Reviewer's report

Title: Serum Thyroid-Stimulating Hormone Levels are not Associated with Exercise Capacity and Lung Function Parameters in two Population-Based Studies

Version: 2
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Reviewer: Vanessa Garcia Larsen

Reviewer's report:

The authors propose to investigate the association between TSH levels and lung function in the general population, based on evidence from patients with cardio-pulmonary disease showing that low levels of TSH might be related to a poorer lung function.

The methods are very well described. An advantage of this study is the fact the authors used two populations with the same methodology, which enhances the sample size of the study.

Major compulsory revisions

A major difficulty in the paper is the justification for carrying out such an analysis in the general population. It is clear why there is evidence of TSH being related to poor lung function outcomes in individuals with cardiovascular diseases, but the rationale for expecting hypothyroidism to be related to lower lung function in the general population needs a better justification.

The Discussion section needs more work to understand the justification of the study and compare it to the existing literature. The authors dedicate a long paragraph to compare their findings with those of a very small clinical study at the beginning, which does not contribute much. Several of the studies cited in the Background/introduction section could be included here and an analysis of the differences could be laid out. There are several other studies though in small samples of individuals, which would help the discussion. Some studies on COPD and TSH explain the role of poor lung function and the interaction with thyroid function (El-Yazed et al Egyptian J Chest Dis Tub 2013, Terzano et al Lung 2014). There is another study by Valjevac C et al (Acta Inform Med 2011) which would also help explain the rationale for poor lung function and thyroid function, and a very good review by Schlenker (Respir Physiol Neurobiol 2012) which explains several possible mechanisms by which hypothyroidism is related to lung function.

Discretionary revisions

The authors address the possible issue of multiple comparisons in their analyses. Although there were no findings of statistical significance, the authors could include some form of adjustment for multiple comparison

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

**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 not competing interests