

# Forecasting the global obesity epidemic through 2050



For decades, we have witnessed steady growth in the prevalence of overweight and obesity throughout the world. In some countries<sup>1,2</sup> the rise in prevalence had already emerged before World War 2, and it has since occurred in more and more countries. Multiple reports have documented this continued rise, indicating that efforts to abate this increasing prevalence have been ineffective (although it cannot be precluded that increases might have been greater if less had been done). In *The Lancet*, as part of the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD), two reports by the GBD 2021 Adolescent BMI Collaborators and GBD 2021 Adult BMI Collaborators update us on the recent developments and provide forecasts of overweight and obesity prevalence to 2050.<sup>3,4</sup>

Aiming at global population-representative estimates of the prevalence of overweight and obesity between 1990 and 2021, the collaborators assembled information on BMI (kg/m<sup>2</sup>) from available pre-existing data sources from as many countries and territories as possible. They succeeded in obtaining data for children and young adolescents (aged 5–14 years) and older adolescents (aged 15–24 years) from 1321 sources in 180 areas, and for adults (aged ≥25 years) from 1350 sources in 184 areas for males and females. WHO criteria were used to define overweight (BMI 25.0–29.9) and obesity (BMI ≥30.0) in adults, and corresponding age-specific and sex-specific International Obesity Task Force criteria were used for children and adolescents. Using advanced epidemiological statistical methods, the collaborators first derived comparable age-standardised estimates of the historical trends in prevalence during the 30 years until 2021, and on that basis produced forecasts of the national, regional, and global trends to 2050, while also integrating expected sociodemographic trends.

In view of the devastating subsequent rise in a variety of serious, potentially fatal, comorbidities—with type 2 diabetes, hypertension, and cardiovascular diseases being the most prominent—the results of both the historical and forecasted trends are concerning and urgent challenges to global public health. Across all age groups and sexes, an approximate doubling of the global prevalence of overweight and obesity took place between 1990 and 2021. By 2021, 93.1 million

(95% uncertainty interval 89.6–96.6) children and young adolescents and 80.6 million (78.2–83.3) older adolescents had obesity, with minor differences between males and females, in addition to 342 million (337–346) men and 496 million (490–503) women. Projecting the trends through 2050, the expectation is that 186 million (141–221) children and young adolescents, 175 million (136–203) older adolescents, 838 million (692–921) men, and 1.11 billion (0.942–1.21) women will live with obesity. When considering overweight and obesity together, the numbers are even greater, but surprisingly, in various groups, the prevalence of obesity will exceed the prevalence of overweight. These are global trends seen almost everywhere, but there remains, both historically and in the future, considerable heterogeneity in the magnitude and speed of changes across locations and time periods throughout the world. By 2050, the highest prevalence of obesity is forecast to be in several countries in Oceania and north Africa and the Middle East, and the greatest increases between 2021 and 2050 are forecast in east Asia, south Asia, and central sub-Saharan Africa. While these are general trends, there is heterogeneity related to site, sex, and age in the trends that needs to be considered in the use of the data.

Whereas the strengths of the studies are the comprehensive global approach and the application of solid analytical methods, the weaknesses are implicit in the various assumptions needed. There are inevitable gaps and possible selection biases in data sources over time and place, and the inclusion of self-reported anthropometric data poses a risk of bias. However, these risks were counteracted by appropriate methods. Overall, the historical findings agree well with the parallel, but methodologically different, estimation of global trends by the NCD-RisC.<sup>5</sup> The forecasting procedure is the most fragile aspect of the study by assuming the continuation of historical trends during the past 30 years throughout the subsequent 30 years. The aggregation of data across groups and times might also hide possibly informative non-linear irregularities in the changes in obesity prevalence.<sup>6</sup> Substantial political, cultural, and environmental changes—and climate changes in particular—might break down the foundation of the forecasting.<sup>7</sup>



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Published Online  
March 3, 2025  
[https://doi.org/10.1016/S0140-6736\(25\)00260-0](https://doi.org/10.1016/S0140-6736(25)00260-0)

See Online/Articles  
[https://doi.org/10.1016/S0140-6736\(25\)00397-6](https://doi.org/10.1016/S0140-6736(25)00397-6) and  
[https://doi.org/10.1016/S0140-6736\(25\)00355-1](https://doi.org/10.1016/S0140-6736(25)00355-1)

Both Articles offer extensive discussion of the putative drivers of the obesity epidemic and inferred calls for interventions targeting these drivers to curb the epidemic.<sup>3,4</sup> Recent improvements in individual clinical management of obesity are likely to be suitable for only small subsets of the global population for whom health-care services can offer them. The scale of the epidemic is such that solutions will have to be public health interventions, also considering the profound macro-level and micro-level heterogeneity of the development of the epidemic. In particular, the consistent and unexplained tendency towards a higher prevalence among socially deprived groups enhances the challenges.<sup>8</sup> The most pressing question concerns which interventions will be both feasible and effective. Although the components of the global environment, presumed to be driving the epidemic, in principle should be reversible, rolling them back to before the emergence or acceleration of the obesity epidemic is clearly unrealistic.

Although it appears that excesses in food supplies and the possibility of sedentary lifestyles, promoting a positive body energy balance, are drivers of obesity development, there remains doubt about the causes.<sup>9</sup> Whereas attempts to prevent the development of obesity by altering energy balance might limit short-term effects on bodyweight, there is clearly a lot to be done to find better approaches.<sup>10–12</sup> The determinants of the fat deposition process during obesity development might not be the internal excess of fuel, but rather a local active fuel partitioning to the adipose tissue.<sup>13,14</sup> Further understanding of the causes and mechanisms of obesity development could pave the way to improved lasting prevention.

I declare no competing interests.

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