Reviewer's report

Title: Tracking of eating patterns and overweight - a follow-up study of Norwegian school children from middle childhood to early adolescence

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Reviewer: Elisabeth Kvaavik

Reviewer's report:

Comments to authors

The study is aiming at describing eating patterns in early adolescence, to examine whether these eating patterns track from middle childhood to early adolescence and to examine the longitudinal relationship between changes in eating patterns and overweight using a sample of Norwegian youths 9 to 10 years old at baseline and 12 to 13 years old at follow-up. Most studies investigating diet in childhood and the relation between diet and body weight have explored the association between single food items or nutrients and body weight, few have investigated a potential relationship between food or eating patterns and body weight, as the current study does. Using longitudinal data to investigate the association between complex diets and overweight in children is warranted. The current study looks into an important topic, is well written and uses appropriate methods to explore the associations in question. However, there are some points that are not completely clear which the authors should go through and make necessary changes.

Major Compulsory Revisions

Statistical analysis (should be changed to Statistical analyses)

1) Fourth paragraph: Please argue in favour for using Cohen’s kappa (#) instead of percent agreement in the tracking analyses. Percent agreement might be as appropriate to use as # as # is considered a particularly conservative measure of agreement.

2) Fifth and sixth paragraphs: Logistic and linear regression has been used to examine association between eating patterns and body weight. Linear regression is used to examine changes in eating patterns as dependent upon changes in BMI categories between baseline and follow up, while in the logistic regression overweight was included as the dependent variable. It might be appropriate to use different approaches to examine the associations between eating patterns and overweight, but it is difficult to see the unique contributions of the different approaches used herein, and therefore a rationale or explanation for why the different approaches has been used should be added. The third aim of the study; to examine the longitudinal relationship between changes in eating patterns and overweight, opens for a variety of approaches as it is not very specific, but as it is the long term relation between diet and overweight that is investigated, the
cross-sectional analyses presented in table 4 might be omitted from the manuscript.

3) Sixth paragraph: Examining the associations between long term changes in diet and changes in weight is appropriately, but the absolute levels of dietary scores should be taken into account - it is unclear whether this has been done.

Results

4) Fourth and fifth paragraphs: The way of presenting percent of girls and boys with height and weight measures and becoming overweight, is confusing. For instance; of the 91% 4th graders with height and weight measurements, 50 % were boys and 50 % were girls, but how does this relate to the 100 % sample? Please find another way to present these numbers making the results more readable.

5) Sixth paragraph (and Table 3): Table 3 shows the associations between eating patterns scores and potential confounders. The table can very well be omitted from the manuscript as the associations between confounders and variables have been offered too much space in the manuscript.

Discussion

6) Generally, the discussion should be shortened as it is rather long. First, second and partly third paragraph restate the findings – shortening of this reiteration would strengthen the discussion. Also, in the comparison with other studies, the discussion is somewhat detailed, for instance in the middle of third paragraph where tracking of dietary habits is discussed, and could preferably been shortened and sharpened.

7) Fifth paragraph discuss confounders presented in table 3. As this is not an objective of the study, this section could be omitted or considerably abridged.

8) In the ninth (second last) paragraph, strengths and weaknesses of the study are discussed, however, they do not appear in a well-organized manner, but rather mixed. They should be presented ordered, for instance with strengths before the weaknesses.

Minor Essential Revisions

Abstract

9) In the background-section of the abstract one can read “The aim of this study was to track eating patterns from middle childhood (9 to 10 years old) to early adolescence (12 to 13 years old), and to examine the longitudinal relationship between changes in eating patterns and overweight.” The study examines whether the identified eating patterns tracks over time, the aim of the study is not to track the eating patterns. The authors should correct this here and elsewhere in the manuscript.

10) Please also make clear that the first part of the results is about tracking.

Abstract, Results

11) The first two sentences reads; “Four distinct, comparable eating patterns
were identified, at both time points. Correlation coefficients for the factor scores of corresponding eating patterns ranged from 0.44 to 0.60.” It is, however, not completely clear what the first sentence point at with “comparable” – is that comparable to each other at each point in time or to a corresponding pattern at the other point in time? “Baseline” and “follow up” should be added to the second sentence, to make it clear that the correlation coefficients are for corresponding patterns between the two waves, if that is the case.

12) The sentence “Children with high “dieting” pattern scores and low “varied Norwegian” pattern scores in the 7th grade had an increased risk of being overweight.” lacks a comparator, please add: “compared to….”.

13) It should be mentioned which adjustments that have been done.

Background

14) First paragraph, last sentence: the meaning of the sentence is difficult to understand. Please re-write the sentence, especially the last part; “...(PCA), which groups correlated food variables and thereby identifies the underlying dimensions in the data that account for the largest variation in overall diet between individuals [12].”

15) The second last paragraph of the Background section is not quite clear; does it mean that the associations between dietary factors and overweight was modified (statistical interaction) by parental factors, or that parents of overweight children changed the children’s diet? Please make the sentence unambiguous.

Methods, Subjects and study design

16) Last part of first paragraph, about the sample: The last sentence states that the sample represented about half of the county’s 4th and 7th grade pupils at the respective time points, but the numbers (1045 and 1095, respectively) constitute about 2/3 of the invited pupils, and all 4th and 7th grades pupils in Telemark County were invited. Please correct these numbers or statements.

Methods, Dietary information

17) Third last sentence of the Dietary information section reads; “Meal patterns were registered as the daily frequencies of five main meals (breakfast, lunch, afternoon meal, dinner, supper), with alternatives ranging from “rarely/never” to “daily”.” The number of response alternatives (8?) followed by “response” should be added between “with” and “alternatives”.

Methods, Other variables

18) First sentence, first paragraph: “In addition to providing dietary information, the parents answered several questions about their own weight, height, educational level and work situation, and family income.” If the parents answered one question about each variable, the word “several” should be deleted.

19) Fourth paragraph: More details about the measure of the children’s physical activity level would improve the understanding.
20) Third line: please insert space between 100 and g, and delete “The” in front of “BMI”
21) Fourth line: Please change “…the measurements” to “…these measurements.”
22) Seventh line: Please add “years” between 18 and [27-28].

Discussion
23) Eighth paragraph, first sentence refer to one study while the last words of the sentence are “in a number of studies”. Please delete these words.

Tables
24) Table 3: The manuscript may improve if this table is omitted.
25) Table 4: Adding “Cross-sectional” as the first word in the title would make it completely clear what kind of analyses that are presented. Alternatively, the heading of first column can be changed to “Eating pattern in 7th grade (n)”. The total N can be added in the table’s title. The second column can be deleted and the numbers inserted in a parenthesis in the first column, after Tertile 1, Tertile 2 etc. In third column, the percentage should be placed in a parenthesis.
26) Table 5: Third column should be deleted and the percentages added, in parentheses, to the second column.
27) Table 6: Please see under Table 4 above.

Discretionary Revisions

Methods, Subjects and study design
28) Last paragraph: The one sentence that constitutes this paragraph (“The research protocol was approved by the Regional Committee for Ethics in Medical Research and the Norwegian Data Inspectorate, and informed written consent was obtained from the parents of all participating children in both 2007 and 2010.”) can profitably be made to two sentences by deleting the word “and” that follows after The Norwegian Data inspectorate, and adding full stop.

Methods, Dietary information
29) Second sentence; “The exact same FFQ was used at both time points.” can profitably be re-phrased to: “Identical FFQs were used at both time points.”

Methods, Other variables
30) Third paragraph: The word “also” should be deleted.

Results
31) When referring to the tables, it is not necessary to include “Model x” in the parentheses.

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.