**Reviewer's report**

**Title:** Risk of Acute Exacerbations in Chronic Obstructive Pulmonary Disease Associated with Biomass Smoke Compared with Tobacco Smoke

**Version:** 0  **Date:** 01 Feb 2019

**Reviewer:** Constant van Schayck

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Review 'Risk of Acute Exacerbations in Chronic Obstructive Pulmonary Disease Associated with Biomass Smoke'

**Major concern**

In order to investigate the association between the risk of exacerbations and biomass smoke the inclusion of age 40 in the definition of COPD is problematic as COPD seems to be most prevalent in women under the age of 40 in LMIC (van Gemert, e.a. Lancet Global health 2015;3:e44). Moreover, the distinction between the two most important subgroups of this paper (Less Tobacco-More Biomass and More Tobacco-Less Biomass) is largely determined on the cut-off value of 60 years of age, resulting in a flawed discrimination between the two groups. This is confirmed by Table 2 where age is hardly different between both groups (69.9 vs 67.5 years) while sex is very different (percentage male 35.0 vs 97.8). COPD associated with biomass smoke is not a disease of older men, certainly not in comparison with COPD associated with smoking cigarettes (Boudewijns e.a. J Glob Health 2018;8(2):020306). This a major limitation of the study and should me mentioned in the Discussion and Abstract.

**Minor points**

**Background:**

- Reference 8 and 9 are from 2006 and 2008. Please use more recent references.

- 'Patients with COPD caused by biomass smoke..'. Please change 'caused by' into 'associated with' or 'most likely caused by'.

**Methods definition of exposure groups**

- Exposure to biomass smoke is defined by 'have you ever burned firewood for cooking or heating by yourself for over a year in your lifetime?'. However, it is also possible that the
responder is not the primary cook, but still have been exposed to the biomass smoke. Please mention this as a limitation

- It is unclear why you use 1031 cohort participations instead of 1033
- It is unclear why non-COPD patients were included in the regression analysis

Results:

- 'After propensity score matching, each of the 16 subjects ..'. It is not clear what these 16 subject refer to.

Discussion:

- 'We found that patients with COPD exposed to …'. Repetition of the previous sentences; please delete this sentence
- The limitations of the use of the estimates of 25 years and 10 years are not described very clearly. Please explain it more extensively.

Table 3:

- Why did you choose to use the 'more tobacco-less biomass' as a reference group?
- The finding that 'more tobacco-more biomass' has a lower adjusted incidence rate (although the rate ratio was not statistically significant) is remarkable. Do you have any idea why this is lower than expected?

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 recommend additional statistical review

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Needs some language corrections before being published

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