

Prevalence of Pre-Diabetes and Its Association With Clustering of Cardiometabolic Risk Factors and Hyperinsulinemia Among U.S. Adolescents

National Health and Nutrition Examination Survey 2005–2006

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Abstract

OBJECTIVE—Impaired fasting glucose (IFG) and/or impaired glucose tolerance (IGT) are considered to constitute “pre-diabetes.” We estimated the prevalence of IFG, IGT, and pre-diabetes among U.S. adolescents using data from a nationally representative sample.

RESEARCH DESIGN AND METHODS—We analyzed data from participants aged 12–19 years in the National Health and Nutrition Examination Survey 2005–2006. We used fasting plasma glucose and 2-h glucose during an oral glucose tolerance test to assess the prevalence of IFG, IGT, and pre-diabetes and used the log-binomial model to estimate the prevalence ratios (PRs) and 95% CIs.

RESULTS—The unadjusted prevalences of IFG, IGT, and pre-diabetes were 13.1, 3.4, and 16.1%, respectively. Boys had a 2.4-fold higher prevalence of pre-diabetes than girls (95% CI 1.3–4.3). Non-Hispanic blacks had a lower rate than non-Hispanic whites (PR 0.6, 95% CI 0.4–0.9). Adolescents aged 16–19 years had a lower rate than those aged 12–15 years (0.6, 0.4–0.9). Overweight adolescents had a 2.6-fold higher rate than those with normal weight (1.3–5.1). Adolescents with two or more cardiometabolic risk factors had a 2.7-fold higher rate than those with none (1.5–4.8). Adolescents with hyperinsulinemia had a fourfold higher prevalence (2.2–7.4) than those without. Neither overweight nor number of cardiometabolic risk factors was significantly associated with pre-diabetes after adjustment for hyperinsulinemia.

CONCLUSIONS—Pre-diabetes was highly prevalent among adolescents. Hyperinsulinemia was independently associated with pre-diabetes and may account for the association of overweight and clustering of cardiometabolic risk factors with pre-diabetes.