Reviewer’s report

Title: The Associations of Multimorbidity with the Sum of Annual Medical and Long-Term Care Expenditures in Japan

Version: 0 Date: 29 Oct 2018

Reviewer: Zhiguo Chen

Reviewer’s report:

This manuscript investigated the association between multimorbidity and medical expenditure, and concluded a positive relationship based on insurance data from a city in Japan for adults over 75 years old. Multimorbidity is appropriately measured by Charlson Comorbidity Index, and medical expenditure data are well captured from insurance claims. Statistical method is used properly. Therefore, I support its publication with minor revisions and clarifications.

1. Last sentence of background at abstract, should specify cohort as "for older adults in Japan".

2. Result at abstract, every increase in one unit CCI was associated with 256,000…, but in table 3, it is 257,000. Please make it consistent. And it's of benefit to state every unit of CCI increase with long-term care expenditure here, as it is the novelty of this manuscript.

3. Conclusion, first sentence at abstract, add "for older adults", because we have no information about this association for younger people.

4. Page 3, line 37, no need to state: "other than Japan", as these two references used data from UK and U.S, not every OECD country other than Japan is included.

5. Page 4, line 14, "used a single disease", better say "used selected diseases separately", because a couple of diseases were studied.

6. Page 5, line 34, any other variables used to merge two datasets besides ID number? Like date?

7. Page 10 line 7, also states result of LTC coefficient to highlight its importance

8. Page 10, line 12. Is there any significant effect of covariates (age, gender, income level)? If yes, please add these covariates coefficient and p-values in table 3 total section.

10. Figure 2 title should be "Predicted Probability" not "Frequency"

11. Add a table of result for ordinal multiple logistic regression because level of LTC requirement is significant
12. Page 11, line 41. Is higher level of LTC associated with higher expenditure? this may explain why there is an association with CCI, but no significance in each level of LTC as expenditure is same in each level?

13. Page 12, line 49, people with public assistance are also excluded, is there any common characteristics for them like illness, income, age?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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