year after diagnosis for chronic ischemic heart conditions, the suicide rate for patients (16.4 deaths per 100,000 people) was nearly two times higher than the suicide rate for the matched controls (8.5 deaths per 100,000 people).

Matched controls are study participants who had the same socio-demographic characteristics as patients. Matching is performed to assess whether the rate of suicide in people diagnosed with severe health conditions differs from that of people with a similar socio-demographic profile but had not been diagnosed with a severe condition.

If you are a journalist covering a suicide-related issue, please consider following the Samaritans' media guidelines on the reporting of suicide because of the potentially damaging consequences of irresponsible reporting. In particular, the guidelines advise on terminology and include links to sources of support for anyone affected by the themes in the article.

If you are struggling to cope, please call Samaritans for free on 116 123 (UK and ROI) or contact other sources of support, such as those listed on the NHS Help for suicidal thoughts webpages. Support is available round the clock, every single day of the year, providing a safe place for anyone struggling to cope, whoever they are, however they feel, and whatever life has done to them.

2 . Overview

Historically, analysis of suicides has been limited to what is recorded on the death certificate, often requiring other data sources to identify the population at risk. The development of the Public Health Data Asset (PHDA), which links mortality records to the 2011 Census and Hospital Episode Statistics (HES), allows us to analyse wider medical circumstances of individuals health before their death.

We used HES records to identify individuals who were diagnosed or received treatment for chronic ischemic heart conditions, low survival cancer and chronic obstructive pulmonary disease (COPD) between 1 January 2017 and 31 March 2020 in England.

For each health condition, patients were matched to other study participants using socio-demographic factors (including age, sex, ethnicity, religion, deprivation and region of residence) to ensure a reliable comparison with suicide rates in the general population (see Section 7). All matched controls had not been diagnosed with the same health conditions and were alive on the date the patients with selected health conditions first received their diagnosis. Our primary outcome was time to death due to suicide from the date of diagnosis. We present suicide rates for patients and matched controls after one year of diagnosis.

The release is classed as Experimental Statistics as the methodologies used to produce the statistics are still in their development phase. This does not mean that the statistics are of low quality, but it does signify that the statistics are new and still being developed. We are open to user feedback on this analysis, including the list of health conditions under consideration.

3 . Suicide rates after one year of diagnosis

Figure 1 shows that there were elevated rates of suicide in patients with the severe health conditions analysed one year after diagnosis when compared with the study participants with similar socio-demographic characteristics (matched controls).

In patients with a diagnosis of chronic obstructive pulmonary disease (COPD), the rate of suicide one year after diagnosis was 23.6 deaths per 100,000 people. This is 2.4 times higher than the suicide rate for the matched controls (9.7 deaths per 100,000 people).

The rate of suicide after one year of diagnosis for chronic ischemic heart conditions was 16.4 deaths per 100,000 people, nearly two times higher than the suicide rate for the matched controls (8.5 deaths per 100,000 people).

For patients diagnosed with low survival cancers, the rate of suicide one year after diagnosis was 22.2 deaths per 100,000 people, compared with a suicide rate of 9.1 deaths per 100,000 people for the matched controls. A wider confidence interval for the suicide rate in the low survival cancer patients is largely because of the lower number of suicides recorded for this condition. For the number of suicide deaths and population at risk for each condition, please see Section 7.

As expected, the mortality rate due to causes other than suicide was much higher in people diagnosed with severe health conditions than matched controls. Please see the reference table for the all-cause mortality rates by severe health conditions.

Figure 1: One year after diagnosis for low survival cancers, the suicide rate in patients was 2.4 times higher than the matched controls

Suicide rate per 100,000 people, comparing patients who were diagnosed with severe health conditions with matched controls who have similar socio-demographic characteristics as patients but were not diagnosed with severe health conditions, England, Hospital Episode Statistics diagnosis and deaths occurred between 1 January 2017 and 31 March 2020

Notes:

1. The National Statistics definition of suicide is given in Section 6: Glossary.

2. Figures are for persons aged 10 years and over.

3. Includes deaths of residents of England.

4. Figures are for deaths occurred, not deaths registered in each calendar year.

5. The 95% confidence intervals are measures of the statistical precision of an estimate and show the range of uncertainty around the estimated figure.

6. Low survival cancers include the diagnosis or treatment of the following cancers: liver cell carcinoma, oesophagus, mesothelioma and malignant neoplasm of bronchus and lung, pancreas and meninges.

Download the data

.xlsx

4 . Suicide rates by time since diagnosis

There were 17,195 people who died due to suicide in the study period (1 January 2017 to 31 March 2020). Of these deaths, 455 (2.6%) were in patients diagnosed with chronic obstructive pulmonary disease (COPD), 465 (2.7%) in patients with chronic ischemic heart conditions, and 58 (0.3%) were suicides in low survival cancer patients.

Figure 2 shows that patients diagnosed with severe health conditions in England are more at risk of death due to suicide than the similar socio-demographic study participants, regardless of the time since their diagnosis.

It also shows that the suicide rates in patients increased sharply after the initial diagnosis for the severe health conditions, but the increase in the suicide rate slows over time. For the matched controls, suicide rates increased at a similar rate over time.

These health conditions were chosen, as in most cases patients with these conditions have a progressive condition which cannot be reversed by treatment and there is a reasonable risk of death in those that are diagnosed. In many instances, people diagnosed with these conditions would meet the definition of having a terminal illness.

Figure 2: Diagnosis or treatment for the severe health conditions is associated with an elevated rate of death due to suicide

Suicide rate per 100,000 people by months since diagnosis, comparing patients who were diagnosed with severe health conditions with matched controls who have similar socio-demographic characteristics as patients but were not diagnosed with severe health conditions, England, Hospital Episode Statistics diagnosis and deaths occurred between 1 January 2017 and 31 March 2020

Notes:

1. The National Statistics definition of suicide is given in Section 6: Glossary.

2. Figures are for persons aged 10 years and over.

3. Includes deaths of residents of England.

4. Figures are for deaths occurred, not deaths registered.

5. The 95% confidence intervals are measures of the statistical precision of an estimate and show the range of uncertainty around the estimated figure.

6. For the patients, the time at risk started at the time of the first hospitalisation episode with a primary diagnosis for the severe health conditions. For matched controls, it started from the day of matching.

7. Low survival cancers include the diagnosis or treatment of the following cancers: liver cell carcinoma, oesophagus, mesothelioma and malignant neoplasm of bronchus and lung, pancreas and meninges.

Download the data

.xlsx

5 . Suicides with severe health conditions data

Suicides among people diagnosed with severe health conditions, England
Dataset | Released 20 April 2022
Deaths due to suicide in England and the rate per 100,000 people by days since diagnosis, comparing patients with selected health conditions with matched controls. Includes Hospital Episode Statistics (HES) diagnosis and deaths that occurred between 1 January 2017 and 31 March 2020.

6 . Glossary

Suicide

The National Statistics definition of suicide includes all deaths from intentional self-harm for persons aged 10 years and over and deaths caused by injury or poisoning where the intent was undetermined for those aged 15 years and over. Further information on the definition can be found in the Suicide rates in the UK QMI.

Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) is the name for a group of lung conditions that cause breathing difficulties.

Chronic ischemic heart conditions

Ischemic heart diseases, sometimes called coronary heart disease (CHD), are heart problems caused by narrowed heart arteries. It is also a leading cause of death in the UK and worldwide.

Low survival cancer

For this analysis, we selected cancers that have low survival rates. In the Hospital Episode Statistics (HES) data, any diagnosis and treatment of the following cancers were classified as patients with low survival cancers:

- malignant neoplasm of pancreas (International Classification of Diseases, 10th Edition (ICD-10): C25)

- malignant neoplasm of meninges (ICD-10: C70)

- malignant neoplasm of bronchus and lung (ICD-10: C34)

- oesophagus (ICD-10: C15)

- liver cell carcinoma (ICD-10: C22)

- mesothelioma (ICD-10: C45)

Matched controls

Matched controls are study participants who had the same socio-demographic characteristics as patients. Matching is performed to assess whether the rate of suicide in people diagnosed with severe health conditions differs from that of people with a similar socio-demographic profile but who had not been diagnosed with a severe health condition.

Confidence interval

A confidence interval gives an indication of the degree of uncertainty of an estimate, showing the precision of a sample estimate. The 95% confidence intervals are calculated so that if we repeated the study many times, 95% of the time the true unknown value would lie between the lower and upper confidence limits. A wider interval indicates more uncertainty in the estimate. Overlapping confidence intervals indicate that there may not be a true difference between two estimates. For more information, see our methodology page on statistical uncertainty.

7 . Measuring the data

Study data

This analysis used linked data combining the 2011 Census, mortality records, and the Hospital Episode Statistics (HES). To obtain NHS numbers for the 2011 Census, we linked the 2011 Census to the 2011 to 2013 NHS patient registers using deterministic and probabilistic matching, with an overall linkage rate of 94.6%. All subsequent linkages were performed based on NHS numbers.

Our study population included 45,971,684 persons who lived in England and were enumerated in the 2011 Census, linked to the 2011 to 2013 patient registers, and alive on 1 January 2017. Between 1 January 2017 and 31 March 2020, 2,445,441 diagnoses were made for severe health conditions.

Analysis method

We used all inpatients, outpatients, and emergency records of HES to obtain information on patients diagnosed and treated for chronic ischemic heart conditions, low survival cancer and chronic obstructive pulmonary disease (COPD) between 1 January 2017 and 31 March 2020. Death registration records were used to identify deaths due to suicide.

With the large pool of census data, it was possible to perform matching to minimize the effect of socio-demographic factors that are likely to be associated with suicide rates in the general population. The factors that we considered for matching were age, sex, place of residence and self-reported ethnicity and religion. An additional condition was that the matched control should be alive on the date the person was diagnosed or received the treatments. Once an individual was matched to a patient with a severe health condition, they were removed from the pool of controls.

Out of the 176,709 individuals diagnosed with low survival cancers, 175,668 (99.4%) were matched to a control. Out of the 1,383,016 individuals diagnosed with chronic ischemic heart conditions, 1,369,736 (99.0%) were matched to a control. Out of the 885,716 individuals diagnosed with COPD, 880,656 (99.4%) were matched to a control.

There were 17,195 people that died due to suicide in the study period. Of these deaths, 455 (2.6%) were in patients diagnosed with COPD and 200 (1.2%) in their matched controls, 465 (2.7%) with chronic ischemic heart conditions and 306 (1.8%) in their matched controls, and 58 (0.3%) deaths in patients with low survival cancers and 37 (0.2%) in their matched controls.

For each condition, we estimated the cumulative incidence of suicide in patients and matched controls, treating mortality from other causes as a competing risk. The time at risk started at the time of the first hospitalisation episode with a primary diagnosis for selected health conditions. Follow-up ended on the date of death (suicide or other cause) or the end of the study date, whichever was earliest. Matched controls were assigned the diagnosis date of the matched individual and censored at the date of death or end of study date.

8 . Strengths and limitations

Strengths

- The use of linked 2011 Census to Hospital Episode Statistics (HES) and mortality data is a strength of our analysis. The linkage to the Census not only provides a large pool of controls but also information about socio-demographic factors typically not included in routinely collected health data, such as self-reported ethnicity or religion.

Limitations

- There is a risk that not all suicides are captured as we only include deaths that occurred in England. People who travelled abroad for the purpose of assisted suicide would not appear as having died in our data.

- For [suicides registered in 2019](), the median registration delay was 166 days in England. The late registration of deaths caused by external causes including suicide means that our analysis will be missing most deaths that occurred within the last three months of the study period.

- This analysis is restricted to people enumerated at the 2011 Census who were linked to the 2011 to 2013 patient register. While this covers most usual residences of England, 3.2% of the population are not included in the analyses.

9 . Related links

[Suicides in England and Wales: 2020 registrations]()
Bulletin | Released 7 September 2021
Registered deaths in England and Wales from suicide analysed by sex, age, area of usual residence of the deceased and suicide method.