Author’s response to reviews

Title: Waist circumference cut-off values for the prediction of cardiovascular risk factors clustering in Chinese school-aged children: a cross-sectional study

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Author’s response to reviews: see over
Dear Editor,

Many thanks for re-reviewing the manuscript. We are extremely grateful to you and the reviewers for their positive and constructive comments. The incorporation of many of the suggestions has further strengthened the manuscript.

Detailed below are the changes we have made.

We look forward to an early and positive reply regarding acceptance for publication.

Best regards

Ailing

Responses to the comments

1. Title: The letter ‘s’ is missing in the end of the word “factor”.

Response: We apologize for the omission. The letter “s” has been added to the title and where necessary throughout the manuscript.

2. Abstract: I will strongly recommend re-writing. Reducing background-methods, and increasing results (including point estimation and 95% confidence interval). Conclusion statement must be consistent with the objective stated at background section.

Response: We thank the editor for this comment and it has been changed accordingly to:

“Background: Waist circumference has been identified as a valuable predictor of cardiovascular risk in children. The development of waist circumference percentiles and cut-offs for various ethnic groups is necessary because of differences in body composition. The purpose of this study was to develop waist circumference percentiles for Chinese children and to explore optimal waist circumference cut-off values for predicting cardiovascular risk factors clustering in this population.

Methods: Height, weight, and waist circumference were measured in 5529 children (2830 boys and 2699 girls) aged 6-12 years randomly selected from southern and northern China. Blood pressure, fasting triglycerides, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, and glucose were obtained in a subsample (n = 1845). Smoothed percentile curves were produced using the LMS method. Receiver-operating characteristic analysis was used to derive the optimal age- and gender-specific waist circumference thresholds for predicting the clustering of cardiovascular risk factors.”
Results: Gender-specific waist circumference percentiles were constructed. The waist circumference thresholds were at the 90th and 84th percentiles for Chinese boys and girls respectively, with sensitivity and specificity ranging from 67% to 83%. The odds ratio of a clustering of cardiovascular risk factors among boys and girls with a higher value than cut-off points was 10.349 (95% confidence interval 4.466 to 23.979) and 8.084 (95% confidence interval 3.147 to 20.767) compared with their counterparts.

Conclusions: Percentile curves for waist circumference of Chinese children are provided. The cut-off point for waist circumference to predict cardiovascular risk factors clustering is at the 90th and 84th percentiles for Chinese boys and girls, respectively.

Main text:

1. One suggestion: do not use developed, developing countries. Please, be more specific.
Response: We thank the editor for this comment. We have added reference to specific countries and regions in the background section: “The global prevalence of overweight and obesity has increased dramatically in North America, some European countries, and Australia in recent decades [1-4], however evidence suggests that a greater potential problem exists for China, South America and some countries in North Africa [4, 5].”

2. Explain for non-Chinese readers about differences between North and South. Is there any significant ethnic difference between these two regions?
Response: This is an important point. The difference in body composition between Chinese living in North and South China has been referenced as follows. “People living in North China are taller and heavier than those living in the South. This is due to a combination of genetic and environmental factors”.

3. The author have not mentioned about the waist circumference percentiles chosen for both boys and girls.
Response: With reference to this comment, the development of gender-specific percentiles is mentioned in the statistical analysis section, however the cut-offs for both boys and girls was not mentioned. Accordingly, the sentence has been changed to: “The gender-specific value which maximized both sensitivity and specificity was regarded as the optimal threshold for predicting cardiovascular risk factors clustering among boys and girls.”

4. Use more words to describe about measurements of weight, height, waist, and use less words to describe blood samples methods.
Response: The section has revised in accordance with the suggestion:
“Cardiovascular risk factors measurement
Blood pressure was measured on the study morning using a random-zero sphygmomanometer after the participant rested for 5 min in a seated position. Two resting blood pressure measurements were taken to the nearest 4 mmHg. A venous blood sample was collected from each participant after an overnight fast. Serum glucose concentration, triglycerides, total cholesterol, and high-density lipoprotein cholesterol, and low-density lipoprotein cholesterol were measured.”

5. Odds ratio: please: rounding 4.4 is enough?.
Response: We thank the reviewer and editor for this comment. The odds ratio is an index that describes the likelihood of an outcome of identified risk factors compared to without. If the odds ratio is higher than 1 (or lower than 1), and both the upper and lower confidence limits (95% confidence intervals) are higher than 1 (or lower than 1), it is likely that the outcome will reach significance. In short, all odds ratios in the current study reach the significance level.

6. Indeed, the age categories in the Table 1 should be the same used in the other ones.
Response: We apologize for the inconsistency. The age categories in Table 1 have been changed to correspond with those in the other tables.

7. Legends: be more specific, in Chinese children, year?. legend #3: add the reference number of others papers.
Response: The legends have been revised to:
“Figure 1 Smoothed percentile curves for waist circumference in Chinese boys (n = 2830) and girls (n = 2699) aged 6-12 years.
Figure 2 Receiver-operating characteristic curves for waist circumference with the clustering of cardiovascular risk factors (3 or more of high triglycerides, low high-density lipoprotein cholesterol, high low-density lipoprotein cholesterol, elevated blood pressure, and hyperglycemia ) in Chinese boys (n = 982) and girls (n = 863) aged 6-12 years.”
The reference numbers have been added in Legend #3.

8. Suggestion: “BMC Public Health is a typical international journal. If you learnt about other similar cross-sectional study published recently (after submission), mainly from BRIC countries, do not hesitate to compare them with your data.
Response: We thank the editor for this suggestion. We searched through PUBMED using “waist circumference AND (children OR adolescent*)” as keywords. Two papers were found in issues since our manuscript was submitted: “The waist circumference percentiles for Bulgarian children and adolescents aged 6-18 years
Percentile distributions of waist circumference for 7-19-year-old Polish children and adolescents (Obes Rev [Epub ahead of print]). As Bulgaria and Poland are not BRIC countries we have not added these references.