Reviewer's report

Title: Family structure and breakfast consumption of 11-15 year old boys and girls in Scotland, 1994-2010: a repeated cross-sectional study

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Reviewer: Bisakha Sen

Reviewer's report:

The paper explores the association between family structure and breakfast consumption of adolescents in Scotland, using HBSC data from 1994-2010. This is a high quality dataset, and the authors provide a nice literature review of past literature. They are also upfront about limitations of the data, particularly since survey questions changed between one survey to another.

I see two major limitations in the paper which should be addressed before it can be recommended for publication. I also have one major recommendation that may benefit readers.

Major Limitations & Recommendations

1) The authors need to better emphasize their primary contributions -- the way I see it, these contributions include looking at family structures that go beyond "two parent family versus not", as well as exploring how the relationship between family structure and breakfast has changed over time. The statistical analyses should be reconfigured to better emphasize one of the main contributions of this work -- namely, how the relationship between family structure and breakfast has changed over time.

2) I fail to understand why the authors take the rich information on frequency of breakfast consumption over the week, and reduce it down to the simplistic logistic 'have breakfast every day versus not'......I do not find this to be appropriate. Why treat children who never have breakfast and those who have breakfast 6 days a week (though not 7) exactly in the same way ? The loss of variation in the outcome variable from this approach weakens the statistical model. The logistic model also suffers from additional problems of interpretation of coefficient estimates (especially where interactions are concerned), and is simply not appropriate for this type of analysis. I strongly advise the authors to keep the full variation of frequency of breakfast consumption that is available in their data, and consider methods like OLS ....which offers greater flexibility, and greater ease of interpretation of the 'trends' over time. It would probably be easier to address my first comment ....placing greater emphasis in the 'over-time' changes in association between family structure and breakfast -- using an OLS model.

3) Recommendation: The authors use models both with 'fixed effects' and 'random effects'. These terms mean very different things in the different
disciplines that contribute to public health (I personally am familiar with how they are defined by health economists). It would be beneficial to interdisciplinary readers if the authors clearly laid out what 'fixed effects' and 'random effects' mean in their models (they can continue to use them even after switching to OLS), how the two models differ, and how the interpretation of coefficients may change when one is used versus the other.

Other (minor) suggestion:
1) Are there no information on other family characteristics like income, parental education or employment? Being able to control for even some of these in the model would help alleviate the concern that family structure is purely a proxy for SES, and may make the results more interesting.

2) It was not clear to me whether the data allowed identification of where the adolescent had breakfast -- at home or at school or elsewhere. If that information was available, it would be useful to at least include it in the descriptive statistics, to see whether there were differences by family structure and over time in where the teens ate breakfast.

**Level of interest:** An article of importance 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:**

I declare that I have no competing interests