Reviewer’s report

Title: Association of obesity with socioeconomic status among adults aged 18~80 years old in rural northwest China

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Reviewer: Lifoter Navti

Reviewer’s report:

The authors presented data for the first time in rural Northwest China to explore the effects of socioeconomic status (SES) on obesity and also the relationship between SES and lifestyle. The socioeconomic pattern of weight status has gained a lot of attention recently and this article provides information from an emerging economy. However, there are very important issues I would like the authors to consider:

Major compulsory revisions:

1. Abstract: It is important to include some statistics (odds ratios and p-values) in the results section of the abstract. Also, the conclusion of the abstract does not appear to be consistent with the aims of the study. Please rephrase the conclusion (what is the contribution of SES to obesity? How does SES affect lifestyles?). Please let it be clearer and more concise.

2. Methods: Lines 64 to 70: The sampling procedure is hard to understand. Can the authors be more explicit on this? Also, 350 participants from 9 strata gives a sample of 3150 and not 3030 subjects as indicated in the abstract and methods sections. I would strongly suggest to the authors to revise the sampling procedure to express it more clearly and accurately.

3. Results: the authors used logistic regression analysis to explore relationships between SES and obesity; and also SES and lifestyle factors (univariate analysis). Since income, level of education and gender have shown significant interactions with obesity, I would suggest to the authors to do a multivariate binary logistic regression analysis (which involves all significant variables being fitted in the model) to get the independent effect of each of the variables on obesity.

Minor essential revisions:

4. Title: It is better for the title to read; ‘Association of obesity with socioeconomic status among adults of ages 18 to 80 years in rural Northwest China’.

5. Abstract: in the background the authors use ‘the identification of obesity risks.....’ please change this to ‘the identification of risk factors of obesity’. Also in the last sentence of the background (line 5), the authors use ‘general and abdominal obesity as well as lifestyles’. Please use overweight+obesity or overweight/obesity and abdominal obesity as well as lifestyles.
6. Abstract: in the methods (lines 7 to 8), it should read; a total of 3030 participants of ages 18 to 80 years from rural Hanzhong, Shaanxi, province, Northwest China were recruited using a two-level stratified random cluster sampling technique.

7. Abstract: in methods line 10, it should read; ......while controlling for confounders. In correcting the abstract, the authors should ensure not to exceed the word limit.

8. Throughout the manuscript, the authors have used general obesity, overweight/obesity. I think it would be easier for the reader to write ‘overweight/obesity (BMI) or overweight+obesity (BMI) and abdominal obesity (WC) so that the reader can detect the method used to measure each variable. Please be consistent, even on some of the tables.

9. Background: Line 33; please rephrase sentence to make the information clearer. E.g. ......energy balance resulting from high energy intake or low physical activity levels......

10. Background: Line 35: please rephrase sentence to make it clearer. E.g. ......strongly associated with increased risk of ............

11. Background: line 36: Use ...... ‘type 2 diabetes’ instead of ‘diabetes mellitus type 2’........

12. Background: Lines 36 to 38. Please rephrase the sentence

13. Background: Line 39: please replace .......‘obesity risks’.... with ....‘risk factors of obesity’......

14. Background: Lines 40 to 50: the sentences need to be rephrased to make the message clearer to the reader.

15. Background: Line 55: Please make the primary goal explicit. The authors have only mentioned the relationship between SES and abdominal obesity (WC). What about SES and overweight+obesity (BMI)? And also what about the relationship between SES and lifestyle factors?

16. Background: Line 64; .....adult residents of ages 18 to 80 years, recruited .........

17. Methods: Line 78: authors should indicate the country where the electronic scale Tanita HD-350 was made.

18. Methods: lines 81 to 82: please rephrase.

19. Methods: Lines 89 to 90. Body mass index (BMI) and waist circumference (WC) were used for the assessment of overweight+obesity and abdominal obesity respectively.

20. Methods: Line 99: The sample size of this study is large enough and I would suggest to the authors to use 3 categories of income (low, middle and high) instead of poor and non-poor, except there is a reason for this. It will be interesting to bring out the contribution of participants in the middle class, which is also important.

21. Methods (research indicators): Lines 104 to 108: The use of 0 and 1 to
explain categorization of variables is not necessary. For instance, for farming frequency, instead of using 0 to represent < 3 times/week and 1 for # 3 times/week, it is better to say; farming frequency was categorised into two groups; < 3 times/week and # 3 times/week.

22. Results: Lines 123 to 128: please rephrase.

23. Results: Line 132: Are the authors talking of prevalence or incidence?

24. Results: Line 163. The association between overweight+obesity and SES in men not determined?

25. Results: Lines 167 – 175: Authors should be more explicit.


27. Discussion: Line 247: ‘..... many previous studies...’ please cite some references to confirm the statement.

28. Table 3: the footnote under table 3 indicates the medium SES used as reference group. Where is this from?

29. Line 268 is supposed to be under acknowledgements.

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

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests: None