Author's response to reviews

Title: School-based intervention on healthy behaviour among Ecuadorian adolescents: effect of a cluster-randomized controlled trial on screen-time.

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Author's response to reviews: see over
RESPONSE LETTER
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Title: School-based intervention on healthy behaviour among Ecuadorian adolescents: effect of a cluster-randomized controlled trial on screen-time.

Dear Editor,

Dear reviewer,

On behalf of all authors, I would like to thank the reviewers for their constructive comments that have helped us to improve our article. All comments and suggestions were addressed and the text was revised accordingly. Detailed responses to the reviewers’ comments are provided below. The original text fragments copied from the old version are in bold, while corrections and insertions are underlined.

Thank you for considering our revised work for publication in BMC Public Health.

Sincerely

Susana Andrade,
Leading author of the paper

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Reviewer #1

Minor essential revisions

1. **A research question is not clearly provided in the introduction. The methods are appropriate and described and the data appear sound.**

   **ANSWER:** We clarified the research questions as follows:

   The aim of the present manuscript was to investigate the effect of the “ACTIVITAL” intervention on adolescents’ television time, videogames time, computer time and total screen-time. In addition, given the differences in implementation focus, we investigated the effect on screen-time after each stage of the intervention. (Lines: 70-74)

2. **British spelling rather than American should be used throughout (e.g. randomised and not randomized; analyse and not analyse; minimise and not minimize; organised and not organized; programme not program).**

   **ANSWER:** We revised the manuscript in order to be consistent with the use of British English.

3. **Page 3, line 30: ‘….IN interventions improves…’ rather than ‘on interventions’**

   **ANSWER:** The mentioned sentence was eliminated since the conclusion of the abstract was modified. Please, refer to the question 2, reviewer #2.

4. **Page 6, line 92: missing a word at the end of the sentence (e.g. ‘….Planning and Evaluation TOOL...’)**

   **ANSWER:** The sentence was edited as follows:

   Comprehensive Participatory Planning and Evaluation approach [21]. (Line: 95)

5. **a) Page 9, line 172: missing a word ‘...using A crude model.’ b) The final sentence on this page does not make sense – what are ‘absolute risk ones?’ c) Page 10, line 179: what does ’31,6’ mean here? d) Line 191: missing word ‘...by means OF the creation....’ And later in the sentence ‘and equal TO 18 when...’**

   **ANSWER:** We thank the reviewer for specifying where we can correct the text. The sentences were edited as follows:

   a) **To assess the effect of the adjusting we also analysed the intervention effect by using a crude model.** (Line: 195)

   b) **For the dichotomous variables the reported intervention effect represents the difference in absolute risks i.e. the difference in the proportions.** (Lines: 196-197)

   c) **The variable “time”, measured in months, was the specific time when each observation was collected i.e. it varies from 0 to 31,6 months.** (Line: 203)

   d) **The Stata command “mkspline” allows performing the spline regression by means of the creation of two auxiliary variables, “time1” and “time2”. These auxiliary variables were generated based on the knot and the values of variable “time”. The auxiliary variables time1 is equal to variable “time” when “time”<18 and equal to 18 when “time”>18** (Lines:215-219).

6. **Page 13, line 242: the title of this section should be ‘SENSITIVITY’ and not ‘sensitive.’**

   **ANSWER:** The sub-title was edited as follows:
Sensitivity analysis (Line: 267)

7. a) Page 13, line 255: ‘s’ needs to be added to the end of ‘adolescent.’ b) Line 260: ‘…WHILST IN the second stage.’ c) Page 14, line 275: insert ‘programme’ after ‘Planet Health’ and d) in line 276 insert ‘the’ before DOiT program. e) Page 16, line 314: ‘…effort INTO developing…’.

ANSWER: We thank the reviewer for these corrections. The sentences were edited as follows:

a) The results showed that the change over the three measurement periods in TV time, total screen-time and the proportion of adolescents (Lines: 280)
b) In general the intervention effect after the first stage was in favour of the adolescents in the intervention group, whilst in the second stage (Lines: 285)
c) Our positive results are in line with other school-based intervention programmes focusing on different health behaviours including screen-time behaviour [16, 13, 14], namely The Planet Health programme [16] and the DOiT [13] programme. (Lines: 299)
d) The Planet Health did not implement the environmental component in contrast to the DOiT programme and our intervention (Lines: 302)
e) After 28 months, the percentage increased up to 92%, therefore it is important to put continuous effort into developing intervention programmes aiming to reduce screen-time in adolescents in Latin-America. (Lines: 341)

8. Line 320 on page 16 needs more detail – what do you mean by similar studies? Studies targeting sedentary behaviour reduction in schools or just in general?

ANSWER: We have clarified this in the Discussion:
Second, the sample size is relatively large, considering that most (70%) of the studies targeting sedentary behaviours in schools have less than 500 participants [6]. (Lines: 346-348)

9. I think it’s important to mention the fact that you included three time points as a strength – without the 18 month the positive effect on sedentary behaviour would have been missed. Future studies needs to include short-term data collection time points to avoid missing effects in these types of studies.

ANSWER: We agree with the reviewer that this is an important strength of this study. We have now added this in the Discussion of the paper:
A final strength is that three time points were included to investigate the effect of the ACTIVITAL intervention. By doing so, we were able to analyse the intervention effect on screen-time after stage 1 of the intervention. We note that no intervention effect would have been found if only the first and last time point would have been included in the analyses. This finding illustrates the need for multiple measurements to document the effect of similar interventions. (Lines: 349-354)

10. Reference format needs to be updated. (e.g. references are not double spaced, journal titles are not in italics, article titles are not in bold, journal abbreviations are not used)
**ANSWER:** We thank the reviewer for this important remark. We have revised all references and have now used the “BMC Public health” reference style, which is available on Endnote software.

Level of interest: An article of importance in its field  
Quality of written English: Acceptable  
Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.
Reviewer #2

Major Compulsory Revisions

1. **Title:** “School-based intervention promotes healthy behavior on screen-time”, this sentence makes me think that the promotion of health behavior was through screen-time. I would suggest: School-based intervention on healthy behavior among Ecuadorian adolescents: effect of a cluster-randomized controlled trial on screen-time.

**ANSWER:** We agree with the reviewer that the title could be misleading. Therefore, we have adjusted the title according to the suggestion of the reviewer.

2. **Abstract conclusion:** Authors stated, “including screen-time activities on interventions improves the screen-time behaviors”. What does it means? The proposed activities on the intervention were screen-based? What was the improvement on the screen-time behaviors?

**ANSWER:** We edit the conclusion of the abstract as follows:

A multicomponent school-based intervention was only able to mitigate the increase in adolescents’ television time and total screen-time after the first stage of the intervention or in other words, when the intervention included specific components or activities that focused on reducing screen-time. After the second stage of the intervention, which only included components and activities related to improve healthy diet and physical activity and not to decrease the screen-time, the adolescents increased their screen-time again. Our findings might imply that reducing screen-time is only possible when the intervention focuses specifically on reducing screen-time. (Lines: 27-34)

3. **Methods, page 6:** Authors should describe the educational package delivered by school teachers, in order to follow key messages of the intervention program. At least activities related to reduction of screen-time behaviors need to be described. It is not clear why during the first stage of the intervention there was only an individual strategy. Why the talks with famous sportsmen and women were considered individual strategy?

**ANSWER:** Thanks to the reviewer for this comment. We clarified the individual and environmental strategies implemented in both first and second stage of intervention. Also, we clarified that the pep talks with famous sportsmen and women were considered as an environmental strategy in the first stage of the intervention. In addition, the table 1 complements the description of intervention activities.

We edited the description of the intervention strategies as follows:

The intervention programme comprised two stages. Each stage included both individual and environmental oriented strategies implemented by the school staff or the researchers. This manuscript only includes information on the strategies related to physical activity and sedentary
behaviour, as these were linked in the intervention programme. In both stages the individual strategy was delivered by means of an educational package which was implemented at classroom level by school staff and researchers. The educational package involved a textbook for teachers and workbook for adolescents. The environmental strategies were designed to increase the opportunities of the adolescents to be active and reduce the screen-time. The environmental strategies, in both intervention stages, included modifications of the school environment and one parental workshops conducted in parallel to the classes with adolescents and with similar topics.

In the first stage of intervention the individual strategy was oriented to two key messages regarding physical activity and screen-time behaviour: i) be active for at least 60 min / day, and ii) spend maximum 2 hour / day on watching TV. These two key messages were also tackled on the parental workshop (environmental strategy). The parental workshop consisted of a slide show followed by a session of questions for parents. Besides, as part of the environmental strategy pep talks with famous young sportsmen and – women were organized. During the pep talks, the sportsmen and – women shared their experiences about their life style, encouraged adolescents to be active and answered questions of the adolescents about their life style (Table 1).

During the second stage, the individual strategy was geared towards ways to overcome the barriers for being physically active. Similar to the first stage, the environmental strategy included a parental workshop with similar topics as the classes with adolescents (e.g. on how to overcome the barriers for being physically active). Also, the environmental strategy included the set-up of a walking trail that was drawn on the floor of the schools. (Table 1). In other words, whereas the first stage of the intervention programme included specific strategies to reduce screen-time behaviour, the second stage did not include these. The table 1 presents more details of the intervention activities.

(Lines: 96-123)

4. The classification of socioeconomic status should be better explained, the reference is not in English and readers need to be aware of that: are there adolescents, within the school system that reported no access to education? Please explain that.

ANSWER: Thank you for this comment, we realize that the language in this text lead to misunderstandings. The socioeconomic status questionnaire assesses a number of deprivations at household level. It means that the socioeconomic characteristics of all members of the household was evaluated, but not just the conditions of the adolescent.

We edited the description of the classification of socioeconomic status as follows: The system classifies a household as “poor” when one or more deprivations related to housing facilities, basic urban services, money, education and physical space are reported otherwise the household is classified as “better-off”. A deprivation of housing facilities is defined when the roofs’ or walls’ material is either cardboard, pieces of aluminium, bamboo, plastic, or any other residual material. A deprivation of urban services appears if the household has precarious or no access to potable water or the house is not connected to a proper sewage system. There is a monetary deprivation if the ratio between household’ members with job over the total members living in the
household is higher than 1:3 or when the head of the household (in the economy context) has maximum two years of primary education. There is a deprivation of education if one or more of the children at school age (between 6 to 12 year old) do not attend school. There is deprivation of physical space if the average of persons per bedroom available in the house is higher than 3 persons/room.

(Lines: 159-170)

5. The very detailed explanation of statistical procedures is unbalanced with the intervention description.

ANSWER: We thank you for this comment. We agree that the description of the statistical methods is unbalanced with the description of the intervention. We think that it is necessary to provide a detailed description of the statistical analyses in order to be transparent on how the analyses were conducted, and to increase clarity of the manuscript. Therefore we prefer to keep the description of the analysis as it stands. Regarding the description of intervention, as suggested, we added more information about the intervention program on the manuscript. Please, refer to the question 3 of the reviewer #2.

6. a) Discussion: with an intervention that only has a slight effect on mitigate the increase of screen-time behaviors needs to be reshaped. I would like to see more discussion on that. b) since determinants and correlates are behavior specific, why authors would expect modify screen-time behavior through physical activity promotion?? (page 15).

ANSWER:

a) We agree that we have somewhat overstated the findings and have downplayed the discussion of the findings:

Also, although our results are encouraging for school interventions in LMICs, our findings are both mixed and modest, since the intervention effect was limited to minimize the increasing of screen time on the first stage. Therefore, there is still a needed for studies focused on decrease the screen-time among adolescents from LMICs. (Lines: 357-360)

b) We think that the reviewer refers to the follow part in the page 15, which discusses the intervention effect on the second stage of the intervention: “This could be attributed to the fact that during the second stage of the programme, the intervention contained no specific strategies on the reduction of screen-time behaviours [10], and focused essentially on improving diet and physical activity. Therefore, our results might indicate that promoting physical activity does not necessarily lead to an improvement in sedentary behaviours like screen-time activities among adolescents”. These sentences were written based on the displacement hypothesis which suggests that television watching and other sedentary behaviours displace physical activity. We revised this theory in detail and we realized that it does not imply that increasing physical activity levels displace the sedentary behaviours (1). Therefore the sentence written could be incorrect. The sentence was edited as follows:

“This could be attributed to the fact that during the second stage of the programme, the intervention contained no specific strategies for the reduction of screen-time behaviours [10], and focused essentially on improving diet and physical activity. This finding is in line with the conclusion that reducing screen-time is only possible when the intervention focuses specifically on reducing screen-time.” (Lines: 309-313)
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.**

**References**