

# Being overweight or underweight could increase your risk of severe COVID-19

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The first large study to report the effect of bodyweight on risk of worse outcomes from COVID-19 across the full range of body-mass index (BMI) is published today in *The Lancet Diabetes & Endocrinology* journal.

The study, based on more than 6.9 million people living in England and including data from more than 20,000 COVID-19 patients who were hospitalized or died during the first wave, found that the risk of worse outcomes from COVID-19 start rising in people with a BMI above 23kg/m<sup>2</sup>, which is considered to be in the healthy range.

The risks of hospitalization were 5% higher for each one unit increase in BMI and the risk of ICU admission was 10% higher for each unit increase. People who were underweight (BMI less than 18.5) also experienced worse outcomes from COVID-19.

The effect of excess weight on the risk of severe COVID-19 was greatest in [young people](#) aged 20 to 39 years of age and decreased after age 60, with increasing BMI having very little impact on the risk of severe COVID-19 in people aged over 80

years (increase in risk of hospitalization per BMI unit: 20-39 years, 9%; 40-59 years, 8%; 60-79 years, 4%; 80-100 years 1%). However, the overall incidence of severe COVID-19 among people aged 20 to 39 years of age was lower than all other age groups (number of hospitalisations: age 20-39, 922; age 40-59, 2,845; age 60-79, 5058; age 80+, 4678).

Dr. Carmen Piernas, lead author of the study, from the University of Oxford's Nuffield Department of Primary Care Health Sciences, UK, said: "Our study shows that even very modest excess weight is associated with greater risks of severe COVID-19 complications and the risks rise sharply as BMI increases. We also show that the risks associated with excess weight are greatest in people aged under 40 years, while weight has little to no effect on your chances of developing severe COVID-19 after age 80. These findings suggest that vaccination policies should prioritize people with obesity, especially now the vaccine is being rolled out to younger age-groups."

Previous studies have reported that obesity is associated with more severe outcomes after infection with the SARS-CoV-2 virus, but this is the first to examine the consequences of excess weight on COVID-19 outcomes across the full range of BMI. It is based on anonymised health records from 6,910,685 community-based patients in the QResearch database of routinely collected electronic patient health records in England. All of the participants included in the study were 20 years or older and had at least one BMI measurement on their record. The average BMI across the whole study group was 26.8 kg/m<sup>2</sup>.

The researchers analyzed records between 24 January and 30 April 2020 for outcomes linked to severe COVID-19 disease. They found that during the study period, 13,503 patients were admitted to hospital with COVID-19, 1,602 patients required treatment in an [intensive care unit](#) (ICU), and 5,479

patients died. Most people with severe COVID-19 were aged over 60 years (72.1% of people admitted to hospital, 9,736/13,503; 55.7% of ICU admissions, 892/1,602; 92.5% of deaths, 5,069/5,479).

The risk of severe outcomes from COVID-19 increased progressively above a BMI of 23kg/m<sup>2</sup> and this was independent of other pre-existing health conditions, including type 2 diabetes (number of hospital admissions as a proportion of population: healthy weight BMI 18.5—

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