Reviewer’s report:

**Title:** The effect of exposure to biomass smoke on respiratory symptoms in adult rural and urban Nepalese populations

**Version:** 2  
**Date:** 12 August 2014

**Reviewer:** William Checkley

**Reviewer’s report:**

The authors are a well known group in the field of biomass fuel smoke and respiratory symptoms in ~1600 participants. They also report on environmental exposures (PM2.5 and CO). This publication follows an earlier report on the relationship between biomass fuel smoke exposure and spirometry. The authors found that participants in rural settings with exposure to biomass fuels had greater wheeze and breathlessness but lower cough and phlegm than did urban, non-biomass exposed participants. These relationships persisted in multivariable analysis of greater wheeze/breathlessness and less cough/phlegm in rural/biomass exposed participants than in urban/non-biomass exposed participants.

**Compulsory revisions**

1. Several studies including meta-analyses conducted by the first author suggest that biomass fuels is an important risk factor for chronic bronchitis (cough and phlegm) and COPD; however, their main finding is that prevalence of cough/phlegm is lower in participants living in rural/biomass exposed homes than in participants living urban/non-biomass exposed homes. The authors suggest that their findings could be explained by the types of exposure (traffic-related) present in urban environments vs. rural environments. However, when the traditional cough & phlegm definition is used, there appears to be no difference between rural/biomass exposed populations vs urban/non-biomass exposed in either men (p=0.51) or women (p=0.66). Can the authors check their statistics in table 2 for cough&phlegm >=3months/year, as they appear incorrect based on my calculations (vs. reported p=0.004 in both cases). They may also want to re-check other calculations.

2. Overall low prevalence of cough/phlegm could be explained by relatively young age of population. Could the authors age-stratify their analysis to determine if effects of biomass fuels are different in older age groups? (On the same note, the authors may want to change that a strength is their sample size, since they may not be able to detect differences in symptoms by age strata). Could the authors further expand on the discussion how they chose the age group under study and what effect this may have on the prevalence estimates of chronic respiratory symptoms by biomass vs. non-biomass exposure status?

3. How do the authors explain no difference in prevalence of obstruction between biomass and non-biomass fuel users (in relation to findings of increased wheeze
and breathlessness)? not mentioned in discussion.

4. PM2.5 levels of ~100 µg/m³ in non-biomass homes sounds high, as do outdoor/ambient levels of ~100 µg/m³. In contrast the the outdoor environment was recorded as only 7.4 µg/m³. can the authors confirm these values or re-write/clarify the paragraph on the results that discusses this section.

Minor revisions
Change to Behera and Jindal [4]

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
None