Reviewer's report

Title: TriGlycerides and High-Density Lipoprotein Cholesterol ratio compared with Homeostasis Model Assessment Insulin Resistance indexes in screening for Metabolic Syndrome in the Chinese obese children: a cross section study

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Reviewer: LAURA LUCACCIONI

Reviewer's report:

Major Compulsory Revisions

First of all I would like to thank BMC Pediatrics for asking me to review the paper titled: “TriGlycerides and High-Density Lipoprotein Cholesterol ratio compared with Homeostasis Model Assessment Insulin Resistance indexes in screening for Metabolic Syndrome in the Chinese obese children: a cross section study”. The topic of this manuscript falls within the scope of the journal, but it can be considered only after Major Compulsory Revisions:

1. Overall, the manuscript needs a major revision for style and grammar to make it readable for audiences with English as a primary language.

2. In section “Background” the question posed by authors is not clear to me. The definition of Metabolic Syndrome (MS) in paediatric population is still controversial especially because of the progressive changes characterising this age. This definition should be better clarified in the text according to different ages, specifying the age from 6 to 10 years as well [Zimmet et al., Pediatric Diabetes 2007]. Authors strongly underline this unclear background (e.g. page 3, lines 45-48) but, according to this, how can the aim of the study be “to investigate the optimal cutoffs of TG/HDL-C ratio, HOMA-IR and compare their accuracy to identify the MS” if even the definition of the disease is still unclear? If there is no certain disease definition, diagnostic and screening criteria cannot be considered certain as well. We cannot look for “optimal cutoffs” if the role of the ratio is still unclear in MS. It is maybe better to work comparing “established risk factors” than with unclear MS diagnostic criteria [Kassi et al, BMC Medicine 2011].

3. Methods – Study Population: Sex ratio and the amount of patients in each group according to different ages could be specified. What about the family history? Was it evaluated, according to the MS-IDF 2007 definition especially for the age range between 6 and 10 years of age? Why authors decided not to use this definition in that range of age, but their own definition? This can increase study’s bias.

4. Methods- Definitions of MS and HOMA-IR calculation: Again, it is not clear why authors decided to use their own MS definition for children between 6 and 10 years of age?

5. Methods – Statistical analysis: Why data are reported as median? Please, specify the data distribution. It is not clear to me why authors have chosen a
sample of “26” to achieve 90% of power and what is the “another diagnostic test” (page 6, line 113) they said? This section results confusing and needs to be clarified with more details.

6. Results – Clinical Characteristics and methabolic phenotypes of all samples. Page 7, lines 129-131: This sentence is confusing. Authors introduced the term “adolescents” that was not clarified before (age cut-off? Gender?). Looking at the Table 1 they seem to refer to the whole Male population, but again this is not clear and need more explanation. According to this, also the following sentence (lines 133-138) is confusing.

7. Results – Receiver Operating Characteristics Analyses: Even if we may assume that the statistical analysis comparing AUCs of three different ratios is reliable, Authors’ conclusions are not consistent, according to the not consistency of the MS definition, that is the start point of the whole ROC analysis.

8. Even if each part is equally represented, Abstract is missing of a clear explanation of the aim of the study and of the population involved in the study (sex? BMI? Etc..).

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

Quality of written English: Not suitable for publication unless extensively edited

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests