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: 24 March 2013

Reviewer: Qiuhua Shen

Reviewer's report:

Gayoso-Diz et al investigated the effects of age and gender on the cut-off values of HOMA-IR in identifying subjects with metabolic syndrome among general Spanish adults, using cross-sectional data from the EPIRCE study (n = 2459). This is an important topic and the research question was well defined. The methods used in the study were appropriate and well described. The findings from this study will provide useful information to the study pool of this important research topic. However, the manuscript could be further improved with the following minor essential revisions.

Minor Essential Revisions

ABSTRACT

1. Background: little background information was provided. Instead, the purpose of the study was presented. Please provide brief background information about HOMA-IR cut-off values.

2. Background: Ln1, please change “Backgrund” to “Background.”; change “describes” to “describe”; Ln2, please change “identifying” to “identify”.

3. Methods: the title and the purpose of the study indicated that the effects of age and gender on HOMA-IR cut-off values would be examined in this study; however, no information about gender was provided. Please add this piece of the information.

4. Methods: Ln1-3, “The effect of age on the accuracy of HOMA-IR was analyzed...”, please specify the accuracy of HOMA-IR in determining what (subjects with metabolic syndrome or subjects with insulin resistance??).

5. Results: Ln2, please change “…to 2.05 take into account MetS components.” to “…to 2.05 taking into account of MetS components”.

BACKGROUND

6. P1, Ln1, the authors used “type 2 diabetes”; while in P2, Ln4, “diabetes mellitus type 2 (DM2)” was used. Please keep it consistent throughout the text.

7. P3, Ln7-8, the sentence of “However, in no case take into account the ability of
classification proposed cutoff points are in terms of clinically relevant outcomes” is confusing. Please re-write and clarify.

8. P4, please combine this paragraph with P3 by “In addition, in these studies the results ....”

9. P5, Ln2-3, “On the other hand, the prevalence cardio metabolic diseases such as ….”, please add “of” between “prevalence” and “cardio metabolic diseases”.

10. P6, Ln4, please delete “serum” and change “identifying” to “identify”.

METHODS

Setting

11. P1, Ln1, please change the first sentence to “The present study was a secondary analysis of data from a survey of the Spanish general adult population (EPIRCE)”.

12. P1, Ln5, please change “the adult Spanish population” to “the Spanish adult population”.

13. P2, Ln4, please change “sex” to “gender”.

Anthropometric and clinical measurements

14. P2, Ln3-5, it was mentioned here that individuals were classified into normal weight, overweight, or obese according to their BMI; however, no data related to this information were reported in the Results section.

Definition of metabolic syndrome

15. P1, Ln4, please add “cm” after “# 80”.

Statistical Analyses

16. P1, Ln, 3-4, please provide a brief justification of the use of the Mann-Whitney U-test and Kruskall-Wallis test.

17. P2, Ln3, please add “is” between the words of “it” and “well” in the sentence of “Since it well established that HOMA-IR values behave differently according to .... in men and in women.”

RESULTS

18. P1, a brief description of the significant results presented in Table 1 should be provided after the first sentence “Table 1 summarizes anthropometric, clinical, and biochemical characteristics of the study population.”.

19. P1, L1-2, first sentence “Table 1 summarizes anthropometric, clinical, and biochemical characteristics of the study population.”, please change “population” to “sample”.
20. P2, Ln 1-3, please move this paragraph to P1 and in the front of the sentence of “In non-diabetic individuals, but not in diabetic individuals, we found significant differences by gender in components of MetS (data no shown)”. This will help the flow of presenting the data (discussing the data presented in Table 1 and followed by data not shown in Table 1).

21. P1, Ln4-7, the sentences were somewhat confusing. Please re-write to convey the information that the percentage of men with positive MetS components of higher triglycerides, blood pressure, and glycemia was significantly higher than in women. In contrast, women with positive MetS components of larger waist circumference were significantly higher than men.

AUC values of HOMA-IR by gender and diabetes status

22. Since the data related to the effect of age on HOMA-IR was also presented under this subheading, it is suggested that “age” should be included in the subheading too (i.e., AUC values of HOMA-IR by age, gender, and diabetes status).

23. P1, Ln1, please add a brief description of Table 2 and Figure 1 before the first sentence of “Regardless of diabetes status…” (i.e., The results of the effects of age and gender on the accuracy of HOMA-IR (AUC values) among non-diabetic and diabetic individuals were presented in Table 2. Figure 1 shows the estimated AUC values by age, with the corresponding 95% point wise bootstrap confidence band in non-diabetic men and women.)

24. P2, please combine this paragraph with P1.

25. P2, Ln4-6, please delete the sentence of “Figure 1 shows the estimated AUC values by age, with the corresponding 95% point wise bootstrap confidence bands.” after a brief description of Figure 1 is added in P1.

Cut-off values of HOMA-IR

26. P2, please combine this paragraph with P1.

27. P4, Ln1-2, the sentence of “All values are between 70th and 75th percentile of HOMA-IR values in the Spanish adult population.” may be deleted as this was also discussed in the Discussion section.

DISCUSSION

28. P3, please correct the following editorial errors:
a. Ln3, please add a period at the end of the sentence of “… for MetSATPIII in women”.
b. Ln4, please delete the extra “.” before “.0.65” and please add “)” after “0.70”.
c. Ln7, please change “we no found…” to “we did not find…”.

29. P4, Ln2-3, please provide references to the statement of “Recent studies
reported marked gender differences with regard to degrees of IR and body composition.”

30. P5, Ln1, please spell out “IR” as “Insulin resistance” as it is at the beginning of the sentence.

31. P5, Ln4, it is late to introduce Table 4 here in the Discussion section. The authors could have mentioned this table in the Background section in P3, Ln 5, after introducing previous population based studies “….in different geographic areas [15-22]”.

32. P5, Ln7-10, the same statement of “The consideration of the attendant risk of cardiovascular and metabolic diseases to establish this cut-off point would increase its clinical utility in identifying those patients in whom the presence of multiple metabolic risk factors imparts an increased metabolic and cardiovascular risk.” appeared three times in the manuscript, including the Abstract, Discussion, and Conclusions. Please re-write/paraphrase to avoid repeating the exact statements three times.

33. P5, Ln11, was the threshold value of HOMA-IR using 90th percentile criteria (3.46) found in the present study or was it reported in the previous studies? This value was not reported in the Results section. If it was from the present study, please add to the Results section. If not, please provide reference.

CONCLUSION

34. P3, Ln 1, please change “sex” to “gender”.

REFERENCES

35. The format of the references list did not follow the BMC Endocrine Disorders reference style. Please refer to the examples of the BMC Endocrine Disorders reference style provided in the Instructions for Authors and reformat the references list to ensure the style is followed precisely. For example, all named authors (up to the first 30) should be listed before adding “et al.”; the title of a journal article and volume should be bold; Journal names should be abbreviated according to Index Medicus/MEDLINE and italicized.

36. Reference #13, please spell out “IR” as “Insulin resistance” in the title.

Table 1

37. Please add the numbers of subjects who had metabolic syndrome among women and men with or without diabetes, using ATP III and IDF criteria. For example, 11.1% (n = …).

38. Please add “HDL, high density lipoprotein” to the footnote of Table 1.

Table 2

39. Please add footnotes for the abbreviations of HOMA-IR, ATPIII, MetS, IDF in Table 2.
Table 3
40. Please add footnotes for the abbreviations of HOMA-IR, ATPIII, MetS, IDF in Table 3.

Table 4
41. Please provide the reference numbers for all the references cited in the table.

42. Cited study of “Taniguchi, 1992” in Table 4 was not found in the reference list. Did the authors intend to refer to Reference #22 (Nakai et al 2002)? If so, please correct the citation. If not, please provide the reference for this study.

Figure 1 and 2
43. The resolution of the two figures was relatively low and the labels for the figures were hard to read.

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

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

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.