Response to Reviewers

When submitting your revision, we need you to address these additional requirements.

1. Please ensure that your manuscript meets PLOS ONE's style requirements, including those for file naming.

2. In your Data Availability statement, you have not specified where the minimal data set underlying the results described in your manuscript can be found. PLOS defines a study's minimal data set as the underlying data used to reach the conclusions drawn in the manuscript and any additional data required to replicate the reported study findings in their entirety. All PLOS journals require that the minimal data set be made fully available. For more information about our data policy, please see http://journals.plos.org/plosone/s/data-availability.

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We will update your Data Availability statement to reflect the information you provide in your cover letter.

Review Comments to the Author

Reviewer #1: The authors of this study investigated the health and economic burden of insufficient physical activity in Saudi Arabia, a country located in the Middle East region where most of the countries located in this region suffer from this public health issue. The study also benefits from a projection of the findings to 2040 and the expected burden is estimated in three scenarios of baseline, intervention, and ideal which could be interesting for future public health policy making in this country. Overall, the study benefits from a robust design and statistical analysis, and the manuscript is well drafted. However, some parts of the manuscript need some revisions to enhance the quality of material, with most of the comments on the methods section. Below, please find my comments and suggestions in this regard.

1. Methods: the two major parts of the methods section including “Estimating Avoidable Health Loss” and “Estimating Economic Impact” which are the most important parts of this paper are drafted inadequately in description and authors only mentioned they have used previously developed methods. Specifically, the last part on the economic burden estimation is too incomplete and need further expansion to make this research a valid and reliable one. In this regard, the incorporated models to estimate the economic burden should be fully elaborated in this section.

2. Methods: the references for the pooled and used relative risks (RRs) to calculate the PAFs is not mentioned in this section which needs a revision to make everything is clear. Also, adding a table as a supplementary and providing the values of used RRs in this study is essential.

3. Results: the presented section on findings lack appropriate tables including the estimated numbers of health and economic burden in different stratifications of population characteristics and according to the four health conditions. Therefore, enriching this section with informative tables is highly needed.

4. Limitations: one of the limitations which is not mentioned in the last part of the discussion is that authors have made their selection of the four conditions with highest burden linked to insufficient physical activity based on the GBD estimations and this could be biased as they secondarily use another data. So, mentioning this issue is highly suggested.

Reviewer #2:

1- Be consistent in using abbreviations. You should define abbreviations in their first use. Moreover, if you have defined any abbreviations, you should only use them instead of full terms (e.g., you used PA and “physical activity” many times interchangeably)

2- In the last paragraph of introduction, you should use present or future verbs. This should explain the main aim of your study.

3- Add your study strengths prior to the limitations section.

4- Revise the whole manuscript for typos and grammatical errors.