Reviewer's report

Title: Subclinical Hyperthyroidism and Dementia: the Sao Paulo Ageing & Health Study (SPAH), a cross-sectional study.

Version: 1 Date: 10 February 2010

Reviewer: Zhaorui Liu

Reviewer's report:

• Major Compulsory Revisions

1. The rationale of the study is not well stated in the introduction section. Why did the authors choose to study the association between thyroid function and dementia? Did the study want to explore the risk factors of dementia, or to contribute to the prevention or treatment of dementia?

2. The authors only listed several findings from different studies in the introduction section, but didn’t explain why those findings were listed. Some clearer statements are supposed to be added to describe the rationale of the current study. For example, it is clear that those results are inconsistent. Some of the researches didn’t find any association between thyroid function and cognitive impairment. Moreover, there is no (or few) research from population-based settings in Brazil. Therefore, the current study is essential to...

3. Six hundred and ninety-nine participants without data about thyroid function were excluded from this study. Who were those participants? Were they older or younger than the participants with data about thyroid function? Was there gender difference between the two groups? More statistic tests should be carried out here.

4. As in some cases, two or more elderly people in the same household were included in the survey. Adjusting for household clustering should be considered when carrying out the analysis.

5. In the results section, the authors mentioned that participants with dementia were older, thinner, and more likely to have higher blood pressure compared to those without dementia. Then in the next paragraph, when analyzing the association between subclinical hyperthyroidism and dementia, authors only adjusted for age, but not for BMI or blood pressure. As the patients with thyroid dysfunction will also suffer from abnormal BMI or blood pressure, it should be better to control the BMI and blood pressure when carrying out the logistic regression.

6. In the discussion section, the authors provided information about the prevalence of dementia in other studies. However, the objective of this study is not for the prevalence of dementia in Brazil, this paragraph is seemed not very relevant.
7. The authors cited papers to describe the association between hypothyroidism and cognitive impairment. Then they provided background of iodine supplementation in Brazil and assumed the sample in this study might have adequate or more than adequate iodine intake. Considering the findings from this study, i.e. a consistent association between subclinical hyperthyroidism and dementia, did the authors want to prove that appropriate iodine supplementation can improve the cognitive function, while excessive iodine supplementation might lead to dementia? More explanation should be added here.

• Minor Essential Revisions

1. In figure 1, 33 participants should be the persons with subclinical hyperthyroidism, while the author wrote as hypothyroidism.

2. In table 1, it is better to add figures in the row of monthly income, while the author only wrote the percentages there.

• Discretionary Revisions

1. In method section, the cut-off point of the classification for monthly income was 127 US dollars. Why 127 US dollars was chosen?

2. For the education, why did the authors divide it into no formal education and more than one year formal education? There might be association between education and dementia if the author would classify the education to no formal education, primary level, secondary level, and tertiary level.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.