Reviewer's report

Title: Waist circumference and insulin resistance: a cross-sectional study of Japanese men

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Reviewer: Altan Onat

Reviewer's report:

Authors investigated in this cross-sectional study the relationship between waist circumference and insulin resistance and the optimal cutoff point for waist circumference in this relationship among 4800 middle-aged Japanese men. Geometric means of five increasing waist categories, adjusted for age, smoking status and alcohol usage, demonstrated a highly significant linear increase in HOMA index. Similarly, the odds of HOMA-IR #2.00 significantly increased in each of the successive waist categories. In ROC curve analyses, a cutoff of 85 cm waist girth was found to display higher areas under curve for HOMA-IR than those of 80 cm and 90 cm waist. Thus, authors concluded that a waist girth of 85 cm was optimally associated with insulin resistance in middle-aged Japanese men.

The circumspect objective in this cross-sectional study has been well shown by appropriate methodology and analyses. The manuscript is clearly written.

A few minor concerns are as follows.

Categorization of smoking status and alcohol usage in the logistic regression models need to be described better in the Methods section under the heading of definitions rather than in parentheses under data analysis.

Please, provide the Spearman correlation coefficient between the two variables studied.

A brief discussion of factors (including lipids, lipoproteins, blood pressure and proinflammatory state) that confound the relationship between abdominal obesity and insulin resistance would be in place.

Given the significant elevation of IR already at levels of 80-84 cm and the strong linear increase in subsequent categories, would authors consider expressing their opinion whether Japanese men have less confounders in this relationship than other ethnicities. This is relevant to compare with the sizeable discordance between IR and metabolic syndrome in some other ethnicities.

In the conclusions, it would be more appropriate to use the term “to be associated with” rather than “predicting” IR since this is a cross-sectional study and controversy persists whether central obesity induces IR or vice versa.

Limitations might encompass briefly the two above stated issues (study design and confounding factors).
**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests