

Age, male sex, obesity, and underlying illness risk factors for severe COVID-19 or death

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Age, male sex, obesity, and underlying illness have emerged as risk factors for severe Covid-19 or death in the UK, according to the largest cohort study to date published by *The BMJ* today.

The risk of death increases in the over 50s, as does being being male, obese, or having underlying heart, lung, liver and kidney disease.

As the largest prospective observational study reported worldwide to date, it provides a comprehensive picture of the characteristics of patients hospitalised in the UK with Covid-19 and their outcomes.

Because the study is ongoing, it has now recruited over 43,000 patients. The findings will help [health professionals](#) learn more about how the illness progresses and enable us to compare the UK with other countries, say the researchers.

Studies in China have reported [risk factors](#) associated with severe Covid-19, but studies describing the features and outcomes of patients

with severe Covid-19 who have been admitted to [hospital](#) in Europe are lacking.

To address this knowledge gap, a team of UK researchers analysed data from 20,133 patients with Covid-19 admitted to 208 acute care hospitals in England, Wales, and Scotland between 6 February and 19 April 2020.

This represents around a third of all patients admitted to hospital with Covid-19 in the UK. The average age of patients in the study was 73 years, and more men (12,068; 60%) were admitted to hospital than women (8,065; 40%).

Besides increasing age, and underlying heart, lung, liver and [kidney disease](#)—factors already known to cause poor outcomes—the researchers found that obesity and gender were key factors associated with the need for higher levels of care and higher risk of death in hospital.

At the time of publication, just over a quarter (26%) of all Covid-19 patients in hospital had died, 54% were discharged alive, and a third (34%) remained in hospital. Outcomes were poorer for those requiring mechanical ventilation: 37% had died, 17% had been discharged alive, and 46% remained in hospital.

The pattern of disease we describe broadly reflects the pattern reported globally, say the researchers. However, obesity is a major additional risk factor that was not highlighted in data from China. They suspect that reduced lung function or inflammation associated with obesity may play a role.

This is an observational study, so can't establish cause, and the researchers point to some limitations that may have affected their results. Nevertheless, they say this is the largest study of

its kind outside of China and clearly shows that severe Covid-19 leads to a prolonged hospital stay and a high mortality rate.

"Our study identifies sectors of the population that are at greatest risk of a poor outcome, and shows the importance of forward planning and investment in preparedness studies," they write.

These results have already been shared with the UK Government and World Health Organisation, and are being compared with data from other countries around the world.

At the outset of the Covid-19 pandemic, it was natural to focus first on the people with severe disease who might need potentially scarce resources in hospital and intensive care, write US researchers in a linked editorial.

Cohort studies of such patients are important, they say, and this study is a testament to good planning and preparation before, and implementation of data collection during a pandemic.

But they add that if we are going to be managing Covid-19 for the next several years, "we need to understand and optimize care before, during, and beyond the hospital."

More information: Annemarie B Docherty et al. Features of 20 133 UK patients in hospital with covid-19 using the ISARIC WHO Clinical Characterisation Protocol: prospective observational cohort study, *BMJ* (2020). [DOI: 10.1136/bmj.m1985](https://doi.org/10.1136/bmj.m1985)

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