Reviewer's report

Title: Prevalence and determinants of overweight and obesity in old age in Germany

Version: 1 Date: 1 April 2015

Reviewer: Siobhan Leahy

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Major Compulsory Revisions

1. The approach to longitudinal analysis is poorly detailed. It is not clear 1) how change between Wave 3/Wave 5 was quantified or 2) if change scores or baseline values were used as predictors in longitudinal regression analysis.

An additional table of descriptive statistics on change between W3 and W5 is necessary, indicating the magnitude of change in the outcome and predictors.

If change scores were used, then the analysis is incomplete. For example, Table 3 indicates the variable ‘Cycling, at least once a week (Ref.: Never/<once a week). There is no indication of the effect of reducing the frequency of any physical activity between waves.

The text in the results section with respect to longitudinal analysis is similarly unclear and must be rewritten to clarify the associations noted in the analysis.

2. Table 1 is difficult to interpret and does not match with the Results text. For example, ‘The majority of participants had elementary education (59.5%)’ – this is not immediately evident from the table.

It would seem to be more intuitive to report the % within each BMI category rather than the % of the total. For example, it is more sensible to report the ‘Sex’ breakdown of ‘Obese’ as Women 67.8%, Men 32.2%.

From the table, Cramer’s V and p-values appear to describe the trend across each category of BMI; however the Results text under ‘Descriptive and bivariate analyses’ suggests that differences within each BMI category were measured – e.g. ‘Prevalence of obesity varied substantially by selected sample characteristics…’.

The Geriatric Depression Scale is described in the methods but not included in Table 1 and should be added.

3. ‘Overweight' and ‘Obesity’ as described in the methods section are not exclusive categories. Suggest using multinomial logistic regression in place of binary to investigate Overweight (BMI: 25-29.9kg/m2) and Obese (BMI>30kg/m2) exclusively.

4. A more in-depth discussion of the findings is required. Specifically, the literature surrounding obesity/BMI and cognition is rather mixed. The Benito-Leon paper which is referenced, while very relevant, is a cross-sectional analysis and...
not fully representative of the substantial body of evidence in this area.
There is also much debate about the ‘obesity paradox’ in older adults which should be discussed.

The use of self-reported BMI is a major limitation and needs to be recognised as such. This must be taken into consideration particularly when comparing findings to studies where measured BMI is used. There is considerable research published in this area, specifically with reference to older adults.

Minor Essential Revisions

5. The precise age profile of the sample needs clarification. The cohort is variously referred to as ‘aged 80 years or older’ in the Abstract Background and ‘79 years and older’ in the Abstract Methods. Inclusion criteria specify >=75 years. Please indicate the mean age and age range of the sample at baseline, i.e Wave 3 and follow up, i.e Wave 5.

6. In the Results section, under ‘Descriptive and bivariate analysis’, the unit for mean BMI is missing

7. OLS regression is abbreviated in Tables 2&3. Please include the full term in the Methods section and table footnote.

8. Specify the unit of measurement for OLS regression in the Tables (i.e. #-coefficient).

9. For the ‘alternate model specifications’, it is indicated that ‘these specifications underlined the robustness of our baseline models’. Please state explicitly that these alternate models did not affect the findings (in terms of significant predictors) of the original models.

10. The effect of replacing single physical activities with an index score in alternate models as mentioned in the methods section is neither justified in the Methods nor reported on in the Results or Discussion sections and should therefore be removed from the paper.

Discretionary Revisions

11. The inclusion of results for men and women combined (‘All’) in Table 2 & 3 does not add to the interpretation or discussion of the results and seems unnecessary.

12. The popularity of gymnastics as a PA in this age-group is surprising, one would expect gardening etc. to be more relevant. Is it plausible that >40% of adults aged 80+ partake in gymnastics more than once a week?

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable
**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests