Reviewer’s report

Title: Evidence on the magnitude of the economic, health and population effects of palm cooking oil consumption: An integrated modelling approach with Thailand as a case study

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Reviewer: Tazeen Jafar

Reviewer's report:

Keogh-Brown et al report an integrated complex modelling exercise in Thailand to determine the health and economic impact of substituting palm oil using demographic, nutrition, and health surveys. The approach is interesting as it aims to combine macroeconomic model of change in nutrition to change in lipids to individuals within the household levels, and effect on adverse clinical outcomes (MI, stroke, and related deaths) over 20 years. Direct costs of hospitalizations, patients' time out of work and caregiver time are projected.

Overall, the approach is interesting. The authors acknowledge the limitation that it lacks practical application as no "method" and related costs for the substitution of palm oil were accounted for. Thus, how much of their results can actually be translated remains unknown, and the work is a purely academic exercise, which is OK. It may stimulate a discussion on controlling palm oil production which continues to increase in many Southeast Asian LMICs.

However, I have the following concerns:

1. First, in terms of a comprehensive model accounting for the macroeconomic effects of labor, one would assume that the full market effect of palm oil on national economy (GDP) of Thailand would be accounted for. Clearly this is not the case in the study as it does not account for reduced production (and thus any potential effect on export/trade deficits). This needs to be discussed under limitations of a "comprehensive model".

2. Please provide details of the simulations done for each of the sub- models. How many times were the data replicated?

3. Please label the units table 1. Please report 95% CI for the estimates from the simulation results. What is meant by "cooking oil burden" in table 1? What do the numbers in column 2 reflect? Please clarify.
4. For Fig B1 (dynamic trajectory total disease burden) in appendix- provide 95% CI, and include in the main paper. Clarify "Change in real consumption (of what?)" Label the y-axis, provide units.

5. How were economic effects of MI/stroke computed? How is the figure US 70billion (line 367) arrived at? Was 308m potential saving over 20 years from palm oil substitution for other oils based on direct cost of hospitalization? Include detailed description of the economic modelling (assumptions) in the appendix.

6. Introduction is too long, please shorten by at least 50%.

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Please indicate the quality of language in the manuscript:

Acceptable

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