Reviewer’s report

Title: A new approach for exploring comorbidity in dementia: A cross-sectional study of primary care patients

Version: 2

Date: 18 October 2013

Reviewer: Marjan M van den Akker

Reviewer’s report:

Dear editor,

Thank you for giving me the opportunity to review this interesting manuscript.

Essential / compulsory revisions

1. The end of the introduction is not very clear to me. Why do studies on the comorbidity of dementia need new methodological approaches? How does this related to “… using the statistical methods most frequently applied in current research.”? Is the focus on new methodology or on the comorbidity of dementia?

2. For me, figure 1 is not very helpful, because it is hard to understand it. I assume one figure represents the males and the other the females (which is which)? One figure includes 21 diseases, the other 23; probably those have factor scores >.25? (please add a fote note or something similar in the figure) What does it mean when disease names are underlined? What should I learn from the fact that most factor scores are <.40?

3. The abstract does not give any results of the factor analysis.

Discretionary revisions

4. If the focus is on methodology the authors might want to extend their discussion beyond the specific example of comorbidity of dementia.

5. The authors have access to an impressive database holding information on over 70 thousands patients aged 65 years and older. The authors do hardly give any explicit comments on the quality of the data(base) used.

6. I think the authors could give an explanation as to why they use exploratory factor analysis and e.g. not hierarchical cluster analysis (Vu T, Finch CF, Day L. Patterns of comorbidity in community-dwelling older people hospitalised for fall-related injury: a cluster analysis. BMC Geriatr. 2011 Aug 18;11:45. doi: 10.1186/1471-2318-11-45.) or other available statistical methods.

7. In their discussion the authors have not yet convinced me that their methods of quantifying the comorbidity of dementia (with analyzing specific diseases) is more useful than calculating a comorbidity index to trace to patients with dementia who are at high risk for hospitalization or mortality. Can the authors formulate recommendations for clinical practice based on their analysis?
**Level of interest:** An article whose findings are important to those with closely related research interests

**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. I am working together with some of the authors on a related subject: analysis multimorbidity and polypharmacy, which will result in joined publications.