Reviewer’s report

Title: Reducing complexity: A visualization of multimorbidity by combining disease clusters and triads

Version: 2 Date: 28 October 2014

Reviewer: Christian Stock

Reviewer’s report:

- Major Compulsory Revisions

1. The wording “significantly associated combinations” (Abstract), even with significantly in quotation marks, is somewhat misleading since it suggests but does not seem to refer to any statistical hypothesis testing. Similarly, the claim “We were able to show which diseases are statistically associated” seems strong given the nature of the data and the applied methods. Alternatively, something like “This study provides evidence on joined occurrences of diseases in elderly population, …” may be more appropriate. I would suggest to carefully review and reconsider, first, the wording in all instances where it is referred to “significance”, and, second, the general claims made in the conclusions.

- Minor Essential Revisions

2. The authors should state the purpose of the study in the abstract, see BMC Public Health submission guideline.

3. It would be helpful if the authors highlighted already in the abstract that their study population was 65 years and older.

4. Although, this might have been included in previous publications by the authors, a table on the characteristics of the study population for both males and females in 2006 and 2004 could be added, e.g. showing the age distributions, numbers of prevalent diseases, etc…

5. Many readers who are unfamiliar to network analyses may not be aware of terms such as “edgelist” used in the abstract (line 61). These terms should very briefly be explained when used first. Also, it might be helpful to prepare a box or a table that very briefly explains frequently used terms that many readers of BMC Public Health might not be familiar with, e.g. “edge”, “bridge”, ...

6. The authors state at the end of the background section: “This work is done for both genders separately”. This sentence could be moved into to methods section and a brief justification for the separate analysis could be added.

7. More details on the network analysis could be given in the statistical analysis subsection.

8. Some discussion of the fact that data are from 2006 (and 2004) would be useful. Although this might be difficult to say: what would be likely differences (if there are any) if more up-to-date data had been used?
9. Please replace "tetrachoric factors analysis" by "tetrachoric factor analysis".
10. A list of the ICD codes used to define each condition or a reference to such a list in a previous publication anywhere in the paper would be useful.
11. Results, line 292-296, “circle”: More appropriately, an “ellipse”. How is the size of these ellipses in Figures 1 and 2 determined?

- Discretionary Revisions

12. The “metaphor from Greek methology” at the end of the background section and in the conclusion seems dispensable.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**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.