Author’s response to reviews

Title: Mortality associated with alternative primary health care policies: a nationwide microsimulation modelling study in Brazil

Authors:

Davide Rasella (davide.rasella@gmail.com)
Thomas Hone (thomas.hone12@imperial.ac.uk)
Luis Eugenio de Souza (luiseugenio@ufba.br)
Renato Tasca (tascar@paho.org)
Sanjay Basu (basus@stanford.edu)
Christopher Millett (c.millett@imperial.ac.uk)

Version: 2 Date: 26 Mar 2019

Author’s response to reviews:

Editorial comments:

Please find attached a rough plot combining the 3 separate plots in Figure 2 that reviewer kindly provided. Please do consider reviewer’s suggestion regarding Figure 2. I believe that, a single plot or separate plots with comparable scaling would be more valuable.

A: As suggested by the reviewer we have combined all plots of Figure 2 in a unique plot.

Reviewer reports:

Reviewer #1:

1) Most specific points raised by reviewers have been addressed in the revised manuscript. The sentence added in lines 121-123 needs to be revised for grammar (suggestion in GREEN below):

Despite that

122 the list of ACSC was originally created for hospitalizations, it has been used in mortality studies

123 16,17 because it is preferred to amenable mortality lists not specific of to the Brazilian context.
2) I continue to question the value of separating the 3 disease category outcomes plotted in Figure 2. In the text, the message from these plotted results is that the trend is different for the different diseases, and specifically, the relative difference between the scenario outcomes in 2030 is very different (over 100% for nutritional deficiency and about 20% for infectious diseases compared with the overall and cvd relative 8% difference). Generally, exploding plots of outcomes at scales that are less well predicted by a model reveals artefacts of the model (e.g. greater uncertainty or rounding artefacts associated with small numbers). So the question for me would be whether the qualitative differences revealed in the separated plots are real or important to the study. If so, they could be (and should be) explained. For example, why does the static ESF nutritional disease mortality rate decline instead of peaking in 2020 as the other disease categories do? If only the 2030 comparison of % difference from static ESF is important to the message, then this can actually be seen in a combined plot, where the relative and absolute difference can be viewed in perspective. I am attaching a rough combined plot which I created in Excel (inferring data points from your plots). If the separate plots with different display scales highlight important differences in the impact of the scenarios, I think that there should be more explanation in the text (which parameters explain these important difference?).

A: We thank the reviewer to have reproduced an unified plot, and we accept the editor and reviewer`s suggestion. We have unified the three plots of Figure 2 in a joint figure in the main text. For sake of clarity, we have left the old version of Figure 2, with the three separate plots in different scales, in the supplementary appendix at page 5, in order to show how the different estimated effects of ESF for each disease were producing different mortality ratios between scenarios.

The differences in the mortality ratios between scenarios (over 100% for nutritional deficiency and about 20% for infectious diseases compared with the overall and cvd relative 8% difference) are mainly explained by the different effects that ESF has on these diseases (as shown in Table A of the supplementary appendix): 52% reduction for nutritional deficiencies, 21% reduction for infectious diseases and 15% for cardiovascular diseases. As explained in the methods section, all these values have been estimated in the retrospective impact evaluation of reference (1). They are important - according to us - to show which causes will be most affected by different policy options.

In order to better explain this in the text, we have added at line 195:”Specifically, these were mortality from nutritional deficiencies and anaemia, infectious diseases, and cardiovascular diseases, which were strongly associated with changes in ESF coverage, with a full municipal coverage responsible for mortality reductions of 52%, 21% and 15% respectively.(17) “, and at line 256:” Compared to constant ESF coverage, the ACSC mortality rates in 2030 under decreasing ESF coverage and MMP termination (scenario 3) would be 111.5% (95%CI:101.3%-122.1%), 18.4% (95%CI:16.2%-20.7%), and 8.30% (95%CI: 6.38%-10.21%) higher for nutritional deficiencies and anaemia, infectious diseases, and cardiovascular disease respectively, due to the different ESF effectiveness on these diseases (supplementary appendix)”