Reviewer's report

Title: Smoker’s awareness and the effects of smoking or quitting on tuberculosis in a Chinese population

Version: 1 Date: 5 December 2009

Reviewer: Kin Bong Hubert Lam

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General comments
This paper exploits a very large dataset (N=486,341) to provide evidence to support smoking as an important risk factor of tuberculosis (TB) mortality. Such finding has important implications on policy makers and clinicians. Overall this is a nice piece of work. The message this paper conveys is simple, but the presentation could be improved by simplifying the results text and tables.

Specific comments
Major Compulsory Revisions

1) I agree with the authors that the relationship and the potential interaction between smoking and TB is generally overlooked. However, I do not think such unawareness (or lack of enthusiasm) is due to the fact that majority of the existing evidence is derived from case-control studies. At least three systematic reviews have been published, suggesting the association between smoking and increased risk of TB infection, active disease and mortality (Slama et al. Int J Tuberc Lung Dis. 2007;11:1049; Lin et al. PLoS Med. 2007;4:e20; Bates et al. Arch Intern Med. 2007;167:335). The authors noted there have been limited cohort studies examining smoking and TB mortality and that information from East Asia was scarce. In fact, three studies from China (Liu et al. BMJ. 1998;317:1411), Taiwan (Lin et al. Am J Respir Crit Care Med. 2009;180:475), and South Korea (Jee et al. Am J Epidemiol. 2009;170:1478) were not cited in the paper. While I could see there are gaps in the existing knowledge, I think the introduction has not adequately presented the picture nor has sufficiently justified the research question.

2) I am concerned about the use of the terms “awareness of TB history” (3rd line, 1st paragraph of Results). My understanding from the Methods is that the participants were asked “whether they had a TB history” and not “whether they knew they had ever had TB”. Thus, a participant could be aware he/she had had TB but decided not to report in the questionnaire (possibly because of the heavy stigma associated with the condition). It could hence be argued that the increase of “TB awareness” with age is a mere reflection of increased proportion of under-reporting in younger participants because TB is seen more of a stigma in younger individuals. This “argument” is also supported by the finding that younger participants with lower educational attainment tended to be more likely
to report TB. While the authors acknowledged that under-reporting of TB history was “almost a certainty”, without differentiating intentional under-reporting from genuine unawareness, there would not be enough information to determine/compare awareness among smoking/non-smoking subgroups. Some form of objective assessment of TB history would be needed, although this might not be feasible/practical in a setting like the present study.

3) While the authors did state that “the cohort came from a higher social class, having above average health status”, no further information in the text suggest how this sample is compared with the general population. In Table 4, the proportion of ex-smokers in the sample was 6.18%, while that from the national statistics was 3.65%. The authors should comment on the representativeness of the sample and generalisability of their findings.

4) The authors referred body mass index (BMI) of <18.5 kg/m2 as “extreme underweight”. Nevertheless, “extreme underweight” is generally referred to those who have BMI <16 kg/m2 (WHO. Physical status: the use and interpretation of anthropometry. Geneva: WHO, 1995). The authors need to pay attention to the choice of terminology.

5) Several inconsistencies in presentation style need to be corrected. For example, on page 14 in the 2nd paragraph 95% CI was presented as “1.53~1.71”, whereas in all tables it is written as “lower limit, upper limit”. There are also extra full stops, e.g. first sentence in the last paragraph on page 3.

Minor Essential Revisions

6) In the Methods, it was stated “current smokers...were asked to give number of years and number of cigarettes smoked per day.” However, nowhere in the paper does it mention whether the same information was collected from ex-smokers. It needs to be clarified as the definition of ever smoker comprises both current and ex-smokers, and in Table 2 pack-year exposure appeared under the group “Ever smoker”.

7) The authors should explain their choice of confounders/risk factors in the regression model. BMI, diabetes, and hypertension were described but were not included in the model. This appear to be haphazard.

8) It has been demonstrated that exposure to sidestream smoke causes more harm than mainstream smoke (from active smoking) (Schick and Glantz. Tob Control. 2005;14:396). In China (and in other parts of East Asia) in utero and childhood exposure to passive smoking and indoor air pollution has been common. This could potentially have substantial effect on lung growth and increased the susceptibility of infections. Adjustment for these variables is thus necessary in order to determine the exact contribution of smoking to TB mortality.

Discretionary Revisions

9) The comparison of participants’ characteristics has been unnecessarily long, given the detailed Table 1.
10) The coexistence of other chronic lung conditions, such as chronic obstructive pulmonary disease (COPD) could complicate the relationship and should be commented on.

11) In the Discussion, the authors stated “This highlights the importance of adjusting educational levels when considering the smoking effect on Tb mortality.” This is not appropriate as educational level was only a proxy for socio-economic status. Educational level per se would have little confounding effect on the relationship.

12) The presentation of the tables could be improved.

**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:**

I declare that I have no competing interests.