**Reviewer's report**

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

**Version:** 2 **Date:** 29 March 2012

**Reviewer:** Jeanie Tryggestad

**Reviewer's report:**

The article "Association of Body Mass Index, Sagittal Abdominal Diameter and Waist-Hip Ratio with Cardiometabolic Risk Factors and Adipocytokines in Arab Children and Adolescents" the authors have sought to determine which of the anthropometric measures was most associated with cardiometabolic risk. They have shown in a cohort of largely normal weight healthy children, BMI has the most associations with cardiometabolic risk factors and adipocytokines.

**Major Compulsary Revisions**

1. While this version of the manuscript is much improved over previous versions, it still remains that the vast majority of children tested in this study are normal weight and healthy. Only 28.4% of the population was overweight or obese. They had normal glucose, lipids, and insulin levels. It is difficult to determine how these data might be useful in a high risk population. It is mentioned that MetS is higher in the region, but what risk factors are present in these children? Obesity is an obvious risk factor, but only around 1/4 of the subjects tested was obese. Do the children have significant family history of cardiometabolic disease? This was not delineated, but would be helpful to the case. Although the sub-classes were removed due to small numbers, recruitment of more overweight and obese subjects to compare with the normal weight healthy controls would strengthen the paper.

2. In the Abstract, Results section, the sentence is not complete. Perhaps consider adding the work "and" after WHR.

3. In the last sentence of the Background, the primary aim of the study was not to correlate SAD with indices of cardiometabolic risk and adipocytokines. While this was a secondary aim, the primary aim of the paper was to compare the 3 anthropometric measures in regard to which had the most associations cardiovascular disease and adipocytokines. Please revise.

4. In the Methods section under anthropometry, please define Cole and colleagues definition of BMI, and remove the last sentence of the paragraph.

5. In the discussion section, last paragraph, the sentence beginning with "Furthermore" needs to be removed as it no longer applies since no groupings were included in this version of the paper.
Minor Essential Revisions

1. In the Abstract, Methods, Components should be added after MetS as MetS was not diagnosed in this study, but the components were assessed individually for associations with the anthropometric measures.

2. In the Background, second paragraph, visceral fat is predictive of cardiometabolic risk, but does not indicate the degree of cardiometabolic risk. Please revise.

3. In the Methods section, KSU is used in the first sentence, but not defined until the third. Please correct.

4. In Methods, last sentence, again add components after MetS.

5. In Methods, Blood Chemistry, seventh sentence, after Luminex please add Multiplex Assay.

6. In the Results section, first paragraph, next to last sentence, please reword as follows"... and retained blood pressure, lipids, glucose, and leptin after adjustment for age and gender."

7. In the Results section, second paragraph, last sentence, please reword as follows "...waist-hip ratio was significant in glucose, 2 or more components of MetS and MetS itself."

8. In the Discussion section, second paragraph, it would be helpful to address the associations that were different between BMI and SAD. SAD had more associations with the adipocytokines, so may have a different predictive value than BMI.

9. In the Discussion section, second paragraph, in the sentence starting with "Furthermore" please clarify that those statistics were from adult studies not children.

10. In the Conclusion, please remove the words "predictive power" as no long terms studies have been done to base predictive power on.

Discretionary Revisions

1. In Table 3, consider bolding the significant values in the Asymptotic Significance category.

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests