Reviewer’s report

Title: Resting heart rate and impaired glucose regulation in Chinese middle-aged and elderly people: a cross-sectional analysis

Version: 0 Date: 20 Mar 2017

Reviewer: Stefan Söderberg

Reviewer's report:

The paper "Resting heart rate and impaired glucose regulation...." by Yang and colleagues is interesting not least due to the size of the studied population.

However, there are some issues that must be addressed, which are listed here, not in order of importance but of occurrence.

1. This is a cross-sectional study and the authors should avoid wording like predictors etc. or that ROHR is an independent risk factor for reduced glucose tolerance. The causality cannot be determined from this study, as diabetes and concomitant polyneuropathy may cause the relative tachycardia. This paper describes associations, nothing else. And any speculation that treatment of pulse rate should reduce the risk of diabetes is speculative. For example, see the last sentence in the results section and the conclusion, rephrase!

2. This is not the first study, for example the work by Grantham et al (Grantham NM, Magliano DJ, Tanamas SK, Soderberg S, Schlaich MP, Shaw JE. Higher heart rate increases risk of diabetes among men: The Australian Diabetes Obesity and Lifestyle (AusDiab) Study. Diabet Med 2013;30:421-7) demonstrated a prospective association between pulse rate and development of diabetes.

3. The manuscript needs a careful language revision by an English native speaker.

4. Abbreviations are explained in the abstract but not in the background and onwards, should be repeated there.

5. Why was not the HbA1c results used to define diabetes as suggested by modern criteria?

6. The findings of inverse relation between BMI and waist on one side and RPR is strange considering that BMI and waist are strongly associated with glucose intolerance. Any explanation?

7. Could the reason be that the authors have not used sex specific cut-offs resulting in less males in the top quartile. Considering that IGT is more common in women and IFG is more comment in men, this could introduce strange findings, and the test between quartiles could be more at test of differences between men and women than between low and high pulse rate.
8. Related to that, decimals could be reduced to 1 or 0 (ex BP) in table 1. HDL is probably the only variable usually presented with 2 decimals.

9. It is not stated how the difference between quartiles is tested, ANOVA??

10. Table 4 should be provided with coding for sex, otherwise impossible to interpret the results.

11. How was the pulse rate determined? ECG was recorded, but was the pulse rate based on R-R interval of one, two, three or how many intervals? How was atrial fibrillation handled with bouts of tachycardia?

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

Yes

**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.

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

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?
3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal