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: 27 Feb 2017

Reviewer: David Meyre

Reviewer’s report:

Report by S. Negash and colleagues:

1- The importance of this study is limited. Numerous reports on the same topic have been published in literature and they provide similar conclusions.

2- The coloured group is very heterogeneous and includes people of East Asian, African and White ancestry, mixed or not. In addition, the classification in different ethnic groups in this study is not based on genetic data, which is a highly questionable strategy (Serre PLOS One 2008). I recommend analyzing the whole sample and avoiding 'ethnic-specific' analyses. If the authors insist to do ethnic-specific analyses, they may base their classification on genetic criteria. If they do not have the possibility to access genetic data, they may classify people into separate ethnic groups (non-mixed people of White, African, South Asian, East Asian ancestry) and exclude mixed or unclear ethnicities from the analyses. They may also acknowledge that using genetic data is the gold standard to classify people in different ethnic groups, or to adjust for ethnic/geographic stratification.

3- The measures of physical inactivity, smoking and drinking behaviors are not precise and have not been validated.

4- Why do the authors use percentile cut-offs for hypertension and overweight/obesity, while cut-offs for dyslipidemia are not based on age and sex-adjusted percentiles?

5- The authors did not use a Bonferroni correction for multiple tests. Many of their association claims are therefore false positive/ random results.

6- The authors describe significant sex*ethnicity interactions but do not describe the differences observed in each ethnic group.

7- The authors may report the associations of BMI with continuous cardio-metabolic traits (e.g. systolic blood pressure) in addition to binary cardio-metabolic traits (e.g. hypertension).

8- Please do not report unadjusted and adjusted statistical tests, they are redundant and increase the multiple testing burden for no reason. Please only report association tests adjusted for covariates.
9-Introduction: 'affluent'... 'poorer' countries. Please prefer high-, middle- and low-income countries.

10-Methods: 50%+30%+18%+1%=99% not 100%. Please correct.

**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.

No

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

No

**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

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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