Reviewer's report

Title: Risk of type 2 diabetes according to traditional and emerging anthropometric indices in Spain, a Mediterranean country with high prevalence of obesity. Results from a large-scale prospective cohort study

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Reviewer: Yung-Po Liaw

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In this study, the authors attempted to obtain specific estimates of diabetes risk in Spain according to different anthropometric variables in a large cohort of participants from the European Prospective Investigation into Cancer and Nutrition (EPIC)-Spain study, and to define those anthropometric values that would better predict future risk of T2DM in this population. The results showed that diabetes risk was associated with higher overall and central obesity indices even at BMI and WC values regarded as normal. The measurement of waist circumference in the clinical setting is strongly recommended for the evaluation of future T2DM risk in women. To increase scientific merits in this study, I would like to suggest several Major Compulsory Revisions.

1. The authors attempted to use the index of PE(RR-1)/(1+ PE(RR-1)) in method section to show the population risk of diabetes attributable to excess body weight. However, we can't find the related results in any tables or figures. Though the authors showed the related statement in result section as “The estimated population attributable risk of diabetes in the overweight was 29.8% (95% CI: 18.7 - 41.0%) for men and 37.1% (95% CI: 27.1 - 47.1%) for women.” The authors still should provide a clear calculation process or explanation about the statement.

2. The authors state: "The diabetic men were more prone to smoke, as opposed to diabetic women in table2" in results. Does the smoking factor play an confounder or interaction role in the study?

3. The prevalence rate of obesity is very high in this study showed in table2, the results of this study should be compared with other countries in Asian with lower obesity rate.

4. The P_value should be calculated in table2.

5. According to table3, the authors showed the statement in results as “adjustment of BMI models for indices of central obesity did not affect the estimation of diabetes risk in men, but led to an attenuation of risk estimates in women”. How to compare the different risk estimates between male and female based on different referent group?

6. The authors showed both table4 and table5, the authors should make more
discourses or comparisons for these two tables.

7. Why only BMI and WC data were plotted in Figure 1? Why are the WHtR (with largest AUC) and WHR data not included? Why is the waist-to-hip not analyzed in Table 5? To compare, the authors should put the same kinds of anthropometric variables in different tables or in figure.

8. Please define “correctly classified” showed in Table 5?

9. The authors also should discuss the different pattern at same anthropometric variables between male and female for figure 1 in discussion section

**Level of interest:** An article of importance in its field

**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