PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Assessment of health-related quality of life and psychological well-being of children and adolescents with obesity enrolled in a New Zealand community-based intervention programme: an observational study
AUTHORS	Anderson, Yvonne; Wynter, Lisa; Treves, Katharine; Grant, Cameron; Stewart, Joanna; Cave, Tami; Wouldes, Trecia; Derraik, José; Cutfield, Wayne; Hofman, Paul

VERSION 1 - REVIEW

REVIEWER	Dot Dumuid University of South Australia Australia
REVIEW RETURNED	26-Jan-2017

GENERAL COMMENTS	The findings of this study are interesting and potentially important. While the negative relationship between HRQoL and obesity in childhood has been well established, the role of ethnicity has rarely been examined. However, there is some indication from previous studies that cultural factors may influence this relationship. The authors may like to consider the work of Petersen S, Moodie M, Mavoa H, Waqa G, Goundar R, Swinburn B. Relationship between overweight and health-related quality of life in secondary school children in Fiji: results from a cross-sectional population-based study. Int J Obes. 2014;38:539-46, which found an inverse relationship between HRQoL and obesity, or Boodai SA, Reilly JJ. Health related quality of life of obese adolescents in Kuwait. BMC Pediatr. 2013;13:1, where no relationship was detected between HRQoL and obesity. Introduction: The authors write that there is little known about the HRQoL of indigenous populations, however previous studies have reported lower HRQoL in indigenous populations compared to non-indigenous populations (e.g. Omma and Petersen. Health-related quality of life in indigenous Sami schoolchildren in Sweden. Acta Peaditrica 2014). Methods: "The reliability and content validity of the PedsQL has been demonstrated..." has it been demonstrated to be poor/moderate/excellent? Has it been demonstrated in ethnic populations? Is it appropriate to perform cross-cultural comparisons of PedsQL scores when different cultures may perceive health and wellbeing differently? The cited reference for PedsQL validity/reliability (Varni JW, Burwinkle TM, Seid M, et al. The PedsQLTM 4.0 as a pediatric

	population health measure: Feasibility, reliability, and validity. Ambul Pediatr. 2003 Nov-Dec;3(6):329-41) only reported parameters for child self-report in children 8 years and over. However, the age of participants in this study ranged from 4.8 y to 16.8 years, and Table 1 presents a summary of child-self report PedsQL for this population. How was self-report obtained from children <8 years, or where these younger children excluded from this analysis? The methods state that the CBCL can be completed by "by parents, caregivers, and others who see children in family contexts, or by the young person themselves", however it does not state who completed the checklist in this study. Was there a protocol in place for who completed the CBCL? Did children over a certain age complete the checklist themselves? Data analysis: It is unclear whether analyses used to determine the significance of relationships between sociodemographics/clinical parameters and HRQoL were a series of univariate linear regression models, or whether analyses consisted of 2 multiple linear regression models (one for child and one for parent-reported HRQoL), i.e. adjusted models. Multiple comparisons are made between various groups of children. Was the statistical significance level of these analyses adjusted to avoid capitalisation on chance? Throughout the discussion, the participants of this study are referred to as "obese", for example in the first sentence of the discussion, "The main findings of this study were that obese children and adolescents in this region of New Zealand...", however the eligibility criteria for the study included children classified as both overweight and obese. Are the results presented only for children classified as obese? This requires clarification. The limitations of this study: eg. comparisons are made with populations (from other published studies) which differ from the present study's population in many ways, have been clearly stated and discussed. I look forward to reading the findings from the completed Whānau Pakari project!

REVIEWER	Dr. Dorothea Kesztyüs MPH Institute of General Practice, Ulm University, Germany
REVIEW RETURNED	13-Feb-2017

GENERAL COMMENTS	In this manuscript the authors analyse cross-sectional data from overweight and obese children and adolescents at enrolment in an obesity intervention program in Taranaki, New Zealand. Firstly, they compare the health-related quality of life (HRQOL) of their participants to other samples of age matched children and adolescents who have normal weight, are obese or suffer from type 1 diabetes. Secondly, they compare psychological characteristics of their cohort to the general population. Finally, they investigate differences in (HRQOL) and psychological characteristics between different ethnicities in their sample.

	Comments and recommendations on the content of the manuscript o Overall: This is a very well-written manuscript on an important topic. It adds new aspects to what is already known, particularly with regard to ethnicities. However, there are some imbalances that have to be addressed. Very important: please remain consistent throughout the entire manuscript with the description of your participants in terms of overweight and obesity. You include overweight as well as obese participants in your study which may be a minor semantic problem for a so-called obesity intervention, but you should always refer to your participants as being overweight and obese, not solely obese. Please do not report p-values beyond < 0.001 (1) (2). o Abstract: All in all, the abstract is very short (170 words), there are 130 words left that should be used for more detailed information o Abstract, Objective: This part is incomplete and should reflect the aim of the study as described in the introduction section (page 5, line 115) o Abstract, Methods: Please add the classification obese and overweight to the respective percentiles. Were weight-related comorbidities a criterion for inclusion of overweight participants? o Abstract, Methods/Results: Please add the timeframe and/or the years of assessments. o Abstract, Results: You compare the whole group of n=239, aged 4.8-16.8 years (Table 1) to the group of non-obese Australian children aged 9 to 12 (Table 2). You should either report data from Table 1 or Table 2, but not mix these results. o Methods, Data analyses: - Page 8: please consider to apply a Bonferroni or Holm-Bonferroni procedure since you are making multiple comparisons (3) - Page 8/9, please include the years of assessment for each comparison group - Page 9, line 197, please report n=94. o Results: - Quality of life, Page 10, line 221: Table 1 shows one comparison group, not three. - Table 1, Table 2, Please add confidence intervals to the data of your participants, these provide additional information to the p-values (4) - Quality of life, Page 11, line 236: wasn't the obese

	community sample part of the Australian sample? This should be made clearer in this sub-clause. - Quality of life, Page 11, line 238: This p-value is not correct for the obese sample, you report p<0.001 in Table 2. Furthermore, the comparison to the Australian sample applies only for a sub-sample of the Taranaki group (n=94). - Quality of life, Page 12, line 247: In this paragraph, you report breathing pauses, difficulty getting to sleep, headaches, developmental problems, and fathers being the sole/primary caregiver. Please add information about these items in the methods section and descriptive stats/numbers in the results, e.g. how many children had breathing pauses, developmental problems etc.. I think in this context it is not sufficient to refer to a previous article in the discussion section (page 17, line 354). - Child Behaviour Checklist, Page 12, line 259: please introduce interquartile range (IQR) - Table 3, there are obviously 30 participants missing, this should be reported in the methods section, why are they missing, is there anything known about possible differences between those with missing CBCL and those with complete data? References 1. Zhu W. P < 0.05, < 0.01, < 0.001, < 0.0001, < 0.00001, < 0.000001, or t... J Sport Heal Sci. 2016;5(1):77–9. 2. Fayers PM. The scales were highly correlated: P = 0.0001. Qual Life Res. 2008;17(5):651–2. 3. Aickin M, Gensler H. Adjusting for multiple testing when reporting research results: The Bonferroni vs Holm methods. Am J Public Health. 1996;86(5):726–8. 4. du Prel J-B, Hommel G, Röhrig B, Blettner M. Confidence interval or p-value?: part 4 of a series on evaluation of scientific publications. Dtsch Arztebl Int. 2009;106(19):335–9.

VERSION 1 – AUTHOR RESPONSE

REVIEWER #1

Dot Dumuid: Institution and Country
University of South Australia, Australia Please state any competing interests: None declared

The findings of this study are interesting and potentially important. While the negative relationship between HRQoL and obesity in childhood has been well established, the role of ethnicity has rarely been examined.

Reply: We thank Ms Dumuid for the time invested in peer-reviewing our manuscript and the valuable feedback provided, which has improved the quality of this manuscript.

However, there is some indication from previous studies that cultural factors may influence this relationship. The authors may like to consider the work of Petersen S, Moodie M, Mavoa H, Waqa G, Goundar R, Swinburn B. Relationship between overweight and health-related quality of life in secondary school children in Fiji: results from a cross-sectional population-based study. Int J Obes. 2014;38:539-46, which found an inverse relationship between HRQoL and obesity, or Boodai SA, Reilly JJ. Health related quality of life of obese adolescents in Kuwait. BMC Pediatr. 2013;13:1, where no relationship was detected between HRQoL and obesity.

Reply: Thank-you for highlighting these important references. We have made the following additions:

Introduction (paragraph 2):

"In relation to HRQOL as it pertains to weight, and the impact of ethnicity, it is acknowledged that information about the relationship between HRQOL and weight may not have transferability from one cultural context to another, given differing perceptions of body image cross-culturally.[7,8]"

Discussion:

"This finding is in contrast to previous research in Fiji and Kuwait, where there was no meaningful negative association between increased weight and HRQOL in children aged 12-18 in Fiji, irrespective of ethnicity, or Kuwaiti nationals, aged 10-14 years old.[7,8] The discrepancies in results may be explained by this study reviewing a treatment-seeking group, rather than population-based sample, and the different cultural values assigned to body size in Fiji and Kuwait compared with New Zealand (a westernised society)."

Introduction: The authors write that there is little known about the HRQoL of indigenous populations, however previous studies have reported lower HRQoL in indigenous populations compared to non-indigenous populations (e.g. Omma and Petersen. Health-related quality of life in indigenous Sami schoolchildren in Sweden. Acta Peaditrica 2014).

Reply: This paper is indeed useful and has now been added in the Introduction (paragraph 2):

"Previous research has found that Sami (the indigenous people of Sweden) children experience lower HRQOL in some domains compared with Swedish children in general.[6]"

Methods:
"The reliability and content validity of the PedsQL has been demonstrated..."
has it been demonstrated to be poor/moderate/excellent? Has it been demonstrated in ethnic populations? Is it appropriate to perform cross-cultural comparisons of PedsQL scores when different cultures may perceive health and wellbeing differently?

Reply: The reviewer makes a valid comment and we agree that clarification was warranted here. The Methods section has been amended with reference to a relevant study (paragraph 2 under "Measures"):

"The reliability of this instrument has been demonstrated in ages 2-16 years as excellent (α = 0.89 child; 0.92 parent report) with acceptable construct validity, in a large population survey in the US (n=10,241), with white, Hispanic/Latino, black/African American, Asian/Pacific Islander, American Indian and Native Alaskan participants.[27]"

We also believe that it is appropriate to perform cross-cultural comparisons of PedsQL given the wide ethnic representation within the reliability and validity studies (noting that ethnic differences were found). However, we acknowledge that findings need to be interpreted with caution, given differences in cultural interpretation of both quality of life and weight. Nonetheless, this is what makes the lack of ethnic difference in both quality of life and CBCL found in this study noteworthy.

The cited reference for PedsQL validity/reliability (Varni JW, Burwinkle TM, Seid M, et al. The PedsQL™ 4.0 as a pediatric population health measure: Feasibility, reliability, and validity. Ambul Pediatr. 2003 Nov-Dec;3(6):329-41) only reported parameters for child self-report in children 8 years and over. However, the age of participants in this study ranged from 4.8 y to 16.8 years, and Table 1 presents a summary of child-self report PedsQL for this population. How was self-report obtained from children <8 years, or where these younger children excluded from this analysis?

Reply: To clarify, the above paper reports reliability for child self-report and parent proxy-report from age 5 years. As referred to in Table 9, intercorrelations between child self-report and parent proxy-report are reported as Pearson correlation coefficients across ages 5-18 years. Our youngest participants were included using the parent proxy-report data from the Parent Report for Young Children (aged 5-7 years), and the Young Child Report (aged 5-7 years). We opted to include these data, given the overall scale intercorrelations were reported as generally consistent for ages 5-16 years.

The methods state that the CBCL can be completed by "by parents, caregivers, and others who see children in family contexts, or by the young person themselves", however it does not state who completed the checklist in this study. Was there a protocol in place for who completed the CBCL? Did children over a certain age complete the checklist themselves?

Reply: Yes, there was a protocol for CBCL completion, and the questionnaires have been alluded to in our published study protocol:

Anderson YC, Wynter LE, Moller KR, Cave TL, Dolan GMS, Grant CC, et al. The effect of a multi-disciplinary obesity intervention compared to usual practice in those ready to make lifestyle changes: Design and rationale of whanau pakari. BMC Obesity. 2015;2(41).

The child behaviour checklist was completed by the parent for children ages 1.5 to 5 years on one questionnaire, ages 6-18 on the next questionnaire, and youth are invited to complete a separate questionnaire aged 11-18, youth self-report (YSR). When a YSR was completed, a parent questionnaire was not sought, and this has since been clarified in the Methods (paragraph 3 under "Measures"):

"The existence of behavioural difficulties was assessed using the Achenbach Child Behaviour Checklist (CBCL) ages 1.5-5 and ages 6-18 (parent report) and Youth Self Report (YSR) for ages 11-18.[28] The CBCL/YSR generate ratings of behavioural, emotional, and social problems. The CBCL can be completed by parents, caregivers, or others who see children in family contexts, or by the young person themselves in the case of the youth self-report (YSR). When the young person completed the YSR, no parent report was collected, in order to reduce the burden of assessment on the family.."

Data analysis: It is unclear whether analyses used to determine the significance of relationships between sociodemographics/clinical parameters and HRQoL were a series of univariate linear regression models, or whether analyses consisted of 2 multiple linear regression models (one for child and one for parent-reported HRQoL), i.e. adjusted models.

Reply: These were exploratory analyses and we ran both univariate models and multivariable models. However, we understand that this might not have been sufficiently clear in the Methods. As a result, we have since attempted to clarify this information in the Methods (last paragraph under "Data analyses"):

"Exploratory analyses using generalized linear regression models also examined the likelihood of displaying behavioural and emotional problems (i.e. having CBCL/YSR scores in the borderline or clinical ranges) in association with certain demographic parameters, adjusting only for source of test scores (i.e. parent or youth). A similarly constructed multivariable model was also run adjusting for age, sex, ethnicity, and socioeconomic deprivation. These results are provided as relative risks (RR) and respective 95% confidence intervals (CI)."

Multiple comparisons are made between various groups of children. Was the statistical significance level of these analyses adjusted to avoid capitalisation on chance?

Reply: Since these were mostly exploratory analyses, we contend that no adjustment for multiple comparisons was necessary. However, we apologise for our oversight as this should have been made clear in the Methods. We have therefore amended the last sentence under "Data analyses" to the following:

"*…significance level was maintained at $p<0.05$, with no adjustments for multiple comparisons.*"

Further, we thank the reviewer for pointing out this issue and we have added the bullet point below under the list of limitations of the manuscript:

"• *There were no adjustments for multiple comparisons in our statistical analyses; due to the inflated likelihood of Type I errors, our findings (particularly from exploratory analyses) need to be interpreted accordingly*."

In addition, we should have also pointed this out as a limitation in the Discussion. We have since added a sentence to this regard at the end of our paragraph on limitations (second-to-last):

"*Lastly, we made no adjustments for multiple comparisons in our statistical analyses, so that the findings (particularly from exploratory analyses) need to be interpreted accordingly.*"

Throughout the discussion, the participants of this study are referred to as "obese", for example in the first sentence of the discussion, "The main findings of this study were that obese children and adolescents in this region of New Zealand...", however the eligibility criteria for the study included children classified as both overweight and obese. Are the results presented only for children classified as obese? This requires clarification.

Reply: We thank the reviewer for highlighting this important issue, which was also raised by Dr Kesztyüs. Our aim was to analyse our entire cohort, as our overweight and obese participant shared numerous commonalities. However, following the feedback we received from the reviewers, we have compared our 6 overweight participants to the 233 obese subjects, and there is sufficient evidence (despite the small number of overweight participants) to suggest that the two groups are indeed dissimilar in regards to HRQOL and psychological wellbeing. As a result, we thought it was more appropriate to focus only on our obese participants for this manuscript so that we can examine a more homogeneous cohort. Therefore, all our data have been re-analysed, and the results throughout the manuscript amended accordingly, noting that our findings are mostly unchanged.

The limitations of this study: eg. comparisons are made with populations (from other published studies) which differ from the present study's population in many ways, have been clearly stated and discussed.

I look forward to reading the findings from the completed Whānau Pakari project!

Reply: We once again would like to express our gratitude to Ms Dumuid for the encouraging and constructive feedback provided.

REVIEWER #2

Reviewer Name: Dr. Dorothea Kesztyüs MPH Institution and Country: Institute of General Practice, Ulm University, Germany
Please state any competing interests: None declared

In this manuscript the authors analyse cross-sectional data from overweight and obese

children and adolescents at enrolment in an obesity intervention program in Taranaki, New Zealand. Firstly, they compare the health-related quality of life (HRQOL) of their participants to other samples of age matched children and adolescents who have normal weight, are obese or suffer from type 1 diabetes. Secondly, they compare psychological characteristics of their cohort to the general population. Finally, they investigate differences in (HRQOL) and psychological characteristics between different ethnicities in their sample.

Comments and recommendations on the content of the manuscript

Overall: This is a very well-written manuscript on an important topic. It adds new aspects to what is already known, particularly with regard to ethnicities. However, there are some imbalances that have to be addressed.

Reply: We are grateful to Dr Kesztyüs for spending valuable time in the appraisal of our manuscript and for providing valuable feedback provided, which has improved the quality of the manuscript.

Very important: please remain consistent throughout the entire manuscript with the description of your participants in terms of overweight and obesity. You include overweight as well as obese participants in your study which may be a minor semantic problem for a so-called obesity intervention, but you should always refer to your participants as being overweight and obese, not solely obese.

Reply: The reviewer is absolutely correct, and we thank you for raising this important issue that was also pointed out by Ms Dumuid. As per our response to the latter, we aimed to analyse our entire cohort, as our overweight and obese participant shared numerous commonalities. However, following the feedback we received from the reviewers, we have compared our 6 overweight participants to the 233 obese subjects, and there is sufficient evidence (despite the small number of overweight participants) to suggest that the two groups are indeed dissimilar in regards to HRQoL and psychological wellbeing. As a result, we thought it was more appropriate to focus only on our obese participants for this manuscript so that we can examine a more homogeneous cohort. Therefore, all our data have been re-analysed, and the results throughout the manuscript amended accordingly, noting that our findings are mostly unchanged.

Please do not report p-values beyond < 0.001 (1) (2).

Reply: As requested by the reviewer, no p-values are reported beyond <0.001.

Abstract: All in all, the abstract is very short (170 words), there are 130 words left that should be used for more detailed information

Reply: The reviewer makes a valid point. We have therefore re-written and expanded the abstract, which now reads:

*"**Objective:** To describe health-related quality of life (HRQOL) and psychological well-being of children and adolescents at enrolment in a multi-disciplinary community-based obesity programme, and to determine association with ethnicity. This programme targeted indigenous people and those from most deprived households. Further, this cohort was compared to other populations/normative data.*

***Methods:** This study examines baseline demographic data of an unblinded randomised controlled clinical trial. Participants (recruited from January 2012-August 2014) resided in Taranaki, New Zealand (NZ), and for this study we only included those with a body mass index (BMI) ≥98th percentile (obese). HRQOL and psychological well-being were assessed using the PedsQL 4.0^{TM} (parent and child reports), and the Achenbach's Child Behaviour Checklist (CBCL)/Youth Self Report (YSR). The trial was registered with the Australian NZ Clinical Trials Registry (ANZCTR: 12611000862943).*

***Results:** Assessments were undertaken for 233 participants (45% Māori, 45% NZ European, 10% other ethnicities, 52% female, 30% from the most deprived household quintile), mean age 10.6 years. The mean BMI standard deviation score (SDS) was 3.12 (range 2.01-5.34). Total PedsQL generic scaled score (parent) was lower (mean=63.4, SD=14.0) than an age-matched group of Australian children without obesity from the Health of Young Victorians study (mean=83.1, SD=12.5). In multivariable models, child and parental generic scaled scores decreased in older children (β=-0.70 and p=0.031, β=-0.64 and p=0.047, respectively). Behavioural difficulties (CBCL/YSR total score) were reported in 44% of participants, with the rate of emotional/behavioural difficulties 6 times higher than reported norms (p<0.001). No associations were found between PedsQL and CBCL/YSR scores and age, sex, ethnicity, or socioeconomic deprivation.*

***Conclusions:** In this cohort, children and adolescents with obesity had a low HRQOL, and a concerning level of psychological difficulties, irrespective of ethnicity. Obesity itself rather than ethnicity or deprivation appeared to contribute to lower HRQOL scores. This study highlights the importance of psychologist involvement in obesity intervention programmes."*

Abstract, Objective: This part is incomplete and should reflect the aim of the study as described in the introduction section (page 5, line 115)

Reply: The reviewer makes a valid point, and this has been addressed in the above re-write of the abstract.

Abstract, Methods: Please add the classification obese and overweight to the respective

percentiles. Were weight-related comorbidities a criterion for inclusion of overweight participants?

Reply: This has also been addressed in the above re-write of the abstract. We now also clarify that only obese individuals were included in the Methods.

Abstract, Methods/Results: Please add the timeframe and/or the years of assessments.

Reply: Thank you for highlighting this oversight, and this information has since been added to both the Abstract and the Methods section:

"Referrals were received between January 2012 and August 2014…"

Abstract, Results: You compare the whole group of n=239, aged 4.8-16.8 years (Table 1) to the group of non-obese Australian children aged 9 to 12 (Table 2). You should either report data from Table 1 or Table 2, but not mix these results.

Reply: We thank the reviewer for this comment, but we contend that the data in both tables are relevant. However, we would like to point out that we have not carried out any such comparisons as suggested by the reviewer. In Table 1, we compared our cohort aged 4.8 to 16.8 years to a group of NZ children of similar age (2 to 17 years). In Table 2, comparisons were made only for participants aged 9 to 12 years in all groups. Thus, we believe that the comparisons in Tables 1 & 2 are informative, and we would prefer to retain these data in the manuscript.

Nonetheless, the reviewer does make a valid point as this was not clear in the Abstract. We have since made a minor amendment to the respective sentence to highlight that the comparison was made with an age-matched group of children.

Methods, Data analyses:

- Page 8: please consider to apply a Bonferroni or Holm-Bonferroni procedure since you are making multiple comparisons (3)

Reply: We thank the reviewer for pointing out this issue. The lack of clarity to this regard and acknowledgement of this issue in the manuscript was an oversight from our part. As per our responses to Ms. Dumuid, since these were mostly exploratory analyses, we contend that adjustments for multiple comparisons were not necessary. However, this should have been made clear in the Methods. We have therefore amended the last sentence under "Data analyses" to the following:

"*…significance level was maintained at p<0.05, with no adjustments for multiple comparisons.*"

Further, we thank both reviewers for pointing out this issue and we have added the bullet point below in the list of limitations of the manuscript:

"• *There were no adjustments for multiple comparisons in our statistical analyses; due to the inflated likelihood of Type I errors, our findings (particularly from exploratory analyses) need to be interpreted accordingly*."

In addition, we now include this point as a limitation in the Discussion, with a sentence to this regard added at the end of our paragraph on limitations (second-to-last):

"*Lastly, we made no adjustments for multiple comparisons in our statistical analyses, so that the findings (particularly from exploratory analyses) need to be interpreted accordingly.*"

- Page 8/9, please include the years of assessment for each comparison group

Reply: These data have been added (now page 10/11).

- Page 9, line 197, please report n=94.

Reply: This has been added (now page 11), n=91 with exclusions of overweight in this age range.

-Results:

- Quality of life, Page 10, line 221: Table 1 shows one comparison group, not three.

Reply: Thank you for noting this typographic error. We corrected and clarified the respective sentence to the following:

"*The PedsQL scores of our study's participants and those of another study population in Taranaki are shown in Table 1.*"

- Table 1, Table 2, Please add confidence intervals to the data of your participants,

these provide additional information to the p-values (4)

Reply: As requested by the reviewer, we have now added 95% confidence intervals for the means in our study population.

- Quality of life, Page 11, line 236: wasn't the obese community sample part of the

Australian sample? This should be made clearer in this sub-clause.

Reply: It was possible from the paper to separate the obese (n=63) and normal-weight (n=1099) within the community sample of n=1456. This passage now includes the n of the total cohort data.

- Quality of life, Page 11, line 238: This p-value is not correct for the obese sample, you

report p<0.001 in Table 2. Furthermore, the comparison to the Australian sample

applies only for a sub-sample of the Taranaki group (n=94).

Reply: This p-value has been corrected in the text, and now reads p<0.001 (now page 13).

- Quality of life, Page 12, line 247: In this paragraph, you report breathing pauses,

difficulty getting to sleep, headaches, developmental problems, and fathers being the

sole/primary caregiver. Please add information about these items in the methods section and descriptive stats/numbers in the results, e.g. how many children had breathing pauses, developmental problems etc.. I think in this context it is not sufficient to refer to a previous article in the discussion section (page 17, line 354).

Reply: The review makes a valid point, and we concur that we need to provide more information on these characteristics. As a result, we have made amendments to the manuscript.

In the Methods (under "Assessments")"

"Questions pertaining to family structure, developmental history, presence/absence of headaches, difficulty getting to sleep, and presence/absence of breathing pauses were all included in the weight-related medical history."

In the Results (paragraph 1):

"Demographics of family and medical history have been previously reported for the total cohort.[33] In brief, among our 233 participants, living arrangements included a two-parent household for half of the participants (n=119, 52%), one-parent household (mother) for 38% (n=87), one-parent household (father) for 4% (n=10), and other arrangement for 6% (n=14). Headaches were prevalent in 32% (n=75), 32% of participants had difficulties getting to sleep (n=75), 20% had breathing pauses (n=47), and 9% had developmental concerns (n=20)."

- Child Behaviour Checklist, Page 12, line 259: please introduce interquartile range (IQR)

Reply: This information has been altered as requested:

"The median CBCL/YSR total score was 58 (interquartile range =15.0)."

- Table 3, there are obviously 30 participants missing, this should be reported in the Methods section, why are they missing, is there anything known about possible

differences between those with missing CBCL and those with complete data?

Reply: Thankyou for highlighting this, which indeed requires further information. The absence of data on the subscales are due to these subscales being absent on the 1.5-5- year questionnaire (parent). We have subsequently made the following amendments under the Results ("Child Behaviour Checklist"):

"Of the total cohort for this study, 232 participants/parents completed the CBCL/YSR."

"Missing data on subscales for parent report are due to the absence of these subscales in the questionnaire for 1.5-5- year-olds."

VERSION 2 – REVIEW

REVIEWER	Dorothea Dumuid University of South Australia
REVIEW RETURNED	06-Apr-2017

GENERAL COMMENTS	The authors have addressed all my comments and suggestions. The exploratory nature of the study is now clearly stated and the limitations associated with the performed analysis are presented.

REVIEWER	Dr. Dorothea Kesztyüs MPH Institute of General Practice Ulm University Germany
REVIEW RETURNED	19-Apr-2017

GENERAL COMMENTS	I feel that the authors have responded well to the reviewer comments and the manuscript is now acceptable for publication.