Author's response to reviews

**Title:** Association of Body Mass Index, Sagittal Abdominal Diameter and Waist-Hip Ratio with Cardiometabolic Risk Factors and Adipocytokines in Arab Children and Adolescents

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**Author's response to reviews:** see over
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BMC Pediatrics Editors

Dear Editors,

I apologize for the delay as I thought it was to be considered as a new manuscript. Please find below the rebuttal for the third reviewer.

I hope the changes done will now merit publication in your prestigious journal.

Respectfully,

Omar Al-Attas
Corresponding author

Major Compulsory Revisions

1. In the abstract, the methods section, it would be helpful to define the criteria for the groups studied. This seems more important than the definition of MetS because MetS is no longer a subgroup in the study.

In the revised manuscript no more groupings were done. The revised methods in the abstract now include apparently healthy children with varying BMI. Definition of Mets was kept because it was used in the study as one of the independent variables for SAD, BMI and WHR.

2. In the method section, under anthropometry, the authors have still not given a clear definition of the BMI criteria. Were the CDC charts used? Was there a certain percentile cut off? The delineation of normal weight and obese is still unclear.

The definition of obesity used in this study was based from the study of Cole and colleagues. CDC charts were not used. This was further explained in the revised methods section of anthropometry.

3. In the results section, second paragraph, second sentence, the authors state that almost all parameters were significant. This is not true as only about 1/2 were significant (9/16) according to Table 2. Also the bivariate and partial correlations were the same except that HOMA-IR became significant in the partial correlation. Please revise and condense the wording.

This comment is well noted. Actually 12 out of the 16 variables measured were significantly associated with SAD under the bivariate analysis. Please note that this table has been
revised, taking into consideration all the subjects, instead of the previous version wherein several children were excluded due to the groupings, which are now removed.

4. In the results section, second paragraph, last sentence, for WHR only HOMA-IR and ANGII were significant after adjustment per the table. This does not correlate with what is in the text. Please revise.

The word “lipids” were included before HOMA-IR. This has now been expanded to included total cholesterol, triglycerides and LDL cholesterol.

5. In the Discussion Section, first paragraph, last sentence, the authors state that the findings contradict previous observations done in adults on the superiority of SAD and WHR over BMI in predicting early onset diabetes mellitus and atherosclerosis. This could not be determined by the present study as the children were not followed to determine if these diseases could be predicted. Please remove this phrase.

This comment is noted and was removed from the revised discussion and the references were adjusted accordingly.

6. In the Discussion section, second paragraph, the authors state that the difference in centrally obese and obese is due to the pull of gravity. While this may be true, it is difficult to understand why the SAD for the non-obese and centrally obese was virtually identical. It is not clear why the centrally obese children with waist circumferences roughly 25cm larger than the non-obese would have virtually identical SAD. This needs explanation.

The groupings for the obese and the centrally obese have been removed, and the authors acknowledge that this has created more confusion than clarity. We have taken into consideration doing associations to all the subjects and not comparing them based on obesity definitions for children.

Minor Essential Revisions

1. In the Abstract, objective section, second line, please remove the words at least.
2. the Abstract, results section, please remove the last sentence it is redundant.
3. aPAI-1 is still not abbreviated consistently throughout the paper.
4. In the Results section, second paragraph, last sentence, please revise to read "Finally, for WHR, ANGII and HOMA-IR remained significant after adjustment." as lipids were not significant according to the table.
5. In the Discussion section, second paragraph, last sentence, please remove the words confirm and change to agrees with. Also in the same sentence, remove the best and change to a surrogate marker. Visceral fat was not specifically measured, so it is difficult to come to the conclusion that SAD is the best surrogate for measuring it.
All the minor revisions were done accordingly except for comment number 4, in which the lipids remained significant because all the subjects have now been included.