Author’s response to reviews

Title: The Burden of Health Conditions for Middle-Aged and Older Adults in the United States: Disability-Adjusted Life Years

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Author’s response to reviews:

Tovah Honor Aronin, Ph.D.
Editor
BMC Geriatrics

Response Letter for Reviewer Comments from BGTC-D-18-00526

Dear Dr. Tovah Honor Aronin,

The authors were pleased with the positive responses and constructive feedback from the reviewers. Thank you for selecting knowledgeable reviewers that helped to improve the quality of our manuscript. The recommendations made by the reviewers have now been incorporated into the revised manuscript and are outlined in brief below.

Editor Comments

Ensure all section headings are as outlined in the submission guidelines, in particular the subheadings of the Declarations section as listed below.

- This information has been added.
Please provide a list of all the abbreviations used in the manuscript. This list should be placed just before the Declarations section. All abbreviations should still be defined in the text at first use.

- This information has been added. All abbreviations are still defined in the text.

Dr. Terrence E. Murphy (Reviewer 1)

This is a very nicely written paper and quantifies an important consideration in the study of aging persons, that of disability adjusted life years (DALYs). It is certainly acceptable for publication as is, but I would like to challenge the authors to improve the paper in two ways. I have suggested these as discretionary changes, because if they don't make sense to you, then I don't want to foist them upon what is already a nice paper.

- The authors really appreciated the time, comments, and feedback you provided for our manuscript.

We are all aging, and most of us have one or more chronic conditions, most commonly HTN. Therefore, when these techniques ascribe the highest burden to HTN, i.e., the most people live the longest amount of time with that condition, it seems somehow off mark in terms of the message. We are living longer, and as our bodies and minds fall apart, we take meds to help us manage this process. HTN is one of the best examples in that so many people take it because it helps prevent or delay cardiovascular disease. Therefore in your first paragraph you talk about how alarming this is. I don't see it as alarming, merely a consequence of a population successfully stretching its own longevity. What I'm asking is difficult, I know, and I wouldn't ask it if I weren't already convinced of your talent and sophistication with this area of study. Can you find a way to spin our tendency to live longer with more disability in a positive light?

- We have revised the first paragraph and other text in the manuscript as per your suggestion.

Can you provide a clear and compelling example of how this measure (DALYs = sum of YLDs and YLLs) answers a pressing social concern? You've given some examples to illustrate how it might be used, but it is based on the idea that the longer you have a condition the more lifetime of perfect health you are deprived of, which strikes me as a not entirely honest premise. We are all aging and eventually moving toward death. How can this measure be used to answer a pressing policy or social issue that hasn't otherwise been answered? I realize this is a tough request and maybe not easily achieved, but after reading this very nice paper you left me wondering how this might really be used to better answer questions that exist than from using some of the more traditional tools in the epidemiological toolkit?

- We have added a paragraph about how YLD may help to inform social and policy issues during aging. We have also clarified that YLD does not imply quality of life is limited. Although advancements in modern medicine and care may suggest that longevity may
not be impacted by a disease state, this may contradict the DALY calculation and was thereby not included in the manuscript.

Reviewer 2

This report originating from secondary data using self-reported morbidity 10 of them only were used to calculate the burden of disease measures namely incident cases, YLLs, YLDs and DALYs similar to GBD study capstone papers published in Lancet. Authors used a single source data and present results for just 10 conditions for entire USA whereas the same information is also available based on multiple, more comprehensive data sources, geographic and diseases/injuries covered in the GBD. From this point of view this paper does not add much to what is already known on this topic. Further, though the methods of estimation seem correct, they lack clarity on TWO areas. 1) how were estimates obtained for entire USA, 2) how robust are the estimated without 95% credible limits being presented.

• Thank you for taking the time to review our manuscript and providing critical feedback.

In addition to the above issues I raised the MS methods should improve to provide more information on number of participants selected, how they would be representative for entire USA for which the estimates are reported in this paper.

• This research included results from a secondary analysis of Health and Retirement Study data. We included participants from the Health and Retirement Study that reported having at least one of the health conditions we examined during the time in which the Health and Retirement Study was considered nationally-representative (beginning in 1998). Sample weights, which are provided by the Health and Retirements Study for making these data nationally-representative, were utilized in our analysis. This information is included in the text.

How the sample studied was arrived via recruitment in successive Cohorts, what was number of deaths and attrition rates, to arrive at the sample that was analyzed as a FLOW CHART would make the readers.

• We used an incidence-based DALY calculation. Participants were followed after they first reported a health condition. It is possible that record disputes and no longer having the health condition after diagnosis occurred, thereby limiting our ability to determine rates. The number of deaths (weighted) is listed in Table 3. A flow chart for participant exclusions was added and introduced in the text (Results section).

Further analyses explain how estimated were drawn for entire USA based on sample studied here, and provide 95% CIs for readers to judge robustness of the estimates.

• We have added person-level DALY means and 95% confidence intervals. This was done at an individual-level so the reader knew the burden of a given health condition for a
single person and for descriptive purposes. Other studies that presented DALYs estimates have not provided 95% confidence limits (e.g., PubMed ID: 17662153, 25343447, 25880843).

The results are too BRIEF, since they lack any socio-economic or racial dis-aggregation, just purely description of 10 conditions is quiet drab particularly in discussion.

- We have added more text in the Results section for our overall and sex-stratified findings. Results for race and ethnicity was not included in this manuscript because it was outside the a priori scope of this manuscript’s aim. Additional results were also inserted in the abstract.

Authors should discuss the results in the light GBD estimates, which data policy makers should use i.e. this report or GBD estimates available country level at http://ghdx.healthdata.org/a brief note strengths of their study would add value to this paper.

- This is a great suggestion. We have added text where appropriate for comparing our results to those from the GBD project in the Discussion and included this website as a citation.

Results in table 2 and appendix 2 should be combined to single table by realignment of rows and columns.

- The results in Table 2 and Appendix 2 have been merged.

Appendix 1 could not be found.

- Appendix 1 was included in the manuscript file as supplementary material that could be downloaded by reviewers. It is again included as supplementary material in this revision.

Figure 2 need to arrange the 10 conditions by their rank order w.r.t either of BOD measure and a legend be added for green and yellow.

- The authors have kept Figure 2 as alphabetical because we thought this would be easier for the reader. The burden of the health conditions differed slightly by sex, and this figure would have to be split into separate figures (males and females) if the estimates were to be ordered from smallest-to-largest. Legends for each figure are listed after the reference section.

Present results for geographies or social class or racial groups would perhaps shed more important messages.

- Results for race and ethnicity was not included in this manuscript because it was outside the a priori scope of this manuscript’s aim. We specifically were interested in examining the overall burden of these health conditions, including stratification by sex. Examining DALYs by race and ethnicity would, in our opinion, have overwhelmed the reader and
convoluted the manuscript. Therefore, the overall and sex stratified DALYs were presented in this manuscript, while the results for DALYs by race and ethnicity are in a separate manuscript that is currently under consideration for publication elsewhere.

Conclusion should highlight an important message to HCP and/or policy makers to improve health and prolong longevity.

- We have revised our concluding paragraph to fit your suggestion.

Additional Edits Made by the Authors

- Minor grammatical edits have been made throughout the manuscript text.
- The presentation of figures and tables have been reordered to align with our revisions.

If you have any questions regarding our revisions to the manuscript, please do not hesitate to contact the corresponding author.

Sincerely,

The authors