COMMENT ON ANJANA ET AL.

Incidence of Diabetes and Prediabetes and Predictors of Progression Among Asian Indians: 10-Year Follow-up of the Chennai Urban Rural Epidemiology Study (CURES). Diabetes Care 2015;38: 1441–1448

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Anjana et al. (1) analyzed the rate of worsening of glucose metabolism in subjects with normal glucose tolerance (NGT) and impaired fasting glucose (IFG)/impaired glucose tolerance (IGT), the rate of regression from abnormal glucose metabolism to NGT, and the risk factors for the worsening in an Asian Indian cohort. The study may be a valuable addition to the previously accumulated knowledge in the epidemiology of the diabetes evolution. However, we are afraid that the classification of glucose tolerance categories and terminology were confusing and misleading in their study. Namely, the current definition of prediabetes by the American Diabetes Association is fasting plasma glucose (FPG) of 100–125 mg/dL (5.6–6.9 mmol/L), 2-h plasma glucose (PG) during 75-g oral glucose tolerance test of 140–199 mg/dL (7.8–11.0 mmol/L), or HbA_{1c} of 5.7–6.4% (39–64 mmol/mol) (2). Although Anjana et al. (1) determined HbA_{1c} at the baseline and the follow-up, the values were not used for the classification of the participants by the authors. Instead, the authors used prediabetes as a synonym for IFG/IGT. That is, they defined prediabetes as "FPG 100–125 mg/dL (5.6–6.9 mmol/L) or 2-h PG 140–199 mg/dL (7.8–11.0 mmol/L)," so that the participants were classified as prediabetes irrespective of HbA_{1c} levels if the glucose criteria were fulfilled (1). The reason(s) why they did not conform to the standard definition of prediabetes was not provided.

The difference between the two prediabetes definitions, i.e., categorization with and without adoption of HbA_{1c}, is not negligible, as reported previously (3,4). Namely, approximately 15% of subjects with HbA_{1c} 5.7–6.4% (39–64 mmol/mol) have FPG $<$100 mg/dL (5.6 mmol/L) or 2-h PG $<$140 mg/dL (7.8 mmol/L) (3,4). The value, 15%, was obtained by calculation on the basis of mean and SE (3) or SD (4) of FPG and 2-h PG of subjects with HbA_{1c} 5.7–6.4% (39–64 mmol/mol) in these studies. In the study by Anjana et al. (1), existence of this subset of subjects with prediabetes was neglected and such individuals were treated as NGT. Importantly, correlation between HbA_{1c} and 2-h PG was not significant in subjects without diabetes (3), β-cell function was worse in subjects with "isolated IFG plus HbA_{1c} 5.7–6.4% (39–64 mmol/mol)" compared with those with isolated IFG alone (4), and HbA_{1c} 5.7–6.4% (39–64 mmol/mol) was less sensitive than IFG and IGT for the detection of subjects with increased risk for development of diabetes (3). These facts imply that groups of subjects captured by the two diagnostic criteria of prediabetes are pathophysiologically dissimilar. We consider the use of prediabetes as a synonym for IFG/IGT as inappropriate and misleading, if not totally wrong.

In fact, the term prediabetes has been used to denote different subsets of subjects with nondiabetic hyperglycemia by other researchers, too (5). Investigators should explain why they used their own definition of prediabetes to the readers if they used nonstandard definitions. We believe now is the time to standardize the use of "prediabetes."

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