Underestimating the true impact of obesity

Authors' reply

We thank Jacob Bradshaw and colleagues for their careful reading of our paper[1] and the useful points that they raise. They suggest that we might have underestimated the true impact of obesity on non-communicable disease because outcome ascertainment for selected disorders might have been imprecise, and we did not consider all obesity-related conditions when we formulated our endpoint.

We utilised the six most common non-communicable diseases in developed countries which are also WHO's priorities for prevention.[2] We agree that this list is not exhaustive, and the full impact of obesity might have been underestimated as a consequence.

However, there are several reasons to anticipate that an overestimation could have occurred in our computations. First, ascertainment of disease cases was, as Bradshaw and colleagues highlight, made by linkage to records from hospital and death registries. This is of course imperfect, missing less severe forms of chronic disease. This could be a source of overestimation of obesity-related burden because disease severity is concurrent to body-mass index, which leads to a more likely detection of those diseases that accompany severe obesity.

Second, we did an observational study which is inevitably subject to the perennial problem of residual confounding. Because confounding typically inflates associations, it is likely that this also contributed to an overestimation of our obesity-disease estimates. Of the obesity-related conditions featured in our analyses, a causal influence on type 2 diabetes, coronary heart disease, and selected cancers only is supported by evidence from randomised controlled trials and Mendelian Randomisation analyses—theoretically less subject to concerns of confounding—in combination with findings from mechanistically-orientated studies.[3-6] However, the positive associations of body-mass index with asthma and cancers of all sites, which also comprised our outcome, could be at least partially attributable to confounding, again tending towards an overestimation of burden in the present analyses.

These points illustrate the multiple factors that could cause bias in effect estimates. Their net effect needs to be considered before one can be confident that our results were indeed an underestimate of the burden of disease due to obesity.

We declare no competing interests.

*Solja T Nyberg, G David Batty, Mika Kivimäki
solja.nyberg@helsinki.fi

Clinicum, University of Helsinki, FI-00014 Helsinki, Finland (STN, MK); and Department of Epidemiology and Public Health, University College London, London, UK (GDB, MK)

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