



Prevalence and clinical profile of type 2 diabetes mellitus in an adult population

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Abstract

Type 2 diabetes mellitus (T2DM) accounts for most diabetes worldwide and is among the fastest-growing chronic conditions in adults. This narrative review synthesises recent evidence (mainly 2023–2026) on the prevalence and clinical profile of T2DM in adult populations, drawing on global surveillance and burden estimates, a national Indian survey, systematic reviews of complications, and a meta-analysis of prevention trials. Estimates of adults living with diabetes range from roughly 590 to 830 million, depending on age range and method, and T2DM represents about 96% of cases in global burden analyses. Prevalence rises steeply with age, is higher in urban settings, and is concentrated in low- and middle-income countries, where many cases remain undiagnosed or untreated. Excess adiposity is the leading modifiable driver, although South Asian adults often develop T2DM earlier and at lower body mass index. Roughly one in four adults with T2DM has chronic kidney disease, and about one in three has cardiovascular disease. Lifestyle programmes producing modest weight loss reduce progression from prediabetes, yet cost, workforce shortages, and delayed diagnosis limit control. The evidence supports earlier risk-based detection, screening that does not rely on body mass index alone, and stronger primary-care pathways.

Keywords: Type 2 diabetes mellitus, prevalence, clinical profile, comorbidities, South Asia, undiagnosed diabetes

Introduction

Diabetes has become one of the defining chronic diseases of this century, and its type 2 form accounts for the great majority of adult cases. Type 2 diabetes mellitus (T2DM) arises when insulin secretion is insufficient for the body's needs, usually against a background of insulin resistance (American Diabetes Association [ADA] Professional Practice Committee for Diabetes, 2026) ^[1]. Because raised glucose can go unnoticed for years, vascular damage may accumulate before diagnosis.

Knowing how common T2DM is, and what affected adults look like clinically, informs screening, service planning, and prevention. Published figures nevertheless differ, because studies use different age ranges, rely on self-report or laboratory measurement, and model unmeasured populations in different ways. Presentation also varies with ethnicity, age at onset, and setting.

This paper addresses three questions: how prevalent is T2DM among adults and how the burden is distributed; what is the typical clinical profile, including risk factors, comorbidities, and complications; and what evidence exists on prevention and care, together with the barriers that limit their delivery. India and South Asia receive particular attention as a setting with an exceptionally large burden.

Review Approach

This is a targeted narrative review, not a registered systematic review. In October 2026 ^[9], publicly accessible web sources, including journal, publisher, society, and institutional pages, were searched for recent literature, with 2023–2026 preferred. Search terms combined type 2 diabetes with prevalence, Diabetes Atlas, global burden, comorbidities, chronic kidney disease, South Asian phenotype, prediabetes, lifestyle intervention, and barriers to care. Priority went to peer-reviewed global estimates, national surveys, systematic reviews and meta-analyses, and current clinical guidelines. Records were screened for relevance to adults with T2DM, and findings were taken

from abstracts and the full-text pages that could be accessed. One 2018 systematic review was retained because no more recent global synthesis of cardiovascular disease prevalence in T2DM was identified. Because bibliographic databases were not searched under a reproducible protocol and appraisal was informal, relevant studies may have been missed.

Prevalence and Distribution of Type 2 Diabetes Global Estimates

The most widely cited recent figures come from the 11th edition of the International Diabetes Federation (IDF) Diabetes Atlas. It estimated that 589 million adults aged 20–79 years, or 11.1% of that age group, were living with diabetes in 2024 ^[6], and projected a rise to 853 million (about 13%) by 2050 (Genitsaridi *et al.*, 2026). A pooled analysis by the NCD Risk Factor Collaboration (NCD-RisC, 2024) ^[6], based on measured fasting glucose and HbA1c from 1,108 population-based studies, arrived at a higher total: 828 million adults aged 18 years and above in 2022, some 630 million more than in 1990, with age-standardised prevalence roughly doubling. The Global Burden of Disease (GBD) analysis for 2021 ^[5] counted 529 million people with diabetes, 96% of them with type 2 (GBD 2021 Diabetes Collaborators, 2023) ^[2, 5].

These figures are not contradictory. They cover different age bands and years, draw on different data, and handle undiagnosed disease differently. The practical lesson is that the adult burden is in the high hundreds of millions, every recent series shows growth, and any quoted number should carry its age range and method. The IDF authors also note that earlier Atlas projections were later exceeded by observed figures, so current projections may be conservative (Genitsaridi *et al.*, 2026).

Age, Sex, Residence, and Detection

Prevalence rises steeply with age, reaching almost 25% among those aged 75–79 years in the IDF estimates. Men

had slightly higher prevalence than women (11.6% versus 10.7%), and urban adults higher than rural adults (12.3% versus 9.2%) (Genitsaridi *et al.*, 2026). Detection is a major gap: an estimated 252 million adults, more than four in ten of those affected, did not know they had diabetes, and about one in eight adults was judged to be at high risk of developing T2DM (International Diabetes Federation [IDF], 2025). NCD-RisC (2024) ^[6, 7] found that 445 million adults aged 30 years or older with diabetes, or 59%, were taking no medication in 2022, about 3.5 times the 1990 ^[11] figure.

The Indian Experience

India illustrates both scale and heterogeneity. The ICMR-INDIAB national survey, covering over 107,000 participants, found an overall weighted prevalence of 11.4% by oral glucose tolerance testing, with markedly higher prevalence in urban (16.4%) than in rural areas, and estimated 101 million people with diabetes and 136 million with prediabetes in 2021 (Anjana *et al.*, 2023) ^[2, 5]. Prevalence was highest in southern and northern regions and lower in central and northeastern ones. NCD-RisC reported a considerably larger count for India, about 212 million adults (NCD-RisC, 2024); differences in age range, reference year, and diagnostic criteria probably explain much of the gap, a reminder of how much methods matter.

Diagnosis and Clinical Profile

Diagnostic Criteria

Current ADA standards diagnose diabetes from a fasting plasma glucose of at least 126 mg/dL (7.0 mmol/L), a two-hour glucose of at least 200 mg/dL (11.1 mmol/L) on an oral glucose tolerance test, or an HbA1c of 6.5% or higher, with repeat testing for confirmation unless symptoms and clear hyperglycaemia are present (ADA, 2026). The guideline judges the evidence insufficient for diagnosing diabetes with continuous glucose monitoring. Because tests do not always identify the same people, prevalence figures depend on the test used.

Risk Factors and Phenotype

Excess adiposity is the dominant modifiable driver. In the GBD 2021 ^[5] analysis, high body-mass index explained 52.2% of global T2DM disability-adjusted life years, and its share rose by about 24% between 1990 and 2021, with south Asia among the steepest regional increases; dietary factors, low physical activity, tobacco, and alcohol were also assessed (GBD 2021 Diabetes Collaborators, 2023) ^[2].

Obesity does not tell the whole story. A recent BMJ review describes a distinct South Asian presentation: T2DM appears earlier and at lower BMI than in white populations, with more abdominal and hepatic fat, less skeletal muscle, and rapid beta-cell dysfunction. These features are linked to faster glycaemic progression and to more retinopathy, cardiovascular disease, and kidney disease (Misra *et al.*, 2025) ^[10]. A thin or normal-weight adult can therefore still have T2DM, which matters for screening.

Comorbidities and Complications

Adults with T2DM often carry additional conditions. A meta-analysis of 20 studies from 13 countries estimated that 27% (95% CI 21–33%) had chronic kidney disease, with older age, obesity, longer disease duration, smoking, hypertension, and heart disease associated with higher risk (Fenta *et al.*, 2023) ^[4]. A systematic review of 57 studies

covering about 4.5 million adults with T2DM found that roughly 32% had cardiovascular disease, with coronary artery disease and stroke contributing most (Einarson *et al.*, 2018). The latter predates 2023 ^[2] and should be read as a benchmark rather than a current estimate.

Evidence on Effectiveness

Randomised evidence is strongest for prevention among people with prediabetes. A 2024 meta-analysis of trials lasting at least six months found that lifestyle programmes aimed at weight loss reduced progression to T2DM (risk ratio 0.59), equivalent to about eight fewer cases per 100 participants, and increased reversion to normal glucose (risk ratio 1.51); certainty was rated moderate (Jayedi *et al.*, 2024) ^[8]. Benefits grew in a near-linear fashion across weight losses of 1% to 9% over a median follow-up of 24 months, suggesting that even modest weight reduction is worthwhile.

At health-system level, evidence is observational. NCD-RisC (2024) documented rising treatment coverage in many countries since 1990, with the largest gains in parts of central and western Europe, Latin America, Canada, and South Korea, yet the gap between the best- and worst-performing countries widened. Misra *et al.* (2025) ^[10] likewise regard lifestyle and dietary weight loss as a viable route to prevention and remission, while noting that durable remission remains untested. Taken together, the evidence shows that T2DM is preventable and treatable but does not show how best to deliver those benefits at scale.

Barriers to Detection, Treatment, and Control

Barriers operate at several levels. At system level, constraints on health financing, workforce capacity, and access to essential medicines and diagnostics weaken both prevention and management in many low- and middle-income countries, where high-quality data on prevalence, risk factors, and complications are also scarce; as a result, nearly half of people with diabetes remain undiagnosed and many diagnosed adults do not reach glycaemic and risk-factor targets (Kocher *et al.*, 2026) ^[9]. In South Asia, delayed diagnosis, limited access to care, and cost have been highlighted as obstacles to sustained control of glucose, lipids, and blood pressure (Misra *et al.*, 2025) ^[10]. The treatment gap documented by NCD-RisC (2024) ^[6] and the undiagnosed fraction reported by the IDF (2025) are the quantitative expression of these constraints.

Individual and clinical factors compound them. A long symptom-free period reduces urgency, and phenotypes that appear at lower body weight may be missed when screening is triggered by obesity alone (Misra *et al.*, 2025) ^[10].

Discussion and Implications

Three messages emerge. First, the scale of T2DM among adults is large and still growing, but estimates differ by method, so planners should work from the source that matches their population and diagnostic approach rather than mixing figures. Second, the clinical profile is not uniform: adiposity drives much of the global burden, yet South Asian adults develop the disease earlier and leaner, with correspondingly early complications. Third, effective prevention exists, but detection and treatment coverage lag far behind need.

For clinical practice, these findings argue for risk-based screening that does not depend on BMI alone, particularly in

South Asian adults, and for routine assessment of kidney and cardiovascular risk at diagnosis, given the pooled prevalence of both. This is an inference from the evidence reviewed, not a guideline recommendation, and local screening criteria should be checked. For policy, priorities include primary-care pathways for detection and treatment, affordable essential medicines and diagnostics, and weight-management programmes accessible beyond urban centres. For research, durable remission, rural and undiagnosed populations, and harmonised measurement are the most pressing gaps.

Limitations apply. The review is narrative and not exhaustive; several findings come from modelled estimates or cross-sectional surveys that cannot show causation; the cardiovascular prevalence figure is older; and India is used as an illustration, so conclusions may not transfer to other populations.

Conclusion

T2DM now affects hundreds of millions of adults worldwide, with the burden rising fastest in low- and middle-income countries and in older and urban populations. Affected adults commonly carry excess adiposity and a heavy load of kidney and cardiovascular disease, while South Asian adults often present younger and leaner. Lifestyle-based weight loss reduces progression from prediabetes, but the scale of undiagnosed and untreated disease shows that knowledge is not yet matched by delivery. Closing that gap will require earlier, better-targeted detection and primary-care systems able to sustain treatment.

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