Reviewer's report

Title: Multimorbidity Patterns and Health Service Use in Swedish 85 year olds: An Exploratory Study

Version: 4 Date: 24 June 2013

Reviewer: Dave Kerby

Reviewer's report:

This is my second review of the paper. The authors have revised the paper based on reviewers' comments, and the paper is much improved. My statistical focus has been on the cluster analysis. The agglomeration method is clarified, and the reporting of the odds ratios greatly improves the meaning of the results.

The big strength of this article is expressed in the discussion section on page eleven: “The advantage of our approach is that morbidity cluster and cluster interaction models provide more information. Unlike the counts of morbidities, where all morbidities are equally scored irrespective of their inner relationship, morbidity cluster and cluster interaction models address what morbidity cluster was the leading cause of hospitalization.” I find this argument persuasive, and this is one reason I think the article merits publication. Another reason is that this is an interesting data set, and the question of health care use is an important one.

Minor Essential Revisions

1. There is one statement on page 12 that was in the original submission, but that for some reason I failed to address. In the following statement, the word it seems to be referring to cluster analysis: “However, it is still not an empirical method.” Gathering and analyzing data is indeed an empirical method, so the meaning here is not clear to me. I wonder if the authors mean to say that there are choices and thus limitations in cluster analysis. If so, then the situation is no different from other methods. In factor analysis, there are choices of extraction and rotation; in ANOVA, there are choices about post hoc tests; in regression analysis, there are choices about models to select – but these choices do not render the studies non-empirical. If the authors are trying to address the limitations of the study, they have done so adequately elsewhere. I suggest omitting this sentence or clarifying the meaning.

2. While the English is much improved over the first submission, there are still problems. The paper needs another polish of the language before it can be published. Below are some language problems that I particularly noticed:

a) On page four, this sentence is grammatically awkward and should be revised: “Therefore studies on multimorbidity may have to be explored a more complex context, where for example influence of gender and cluster of diseases are considered.”
b) On page five, the word also is not needed: “The process of sample collection is also described elsewhere [10].”

c) Add a comma after the word status: “Working status measured by previous occupation, was classified into the following categories.”

d) On page nine, I suggest the phrase “explained more variance” rather than “improved more variance”: “Morbidity cluster (Model 2) and cluster interaction (Model 3) improved more variance than the single morbidity model (Model 1) (Table 5 and Table 6).”

e) On page eleven, I suggest the phrase “did not improve explained variance” rather than “did not improve variance”: “The slightly lower R2 in the morbidity cluster models reveals that the selected morbidity cluster (men’s cardiac cluster and women’s cardiopulmonary cluster) did not improve variance.”

d) On page twelve, the word be should be omitted: “First, the choice of morbidities in the hierarchical cluster analysis was not be equal for men and women due to the different prevalence.”

**Level of interest:** An article whose findings are important to those with closely related research interests

**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.