COMMENTS AND RESPONSES

An Accurate Risk Score Based on Anthropometric, Dietary, and Lifestyle Factors to Predict the Development of Type 2 Diabetes

Response to Schulze et al.

We read with interest the article by Schulze et al. (1) that describes the development of the accurate German Diabetes Risk Score (DRS) to predict the development of type 2 diabetes. There is a clear consensus that it is necessary to have simple noninvasive tools for screening diabetes risk in order to identify persons who are eligible for further diagnostic assessments or preventive interventions (2).

An alternative test is the Finnish DRS (3), which is based on a categorical model and currently used in population-based type 2 diabetes prevention projects in several countries. In practice, the Finnish DRS score can be graded into five categories to give a level of risk between "low" and "very high" that advises indivduals for further steps of diagnosis and/or interventions. The major difference between the Finnish DRS and the German DRS is that the latter includes additional lifestyle questions and uses continuous variables without giving a risk classification (2).

We explored the effect of these additional variables added to the Finnish DRS questionnaire and analyzed 512 healthy participants in a prospective study in Dresden, Germany. During an average follow-up time of 3.8 years, 59 incident cases of diabetes were detected using an oral glucose tolerance test at baseline and at follow-up. To assess the ability of six Finnish DRS variables (age, BMI, waist circumference, family history of diabetes, history of hypertension, and history of high blood glucose) to predict diabetes risk, a logistic regression model was developed including the first three variables as continuous ones. The receiver operator characteristic area under the curve (AUC) to identify individuals who developed diabetes in the testing sample was 0.795. By adding the lifestyle variables (smoking, alcohol, and physical activity) to this model, the AUC increased nonsignificantly to 0.805. This is in line with the original Finnish DRS model, where questions on diet and physical activity did not add much to the predictive power.

We also assessed the variables from the German DRS with the same procedure. Using four variables of the German DRS (age, waist circumference, height, and hypertension), the AUC for diabetes prediction was 0.751 in our study. Adding the same three lifestyle variables (alcohol, activity, and smoking), the AUC changed to 0.739, showing no significant difference.

Based on our data, we can conclude that the addition of lifestyle factors does not necessarily increase the power of a risk score to predict diabetes. According to Schulz et al., the German DRS seems to be slightly more powerful to predict diabetes due to the use of continuous variables (2), but in our present study this was not the case. Conversely, the Finnish DRS model is more practical without losing much of the predictive power. Of the tools currently available, the Finnish DRS is currently the most widely used. It is an ideal tool to be used in primary diabetes prevention programs because it is simple to understand by lay people, does not any require laboratory or nutrient intake data, does not require a computer to calculate the risk score, and can be applied on a population level.

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