Reviewer's report:


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Reviewer: Chaoyang Li

This is an excellent study, in which the researchers examined the county level changes in the prevalence of physical activity and obesity using data from the Behavioral Risk Factor Surveillance System (BRFSS). One of the major strengths is that they used measured weight and height data from the National Health and Nutrition Examination Survey to adjust BRFSS data for self-reporting bias in height and weight. This paper is well written. The methods are appropriate and well described.

There are no suggestions for major compulsory revisions. The following are suggestions for minor essential revisions or discretionary revisions:

Abstract

1. Please consider changing “a state based random-digit telephone survey that covered all United States counties” to “a state based random-digit telephone survey” or “a state based random-digit telephone survey that covered the majority of United States counties.”

2. Please consider changing “a nationally representative sample” to “a nationally representative sample of the U.S. civilian non-institutionalized population.”

3. The conclusion, “but a reduction in caloric intake is needed to curb the obesity epidemic and its burden” does not seem to be well supported by the results of this study. A modification on this sentence is recommended.

Methods

4. Please consider modifying the sentence “The NHANES is a nationally representative cross-sectional survey of self-reported health and an extensive array of biomarkers” to summarize the NHANES survey and its contents more accurately and precisely. Please refer the following website: http://www.cdc.gov/nchs/nhanes/about_nhanes.htm#intro

5. It may be more informative to assess the change in average body mass index (BMI), in addition to obesity prevalence.

Results

6. It might be more informative to report the change in average BMI over time.
among persons who had normal weight (BMI<25 kg/m²), who were overweight (BMI 25-29 kg/m²), or who were obese (BMI>30 kg/m²) in addition to obesity prevalence. Please consider adding this information to Figure 6.

Discussion

7. Since this is an ecological study, two additional limitations may be discussed. First, ecological design may not enable ones to a causal inference for the observed associations. Second, ecological fallacy may exist; thus it may explain in part the discrepancy in the association of physical activity and obesity between population data and individual data.

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

None to all questions listed above.