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Letter to the Editor

Assessing the Relationship between BMI and COVID-19 Severity Requires the Use of Appropriate Measurement Parameters

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Letter to the Editor

We reviewed the retrospective study by Matsushita *et al*. on the relationship between body mass index (BMI) and the severity of coronavirus disease COVID-19 (COVID-19) as measured by the invasiveness of the treatment used during hospitalization (no oxygen, oxygen via mask, non-invasive positive pressure ventilation (NIPPV), mechanical ventilation (MV), extracorporeal membrane oxygenation (ECMO), and death) [1]. The risk of severe COVID-19 disease was increased in individuals with a BMI < 18.5 or > 24, with the risk of severe COVID-19 disease being particularly increased in individuals infected with the Omicron variant and a BMI < 18.5 [1]. It was concluded that underweight and obesity increase the risk of severe COVID-19 disease [1]. The study is noteworthy, but some points should be discussed.

The first point concerns the discrepancy between the study objectives stated in the introduction (evaluation of the relationship between BMI and COVID-19 severity) and the title of the article (increased risk of severe disease in COVID-19 patients with low BMI) [1]. The severity of a disease, including COVID-19, does not necessarily correlate with its course. Severe COVID-19 disease can have an uncomplicated course without long-term impairments, while a mild infection can be associated with long-term impairments [2].

The second point is that the parameters chosen only partially reflect the course of the disease [1]. Death is a classic outcome parameter, but the need for certain treatments (no oxygen, oxygen mask, NIPPV, MV, ECMO) is not. Since all patients except those who died in hospital were discharged, it would have been more useful to use outcome parameters such as the modified Rankin scale, the Glasgow Outcome Scale, the CHESS score (Changes in Health, End-stage Disease, and Signs and Symptoms) or activities of daily living (ADL) to assess the relationship between BMI and outcome.

The fourth point is that the study period covered the year 2022, when the SARS-CoV-2 vaccine (SC2V) was already available. Therefore, it can be assumed that at least some of the patients included had received an SC2V before developing COVID-19. We should know whether the intensity of treatment required for COVID-19 was lower in those who had undergone SC2V than in unvaccinated COVID-19 patients, and whether the outcome was better in vaccinated patients than in unvaccinated patients.

The fifth point is that death is not an ideal parameter for assessing the intensity of COVID-19 therapy. Death is an outcome parameter, but it is not really suitable for assessing the intensity of treatment.

In summary, assessing the relationship between BMI and COVID-19 severity requires the selection of appropriate severity parameters. To assess the relationship between BMI and COVID-19 outcome, appropriate outcome parameters must be applied.

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