Reviewer's report

Title: Insulin resistance (HOMA-IR) cut-off values and the metabolic syndrome in a general adult population: effect of gender and age. EPIRCE cross-sectional study.

Version: 1 Date: 11 March 2013

Reviewer: Fumihiko Kamezaki

Reviewer’s report:

The authors examined the influence of age and gender on the proposed cutoff levels of homeostasis model assessment of insulin resistance (HOMA-IR) in order to identify subjects with metabolic syndrome (MetS). The results revealed that the HOMA-IR levels to define insulin resistance have to be modified by age in women without type 2 diabetes. This study is potentially interesting, but there are a number of issues that need to be addressed.

Major Compulsory Revisions:

#1. For a better understanding of this study by the majority of readers of the Journal, the authors should revise the Abstract section in more detail. For example, the authors do not show the definition of MetS and the methodology of ROC curve analysis. In addition, the reviewer thinks that the authors have to clearly show the study results and concisely conclude this study. Also, the authors should avoid suddenly uses of abbreviations such HOMA-IR, IR, ROC, and MetS.

#2. More methodological details should be provided regarding the measurement for fasting insulin. In addition, the reviewer thinks that researches about the HOMA-IR should at least exclude subjects with the use of antidiabetic drugs in order to diminish the possibility of inaccurate evaluations of HOMA-IR. Antidiabetic drugs and high levels of fasting glucose may influence the study results in diabetic men and women.

#3. Why don’t the authors use the updated criteria of MetS (Reference 8) by six major world organizations including the International Diabetes Federation? Abdominal (central) obesity is not the sole criterion for the diagnosis.

#4. The authors should show the proportions of post-menopausal women, and examine the impacts of menopausal changes on the HOMA-IR levels.

Minor Essential Revisions:

#1. The authors should not use abbreviations including CVD, DM2, and CKD because such words are not repeatedly use in the text (Background, 10th paragraph and Methods, 6th paragraph).

#2. Is the sentence (Methods, 14th to 15th paragraph) “The average age was 49.4#16.2 years (range 19-92 years)” correct? The authors describe the EPIRCE study included Spanish persons aged 20 years and older (Methods, 4th
#3. The method of measuring waist circumference should be provided (Methods, 21th paragraph). In women, waist circumference at the umbilical level is thought to be several centimeters longer than that measured at the midway between the lowest rib and the iliac crest.

#4. Are the continuous data normally distributed? If the data are not normally distributed, they are often presented median and quartiles, for instance.

#5. The authors have to revise the sentence “Women had a significantly higher waist circumference component than men (43.6% vs. 29.8%, P<0.0001) (Results, 6th to 7th paragraph)”. There are differences in cutoff levels of waist circumference between the International Diabetes Federation criteria and the Adult Treatment Panel III criteria.

#6. The authors should provide high-resolution figures (Figure 1 and 2 are unclear for the readers).

#7. The authors should show the numbers of each age group in Table 2 and 3.

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**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.