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OBESITY AND COVID-19

Obesity and covid-19: the unseen risks

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Two seemingly disparate risk factors have emerged for susceptibility and severity of covid-19: obesity[1] and ethnicity.[2] Several characteristics—including socioeconomic, cultural, or lifestyle factors, genetic predisposition, or pathophysiological differences—might influence susceptibility or response to covid-19 in people with black, Asian, and minority ethnic heritage,[3] but black adults are the most likely of all ethnic groups to be overweight or obese.[4] One poorly recognised risk factor in ethnic minority communities could be normal weight obesity, wherein individuals have excessive body fat, particularly visceral fat, despite a normal weight based on BMI.[5] In people with conventional or normal weight obesity, insulin resistance, hyperinsulinaemia, type 2 diabetes, hypertension, hypertriglyceridaemia, atherosclerotic cardiovascular disease, and higher levels of pro-inflammatory cytokines expressed in adipose tissue might augment the critical effects of covid-19.[6]

Obesity is often overlooked as a cause of suboptimal treatment in infectious diseases owing to its adverse influence on pharmacokinetic and pharmacodynamic properties of drugs, as well as their efficacy and safety. Obesity also impairs the protective immune response to virus infection and vaccination, as seen with influenza, through alterations of cellular immunity.[7 8] Higher BMI is associated with greater decline in antibody titres 12 months after vaccination and impairment of CD8+T cell activation and functional responses to ex vivo influenza virus challenge.[7] Furthermore, vaccinated adults with obesity have twice the risk of influenza despite equal serological response as healthy weight adults. The reduced immune response to vaccination can be detrimental to more than just the individual through its effects on herd immunity.

Global efforts to develop treatments for covid-19 have focused on drug repurposing, immunotherapies including convalescent plasma and monoclonal antibodies, and vaccines. Despite obesity prevalence rates of 40% in the United States, 29% in England, and 13% globally, to our knowledge none of the several thousand clinical studies of covid-19 in international clinical trial registries proactively recruit participants with obesity. On the contrary, several studies consider overweight or obesity as exclusion criteria. We call for proportional representation of people with obesity in clinical trials of drugs and vaccines, including dose finding studies.

Competing interests: None declared.

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