Reviewer’s report

Title: The product of fasting plasma glucose and triglycerides improves risk prediction of type 2 diabetes in middle-aged Koreans

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Reviewer: Carlos Lorenzo

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Comments to the Authors:

Lee et al examine the ability of triglyceride (TG)-related indices, such as lipid accumulation product (LAP) and the product of fasting glucose and TG (TyG index), to predict incident T2DM. Results indicate that TyG index is a better predictive discrimination for incident diabetes than waist circumference (WC), LAP, and TG.

I have several comments:

1) TyG index, LAP, and TG are compared to WC for predicting diabetes. However, the correlation between WC and BMI is usually high (r ~0.8), and BMI is already in the basic prediction model (age, body mass index, family history of diabetes, hypertension, current smoking, current drinking, and fasting plasma glucose). Therefore, WC may not add too much predictive discrimination to BMI.

2) The authors demonstrate that TG increases the predictive discrimination of the basic model. However, the authors do not demonstrate that TyG index is better than TG for predicting future diabetes. Per example, AROCs for basic model + TyG index are marginally better than those of basic model + TG in both men (0.705 vs 0.700) and women (0.674 vs 0.672).

3) The authors put emphasis in the reclassification ability of TyG index. However, there are some considerations to make: a) there are not clinically relevant strata in the prediction of diabetes (in contrast to clinically relevant strata for predicting future coronary heart disease);
and b) the IDI for the basic model + TyG index is not much different than that for the basic model + TG in either men (0.012 vs 0.007) or women (0.022 vs 0.020).

4) It would be useful that the authors state, in the Results section, the significance of the findings regarding the AROC, cNRI, and IDI for the readers that are not familiar with those terms.

5) In the Abstract Conclusions: "Therefore, TyG index should be considered as a screening tool for identification of patients at high risk for T2DM in practice." Similar statement is also in the last paragraph of the manuscript.

The authors have study the predictive discrimination of TyG beyond that of a basic model. However, the authors have not examined the TyG index as a screening tool for the identification of individuals at increased risk of diabetes. How can the TyG index be used as a screening tool?

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.
Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.
Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.
No

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