Reviewer's report

Title: Utility of Waist-to-Height Ratio in Assessing the Status of Central Obesity and Related Cardiometabolic Risk Profile Among Normal Weight and Overweight/Obese Children: The Bogalusa Heart Study.

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Reviewer: Claudio Maffeis

Reviewer's report:

The aim of the study was to assess the utility of waist/height ratio in assessing the cardiovascular risk profile in a multiethnic group of normal weight and overweight/obese children and adolescents. The study is potentially interesting but some choices in the data analysis limit the potential impact of the information.

Major comments.

Introduction. Several studies have been previously published exploring the relationship between waist/height ratio and the cardiovascular risk variables in children (Hara M, et al. J Atheroscler Thromb 2002;9:127-32; Maffeis C, et al. J Pediatr. 2008;152(2):207-13) and should be reported in the list of references. The aims of the study have not been adequately reported: please provide a more detailed and clear description of the purposes of the study.

a. Subjects. The description of the subjects recruited for the study is incomplete. No data on the ethnic distribution was provided (how many non-Hispanic white children and how many Asian children have been recruited?). Puberty. Puberty heavily affects cardiovascular risk factors (insulin resistance, blood lipid profile) as well as body fat distribution. No data on the pubertal status of the children and adolescents have been provided. Moreover, data should be reported categorizing children/adolescents on the basis of their pubertal status: pre-pubertal, pubertal, post-pubertal.

b. BMI categories. Authors divided their sample into two BMI categories: a. normal weight; b. overweight and obese combined. It could be more interesting to divide the sample into three categories of BMI: a. normal weight; overweight; and obese. This different categorization allows to analyze the potential advantage of W/H r on BMI categorization especially in the category of overweight children. In fact, it is largely expected that in the true obese children category (children with a BMI > 95th centile) the use of W/Hr > 0.5 is not more informative than BMI in predicting the cardiovascular risk. Data should be re-analyzed and results obtained should be reported.

c. Blood pressure measurement. The use of a mercury sphygmomanometer exposes to a higher inter- and intra-observer variability than the use of an electronic sphygmomanometer.

d. Cardiovascular risk factors categorization. Authors used tertiles to categorized the cardiovascular risk factor variables. This choice is potentially questionable. In
fact, this is an arbitrary choice and it should be adequately motivated in the manuscript.

e. Results. There is overlap of data reported in figures, tables, and text. Text may be potentially reduced.

Discussion. Several studies have been previously published exploring the relationship between waist/height ratio and the cardiovascular risk variables in children (hara M, et al. J Atheroscler Thromb 2002;9:127-32; Maffeis C, et al. J Pediatr. 2008;152(2):207-13) and should be reported in the list of references. A comparison between the results obtained in previous studies should be also provided. Puberty: puberty affects cardiovascular risk factors and fat distribution. This, on the basis of the results obtained, should be discussed.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests