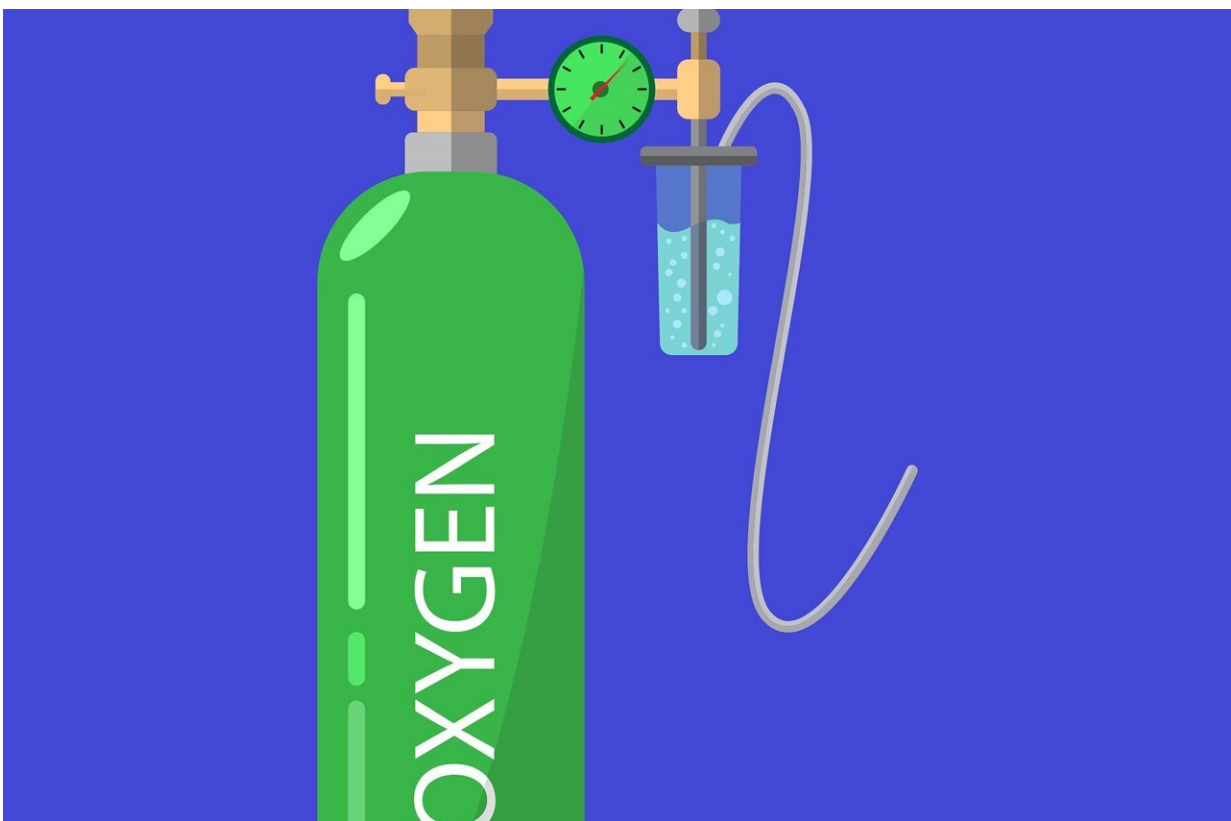


# Analysis of 58 studies finds male sex and obesity are not associated with COVID-19 ICU mortality, but many factors are

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A new analysis of 58 studies and 44305 patients published in *Anaesthesia* (a journal of the Association of Anaesthetists) shows that, contrary to

some previous research, being male and increasing body mass index (BMI) are not associated with increased mortality in COVID-19 in patients admitted into intensive care (ICU).

However, the study, by Dr. Bruce Biccard (Groote Schuur Hospital and University of Cape Town, South Africa) and colleagues finds that a wide range of factors are associated with death from COVID-19 in ICU.

Patients with COVID-19 in ICU were 40% more likely to die with a history of smoking, 54% more likely with [high blood pressure](#), 41% more likely with diabetes, 75% more likely with respiratory disease, around twice as likely with [cardiovascular disease](#) or cancer, and 2.4 times more likely to die with [kidney disease](#), than patients without these risk factors. Other factors associated with an increased risk of death were the severity of organ failure, needing mechanical ventilation (by 2.5 times compared to non-ventilated ICU patients), and also elevated white blood cell counts and other markers of inflammation.

Analysing the reasons for the associations, the authors say age may effectively represent frailty in COVID-19 patients which impacts on a person's physiological reserve to overcome a critical illness. The risk factors of hypertension, smoking and respiratory disease may be linked by their association with angiotensin-converting enzyme (ACE) receptors in the body, as seen by the increased expression of ACE-2 receptors amongst smokers and patients with chronic obstructive pulmonary disease. The association between hypertension and cardiovascular disease and increased mortality may be linked to the risk of cardiac injury associated with the systemic inflammatory response to COVID-19 infection.

The authors say: "The findings confirm the association between diabetes, cardiovascular and respiratory comorbidities with mortality in COVID-19 patients. However, the reported associations between male

sex and increasing BMI worsening outcomes are not supported by this meta-analysis of patients admitted to ICU. This meta-analysis provides a large sample size with respect to these [risk factors](#) and is a robust estimate of risk associated with male sex and BMI."

**More information:** *Anaesthesia*, [doi.org/10.1111/anae.15532](https://doi.org/10.1111/anae.15532)

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