Reviewer's report

Title: The potential for prevention of dementia across two decades: the prospective, population-based Rotterdam Study

Version: 1 Date: 23 March 2015

Reviewer: Amos Korczyn

Reviewer's report:

This important study can only be published after correcting or expanding several points.

1) The definition of the vascular risk factors may have changed over the years (e.g. hypertension, hyperlipidemia). More importantly, the inclusion of all cases with "hypertension" together may cause under-estimation of the effect. Some patients, perhaps most, had their hypertension controlled. If these with controlled HT also contributed to the PAR, this may imply that controlling HT will not reduce the onset of dementia.

The dichotomic separation of HT yes/no is counterproductive.

The same is true for including past smokers together with present smokers, and disregarding the amount smoked (PY).

2) I assume many participants must have died during the observation period, but we are not told how many, and how this was dealt with in the analysis, which is a critical issue.

3) The use of "combined PAR" needs to be justified. In fact, some subjects must have had only one or two RF, but others had many. In some cases, the effect could either summate (smoking and HT) or become redundant (education and smoking). This needs to be discussed.

4) I am surprised that the authors, among them leaders in epidemiology, still use terms like "HT had the largest effect on the burden of dementia". Studies such as this only tell us about associations, not causation. For example, coronary artery disease is associated with dementia, not causing it, and paradoxically treatment of this RF may increase the occurrence of dementia, if those treated for CAD will survive longer.

5) Another limitation which should be acknowledged is that the CV RF have been associated with AD and VaD, but not with FTD. Thus, eliminating all these RF could not prevent dementia completely.
These are my major comments, otherwise the paper is important

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

'I declare I have no competing interests'