

Why is obesity so common in COVID-19 patients?

July 24 2020



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A hormone that connects the body's metabolism and immune response system may explain why COVID-19 is so dangerous for people with obesity.

"The problem for people with obesity is that their leptin levels are always high, and that can affect the response to a COVID-19 infection," said Candida Rebello, Ph.D., RD, lead author of a new paper that traces the link between obesity and the virus.

The hormone leptin regulates appetite and metabolism. Leptin also regulates the cells that fight infection. Leptin is produced by [fat cells](#), and to a lesser extent by tissues in the lungs. The more fat a person has, the more leptin circulates in their body.

Elevated leptin levels hamper the body's ability to fight off infections, in the lungs and elsewhere, Dr. Rebello said. High [leptin levels](#) promote a low-grade systemic inflammatory state.

"If you have obesity, there are a number of underlying [health issues](#) that make it more difficult for you to fight off a COVID-19 infection," said John Kirwan, Ph.D., Pennington Biomedical Executive Director and a co-author of the review. "Your entire body, including your lungs, may be inflamed. Your [immune response](#) is likely compromised, and your lung capacity reduced.

"Add in a virus that further weakens the body's ability to fight infection, that can limit the body's ability to control lung inflammation, and you have the recipe for disaster."

COVID-19 vaccine developers should take the immunocompromised state resulting from obesity into consideration, in much the same way they would advancing age.

The researchers say the role of leptin in COVID-19's development bears investigation along with the [viral proteins](#) that alter the immune systems of people with obesity. One potential avenue of treatment may be a drug that prevents [inflammatory responses](#) to the virus.

Another potential avenue of investigation includes examining how proinflammatory fat tissue in people with obesity might contribute to activating fewer infection-fighting cells and why those cells die more quickly.

More information: Candida J. Rebello et al, Obesity, the most common comorbidity in SARS-CoV-2: is leptin the link?, *International Journal of Obesity* (2020). [DOI: 10.1038/s41366-020-0640-5](https://doi.org/10.1038/s41366-020-0640-5)

Provided by Pennington Biomedical Research Center

Citation: Why is obesity so common in COVID-19 patients? (2020, July 24) retrieved 27 April 2024 from <https://medicalxpress.com/news/2020-07-obesity-common-covid-patients.html>

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