

Obesity and metabolic risk factors associated with prediabetes among bangladeshi youth: a nationwide community-based study

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Abstract

Background: Prediabetes is an emerging concern among Bangladeshi adolescents and young adults, with coexisting obesity and metabolic abnormalities increasing the risk of type 2 diabetes and cardiovascular disease.

Objectives: To evaluate the association of prediabetes with obesity and metabolic abnormalities among adolescents and young adults in Bangladesh.

Methods: This post hoc analysis included 2,196 participants aged 10–34 years from a nationwide community-based cross-sectional study conducted in 2024–2025. Participants were selected from all eight administrative divisions using multistage random sampling. Sociodemographic, lifestyle, anthropometric, and clinical data were collected using standardized protocols. Fasting and 2-hour plasma glucose and lipid profiles were assessed. Prediabetes was defined as impaired fasting glucose and/or impaired glucose tolerance according to World Health Organization (WHO) criteria, and obesity using age-appropriate criteria.

Results: Median age was 18 years (IQR 15–25); 50.2% were adolescents, 49.8% young adults, and 50.4% female. Prediabetes occurred in 423 participants (19.3%), and 27.9% had obesity. In unadjusted analyses, female sex (OR 1.9, 95% CI 1.6–2.4), obesity (OR 1.8, 95% CI 1.4–2.2), family history (OR 1.4, 95% CI 1.1–1.7), elevated total cholesterol (OR 1.7, 95% CI 1.2–2.5), LDL (OR 2.5, 95% CI 1.5–3.9), and triglycerides (OR 2.3, 95% CI 1.8–3.0) were associated with prediabetes. Multivariable analyses showed independent associations of female sex (OR 1.5, 95% CI 1.1–2.2), obesity (OR 1.6, 95% CI 1.1–2.1), and triglycerides (OR 1.9, 95% CI 1.4–2.8) among young adults; among adolescents, female sex (OR 1.7, 95% CI 1.2–2.4) and obesity (OR 1.8, 95% CI 1.3–2.4) remained associated.

Conclusions: Prediabetes was common among adolescents and young adults and was associated with obesity, female sex, family history of diabetes, and adverse lipid profiles. These findings support age-appropriate obesity prevention and targeted metabolic screening and risk-reduction interventions.

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