Author’s response to reviews

Title: National disability-adjusted life years (DALYs) for 257 diseases and injuries in Ethiopia, 1990-2015: findings from the Global Burden of Disease Study 2015

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**Introduction**

This article presents a summary of the burden of disease in Ethiopia, measured using DALYs, and trends from 1990-2013. The data is taken from the GBD 2013 project, and will be of some interest to researchers working in health policy and planning in this country. Although it describes the epidemiological transition in Ethiopia well, it is not of especially great interest in and of itself and requires stronger results and discussion before it is acceptable for publication.

Response: The authors would like to thank the reviewers for their constructive comments to improve this manuscript. The authors used GBD 2015 estimates and addressed the comments point by point as shown below. The authors addressed the comments in the text, figures and tables and showed with track changes, underline or yellow highlighted in the documents based on the instructions given.

**Major Comments**

Present ranks and proportions

The authors discuss the rank of different causes of disease burden, and also an overview of the proportion of disease due to different major categories, but this information would be of greater value if presented in more detail. A table presenting the shift in ranks of different causes from 1990 to 2013 would be helpful for the reader, along with a comprehensive description of how proportions of burden due to different causes have shifted over time. It would also be useful to see how the relative contribution to DALYs of death and disability has changed over time for the major diseases – while it is a significant achievement to reduce death due to stroke, for example, if this change arises through prevention of fatal strokes it may lead to a large increase in YLDs for stroke-related sequelae, which will be of importance to health planners. For some conditions with no or limited absolute declines in DALYs there may have been a significant shift away from
YLLs, which is of value for health planners. This information should be presented comprehensively and clearly in the results.

Response: The authors would like to appreciate for this comment, we have changed almost all the results following the comment and included figures 1-9 and tables 1-2. We have described all in the result section.

Significant English edit

The article’s English is not at a level sufficient for publication, and requires a substantial edit.

Response: The authors have tried to edit the language by themselves. The authors did not secure any funding to write this manuscript and volunteers declined to edit and give their support. The authors would like to get editors support or suggestion if there are volunteer language editors or any funding source for such language editing. We preferred to submit the paper not to get delay.

Better presentation of Meta-regression modeling

The Meta-regression modeling process described briefly in this paper is a complex modeling process that requires a great many assumptions, and can vary substantially between causes. It is also only as effective as the input data it uses and the assumptions made. The authors have not clarified in this article the extent to which local data informed these meta-regression models, and the extent to which those models built on non-local data will be representative of Ethiopian conditions. For example, a Bayesian Meta-regression of stroke-related sequelae may be highly dependent on assumptions about stroke survival and subsequent longevity in non-fatal cases, but these outcomes may vary substantially between Ethiopia and the data used in the DisMod analysis. It is not clear to what extent this will affect the validity of models for individual causes, but this has not been discussed sufficiently in the text. More detail on this and possible drawbacks would improve the robustness of the paper, particularly for the main causes that contribute to DALYs.

Response: We have modified the methods section, line 431-436

More critical discussion

The discussion needs to offer a more critical perspective on the Ethiopian government’s health policies and future plans, and provide a more robust analysis of these policies for non-Ethiopian readers. Some comparison with other countries in the region would also be helpful.
Response: Based on the new results we included, the authors have made major revision on the discussion part of this manuscript.

Reviewer #2: Overall this is a reasonably competent description of the burden of diseases and injuries in Ethiopia using GBD 2013 estimates. There are some minor points that need tidying up before it can be accepted for publication.

In several places in the Abstract, the phrase "GBD 2013 data" is used, which is misleading. It should be "GBD 2013 estimates" - i.e. the outputs of the GBD 2013 modelling process in relation to Ethiopia, not primary data.

Response: Thanks, we have used the term “estimate” to be consistent.

The basic methods used are those already used for the worldwide GBD 2013 exercise, which are generally satisfactory. Unfortunately, as with much GBD work, the globally recognised International Classification of Diseases (ICD) coding system is not used to characterise disease entities, and this is a weakness of the paper, making direct comparisons with other material difficult.

Response: We have sited GBD works in the method section for readers to consider GBD hierarchical classifications

Here the GBD 2013 estimates for Ethiopia are taken in isolation, but there is no discussion of possible problems associated with this approach. GBD methods in principle "borrow" characteristics of adjoining territories where in-country data are scarce, and this is a potential concern for Ethiopia, which happens to be surrounded by a number of territories with poorly-performing health systems. Is it possible to quantify - or exclude - any such effects? Is it possible to re-run the GBD 2013 model for Ethiopia only (i.e. using only in-country source data)?

Response: The authors would like to thank for this comment. First GBD modelling is getting strength not only from region, but also from supper region that is whole Sub-Sahara Africa, and in the supper region we have good data including VA and VR. Second we are using covariates (around 80 for 1990-2015 and all countries) then these are very helpful for GBD 2015 estimation.

Figure 4 should say "Alzheimer's" and not "Alzheimer" (and line 163)
Response: we have avoided this table because it is less important because of the first author to include more important results.

Figure 5 "standardized" is mis-spelt. The legend to figure 5 is unclear - what are the numbers on the left-hand side?
Response: we have modified this figure, instead we included figure 6

What is the meaning of the footnotes to Figs 4 and 5 about excluding HIV/AIDS, and why?

Response: the level and trend of HIV/AIDS between the two data points 1990 and 2015 is not meaningful, we have included figure 7 to show the pattern over the years.