Reviewer's report

Title: Diet quality and hippocampal volume in humans

Version: 2 Date: 22 June 2015

Reviewer: Margaret Morris

Reviewer's report:

The article by Jacka et al describes the changes in hippocampal volume over time in subjects aged over 60 years, and examines the relationships with dietary patterns. The data are interesting and the area is highly topical. The group has published extensively on the issue of diet and mental health and the reference list draws heavily on their work. A range of relevant lifestyle factors were assessed, including a validated food frequency questionnaire. The paper is well written and easy to follow. Limitations of the data are discussed.

Major revisions

1. In the background, it is stated that hippocampal volume is reduced in adults with depression [17], while antidepressants increase neurogenesis [18, 19]. Is the inference that hippocampal volume is increased? Ref 18 is in the rat and 19 is a short review. Please provide clarification.

2. There is an interesting difference in those subjects of the larger group who were included in the study, in terms of being less likely to report heart problems or poor self-rated health, being married and their participation in regular exercise. Can the authors comment on this?

3. Food frequency was completed at baseline- is it possible that there was a greater shift (e.g., increased energy density, or poorer food quality) in diet in some of the participants which may have affected their hippocampal volume? Perhaps some comment could be added. The authors have already commented regarding the fairly short time window between the two scans but do not really address whether it is possible that behaviour may have altered (or that this has not been surveyed).

4. Is the reduction in hippocampal volume seen over the 4 year window commensurate with that observed in other studies?

5. In Figure 1 predicted hippocampal volumes are shown across poor, average and good diet quality groups - how many subjects appear in each group?

Minor points - revisions

To better illustrate the overall association between diet and left hippocampus volume, we model..

use modelled
Please complete reference 54
Perhaps Figure 1 could be redrawn using a graphics program to improve quality

**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 that I have no competing interests