Prevalence of Abnormal Glucose Tolerance and Risk Factors in Urban and Rural Malaysia

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OBJECTIVE—To determine the prevalence of prediabetes and diabetes among rural and urban Malaysians.

RESEARCH DESIGN AND METHODS—This cross-sectional survey was conducted among 3,879 Malaysian adults (1,335 men and 2,544 women). All subjects underwent the 75-g oral glucose tolerance test (OGTT).

RESULTS—The overall prevalence of prediabetes was 22.1% (30.2% in men and 69.8% in women). Isolated impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) were found in 3.4 and 16.1% of the study population, respectively, whereas 2.6% of the subjects had both IFG and IGT. Based on an OGTT, the prevalence of newly diagnosed type 2 diabetes was 12.6% (31.0% in men and 69.0% in women). The prediabetic subjects also had an increased prevalence of cardiovascular disease risk factors.

CONCLUSIONS—The large proportion of undiagnosed cases of prediabetes and diabetes reflects the lack of public awareness of the disease.
with both IFG and IGT, the prevalence of CVD risk factors was high (65.7% had dyslipidaemia, 52.0% had hypertension, 76.5% had abdominal obesity [≥90 cm for men and >80 cm for women], 82.4% had BMI ≥23 kg/m², and 10.8% were current smokers). Using multiple logistic regression analysis, prediabetes was found to be associated with a history of smoking, age, and the low-income group.

The prevalence of newly diagnosed type 2 diabetes was 12.6% (31.0% in men and 69.0% in women) and increased with age from 3.8% among adults aged <30 years to 11.6% among adults aged 40–49 years and was still higher (16.5%) in the older age-group (≥60 years). Without relying on the OGTT, we would have missed ~5% of type 2 diabetes cases.

CONCLUSIONS—Glucose intolerance in this study is defined according to the World Health Organization diagnostic criteria (5). The prevalence of prediabetes in our study is comparable to other similar studies (6,7), and the percentage rose to 24.4% in those aged ≥60 years. Interestingly, the prevalence of IFG was lower than IGT in studied populations. Similarly, IGT was found to be more prevalent compared with IFG in Mauritius (8), in the U.S. (9), and in Pima Indians (10).

In our study, ~16.1% of adults had isolated IGT, a condition that increases the risk for diabetes and other cardiovascular risk factors (11). In fact, many subjects with IGT will develop CVD before progressing to diabetes, as shown in one Japanese study (12). Changes in lifestyle and dietary habits in our population, in both rural and in urban areas, have resulted in the increased prevalence of risk factors for CVD, such as obesity, hypertension, and diabetes. Our prediabetic subjects had a high risk for CVD. This is not to be unexpected because prediabetes is a prelude to type 2 diabetes and is also associated with various comorbidities, which has been termed metabolic syndrome.

The prevalence of newly diagnosed type 2 diabetes in our study was 12.6% and is increasing with age. This high prevalence of undiagnosed diabetes, together with its earlier age of onset (<30 years), poses a serious public health problem, especially if there is no serious concerted effort taken to improve it. By performing the OGTT, we were able to diagnose more subjects with type 2 diabetes because it captured both fasting and elevated 2-h plasma glucose levels.

In summary, the high prevalence of glucose intolerance among adults aged ≥18 years has raised public health concerns. Because individuals with prediabetes usually have no apparent clinical symptoms, great efforts may be needed to identify them early and to intervene against the root causes of insulin resistance, such as overweight, physical inactivity, and unhealthy diet in pediatric primary care and through public health services.

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