Reviewer’s report

Title: Higher serum 25(OH)D level is associated with decreased risk of impairment of glucose homeostasis: data from Southwest China

Version: 0 Date: 07 Dec 2017

Reviewer: Tomás Griffin

Reviewer's report:

It was with great interest that this reviewer read "Higher serum 25(OH)D is associated with decreased risk of impairment of glucose homeostasis: data from Southwest China" by Li et al. This reviewer may suggest publication of this manuscript if the following significant changes were made. A revised manuscript could add to the field.

Overall, this reviewer suggests proof reading this manuscript as multiple sentences need rewording. Diabetes and non-diabetes should not be used as adjectives to describe participants. P-values should be reported to a consistent number of decimal places eg 3.

Abstract (Page 2):

Rephrase Line 27 -28: The aim of this study was to….

Line 31 -37: There is conflicting information on the study design throughout the manuscript.

Line 33: Adults without diabetes (advise against using diabetes and non-diabetes as adjectives).

Line 35: fasting plasma insulin.

Line 36: does odds of pre-diabetes describe glucose homeostasis?

Line 39/40: rephrase.

Line 45/46: multiple adjustment - review terminology.

Line 47/48: what was the stratified analysis?

Line 49: why choose a BMI <24kg/m2? Refer to WHO criteria. Using a BMI of 24 (working group on obesity in China) may confuse the reader as this manuscript is being submitted to a European Journal. The working group on obesity in China guidelines for BMI have not been explained clearly later on in the manuscript.

Line 51: change the word 'support', words missing.
Background (Page 3-4):

Lines 57-60: Sentences need to be rewritten in a more concise format.

I suggest proof reading this section e.g. lines 61, 73, 77-81 needs rewording. More data on the prevalence of Vitamin D deficiency. More detail regarding the scientific background and rationale for the study and how the results will contribute to the field is required.

Methods (Page 4-10):

I suggest proof reading this section as multiple sentences need rewording.

Study Design: Clarity regarding study design necessary.

Setting: It is unclear the dates this study took place and if participants were recruited all year round. Further information is required regarding where the study took place.

Participants: More detail regarding the eligibility criteria (inclusion and exclusion criteria). Line 98 -103 detailing number of participants included and those excluded would be best placed in the results section.

Variables: A separate section outlining the different haematological and biochemical parameters measured followed by a section on the methodology used to measure salient parameters is advised. Calcium measurement should be included in this section.

Line 133: Body mass index (BMI) was calculated as weight (kg) divided by height squared (m2).

Body mass index should be broken down into groups e.g. normal, overweight, obese and compared to WHO criteria. As this paper is being submitted to a European Journal it would be beneficial if WHO criteria were used throughout.

An explanation of what <1800 Yuan v 1800-3200 Yuan… in the context of Chinese society would help the reader understand the socio-economic status of the participants. Lines 150 -161 could be concise/shorter. Line 153 - maybe a different adjective could be used - "mental worker." Consider reporting alcohol consumption in units per day.

Study size: why did you choose this number of participants?

Statistics: The statistical methodology is confusing and requires further clarification, in particular the descriptions of the multi-variable models used. Model A, B and C referred to later in the text need to be clearly explained. The stratified analysis procedure needs to be explained. Describe how you defined the tertiles for serum 25 (OH)D.
Results (Page 10-12):

I suggest proof reading this section as multiple sentences need rewording.

The number of participants and the exclusion criteria should be outlined here. Consider a flow diagram. It is important to identify in what seasons the vitamin D measurements were taken, as you noted in the discussion sunshine has an effect on Vitamin D levels.

Did participants have pre-diabetes based on all three criteria: OGTT, HbA1c and fasting plasma glucose. A supplementary table or Venn Diagram looking at the number of participants with prediabetes based on each criterion and the overlap would be useful. How did deficiency and sufficiency change between the seasons? How many participants had a BMI > 30? This should be broken down for the reader into groups based on WHO criteria.

Line 240: All p-values < 0.03 should be replaced with individual p-values.

Line 258-259: The WHO data is important to include, either in the main text or as a supplementary table.

Discussion (Page 12-16):

I suggest proof reading this section as multiple sentences need rewording.

Line 262: this study suggests (rather than provides evidence).

Lines 262 - 269: some repetition.

Lines 290 -292: needs clearer explanation.

Line 321-322: difficult to discern this information from results section.

Consider a more detailed discussion on the implications of your findings for the Chinese population and from a public health policy point of view.

Conclusions (Page16):

I suggest proof reading this section as multiple sentences need rewording.

Consider discussing need for further study in the discussion.

Table 1-4:

For % round to 1 decimal place
For serum 25(OH)D, age, HbA1c, fasting plasma glucose and insulin, BMI, waist circumference round to 1 decimal place. Round total energy intake and MVPA to 1 decimal place. Insert a column indicating the demographics for male and female combined.

Round p-values to 3 decimal places

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.

Unable to assess

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:

Not suitable for publication unless extensively edited

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