Reviewer’s report

Title: Regional and socioeconomic variations in dietary patterns in a representative sample of young Polish females: a cross-sectional study (GEBaHealth Project)

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Reviewer: Jana Strahler

Reviewer's report:

The present paper by Czarnocinska and colleagues presents data from the Girls Eating Behaviours and Health project. The authors aimed at analyzing differences in DPs adherence related to country regions and family socioeconomic status (SES) among young Polish females n=1107, 13-21yrs. Analyses showed differences in dietary patterns between six regions ranging from less to more wealthy, a categorical family SES composite measure was also related to dietary patterns. This article provided evidence for the importance of region-specific analysis of health behaviors within a single country. Overall a very worthy topic and attention to healthy diet pursuits and predictors. I have some concerns and suggestions, detailed below:

Abstract:

- 4/5 -&gt; do you mean 4 out of 5?
- "highlighting more discrepancies than the sole analysis of family SES." -&gt; I do not understand this sentence. Discrepancy of what? Given the statistical procedure could we really conclude this (separate models, no interaction analysis)?
- "shifting the resources to the regions at higher risk" -&gt; unclear what high risk regions are, high risk for what? (same applies to Line 312, 317)

Introduction:

- Rationale needs further development in the introduction and more clarity about what this study adds to the literature. I there any knowledge on whether and how changes in dietary patterns relate to health outcomes in those regions? Engage more with the theories introduced in more depth as well as how these interplay with health - this needs further clarity and development.
- The rationale for moderators is not sufficiently developed. Why age and BMI?

Method
Looking at the single factors that constitute the SES index, I am unsure about the theoretical sense: 2 items reflect objective measures (parental education) while the other two reflect subjective evaluations (economic status as compared to some average, description of household from living poorly to living very well). There is convincing evidence that objective and subjective status measures contribute differently to health (behaviors) and should be assessed as such. Conflating of related but distinct constructs into one predictor needs to be addressed.

Findings of the Kolmogorov test have not been stated - were they skewed, how was this managed?

In this age group, age and BMI should correlate strongly (and BMI categories were created based on age). So, should the models really include both variables as moderators?

Please provide more details on the logistic regression (binary dummy coding?) in the statistic section. Were z-scores used to standardize?

Results/Discussion

From the introduction and objectives, I was expecting some kind of comparison between the regional and individual SES levels approach. Could we expect an interaction of these two? To my understanding, this could be an important addition to the literature, i.e. 1. What is more important, regional or family SES (not sure whether a descriptive comparison based on variables with different scaling is valid)? and 2. Is family SES only of importance in some regions?

The project only included girls/women so findings can only be generalized on this gender. Can we expect the same in boys/men? Please add this discussion.

Line 288 "In Poland, the price and accessibility still appear to be one of the crucial factors determining eating choices, and it can be assumed that the cultural background was only of mild importance." -&gt; is this concluded from the present analysis? SES and culture are distinct concepts and both have different importance for lifestyle behaviors. Please adapt.

Line 302 "... and the associations with health status remain unclear." -&gt; The project offers data on perceived health and BMI, both two important health outcome measures. To my understanding, this project could at least partially answer this question (cross-sectionally).

From the previous publications from this data set (n=6 in Pubmed), there is knowledge about important confounders of dietary patterns. Some of them also relate to socio-economic status (health attitude, health concerns, health orientation). Do those
previously analyzed variables actually correlate with SES and need to be considered herein?

Tables

- Table 2 is pretty busy and presents both composite measure data (SES) and single measures (but incoherently also the excluded item on "place of residence" but not "number of children"). I suggest to present only the variables under (statistical) study.

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