Author's response to reviews

Title: Differences in school environment, school policy and actions regarding overweight prevention between Dutch schools. A nationwide survey.

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Author's response to reviews:

Dear Editor,

Please find enclosed a revision of our manuscript (MS: 1582971803265230) entitled: “Differences in school environment, school policy and actions regarding overweight prevention between Dutch schools. A nationwide survey.”

Attached you will find a point-by-point response to the excellent comments we received from your reviewers and we think the manuscript has greatly benefited from them. We apologize for the weak English writing. The revised manuscript with and without highlighted changes has been uploaded. We hope the manuscript is now suitable for publication, and we look forward to your response.

Sincerely,

Salome Scholtens

Reviewer 1 (Norman J Temple):

This study provides an interesting picture of factors associated with the prevalence of obesity in Dutch schools. However the paper would be much improved by having it edited by someone more skilled than the authors at writing good English and also by deleting the excessive amounts of data. In particular, Tables 2, 3, 4 and 5 have much too much data. The authors should bear in mind that “less is more”. It would be better to highlight the key points in a few sentences in the text.

Here are specific comments:

P 4, line 5, the word “monitor” does not seem correct. At the top of the next page it says: “This study was performed within the scope of a national survey on the prevention of Overweight.” While “national survey” is appropriate, the next 5 words are not (a survey aims only to gather information, not to achieve a
change).

- This sentence was changed to: “This study was performed within the scope of a national survey on the current nutritional and physical environment at Dutch secondary schools” (Methods, page 5, line 48).

P 6, line 5, this should be “lunch breaks” (cars have brakes)
P8, last line, the correct term is “basketball field”
- These corrections were made in the revised manuscript.

P8, line 6, there is no such word as “missingness”
- “Missingness to” was replaced by “missing data on”.

The following sentence is on both pages 7 and 9: “All associations were adjusted for school size”. It can be deleted from p 9.
- The sentence was deleted from page 9.

The next sentence on p 9 is not clear. A better wording is: “Most associations were attenuated after adjustment for school size.”
- The sentence was rephrased.

Further down on p 9 the following sentence is confusing: “The vocational education schools indicated significantly less often than higher education schools that they thought that the students at their schools were less often overweight than the 12 to 18 year old children in the general population.”
- In the revised manuscript we rephrased the sentence to: “The schools reported whether they thought that the students at their school were more often or less often overweight than the 12 to 18 year old children in the general population. Compared to vocational education schools higher education schools indicated more often that the students at their schools were less often overweight than the 12 to 18 year old children in the general population.” (Results, page 10, line 164)

Bottom of p 9 this sentence needs revising: “Adjustment for school size did not change the crude association to a large extent.” The word “association” should be plural. “to a large extent” is vague. This problem occurs again on p 11, line 3.
- These sentences are rephrased to: “Adjustment for school size did change the crude associations slightly, but did not affect our conclusions.” (Results, page 10, line 169; page 11 line 198).

P 10, line 6, The following sentence is not clear: “No differences between school levels were observed.” What stats does this refer to?
- No differences between school levels were observed with regard to a general health policy, a policy on healthy nutrition, or a policy on overweight prevention. In the revised manuscript we rephrased the sentence (Results, page 10, line 177).

P 13, half way down. The following sentence is unclear as regards meaning:
“The majority of the schools have taken some actions to stimulate healthy eating behaviour and to increase levels of physical activity, but only a couple of schools indicated that they had taken actions to prevent overweight.” Surely, healthy eating and physical activity are actions to prevent overweight.

• The question was whether the school had taken actions specifically aiming to 1) stimulate healthy eating behaviour, 2) increase levels of physical activity or 3) prevent overweight. We agree that improving eating behaviour and increase levels of physical activity may lead to the prevention of overweight. However, our aim was to identify the school’s rationale for the action. We showed that not many school took actions specifically aimed at the prevention of overweight (Table 5). In the revised manuscript we rephrased the sentence (Discussion, page 13, line 236).

P 15, 8 lines from bottom “dense” is spelled wrongly.
• This error has been corrected

Final sentence on p 16 is poorly written.
• This sentence was rephrased.

Table 1 states that the questionnaire included question on nutrition education, but no findings on this are given.
• The questions regarding the curriculum were not included in this study, due to space limitations and because in the Netherlands within a school level the curriculum is fairly similar between schools. In line 275 we state that: “The questions on the curriculum were not included in this study, because all students in the Netherlands have to pass the same final exam for graduation, dependent on the school level”. We added a footnote to Table 1 to clarify this.

In Table 2 give the data on questions only for total of all schools (but keep 4 sets of numbers on school size).

Table 3 can be much simplified. At a minimum the 2 columns on the right should be deleted. I would prefer to have only the first column (all schools). Key findings can then be stated in the text.

Table 4 has less of a problem of data overload than Table 3. However the final 2 columns can still be deleted.

Table 5 would also be much improved by deleting much of the data.
• We agree that the tables are large and contain a lot of data. However, since one of the research questions is to study the difference between school types we think that the results should be presented by school type. We have deleted Table 2, because most of the data was already presented in the text. The data on school size is now presented in the text (Results, page 8, line 125). To make the Tables 3 to 5 less crowded we have rounded off at one decimal. Also, in the revised manuscript Table 3 and Table 5 contain fewer variables. If the editor would prefer if the results of the regression analyses would be presented in the text, we could delete the two final columns of Table 3 to 5.
Reviewer 2 (Eva Grammatikaki):

This is a very interesting paper describing a great effort in the Netherlands to assess the potential effect of school environment on obesity epidemic, examine existence or lack of school policy and actions on overweight prevention. It is generally well-written and presents data in a coherent way, however some revisions to the points mentioned below would further improve it.

Major Compulsory Revisions

1) The study aims to present a nationally representative picture of the obesogenity of the school environment (Introduction section). However, the authors have not presented the level of representativeness they have chosen and whether the final sample was actually representative. For example, if school type was the designated level of representativeness, they could add a comment in the results section (Reasons for non-response and study characteristics) on whether the presence of the different types of schools in the study is similar to that in the whole country.

• 44% of the secondary schools in the Netherlands participated in our study. With ‘schools’ we meant ‘school sites’ (Methods, page 5, line 57). In the Netherlands, the majority of the secondary schools consist of different sites. At the time of the survey there were 577 secondary schools consisting of 1250 school sites. Therefore it is likely that on a school level the response rate was higher than 44% at school site level.

Because data on the educational level of the schools was collected by the questionnaire (Methods, page 5, line 59) we could not analyze whether the prevalence of the school levels in our study was representative for the whole country. However, the percentage vocational education schools, mixed schools, and higher education schools in our study looked representative.

To assess the representativeness, we did a non-response analysis. The non-response card contained five additional questions beside the question on the reason for non-response. For instance, we asked whether there was a soft drink vending machine or a vending machine containing sweets and candy bars present at school, and whether the school had a policy on overweight prevention. The prevalence of the presence of a soft drink vending machine or a vending machine containing sweets and candy bars at school did not differ between the schools that completed the questionnaire and schools that only returned the non-response card. In both groups, 88% of the schools reported that there was a soft drink vending machine present at school and about 76% of the schools reported that there was a vending machine containing sweets and candy bars. Of the schools that completed the questionnaire 14% had a policy on overweight prevention compared to 31% of the schools that only complete the non-response card.

Based on these findings we concluded that our study population was representative for the whole country. We included these findings in the revised version of our manuscript (results, page 8, line 116).
2) I noticed that although in table 5, almost 15% of schools had placed a water cooler as part of the actions taken to stimulate healthy eating behaviour, only 10% of schools reported having water coolers at school. Does this mean that the actions taken by the schools were not necessarily in progress at the time of data collection? What was the time span that the questions referred to? Please clarify this in the text.

• The percentage of schools that says to have placed water coolers could differ from the percentage of schools that report to have water coolers at school, because the schools might still be in the process of placing the water coolers. The questions in the survey asked about the current situation. The other reviewers asked us to make the tables smaller. Therefore, the revised manuscript contains fewer variables and the questions on water coolers are no longer shown.

Minor Essential Revisions
1) Page 6, paragraph 1, line 4: please change “brakes” to “breaks”
2) Page 8, School environment section, line 4: change to “students regularly go”
3) Page 14, paragraph 2, lines 5 and 6: change “vocation” to “vocational”
4) Page 15, paragraph 2, line 6: change “energy dens” to “energy dense”
5) Page 17, lines 8 and 9: change “vocation” to “vocational”
6) Table 1: Correct sentence to “how many hours of physical activity education do the children receive per week?”
7) Table 1: Correct sentence to “Did your school participate in one of the following national projects in the last two years?”
8) Table 5: please change “brakes” to “breaks”
• We apologize for the weak English and corrected the errors

Reviewer 3 (Karin Bammann):

Major Compulsory Revisions
1) Page 6, (45 outcome variables): In general, it does not seem to be a good idea to declare such a huge number of outcome variables. If this is left like this, multiple testing becomes an issue and should be discussed. Alternatively, descriptive statistics could be presented for most of the variables and a lower number (e.g. a score) should be used for statistical testing.
• In the revised manuscript the number of variables is reduced to 28 variables (Table 3: 8 variables; Table 4: 6 variables; Table 5: 14 variables).

2) To use higher education schools as reference category is not appropriate since this is a very small group and statistical power is diminished. Instead, mixed schools or vocational education schools should be used.
• We were in particular interested in the difference between the vocational
education schools and the higher education schools, therefore we did not use mixed schools as a reference. Using lower education schools as reference category did not change our conclusions.

3) Page 8, School environment, “where the student regularly go”. Was this part of the questionnaire or how is this information obtained? If this is just a guess, please provide evidence or delete from the text. And please correct into “students”.

- The question in the questionnaire was: “Which of the following services are within 1 km distance of the school and are being visited by the students regularly”. Answer options were among others: a fast food restaurant, a supermarket, a gas station, a park, a soccer field, etc. Whether the students regularly visited the services was a presumption of the person who filled in the questionnaire (in most cases the principal or manager of the school). In the revised manuscript “where the students regularly go” was deleted (Results, page 9, line142).

4) Adjustment for school size (cf. also pages 9, 11): School size is only used for adjustment but this variable is of interest on its own especially since it seems to be more influential than school type. Therefore, the results for school size should be presented. The same is true for other indicators (e.g. SES of district, male/female-ratio etc.) apart from school type, if available. Although it might be true that for obesity prevention no differential approach for school type is needed, it might be the case for other variables (like school size).

- Both school type and school size could be determinants of the obesogenity of the school environment. However, we were mainly interested in differences in school type, because school type might partly explain the higher overweight prevalence among subject with a low SES. Also, others have observed a higher overweight prevalence among students engaged in preparatory vocational education. (Introduction, page 3, line 25). Data on SES of district and male/female ratio were not available.

The associations between school size and the outcome variables were analyzed, because school size was considered an important confounder. The associations between school size and the outcome variables are reported in the last paragraph of the results section: ‘School size and municipal health services region’ (Results, page 11, line 205).

5) Table 2: Please give school size in categories as for example also presented in the text, page 11.

- In the revised manuscript Table 2 is deleted, to decrease the total number of Tables. The school size in categories is presented in the text (Results, page 8, line 127).

6) Why is the number of “Water cooler present at school” (table 3) lower than “The school placed water coolers” (table 5)?

- See reviewer 2, second question.
7) Page 13 “However, vocational education schools seemed to be more aware of the overweight problem than higher educational schools”. Please include in the discussion of this result the fact (stated in the introduction) that in vocational education schools the prevalence of overweight is higher than in other schools.

• In the Discussion section at page 16, line 313 we already included a reference to the finding that that in vocational education schools the prevalence of overweight is higher than in other schools: “Interestingly, the vocational education schools reported less often that overweight was less prevalent at their schools than among the children in the general population. This finding in accordance with the higher overweight rates observed among students following vocational education reported in Dutch studies. [10, 11]”. At page 13 we briefly summarized the main finding of our study. Therefore, we did not include a reference to the prevalence of overweight at vocational education schools.

8) Page 13/14 “The response of the questionnaire was good”. A response rate of 44% is not “good”, but low, and this is a clear flaw of the study. The discussion of the response rate is not sufficient. It is not a valid argument that “non-response bias is unlikely” simply because different school sizes, school levels and regions were represented. It is e.g. quite possible that school directors more interested in the topic would be more eager to participate than others. Another bias could be introduced by the different persons filling in the questionnaire. How e.g. do the food-related answers differ depending whether canteen personnel was involved in answering the questionnaire? Furthermore, it remains completely unclear whether school directors of vocational education schools should be more prone to give social desired answers than other school directors.

• At an individual level a response rate of 44% is not very high. However, in the Netherlands schools are often invited to participate in studies and/or to complete questionnaires. The main reason the schools mentioned for not participating in the study was that they could not participate in every study conducted in secondary schools (Results, page 8, line 113). Therefore, a response rate of 44% is rather high at a school level. We rephrased the paragraph on non-response bias and added a paragraph in the discussion section (Discussion, page 13, line 247).

In addition, the 44% participation rate was based on the level of ‘school site’. In our study, we meant ‘school site’ with ‘school’, because in the Netherlands, the majority of the secondary schools consist of different sites (Methods, page 5, line 57). At the time of the survey there were 577 secondary schools consisting of 1250 school sites. Therefore it is likely that on a school level the response rate was higher than 44% at school site level.

To assess the representativeness, we did a non-response analysis. The non-response card contained five additional questions beside the question on the reason for non-response. For instance, we asked whether there was a soft drink vending machine or a vending machine containing sweets and candy bars present at school, and whether the school had a policy on overweight prevention. The prevalence of the presence of a soft drink vending machine or a vending machine containing sweets and candy bars at school did not differ between the
schools that completed the questionnaire and schools that only returned the non-response card. In both groups, 88% of the schools reported that there was a soft drink vending machine present at school and about 76% of the schools reported that there was a vending machine containing sweets and candy bars. Of the schools that completed the questionnaire 14% had a policy on overweight prevention compared to 31% of the schools that only complete the non-response card.

Based on these findings we concluded that our study population was representative for the whole country. We included these findings in the revised version of our manuscript (results, page 8, line 116). Schools who were already interested in overweight prevention might have been less interested to participate, since the percentage of schools that had a policy on overweight prevention was lower among the schools that completed the questionnaire than the schools that only returned the non-response card.

9) Other issues on page 14: “The school level is not related to degree of urbanisation”. Is there any statistic available proving this?

• Since we did not have data on urbanisation we were not able to test this hypothesis. However, schools of difference school types are spread all over the Netherlands and are not bound to a specific region. Therefore we wrote “The school level is not related to degree of urbanisation”. In the revised manuscript we state that: “It is not likely that the differences between school levels could be explained by differences in degree of urbanisation, because we have no indication that schools of a certain school level are more prevalent in more or less urban regions.” (Discussion, page 14, line 271).

10) “it is likely that the curriculum differs between school levels”. Why is this not known, but has to be guessed? Are single schools in the Netherlands free to make their own curriculum and are there no state regulations on this? If yes, please state this fact.

• The major part of the school curriculum has been regulated by the government per school level. However, to some extent schools are free to define their curriculum. The curriculum differs with the school level. We delete “it is likely that”. (Discussion, page 15, line 277).

Minor Revisions:
11) “Breaks” are misspelled as “brakes” throughout the text, please correct.
12) Page 3, SES vs. “SES” (bottom of page), please chose uniform writing.
13) Page 5, second para “..first mail was sent to all secondary schools ..”, please add “of the Netherlands”
14) Page 7, last full stop is missing.
15) Page 10, line 3 “Sixty-five percent” please change into “65 %”.
16) Table 3, last row, please correct “there are there facilities”.
17) Table 3, please correct “..contains more unhealthy that healthy foods”
18) Table 3, please correct “The student are “
19) Please carefully revise all tables and text for spelling errors.
• We apologize for the weak English and corrected the errors

Discretionary revisions:

20) Readability would be enhanced for readers not familiar with the Dutch school system if school types would not change their names in the course of the text. e.g. page 3 “Preparatory vocational education” vs. “Vocational secondary education”.
• “Vocational secondary education” is replaced by “preparatory vocational education”

21) Page 8 “Reasons for non-response and study characteristics”: The sequence of these aspects is a bit unusual. I would suggest changing into “Study characteristics and reasons for non-response”. Also, paras 2 and 3 should be exchanged in this section because as it is now, the description moves from details to the broader picture.
• We changed the title and the order of the paragraph.

22) Page 16: In order to make a stronger point with the paper, I would shift the whole aspect on data on individual level before the statements on the important role that schools could play in overweight prevention. As it is, the paper ends with a rather minor aspect which does not give justice to the study.
• We rephrased the last paragraph of the discussion section. The paper ends with a conclusion.