Author’s response to reviews

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

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Author’s response to reviews:

Dear Editor,

Thank you for giving us the opportunity to review and improve our manuscript ‘BGTC-D-19-00021 Health of Spanish centenarians: a cross-sectional study based on electronic health records’ for publication in BMC Geriatrics.

We would like to sincerely thank the reviewer for her great effort in reviewing the manuscript and her valuable comments and suggestions for improving the quality of our study. We have carefully read all the points highlighted and tried to address most of the comments. Our answers are provided below. We would also like to take the opportunity to ask for a change in the authorship of the manuscript; specifically to equate the contribution and position of the first two authors as co-first authors, as it appears now in the revised version of the manuscript submitted.

Sincerely,

Antonio Gimeno Miguel
Karen Andersen-Ranberg, Ph.D, MD (Reviewer 1):

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.

Thank you very much for the great effort in revising the manuscript. We also think it has improved a lot from its first version. The article has now been revised by someone who is native speaker of English.

Abstract Line 56: be more precise, e.g. Medical specialist consultations or the like.

We agree. The term ‘specialities’ has been changed for ‘medical specialist consultations’.

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.

We agree that some of the conclusions were not related to our findings. We have rewritten the conclusions as proposed.

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.
We agree with the comment. We have rephrased the paragraph. We have also revised all the references used in the Background and removed those of the methodologically less sound studies.

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.

We agree with your comment and have deleted 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.
These ideas have been added in the manuscript.

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)
We agree. These ideas have been added in the last paragraph of the Background.

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.
We agree. These references are now stated in the Results section.

Line 200: should it be 'radiologist'?
It has been modified in the text, and also the rest of specialists to refer all of them to the specialist instead of the specialty.

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.
We agree with the comment. We have tried to tighten the discussion, and to remove from the manuscript the methodologically less sound studies (mainly from the Background). We have kept most of the comparisons but highlighting the nature of each study.

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.
We agree. We have deleted this paragraph in the Discussion.

Line 229: You mention 'incidence' and later you Refer to the prevalence based on your data. Be precise.
You are right. We have used the term prevalence in both cases.

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.
The prevalence of multimorbidity in the population 90+ years was not specifically studied in the mentioned reference (it was analyzed only for the present study) so we have decided to refer to the prevalence for ages 0-14, 15-44, 45-64 and 65+ years, which were the age intervals originally studied in the EpiChron Cohort. We have rephrased this paragraph and changed some figures regarding the prevalence of multimorbidity accordingly.

Line 271: ulcers - where? gastrointestinal or venous? or diabetic? or atherosclerotic? I guess it is venous, but you need to be precise.
We refer to chronic ulcers of the skin. It is now specified in the text.

Line 292: unclear: "...doubled the 32% reported in previous studies".
We have rephrased the text. We mean that the percentage observed in our study (70%) doubled that reported in other study (32%).

Line 300: in their prevalence of what?
It has been specified in the text. We mean prevalence of sleep disorders and anxiety/neuroses.

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.
We agree. We have finally decided to delete the sentence.

Line 307: You write 'studies' in plural, but you are only referring to one! We have changed ‘studies’ for ‘study’.

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. We agree with the comment. We have included the lack of information regarding housing indicators and physical functioning as limitations of the study.

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?. We agree with the comment. We have rephrased the conclusions of the study in line with the changes made in the conclusions of the Abstract.

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. We agree with your suggestion. Tables have been revised and modified accordingly.

Table 3: you should add the ATC codes We agree. We have added the ATC codes to Table 3, and also the EDC codes to Table 2.

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

It is true that additional files are now somewhat redundant as they only provided with new information regarding chronic conditions and medications with a prevalence lower than 1%. We have finally omitted them. We have added ATC codes to Table 3, and have also added EDC codes to Table 2.