Reviewer’s report

Title: Differential prevalence and associations of Overweight and Obesity by gender and population group among School Learners in South Africa

Version: 0 Date: 17 Mar 2017

Reviewer: Ju-Sheng Zheng

Reviewer’s report:

The authors nicely presented a cross-sectional analysis for the potential determinants of overweight/obesity among school children from 7-18 years old, and also examined the association of overweight/obesity with several cardiometabolic risk factors. This study is well designed, and also provided useful information from public health point of view.

Major comments:

1. The definition of socio-economic status (SES) is problematic (Page 4, line 50-51). Have the author collected more reliable indicators: such as educational level of the parents, annual income, occupation of the parents etc. The current definition based on in-house flush toilet system is rather crude. What about those people who live/rent in a flat/apartment. They could be poor, but the flat/apartment they rent has the flush system.

2. Use of time of TV watching per week for the assessment of sedentary behaviour is also not persuasive. Have the authors measured the average time of the TV watching?

3. Page 5, line 49-52: the definition of the dyslipidaemia is problematic. According to the American Association of Clinical Endocrinologists' Guideline (Jellinger PS, PMID:22522068), high TC is defined as TC≥6.2 mmol/L, high TG defined as TG≥2.26 mmol/, and low HDL-C defined as HDL-C<1.03 mmol/L in men and <1.29 mmol/L in women. But I can not see the rationale for the definition in the present study. The reference cited (ref 16) is not related to the definition of dyslipidaemia.

4. The statistical section is rather unclear and a major revision is needed in this section. For example, in the results section, the authors mentioned many times for the "interaction" between gender and ethnicity. However, the statistical method to do the interaction is not mentioned at all in the statistical section. In addition, the statistical method to examine the association between overweight/obesity and cardiometabolic risk factors is not mentioned either in the statistical section. In general, results you present in the results section/tables/figures, you should clearly state the statistical methods used.

Minor comments:
1. Abstract: Please add some explanation for the "coloured learners", or the readers will get confused.

2. Page 5, line 6-7: in the questionnaire, how did the investigators define vitamin A-rich fruit/vegetables, as the student won't know which is vitamin A rich fruit/vegic?

3. Page 5, line 60-page 6 line 1. Please revise the sentence, as it is not seems rather odd.

4. Page 5 line30-22: For the measurement of blood pressure, three readings were taken, but only the lowest one was used. This is rather odd. But the authors did not give any explanation for this definition.

5. Page 7 line 23: Please do not use "increase", as this is the cross-sectional analysis, one can only use "associated".

6. Page 7 line 33-34: revise the sentence "overweight/obese learners were more likely to have.." to "…associated with …"

7. Page 8 line 42-43: "previous South African…as well as between.." . This sentence is no clear and not informative. Please demonstrate the direction of the association.

8. Page 9 line 37-38: "subjected to recall bias" change to "subject to recall bias and measurement error."

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

No

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

Yes

**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.

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