Reviewer’s report

Title: Who counts as normal? Using maximum weight to redefine body mass index categories in studies of the mortality risks of obesity

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Reviewer: Abdullah Mamun

Reviewer’s report:

This is an interesting article. Major limitation is the self-reported retrospective recall of maximum weight, which might produce some bias in the estimates. Likely direction of bias and misclassification of BMI, time of survey and BMI, maximum is not well argued. This paper could be potentially acceptable but limitations need to be addressed adequately.

1) Validity of the retrospective recall of maximum weight is questionable. The retrospective recall of maximum weight would be different for males and females because the weight gain/weight change cycle is not same between males and females. It is unclear whether the author tested the gender difference of the association between BMI and mortality. The retrospective recall of maximum weight would be highly dependent on the age of the respondents at the time of survey. It is unclear whether the author considered this in the analyses.

2) Recent studies (e.g. Am J Epidemiol. 2012 Jul 15;176(2):99-107) suggested that a construct of 'obese-years' could be a better indicator of the health risks (e.g. diabetes, mortality) associated with increasing body weight than BMI or duration of obesity alone. Author might wish to consider this concept and compare with the maximum weight.

3) BMI at the maximum weight based on the survey time height might not be reliable, specially for the old people. Again this would be different for males and females.

4) The association observed between BMI and mortality might be confounded by the dietary and sedentary life styles of the respondents. If the these information are available would be appropriate to control for them.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
None