

## Type 2 Diabetes in India: Prevalence, Management, and Guidelines

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India has been labelled as the diabetic capital of the world due to its high prevalence of type 2 diabetes.<sup>1</sup> Type 2 diabetes is a chronic metabolic disorder that affects the way the body processes glucose, the primary source of energy for cells. The condition arises when the body either resists insulin's effects, a hormone that regulates glucose movement into cells, or does not produce enough insulin to maintain normal glucose levels.<sup>1-3</sup>

The World Health Organization (WHO) has also developed a package for diagnosis and management of type 2 diabetes as part of the Hearts initiative, which aims to improve cardiovascular health in primary health care settings.<sup>1,4-5</sup> The package provides practical guidance on how to diagnose type 2 diabetes using fasting blood glucose or HbA1c tests, how to assess cardiovascular risk using simple clinical criteria or risk scores, how to prescribe appropriate medications for blood glucose, blood pressure and lipid control, how to monitor treatment response and adjust therapy as needed, and how to counsel patients on lifestyle modifications and adherence to treatment.<sup>4</sup>

According to a report on the state level disease burden in India, the percent change in diabetes prevalence among all ages in India from 1990 to 2016 was 64.3%.<sup>1</sup> The prevalence of diabetes in adults aged 20 years and above in India increased from 5.5% in 1990 to 7.7% in 2016.<sup>1</sup> According to a recent report by the National NCD Monitoring Survey, the diabetes prevalence in India stood at 9.3% in 2018.<sup>2</sup> The same report also stated that the prevalence of impaired fasting blood glucose (IFG) in India was 24.5%.<sup>2</sup> Within the age group of 20–79 years, India had 74.9 million diabetics in 2021, which is projected to increase to 124.9 million by 2045.<sup>2</sup>

According to the National Non communicable Disease Monitoring Survey (NNMS) conducted in 2017–18, India's prevalence of type 2 diabetes and impaired fasting blood glucose (IFG) was 9.3% and 24.5%, respectively. Among those with type 2 diabetes, 45.8% were aware, 36.1% were on treatment, and 15.7% had it under control.<sup>6</sup> More than three-fourths of adults approached allopathic practitioners for consultation (84.0%) and treatment (78.8%) for diabetes.<sup>6</sup>

The management of type 2 diabetes involves healthy eating, regular exercise, weight loss, diabetes medication or insulin therapy, and blood sugar monitoring.<sup>3</sup> The Indian Council of guidelines cover various aspects of diabetes management, including screening, diagnostic criteria, targets for control, monitoring and follow-up, non-pharmacological and pharmacological management, complications, diabetes and pregnancy, and comorbid conditions.<sup>7</sup> The guidelines emphasize the importance of prevention, education, and lifestyle modifications in managing diabetes. Screening is recommended for all individuals over 30 years of age and at an earlier age for those with risk factors.<sup>7</sup> The guidelines also provide information on differentiating between type 1 and type 2 diabetes, and the "Asian Indian phenotype" that is associated with a higher prevalence of diabetes.

According to a study conducted by the Indian Council of Medical Research, India Diabetes (ICMR-INDIAB), diabetes and related metabolic non-communicable diseases (NCDs) such as hypertension and obesity are becoming increasingly prevalent in India.<sup>7</sup> The study was conducted in all 30 states/union territories of India between 2008 and 2020 and provides accurate and comprehensive state and national level data on the prevalence of diabetes and other metabolic NCDs in India.<sup>2</sup> The study reports on the prevalence of various cardiometabolic disease risk factors such as diabetes, prediabetes, obesity, hypertension, and dyslipidemia, assessment of knowledge of diabetes in the general population and those with known

diabetes, achievement of diabetes treatment targets, and the role of migration, diet, and physical inactivity on diabetes.<sup>2</sup> The study concludes that glycemic control in India is poor and this has resulted in a high prevalence of complications.<sup>8</sup> Another study reports that the Indian population with type 2 diabetes has a high burden (76.6%) of poor glycemic control.<sup>9</sup> This highlights the need for early implementation of optimum diabetes pharmacotherapy to maintain recommended glycemic control, thereby reducing the burden of microvascular complications.<sup>9</sup>

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