

Review of: "Causality Analysis for Non-Communicable Diseases, Obesity, and Health Expenditure: Toda Yamamoto Approach"

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Potential competing interests: No potential competing interests to declare.

The major finding of this study is that there are causal relationships linking obesity to the disease burden of non-communicable diseases and to health expenditures. In addition, the burden on NCD disease contributes to healthcare expenditures. This is already known but (as to my knowledge) has not been addressed by detailed modeling.

Overall, this study has value.

I just want add three points to be considered.

Since BMI is a crude measure of the nutritional state and thus a BMI > 30 kg/m² includes two groups of healthy and unhealthy subjects, this limits the present calculations. Thus, the authors should at least discuss whether a health-related BMI-phenotype (characterized by either VAT or liver fat) may affect the results of their modeling approach.

In addition, the association between BMI and mortality is not linear over the range of BMI. Thus, I would suggest to repeat the calculations for different BMI groups, i.e., BMI of 30-35, 35-40 and >40 kg/m².

Discussion, the authors should avoid to refer to possible determinants of either obesity or NCD (like PA and diet) since these variables have not been included in their model.