Reviewer’s report

Title: Health of Spanish centenarians: a cross-sectional study based on electronic health records

Version: 2 Date: 10 Jul 2019

Reviewer: Karen Andersen-Ranberg

Reviewer's report:

I am happy to read the re-submission, which has improved a lot. I still have some comments, which I think you should consider, as it would strengthen the Whole article. I also think you need to have the English language corrected.

Abstract Line 56: be more precise, e.g. Medical specialist consultations or the like.
Line 58: I think the conclusion should be that most Spanish centenarians suffer from multimorbidity, and that it is important to address these very old persons from a holistic geriatric view in order to preserve or improve their health, and avoid the negative effects of polypharmacy. The last part "which may be potential underlying factors....." should be deleted as it has nothing to do with your findings.

Background:
Line 74-78. I think you should be more specific on how the ref. 8-10 supports your sentence that "However, centenarians might not necessarily follow the general trend.....". It is not clear, and as a reader you do not want to open the reference to find out what you mean. Please, make it more clear.

Line 79-80: What do you mean? I do not think this is true. Do you mean longitudinal studies up to age 100. Most centenarian studies I know off have looked at morbidity as a Whole and reported prevalences of the various diseases. I suggest you delete the sentence.

Line 88: you should add that it was a convenience sample recruited by various methods, and the information on Health being self-reported. That is likely to give the good results of the Australian centenarians.

Line 101: I think you should add that it is important to understand the Health and Health care needs of the very old and generally frail persons, such as centenarians, as their numbers are increasing exponentially. I also think that you should address that the more methodological sound research studies show higher prevalence of diseases and multimorbidity, and that your data can bring the same high level of Scientific knowledge by covering almost all Spanish centenarians in a geographical region representative to Whole country of Spain, (- or something like this)

Results:
Line 180-181: Reference on De Beers criteria and anticholinergic scores are missing. Should be stated here too, and not only in the methods section.
Line 200: should it be 'radiologist'?

Discussion:
In general, the discussion could benefit from a tightening, especially when comparing the disease prevalences in the various studies. And I think you should avoid the methodological less sound studies, as they are largely representing the more 'healthy' results/lower prevalences. You cannot compare self-reported with medically reported diseases, nor can you compare a population sample with a convenience sample. It is fair enough to write that when comparing your results with other studies based on Medical examination and/or Medical records you largely get the same results.

Line 222: Why do you suddenly mention that the centenarians should come from deprived areas, WHY? Barnett et al. (ref. 6) clearly shows that it has less importance at the highest ages, and that the results for the most and the least affluent converges. I suggest you delete from line 222 to 228.

Line 229: You mention 'incidence' and later you Refer to the prevalence based on your data. Be precise.

Line 237: It is odd that you have different results for the 90+ year olds in reference 24 and your results. Could you come up with some other explanations? Methodological differences in disease Counts? I think ageism is as prevalent in nonagenarians as in centenarians, so there must be another explanation.

Line 271: ulcers - where? gastrointestinal or venous? or diabetic? or atherosclerotic? I guess it is venous, but you need to be precise.

Line 292: unclear: "...doubled the 32% reported in previous studies".

Line 300: in their prevalence of what?

Line 303: opioids are only give for pain. My note on drugs being dispensed for other reasons was the example of antidepressants and anticonvulsive, which may be use in pain management too. You might want to delete the sentence, although I suggested it.

Line 307: You write 'studies' in plural, but you are only referring to one!

Line 314: It is also a limitation that you do not know their housing conditions, nor their level of physical functioning (ADL), which would be informative too.

Conclusion: You do not conclude your findings, but rather giving some recommendations for future studies. Maybe you should suggest the addition of more variables, e.g. smoking, alcohol consumption, housing, which would enrich your valuable database?.

Tables: In general for the p-values, I would just mention below <0.05 or <0.01, or <0.001 and the insignificant p-values with an 'n.s.'. It will be less disturbing, and the significant differences will be seen more easily.

Table 3: you should add the ATC codes
Additional files 1-2-3 are somewhat redundant, and you might consider omitting them. Moreover, additional fil 2 says ATC codes, but you cannot see the codes. I suggest that you add them to Table 3, as mentioned earlier.
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

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I am able to assess the statistics

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