Reviewer’s report

Title: Indoor solid fuel use and tuberculosis in China: a matched case-control study

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Reviewer: Rogelio Perez-Padilla

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GENERAL: Question was the risk of tuberculosis in those exposed to solid fuel smoke, with well described and appropriate methods and sound data, with a good manuscript, clear and concise. Previous work is acknowledged and abstract and writing is good.

Strengths of the study are clearly stated and some of the limitations, for example the presence of missing data, but with clear strategy to analyze the database taking into account the missing data.

It is also clearly stated that exposure in the studied community is likely much lower than in communities cooking with open fires and higher levels of indoor pollution as happens in many developing countries, also having high tuberculosis problem. This is an important issue.

1- Other limitation is that exposure is not measured but categorized by cooking fuel and type of stove and ventilation. Categories used in the study correlate with overall measured levels of indoor particles and other pollutants but each group has a wide dispersion of mean levels and also peak levels during cooking. This may lead to some misclassification of exposure by indoor particulate matter levels or any other pollutant considered relevant.

2- What exposure the authors considered the most relevant? Current? That would have to do with enhancing recent transmission and disease progression but can also be previous at the moment of primary infection. A model of impact of exposure to solid fuel smoke in relation to tuberculosis infection and disease is relevant for the study model. People non exposed to solid fuel smoke in the study, may have been exposed in the past in the right moment for the infection or for developing of disease. Past exposure is important for past development of disease (before diagnosis)

3- Case control studies have been used to assess indoor pollution as a risk factor or cause of tuberculosis. Case control studies have limitations, even those population based, with possible biases that have to be acknowledged. One is the quantification of exposure, done in retrospect. Other is the association between use of solid fuel and poverty with many derived risk factors. Community matching by neighbors tends to match SE level and in this sense exposures: difficult or impossible to separate low SES and solid fuel use.

4- Better designs are needed in this field. Cohort studies are lacking to address
the issue of tuberculosis and indoor pollution, and those studies are welcome and needed. Other very powerful design is the intervention study, where stoves are improved in a community or part of it, with the great advantage that the permanent link between poverty and use of solid fuels is broken. Some of those studies are now reported but not for tuberculosis. Interesting, improved stoves, with chimney are associated with high level of pollutants in the kitchen, although much lower than with open fires.

5- Population studied: may be typical for China but is peculiar for other parts of the world in terms of exposures. Smoking is very high, and in general smoking is a very powerful driving force for lung diseases, more powerful than indoor pollution. Smoking requires more than yes or not, something semiquantitative at least. About half of the studied population smokes what is much higher than in other rural areas of developing countries. Also coexist several fuels used for cooking, including coal, charcoal, wood, crop residues, gas, what is also uncommon in other parts of the world. Risk for several diseases differs from coal, especially smoky coal and biomass and it may be the same for tuberculosis. Putting together all solid fuels may be questionable. WHO speaks of solid fuel effects in fact, and for example finds an increased risk for lung cancer, but it is due mainly of exposure to coal (in China), and not to biomass.

6- Indoor pollution affects mainly women and small children, unless used also as a heating source and if a cause of tuberculosis it is expected to increase tuberculosis mainly in women and children. Others only by contact with tuberculous patients. The studied population is mostly men. Possible impacts of this situation should be commented.

In summary information provided is useful and welcome but not necessarily applicable to the situation in many poor countries with higher levels of indoor pollution. Indoor pollution was not measured and in the design exposure to solid fuel pollution cannot be separated from other effects of poverty. Smoking is a leading risk factor for lung diseases, and may be leading risk of diseases in the studied population. China has advanced a lot in eliminating the most pollutant indoor stoves, and as the results of this study can not necessarily be extrapolated to most regions of the world with high indoor levels of pollutants, if phrased poorly, the results of this study may reduce interest to improve stoves in poor countries.

**Level of interest:** An article of importance in its field

**Declaration of competing interests:**

I declare that I have no competing interests