# Nationwide Survey of Prevalence and Risk Factors for Diabetes and Prediabetes in Bangladeshi Adults

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Diabetes is a major noncommunicable disease, ranking as a leading cause of death and disability worldwide (1). Globally, the prevalence of diabetes is ~8%, and nearly 80% of patients with diabetes live in low- and middle-income countries (2). Like many developing countries, prevalence of diabetes in Bangladesh increased substantially from 4% in 1990 to 10% in 2011 and is projected to reach 13% by 2030 (3,4). Despite this heavy burden, currently there are no epidemiologic studies in Bangladesh that investigate prevalence of diabetes and risk factors using nationally representative data. Therefore, we estimated the prevalence of diabetes and prediabetes and identified associated risk factors using Bangladesh nationwide survey data by multilevel logistic regression models.

Our analysis was based on the 2011 Bangladesh Demographic and Health Survey. Data were available as of February 2013, including 8,835 residents (4,524 men and 4,311 women) aged ≥35 years. The overall response rate was 89.17%. After dropping of nonresponders and missing data related to working status and hypertension, the remaining sample was 7,541. The estimated age-adjusted prevalence was taken into account for complex survey design and sampling weights.

Overall, 795 persons (9.7% [95% CI 4.2–10.5]) had diabetes, and 1,786 persons (23.0% [95% CI 21.3–24.7]) had prediabetes. Prevalence was nearly similar in both sexes (diabetes: men 9.3%, women 10.4%; prediabetes: men, 22.9%, women, 23.3%). Among diabetic persons, nearly 56.0% (95% CI 51.2–60.7) were unaware that they had diabetes. Only 39.5% (95% CI 35.1–44.1) of diabetic persons received treatment from consulting doctors regularly. In the multivariable logistic regression analyses, the odds of diabetes increased with increasing age (odds ratios of having diabetes for age-groups 35–39, 40–44, 45–49, 50–54,55–59, 60–69, and ≥70 years were 1.00 (reference), 1.17 [95% CI 0.86–1.57], 1.46 [1.09–1.96], 1.33 [0.97–1.82], 1.94 [1.40–2.68], 1.51 [1.09–2.08], and 1.82 [1.27–2.60], respectively) and with increasing weight (1.93 [1.52–2.47] among persons who were overweight/obese compared with normal-weight persons). The results also suggest that persons with higher education, those having hypertension, those belonging to the richest household, and the currently working group were more likely to have diabetes compared with their uneducated, nonhypertensive, poorest, and nonworking counterparts. Regarding prediabetes, age, education, and BMI showed a significant positive association. Bangladesh is a small country (147,570 km$^2$); however, there was a striking variation of being diabetic and prediabetic across the geographic regions. The highest age-adjusted prevalence of diabetes was observed in the southeastern part (Chittagong, 12.4%, and Barisal, 11.6%) of the country, followed by central (Dhaka, 10.2%), middle-western (Rajshahi, 10.2%), eastern (Sylhet, 10.0%), northwestern (Rajgpur, 8.0%), and western (Khulna, 6.4%) parts. Regression models revealed that residents in the southeastern part of Bangladesh were almost two times more likely to be diabetic compared with those living in western parts.

In conclusion, diabetes has become a major public health issue in Bangladesh, affecting one in ten adults. However, significant proportions of adults were unaware of their diabetes disease status, and few with diabetes received treatment regularly. These results suggest that urgent action is necessary to stop diabetes development through improving detection, awareness, prevention, and treatment of diabetes.

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**Duality of Interest.** The authors obtained the data used in this study from the MEASURE DHS Archive. The data were originally collected by Macro International Inc. (Calverton, MD). No other potential conflicts of interest relevant to this article were reported.

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