Reviewer’s report

Title: Overweight or obese BMI is associated with earlier, but not later survival after common acute illnesses

Version: 0 Date: 06 Oct 2017

Reviewer: Kirsty Bowman

Reviewer’s report:

General comments

This is an interesting and important paper on selected hospital events, comparing overweight and obese groups together to those classified as being within the conventional BMI normal (18.5 to <25) using the WHO categories. It is unclear what the rationale is for combining the overweight and obese groups, as the associations within each of these groups separately would be more informative, and indeed show the same direction and similar effect size within supplementary Table S6 compared to Table 3. Also, the BMI normal group range has been criticised as being invalid for older groups, as mortality increases substantially below BMI 22, distorting associations: comparisons with the BMI 22 to <25 group would be more valid. Also, smoking is associated with poor health outcomes and lower weights, and simple linear adjustment for smoking in models is inadequate.

Specific comments:

Title

Consider changing the title as the abstract includes overweight and obese patients jointly. Perhaps high BMI/ high adiposity/ excess body mass index instead of obesity.

Abstract

* Should overweight be ≥25 instead of >25?
* There is no mention of the comparison group for the models. Please define the BMI referent range that you are using i.e. 18.5 to <25.0.
* Please provide the age range of the participants.

Introduction

* Paragraph two: please expand on the confounding and bias sentence (sentence 3).
* Paragraph two: Consider putting sentence 1 to the end of the paragraph. Sentences 2 through 4 concern community dwelling older adults rather than patients who have been hospitalised. This then links into paragraph three.

Methods

* How many values were missing for wealth and income? Please expand on how missing values were imputed.
* Please expand on the choice of a decline in BMI 1.0.
* In the third sensitivity analysis please change approaches to approach.
* Please consider running a sensitivity analysis of excluding current smokers. Please include the prevalence of current, never and former smokers (see comments in results section).
* Please consider running a sensitivity analysis using a smaller BMI range for the Normal BMI group - those within the lower end are known to have increased risks for mortality.
* Please consider running a sensitivity analysis for those with complete data on wealth and income.
* Please add in a sentence to confirm that you will present the results for the granular BMI categories as it indicated previously that this was an exploratory analysis.

Results

* Please could you indicate the prevalence of current, former, and never smokers.
* Paragraph one: Please confirm if the 1 year mortality is inclusive of those who died in hospital, at 30 days and 90 days.
* Paragraph two: please indicate the difference in the unadjusted mortality comparisons.
* Paragraph three: please add "a" into the sentence, change to "with a lower hazard".
* Paragraph three: Please add a full stop after (Table 2) and the define reference BMI group and range.
* Please move sensitivity analysis three into the sensitivity analyses section.
As above, please provide data on overweight and obesity separately (i.e. within the main manuscript), and on the effect of the narrower 'normal' BMI category excluding the low values (<22) where mortality rates are nearer the underweight group.

Discussion

* Paragraph three: please consider a different word than concert. Are in-line with several studies etc.

* Please add a discussion on the effects of excluding current and recent smokers (rather than adjusting), excluding low 'normal' BMIs (<22) and the separate associations for underweight and obese groups.

Conclusions

* Please rephrase the first sentence "excess BMI was associated with improved…"

* Please combine the first two sentences.

* Please add 'to five years' to the third sentence.

Tables and figures

* Please add * to table 2.

* Please add the details of the BMI comparisons being made and note the adjustments and model used under each table and figure.

* Please consider using different colours or symbols for the different sensitivity analyses. Change the number from four to six.

* Figure 1 - please expand on 1) the exclusion of patients with unknown or declining BMI.

* Please define the control category.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.
Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

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Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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