Reviewer's report

Title: Smoking, dementia and cognitive decline in the elderly, a systematic review

Version: 1 Date: 18 March 2008

Reviewer: Danielle Laurin

Reviewer's report:

Major Compulsory Revisions:

1) Given the fact that a meta-analysis covering the association between smoking and dementia or cognitive decline was recently published in the American Journal of Epidemiology by Anstey et al (2007), the authors should provide a better justification to why they propose to replicate a similar exercise except for more recent data.

2) According to the method, all searches were limited to subjects aged 65 and over, but when you look at table 1, subjects aged <65y at baseline were included in several studies (references 22-23, 25, 29-30, 36, 38, 44-45). Please explain.

3) Smoking status: The authors provide results for the association between current smoking and dementia or cognitive decline. For having done CSHA statistical analyses (reference 47: Lindsay et al, 2002), our results corresponded to ever (current and past) smoking (including pipe and cigar). These results are included in the present meta-analysis as current smoking, which is false. In addition, as mentioned in reference 47, data for smoking were available for 3973 subjects of the 4615 (as specified in table 1) included in the core analysis. The authors of the meta-analysis should have contacted directly the authors of all papers included in the meta-regression in order to clarify correctly the information pertaining to smoking exposure or study sample.

4) Results should be discussed in extensive details.

5) In page 6, the authors mentioned that "Measurements of heterogeneity were not significant with the exception of that for AD with current smoking", but they don't mention what they did for this particular case.

6) Reference 45 includes prevalent cases of dementia. This study should not be considered for the meta-analysis including only incident cases.

Minor Compulsory Revisions:

1) Page 2, line 8: "Although the smokers did die earlier". Is this sentence supposed to be part of the sentence before?

2) Page 3, 2nd paragraph, 2nd line: the review was published in 2007
3) In table 1: please provide the proportion of men and women. For reference 42, we don't have the information on age at baseline (or follow-up). Diagnostic criteria should be reported in the table.

4) In figure 4, how come the square of reference 30 overlaps the value of 1, since the lower CI is 1.03.

5) What is the quality assessment used by researchers? This result should be added in table 1.

6) Please define the summary ratios in page 5: OR or RR?

7) Page 11, last sentence: please rephrase: "Further studies are clearly although smoking is clearly not an advantageous way to test this".

Discretionary Revisions:

1) Please write:
   - Alzheimer's disease with a small D throughout the text.
   - Idem for vascular dementia (with a small V)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.