Obesity protects against death in severe bacterial infection

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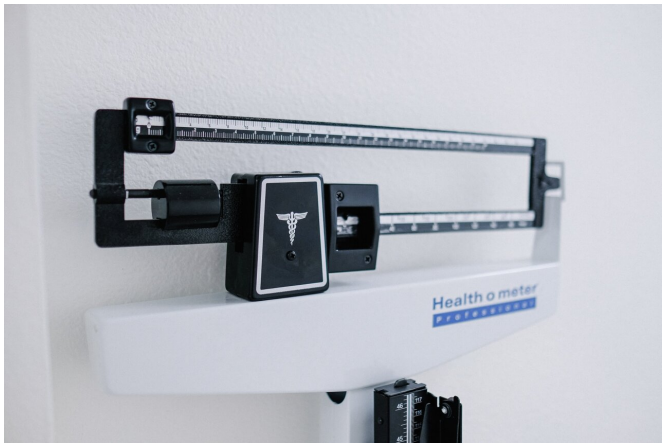

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For many diseases, overweight and obesity are risk factors. But now a study shows that a higher BMI may be linked to higher survival rates in patients hospitalized for severe bacterial infections.

Scientists at Sahlgrenska Academy, University of Gothenburg, and Skaraborg Hospital in Skövde carried out the research, and their study has now been published in the journal *PLOS ONE*. The data were collected before the COVID-19 pandemic.

The population-based study involved observations, over a nine-month period, of all 2,196 individual adults receiving care for suspected severe bacterial infection at Skaraborg Hospital in Skövde. The researchers followed the patients in this study population over time, during and after their hospital stay.

The results show that the raised chances of survival were associated with a higher body mass index (BMI) in both the short and long term, at 28 days and one year after hospitalization respectively. The differences in survival rates were clear. In the normal-weight group, 26 percent were dead within a year. The corresponding figures in the groups with higher BMI were 9–17 percent.

Unlike other diseases

Occasional surveys of limited patient groups have previously shown similar results. The new findings clarify and confirm the "obesity survival paradox": that overweight and obesity afford protection against severe bacterial infections.

Åsa Alsiö, adjunct senior lecturer in infectious diseases at Sahlgrenska Academy and senior consultant in infectious diseases at Skövde, is the study's first and corresponding author.

"In the context of most other diseases, overweight and obesity are disadvantageous. This applies to several types of cancer, cardiovascular disease and, in particular, COVID-19, in which a higher BMI is associated with higher mortality. Paradoxically, it's the other way round here.

"What we don't know," Alsiö continues, "is how being overweight can benefit the patient with a bacterial infection, or whether it's connected with functions in the immune system and how they're regulated. More knowledge is needed about how being overweight affects the immune system. One patient category it could be studied in is individuals undergoing bariatric surgery."

BMI a key variable

Gunnar Jacobsson, Sahlgrenska Academy and senior consultant in infectious diseases at Skaraborg Hospital in Skövde, is the senior author of the study:

"The COVID-19 pandemic has highlighted vulnerable patient groups, and overweight people have been hit hard. Maybe experience and

handling of care for patients with severe bacterial infections can be used to improve the prognosis of COVID-19 and overweight. Globally, obesity is increasing at an alarming rate. More knowledge is needed to shed light on how body weight affects the body's defenses against infection, so that treatment can be individualized," Jacobsson says.

The researchers think there is a need for more studies, at the population level, of how BMI affects treatment outcomes in various infectious diseases and what connections with regulation of the immune system may exist.

More information: Åsa Alsiö et al, Impact of obesity on outcome of severe bacterial infections, *PLOS ONE* (2021). DOI: 10.1371/journal.pone.0251887

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