Reviewer’s report

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

Version: 2 Date: 6 October 2008

Reviewer: Sally Lee

Reviewer’s report:

Major Compulsory Revision:
1) The hand-search for relevant studies was not done and it has not been addressed why it wasn't used as part of the study search. Hand-search is an important element of study searching for systematic review and this study specifically didn't use this technique without addressing why it wasn't done.
2) More details need to be added to the Methods section of this manuscript - Were the analyses weighted in order to account for the variation in sizes of included studies (N is between 1000 and 34000)?
   - Were any factors adjusted?
   - There were no details/reasons why some 22 of the 50 studies were excluded (a table of all studies included/excluded in the manuscript will help, also a flowchart of exclusion will be useful)
   - There were no details of the mixed models / Cochran's Q test for heterogeneity. Therefore it is difficult to judge the stats used in the analyses.
3) The authors stated that publication bias didn't seem to be evident from funnel plots, would be useful if it is included.

Minor Essential revision:

It was not clear why Cochrane Central wasn't in their literature search.

In Figure 1, the label 'smoking related to decreased risk' should not be over the ratio 1.

Smoking status has not been defined in the manuscript. There were non-smokers, ever-smokers, ex-smokers, and former smokers. Do non-smokers include ex-smoker or former smokers?

There are many typos in the manuscript, e.g., in Conclusion, the bracket was not closed off. Full stops are missing either side of the sentence "Some studies used more than one instrument and some reported detailed neuropsychological testing". The spelling of 'ethnic'.

Level of interest: An article of limited interest
**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**
I declare that I have no competing interests