Author's response to reviews

Title: Symptom burden in community-dwelling older people with multimorbidity: a cross-sectional study

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Version: 4 Date: 12 November 2014

Author's response to reviews: see over
Reviewer 1: Danijela Gnjidic

Thank you for the opportunity to review this work. The paper addresses an important topic. Multi-morbidity and symptom burden are common in older people and have significant impact on overall health. Some aspects of the study methodology and results need to be clarified further.

<table>
<thead>
<tr>
<th>Major Compulsory Revisions</th>
<th>Authors reaction</th>
<th>Changes in the text</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong> 1) Would be good to provide data on multimorbidity prevalence internationally.</td>
<td>Thank you, the data provided was from an international sample, we clarified this in the text</td>
<td>Page 1 line 29-31 Chronic diseases tend to increase with old age, an international systematic review reported that approximately 62% of the all people between 65–74 years and 81.5% of people above 85 years suffer from multiple chronic diseases [3]. (Salive 2013)</td>
</tr>
<tr>
<td>2) Sections describing symptom burden should be more succinct.</td>
<td>We have removed descriptions about some of the symptom concepts in the introduction.</td>
<td>Changes have been made in the introduction section of the manuscript.</td>
</tr>
<tr>
<td><strong>Methods</strong> 3) Page 5, line 78 – please add city of recruitment.</td>
<td>Done</td>
<td>Page 4 line 71 Norrkoping is a middle-sized city, (120 000) in the south-east of Sweden,</td>
</tr>
<tr>
<td>4) Page 5, line 84 - please remove semicolon.</td>
<td>Thank you , done</td>
<td>The semicolon has been removed.</td>
</tr>
<tr>
<td>5) Should specify recruitment start and end date more clearly – e.g. day, month and year. Moreover, how was the data collected? Who performed the assessments?</td>
<td>thank you for the opportunity to clarify this , we added this data</td>
<td>Page 5 line 88-90 All data were assessed with protocol-guided interviews, performed by specially trained registered nurses or occupational therapist between February 2011 and December 2011.</td>
</tr>
<tr>
<td>6) Why was item on sexual activity excluded from the MSAS?</td>
<td>Unfortunately, the research group ended up in a discussion about this item since the data collector did not feel at ease with asking the old lonely people questions about sex. Still this is a very sensitive area to talk about in Sweden. So to make the data collection possible this item was taken out of the protocol. However, the MSAS subscales do not include the item sexual interest or activity, so removing this item does not effect the result of the Total MSAS score. We added an explanation in the manuscript.</td>
<td>Page 6 line 105-106 One item dealing with sexual interest or activity was excluded from the original instrument prior to the data collection. The data collector did not feel at ease to ask the old often lonely people a question about sex, this left the instrument with 31 symptoms.</td>
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Research article: Symptom burden in community-dwelling older people with multimorbidity: a cross-sectional study

### Results

9) Did symptom burden vary according to particular chronic diseases?

Unfortunately we “only” have data from the general ICD chapters and not on the specific diseases within the ICD chapters.

This makes it not possible to say what disease or combinations of diseases have the highest impact on symptom burden. However, to get more understanding on the ICD chapters, we have done correlations and regression analysis with the data on ICD chapters, and included it in the result.

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### Discussion

11) Do you have information about treatment of symptoms?

Multimorbidity often coexists with polypharmacy in older people and pharmacological treatment of one symptom may exacerbate another or a coexisting condition, which may explain the increase in symptoms in this population.

We agree that this is a huge and important issue in this group of patients. We have now acknowledged the problem by inserting a section about in in the discussion.

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12) Page 13 - this study did not use data from a large dataset but rather a smaller RCT.

Thank you, we changed this

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8) Have authors considered comparing frailty in this population since this data is

We indeed collected data on frailty, however, since we wanted to focus our manuscript on symptom burden, we had to make choices and will not use the data on frailty in this manuscript.

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7) How was multimorbidity defined in this study?

Thank you for the opportunity to clarify this, we added this text.

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Page 3 line 32

A co-occurrence of ≥2 diseases were at least one is chronic, is defined as multimorbidity [4].

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No changes in the text.

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Another limitation in this study is the lack of data on diseases from all the ICD chapters. Data on diseases would have made it possible to make disease cluster and use as a predictor of TMSAS or to describe the symptoms experience of specific clusters.
### Reviewer 2:
Stefano Volpato

#### Major Compulsory Revisions
One of the strengths of the paper is the inclusion of people with multimorbidity. Nevertheless, the authors did not organize the analysis in order to take advantage of these important characteristics of the study population.

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<td>I suggest the author to: 1) Describe the most common combinations of diseases in the populations</td>
<td>Thank you for you valuable comments. We agree that the different diseases could be interesting to combine, however</td>
<td>Page 8. Participants in this study had three or more medical diagnoses in their medical record. Almost all participants (96%) had at least one</td>
</tr>
</tbody>
</table>
### 2) Investigate prevalence and symptoms experience

Unfortunately we “only” have data from the ICD chapters, we do not have information about the actual disease in all of the ICD chapters. However, as suggested by you, we have looked at the combination of ICS chapters. Thank you for that suggestion. We added this to the results. In the result section we now describe the three most common combination of ICD chapters within ICD chapter 9.

We could not make clusters to use as predictor of TMSAS or describe the prevalence and symptoms experience in specific disease clusters. However, we also still believe that, although clustering of diseases is important, our results bring forward the unique perspective of an elderly population with several diseases living with symptoms (irrespective of which diseases they have at the same time). We added this reflection also to the discussion.

### 3) Use combination or cluster of diseases as predictors of TMAS.

Disease in ICD chapter 9, diseases of the circulatory system. Within ICD chapter 9, participants also had diseases from the musculoskeletal system 83%, diseases of the digestive system 60% and diseases of the eye and adnexa 58%. (Table 1).

### Page 12

Another limitation in this study is the lack of data on the actual diseases the participants were diagnosed with. Data on diseases would have made it possible to make disease clusters and use as a predictor of TMSAS or to describe the symptoms experience of specific clusters. However, we still believe that although clustering of diseases is important and an area of interest for future studies, our results bring forward the unique perspective of an elderly population with several diseases living with symptoms.

### The cross-sectional design of the study must be mentioned among the limitation of the study.

Thank you for noticing this, we changed this in the text.

### Minor Essential revision.

The manuscript is probably too long. In particular the introduction and the results section could be shortened. In the results sections the author described almost all the results presented in the

Yes we agree. The text in both introduction and in the result section have been shortened.

Changes in the introduction and results have been made.
tables and there is too much overlap between text and tables. I suggest to summarize the most interesting results and simply referring to the appropriate tables for the others.