Reviewer's report

Title: Excess costs of dementia disorders and the role of age and gender An analysis of German health and long-term care insurance claims data

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Reviewer: Ramon Luengo-Fernandez

Reviewer's report:

Overall, I thought that the article was very interesting and shed some important results.

My comments therefore are more concerned with overall presentation and clarity.

Comments relevant throughout the paper (including abstract):
The authors report all their cost results as an approximation (e.g. yearly spending was ca. € 12,300). This makes their results look speculative and crude approximations rather than final results. I would suggest the authors report the exact results.

Abstract:
Results, second sentence. The authors report "About two-thirds of additional expenditures occurred in long-term care sector". Compared to what are these additional expenditures?. Demened cases vs. non-demented controls?

Results, third sentence. Does this sentence mean that for patients aged less than 80 years, total costs between males and females were different? In addition the sentence "... patients incurred comparable costs." should be changed to ".... patients incurred comparable total costs."

Results, last sentence. Typo "coeval".

Conclusions. The conclusion section is longer than the results. This imbalance should be corrected.

Methods:
Page 5, 1st paragraph, 2nd sentence. What are the corresponding age groups?

Page 6, last paragraph, 1st sentence. OTC not defined previously.

Page 8, 3rd paragraph. The authors report that unadjusted mean per capita expenditures were compared using Wilcoxon-tests. No p-values of this analysis are reported in the results. Also, given the very large patient sample, would it not be better to use a two-sided t-test to compare means?

Page 8, paragraph 6. The authors should report all the categories used for approach 2.

Page 9, 1st sentence. The authors mention that a stepwise approach was used. This was not explicitly reported when detailing the nature of the regression models. In addition, what were the other covariates used apart from age and gender?

Results:

Page 10, paragraph 3, sentence 2. The authors report that costs of medical specialists were higher in controls than in cases. Was this difference significant? Related to this, and to my point above, the exact p-values should be provided (maybe as part of Figure 1?).

Page 11, paragraph 7 and beyond. When the authors report excess cost results by gender and age group, the comparator should be explicitly reported. As it stands it is sometimes difficult to determine if excess costs are the difference between male and female dementia patients, or between male dementia patients vs. male controls.

Page 12, paragraph 1. p-values should be provided for these comparisons.

Discussion.

It is absolutely right that the costs of informal care are paramount in dementia care. Could the authors maybe link the issue of informal care to the important gender and age differences observed in this study? e.g. Men (who were found to be younger than female dementia cases) might incur lower LTCI costs than women because the spouse takes care of them, requiring less input from social care but more input from the healthcare system. Whereas for females (who tended to be older), the spouse might be unable to take care of them (also male spouse more likely to be dead) therefore more input from social care required.

**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