Reviewer’s report

Title: Thyroid function and metabolic syndrome. Results from the population-based LifeLines Cohort Study.

Version: 0 Date: 23 Aug 2017

Reviewer: Harish Ranjani

Reviewer's report:

COMMENTS TO THE AUTHORS

General Comments: The aim of this study was to investigate the relationship between thyroid hormone parameters and components of the MetS in this large sample of euthyroid subjects in the general population. The authors used data of more than 26000 participants from a population based LifeLines Cohort Study to address discrepancies in the literature.

Specific Comments:

1. There is no prior expansion of NCEP ATP III and TSH in methods section of the abstract. Kindly expand the terms before use of abbreviation.

2. The following lines in introduction section do not have any reference numbers provided - 'In recent years, there have been confusing results on the relationship between thyroid hormone levels within the normal range and cardiovascular risk factors and MetS. Several papers have confirmed the relationship between thyroid hormone parameters and components of MetS.' Kindly provide reference numbers for the same.

3. Clinical examination section in methods mentions about fasting blood glucose (FBG) value which is irrelevant for this section. Kindly move this to next section on biochemical measurements.

4. Also, why was only FBG considered for the diagnosis of diabetes and not a complete oral glucose tolerance test (OGTT)? It is misleading to just consider the fasting value for diagnosis and leave out the 2 hour value.

5. The last two lines in biochemical measurements is not really required and may be removed - 'The general Dutch population is iodine sufficient. Tests to measure anti-thyroid peroxidase antibody levels were not performed.'

6. According to line 82 data of 26719 participants was taken from Dutch cohort study but in line 137 the number mentioned is 26000. Kindly correct it.
7. Kindly include 2-3 lines on methodology in the 'Subjects and Methods' section.

8. Line 168, kindly give reference for diagnostic criteria of diabetes. Similarly in line 200, give reference for BMI.

9. In line 254 and 258 'both sexes' can be rephrased as 'both genders'.

10. In 10th line of study design section of materials and methods, "follow up" is written as "fallow up". Kindly correct it.

11. Were diabetic patients with chronic conditions also part of the study?

12. Flow chart on study design does not clearly describe the kind of 7 day recall taken. It would be better to write it as 7 day physical activity recall.

13. Methods and data collection section mentions that On Friday, the people in SMS group asked their questions from the researcher and received the answers. It would be interesting to know the kind of questions asked by the SMS group to the researcher. This data can help us understand barriers affecting a regular physical activity schedule.

**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.

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.

I am able to assess the statistics

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