Author's response to reviews

**Title:** Primary caregiver knowledge of paediatric physical activity recommendations in the United Kingdom and its association with caregiver behaviour: an observational study

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**Author's response to reviews:** see over
Dear Dr Gracia-Marco,

Re: Manuscript MS:1276202433127893

The authors would like to thank the editor for the opportunity to revise this manuscript and the reviewers for their constructive comments. Please find below our responses to the reviewers’ comments.

Reviewer 1:

General comment:
The aim of this study was to assess knowledge of paediatric physical activity recommendations among parents and examined association between knowledge and parental support and modelling physical activity. It is an important topic because knowing how much physical activity young people should do could be a potential facilitator for physical activity. Moreover, there is a lack of knowledge about what people know on physical activity recommendation, so this topic is highly important.

The premise of the study has been appropriately presented. However, the methods section should be improved, because there is lack of information and some parts are not clear. Results section should also be improved, because some parts are difficult to follow. The title of the manuscript must be rethought, it is “parental knowledge”, but only 3.3% were fathers. It is clearly a study focus on maternal knowledge.

- Thank you for noting the importance of this topic. We have improved the methods section by responding to your specific comments below. The title of the manuscript has been changed to ‘primary caregiver knowledge...’ rather than ‘parental knowledge...’ and the sample referred to as primary caregivers rather than parents throughout the manuscript for consistency. The authors believe that focusing the manuscript on primary caregivers, who are predominantly mothers, rather than excluding fathers, increases the contribution of this research. The low representation of fathers has been discussed in terms of generalisability later in the manuscript (see comment 11).

Specific comments:
Major revisions
1. Abstract is well structured, but needs some improvements. In the first sentence (line 35) it seems that authors assumed that all affluent developed countries have physical activity recommendations. This is not true. So, I suggest removing the word “government”. There is no information about the statistical analyses. If it is possible, please provide some briefly information. I also recommend the description of the used socio-demographic variables (line 42).
• The word “government” has been removed. Description of the used socio-demographic variables and information about statistical analyses has been included:

“Socio-demographic variables (maternal age, BMI, education, ethnicity and presence of co-habiting partner) were available from previously completed questionnaires.” (Lines 42-44)

“Binary logistic regression analyses examined the relationship between knowledge and socio-demographic variables and components of parental support and modelling of physical activity.” (Lines 45-46)

2. **I do recommend writing the p-value after the 95% CI.**

• P-values have now been provided for analyses conducted within the study.

3. **Line 95 and 96. It is written that children younger than 5 years should achieve a minimum of 180 minutes of activity. However, there is no information about the intensity. I also recommend adding some information related with the benefits of at least 180 minutes of physical activity per day for children younger than 5 years.**

• Guidelines state that activity in children younger than 5 years can be of any intensity; this has now been stated, along with the associated health benefits.

“...recommend that children younger than 5 years who are capable of walking achieve a minimum of 180 minutes of any intensity activity a day” (Lines 97-98)

“Achieving physical activity guidelines can help children to improve their cardiovascular health, support their development of co-ordination and movement skills, improve their bone health and maintain a healthy weight [4].” (Lines 98-101)

4. **Line 132. The last part of the sentence (“but differences were small”) should be removed.**

• This has now been removed.

5. **It is necessary an explanation on why only 1113 parents from 24002 families took part in this study. Were the parents selected? If so, what were the criteria?**

• 1113 families took part in this study due to drop-out from the baseline sample of 2,402 families. This has been made clearer by including the data collection wave, stressing that this sample is likely to be smaller than the baseline sample.

“1,113 primary caregivers (46% of baseline sample) took part in a home environment interview at wave 5 of data collection, when children were approximately 3.5 years old (40 months).” (Lines 135-136)

6. **Line 153. Maternal characteristics have to be described.**

• This section has now been clarified. Maternal characteristics respond to the socio-demographic variables as these were predominantly assessed with respect to the mother.

“All socio-demographic variables other than presence of a co-habiting partner were measured with respect to the mother of the twins, even if the interview was completed by a partner or other caregiver.” (Lines 165-166)
7. Line 162. How the continuous scores (overall levels of support and overall levels of modelling) were calculated? Did you create a composite variable, using the 4 items for parental support and the 3 items for parental modelling? Did you reduce the 5-point Likert scale to a binary variable? This information has to be clear for the readers. Please, rephrase this part of the manuscript.

- This section has now been rephrased.

“Continuous scores for overall levels of support and overall levels of modelling were calculated using a composite score from all items included in the respective scales.” (Lines 173-174)

8. Line 173. Do not use the word “influence”, because it is not a longitudinal investigation, therefore as a cross sectional study is not possible to see the causal relationship.

- The word “influence” has been replaced with “relationship between” (Line 186).

9. The program used for data analysis is omitted. Add the name and version of the software. Moreover, provide the level of significance.

- This information has now been included.

“All analyses were carried out in SPSS v 20 using a significance level of p<0.05.” (Line 192)

10. If possible, I would recommend another table with information provided from lines 179 to 186 (and table 1 become table 2 and table 2 become table 3). When reading the manuscript I was trying to follow this information, but the table 1 does not have this information. This new table could be like table 1, but instead of the univariate and multivariate analysis, it could have three new columns. Two columns would have information from those classified as “yes” and “no”. The last could have the results (p-value) from qui-square and t-test. If you decide to follow this recommendation, qui-square has to be performed for the analyses of “knowledge of recommendations” and “maternal education”, maternal ethnicity” and “co-habiting partner”. Obviously, the use of qui-square has to be mentioned in the methods section.

- This information is now provided in a new table (Table 1) and qui-square and t-tests have been conducted and describe in the methods and results sections.

“Chi-square and t-test analyses were performed to assess socio-demographic differences between participants who did and did not have knowledge of guidelines.” (Lines 184-185)

“Of those who were educated to university level, 136 (25.3%) knew physical activity recommendations, compared with 83 (20.6%) of those educated to high school/vocational level and 18 (10.4%) of those educated to basic school level or less. Knowledge of physical activity recommendations was higher in white participants (n=229; 21.7%) than in participants in ethnic minority groups (n=8; 13.8%) and higher in co-habiting participants (n=224; 21.6%) than in single participants (n=13; 17.1%). The only significant difference between those who did and did not know recommendations was in maternal education (Table 1).” (Lines 196-202)

11. I think the fact that only 3.3% of the participants were fathers should be mentioned as a limitation.

- This has now been included as a limitation.
“The over-representation of white participants and mothers is another limitation of the study.” (Line 267)

“Low representation of ethnic minority groups (5.2%) and fathers (3.3%) limits the generalisability of our results to other populations.” (Line 269-270)

Minor revisions

1. Line 48 should read “(OR=2.82, 95% CI: 1.66-4.49, p<…)”
   • This has been amended (lines 50).

2. Line 149 should read “maternal age, height and weight were self-reported…” After that should be described how BMI was calculated.
   • This has been amended.

   “Maternal BMI was calculated using the formula: weight (kilograms) / height^2 (meters).” (Lines 160-161)

3. Line 177 should read “socio-demographic characteristics”
   • This has been amended (lines 186-187).

4. Line 188, 189 should read “OR=2.82, 95% CI: 1.66-4.79, p<0.001” and “OR=2.23, 95% CI: 1.29-3.85, p=0.003”
   • This has been amended (lines 204-205).

5. Lines 196-198 and 199 should follow the same suggestion for lines 188 and 189.
   • This has been amended (lines 211-213).

Reviewer 2:

Minor Essential Revisions:

1. Methods.
   It is suggested including if the questions used for measuring the knowledge of physical activity recommendations, the parental support and the parental modelling of physical activity are valid, reliable and if they have been previously used in other studies.
   • This information has now been included where possible.

   “Data on the validity and reliability of this question were not collected in the current study (test-retest reliability of the rest of the home environment interview was assessed but this was not possible with this question as incorrect answers were corrected by the researcher). However, similar methods of measurement have been used successfully elsewhere [17,18].” (Lines 156-159)

   “The parental support scale has been shown to have good internal consistency (Cronbach’s alpha=0.78) and excellent test-retest reliability (r=0.81) [13]. The parental modelling scale has been used previously for the assessment of the Change for Life campaign in the UK, when it was shown to have good internal consistency (Cronbach’s alpha=0.80; Croker et al., unpublished). Indeed, in a sample of 44 primary caregivers from this
study, test-retest reliability was satisfactory for the parental support scale (ICC=0.68; 95% CI=0.48-0.81) and good for the parental modelling scale (ICC=0.78; 95% CI=0.62-0.87).” (Lines 175-181)

2. Discussion.
It is suggested starting the 1st paragraph including the main results of the overall study (including all the analyses).

- This information has now been included.

“Only a fifth of primary caregivers in our sample knew the recommended amount of physical activity for children. Higher maternal education increased the likelihood of knowledge in primary caregivers and knowledge was related to components of parental support and modelling of physical activity: communicating positive messages about physical activity to the child, watching the child participate in physical activity and showing the child they enjoyed physical activity themselves.” (Lines 217-221)

3. Tables 1 and 2.
It is suggested eliminating vertical lines and reduce as much the number of horizontal lines.

- Tables have now been amended following this recommendation.

We appreciate your consideration of this manuscript.

Many thanks,
Alexia Sawyer