Reviewer's report

Title: The effect of gender and age on the association between weight status and health-related quality of life in Australian adolescents

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Reviewer: Juan Miguel Fernandez-Alvira

Reviewer's report:

The manuscript entitled "The effect of gender and age on the association between weight status and health-related quality of life in Australian adolescents" presents an interesting topic which can help to further elucidate how obesity affects the quality of life in adolescents depending on gender and age. However, there are some points that need to be addressed before a decision can be made.

Major compulsory revisions:

1. The manuscript includes demographic data from 1583 participants and anthropometric data from 944 participants. With the available information in the tables and text it is not easy to elucidate what is the actual sample size for each of the associations tested (e.g. Table 2 includes a total sample of 944, but it is also written that sample size varies depending on the specific variable). Anyway, it is not clear how much it varies. If the associations between gender/age and HRQoL would include the 1583 participants (or if the n might differ substantially), then the results might not be comparable and it would represent a basic limitation of the study. It is necessary to clearly state throughout the text and tables what is the actual sample size for each of the associations tested (please, provide in the tables the exact n for each association), so the discussion and conclusions are clearly supported by the results.

Minor essential revisions:

1. line 23: part of the HRQoL wording is missing. Please, include the missing part.

2. The first two paragraphs of the background should be rewritten in order to present the ideas in a more tidy way, as right now it is difficult to follow the ideas easy. For example: the information about obesity could be ordered as follows: prevalence, comorbidities, psychological and social related aspects, and then start focusing on quality of life in the second paragraph.

3. line 178: Clearly state what is the real n for each of the statistical analyses.

4. line 212: I suggest to clarify a bit in what direction gender moderates the association between weight status and HRQoL, so the readers can have a clear idea of what this moderation implies.

5. line 215: I suggest to downsize the information about non-significant
associations. If they are not significant, I would avoid saying that HRQoL score was lower for one group compared to the other. Please, rephrase the information to avoid confusion.

6- line 219: in the list of potential explanations to the lack of significance in the association between weight status and HRQoL one of the reasons explained is the potential difference between measured vs parental reported or self-reported weight and height. However, the present study includes measured weight and height, which represents and advantage versus self-reported weight and height. Therefore, the present study includes the best scenario compared to other studies, and thus this is not a reason for not finding an association.

7- line 239: one of the questions I have after reading the discussion part is what would be the picture if instead of grouping overweight and obese all together, the analyses would be done for overweight and obese separately. The psychological and social implications of obesity and overweight in adolescents might be quite different.

8- Table 1: please include the n next to the percentages, so the readers can have a clear mind of what a percentage really means in terms of sample size.

9- All tables: please include the n for each of the associations tested.

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