Author’s response to reviews

Title: Energy Balance-Related Factors Associating with Adolescent Weight Loss Intent: Evidence from the 2017 National Youth Risk Behavior Survey

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Author’s response to reviews:

Reviewer reports:

Leandro dos Santos (Reviewer 1):

Major review points:

Q1. The thematic is relevant in the context of public health, however, I have concerns about the analysis model and the form as results were reported. This is a cross-sectional study and one of the relevant aspects in the interpretation of the results is the reverse causality bias, which makes it impossible to determine the causal relationship between exposures and outcome.

In view of this, I would like to reflect on the outcome "intention to lose weight", I believe that the variable fits more as an exposure factor than the main outcome. Taking, for example, the relationship between the intention to lose weight and the weekly consumption of salads, in this study, people who eat salads one or more times a week were more likely to be trying to lose weight. Considering the potential causality between these variables, it is plausible to believe that the subjects who intend to lose weight increased the consumption of salads and not the opposite. That is, the intention to lose weight is that it models the consumption of salads. The same may be true for the other variables. Maintaining the current outcome is not incorrect, but the results and conclusions should be cautious and consider such notes.

-Thank you. I now reiterate throughout the Discussion that these observed relationships are merely associations, not causal pathways (lines 224-226). I also agree with this Reviewer’s comment and is why there was a comment in the Discussion regarding the possible reverse direction of causality. This comment has now been expanded upon (lines 310-314).
Q2. For data analysis, it was used the binary logistic regression, with dichotomous categories for all variables. However, I believe the language and manner of reporting findings and conclusions could be reviewed.

Taking, for example, the conclusions described in the abstract:

Pag. 2, lin. 48 - 50 "There was an inverse association between physical activity and breakfast consumption with weight loss intent but a direct association between video game playing and salad consumption with weight loss intent in a representative sample of adolescents."

As the findings are reported, they denote a dose-response relationship that was not tested in the study because it would be necessary for the independent variables to be polyatomic and/or continuous to infer the magnitude of potential causal relationships. My suggestion is that the results and discussion be reviewed and focus on probabilities rather than inferences about potential causalities.

-Thank you. The language used to communicate the observed relationships has been revised throughout the paper.

Minor review points:

Q1. In the abstract, it would be important to present in the methodology section a usual term for study design (e.g. cross-sectional study), as well, to present the mean age values of the sample to facilitate understanding of the study design and population.

-Thank you, this information is now presented in the Abstract (lines 34-35, 38).

Q2. In the introduction section, the author provides pertinent information about obesity, the importance of multidisciplinary interventions and the lack of information on the subject, however, I missed the background of the behaviors that will be studied, their prevalence in this population and their influence on them in health and adulthood.

-Thank you, this information is now provided in the Introduction section (lines 78-83).

Q3. In the methods, it would be important to bring more detail about the variable breakfast consumption, as it was obtained and categorized, considering that it is presented in the results and in the discussion.

-Thank you, this information is now presented in the Methods section (line 155).
Michele Nicolo (Reviewer 2):

Methods:

Line 139 and 141: written as Q69 the as Q 89

-Thank you, change made in the Methods section (line 143).

Line 163: stated missing data was not imputed. Suggest adding reason why such as data not missing at random/completely at random

-Thank you, an explanation is now provided in the Methods section (lines 166-168).

1. Used BMI percentile and not BMI z-score what was the rationale?

-Thank you, this information is now communicated in the Methods section (line 176-177).

2. Consider justifying which questions on the survey were targeted to measure healthy versus unhealthy food intake.

- All dietary questions were used to determine health food intake. This has now been indicated in the Methods section (line 161).

Results:

Lines 192-197: This section was confusing having results of lower and high odds for many covariates in one sentence. Consider separating to sex and BMI then ethnicity and race as a separate sentence.

-Thank you, revisions to this sentence were made in the Results section (lines 199-204).

Discussion section:

1. The strengths of the study are not addressed.
-Thank you. Strengths of this study are now communicated in the Discussion section (lines 306-308).

2. In the sentence for limitations "before results can be generalized" is not appropriate since this is a cross-sectional study measuring specific population at one point in time, however, may be important to follow-up with a longitudinal study.

-Thank you, this sentence has been modified in the Discussion section (line 308).

3. Suggest avoiding use of "directly associated" terminology and consider for this sample to be more or less likely compared to the referent group

-Thank you. I rephrased the associations throughout the manuscript.