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Type 2 Diabetes Mellitus in Afghanistan (2015–2025): A Systematic Review of Prevalence and Determinants

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ABSTRACT

Background: Type 2 Diabetes Mellitus (T2DM) is a rapidly growing public health concern in Afghanistan, reflecting global trends in the increase of non-communicable diseases. However, the country's fragile healthcare infrastructure, prolonged socioeconomic instability, and limited preventive strategies make a unique epidemiological context that may worsen disease burden and outcomes.

Objective: This systematic review aims to synthesize available evidence on the prevalence, temporal trends, and key determinants of T2DM in Afghanistan between 2015 and 2025.

Methods: A systematic review with narrative synthesis was conducted using studies retrieved from PubMed, Google Scholar, Scopus, Web of Science, and relevant grey literature. Eligible studies included observational studies on adult populations in Afghanistan that reported T2DM prevalence and associated risk factors. Due to methodological heterogeneity, findings were synthesized thematically rather than through meta-analysis.

Results: Evidence indicates a rising and consistently high prevalence of T2DM, generally ranging from approximately 9% to over 20%, with higher rates observed in urban populations. Major determinants include physical inactivity, dietary transitions toward high-calorie and low-fiber foods, obesity, and socioeconomic constraints. Health system limitations—particularly inadequate screening, delayed diagnosis, and poor continuity of care—contribute substantially to undiagnosed and poorly controlled cases. Additionally, gender disparities and rural–urban differences significantly affect disease distribution and management outcomes.

Conclusion: T2DM in Afghanistan is a growing and multifactorial health challenge driven by both modifiable lifestyle factors and systemic healthcare weaknesses. Addressing this burden requires integrated national strategies focused on early detection, strengthening primary healthcare systems, improving public awareness, and promoting preventive interventions. Without coordinated action, the prevalence and complications of T2DM are likely to continue increasing.

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1. Introduction

Non-communicable diseases (NCDs) are now the frontline cause of morbidity and mortality worldwide, accounting for a large proportion of global deaths each year (1). Among these, type 2 diabetes mellitus (T2DM) has increased rapidly, particularly in low- and middle-income countries undergoing demographic and lifestyle transitions (2). This rise is closely linked to urbanization, diet changes, reduced physical activity, and increased life expectancy (3,4).

Afghanistan is currently experiencing this epidemiological shift. While infectious diseases and conflict-related health challenges have historically dominated, chronic diseases such as T2DM are becoming increasingly influential (5). The country's healthcare system is already under pressure and faces additional challenges in relation to long-term disease management (6).

Evidence from global and regional studies suggests that the burden of T2DM in the Middle East and North Africa has increased significantly over recent decades (7). Afghanistan appears to follow a similar pathway, although data remain fragmented and region-specific (8).

This review incorporates available studies to provide a more explicit understanding of the prevalence, determinants, and consequences of T2DM in Afghanistan.

2. Methods

2.1 Study Design

This research was conducted as a systematic review using a structured and transparent approach to identify, evaluate, and synthesize relevant studies on Type 2 Diabetes Mellitus (T2DM) in Afghanistan (9).

2.2 Search Strategy

A detailed literature search was conducted for studies published between 2015 and 2025. Multiple electronic databases were systematically searched, including PubMed, Google Scholar, Scopus, Web of Science, and relevant regional and institutional repositories (9,10).

Search terms included combinations of keywords such as:

"Type 2 Diabetes Mellitus," "T2DM," "prevalence," "risk factors," "determinants," and "Afghanistan," using Boolean operators (AND, OR).

In addition, grey literature sources such as national health surveys, government reports, and WHO publications were reviewed to ensure comprehensive coverage (11,12).

2.3 Inclusion Criteria

Studies were included if they met the following criteria (9):

- Adults aged ≥18 years
- Conducted in Afghanistan
- Reported prevalence, determinants, or complications of T2DM
- Observational (cross-sectional, cohort, or case-control) studies
- Published between 2015 and 2025
- Available in English

2.4 Exclusion Criteria

Studies were excluded based on the following criteria (9):

- Studies focusing on Type 1 diabetes, gestational diabetes, or other specific diabetes types
- Studies conducted outside Afghanistan or without Afghanistan-specific data
- Pediatric populations (<18 years)
- Case reports, case series, editorials, commentaries, and review articles
- Studies lacking clear methodology or insufficient data on outcomes of interest
- Duplicate publications or overlapping datasets
- Non-English publications without an accessible full text

2.5 Data Extraction and Synthesis

Relevant data were extracted systematically using a standardized data extraction form (9,10). Extracted variables included: study location, year of publication, study design, sample size, population characteristics, diagnostic criteria, prevalence rates, and associated risk factors.

Due to dissimilarity in study design, populations, and diagnostic criteria, a narrative synthesis approach was used rather than meta-analysis (9,10).

3. Results

3.1 Prevalence and Regional Distribution

The prevalence of T2DM in Afghanistan varies across regions, but all available evidence points to a substantial burden (13,14).

The most comprehensive national estimate reported a prevalence of 11.1%, including a high proportion of individuals with impaired fasting glucose (13). Regional studies provide additional detail. In Herat, prevalence was reported at 9.9%, with a notable proportion of previously undiagnosed cases (15). In Kabul, estimates range between 9.1% and 13.2%, reflecting differences in study populations (14,18).

Jalalabad shows a prevalence of approximately 11.8%, while Kandahar reports significantly higher rates, reaching up to 22.4% (14,18). In contrast, rural areas such as And Khoy report slightly lower prevalence, around 9.7% (16).

In general, urban populations consistently demonstrate higher prevalence compared to rural populations (13–16). This pattern likely indicates lifestyle change, including reduced physical activity and dietary changes. However, the relatively high prevalence in rural areas suggests that risk factors are becoming widespread all over the country (16,17).

Table 1. Prevalence of Type 2 Diabetes in Afghanistan (2015–2025)

Study / Location	Year	Population	Prevalence (%)	Key Notes
National Survey	2018	18–69 yrs	11.1	First national estimate
Kabul	2015	Adults	9.1–13.2	Urban variation
Herat	2015	25–70 yrs	9.9	6.6% undiagnosed
Jalalabad	2015	Adults	11.8	Urban population
Kandahar	2020	Adults	22.4	Highest reported
And Khoy (Rural)	2019	18–79 yrs	9.7	Rural population

Kateb Journal of Medical Sciences and Biotechnology (Scientific - Research)
Vol. 4, No. 1, Spring and Summer 2025

Table 1 shows that the prevalence of type 2 diabetes in Afghanistan is regularly high across different regions, generally clustering around 10–12%. However, there is notable regional variation, with Kandahar showing a much higher prevalence compared to other areas. While urban regions tend to have higher rates, rural areas also demonstrate considerable burden. This suggests that diabetes is becoming a nationwide issue rather than being limited to cities.

3.2 Determinants of Type 2 Diabetes

3.2.1 Demographic Factors

Age is one of the strongest predictors of T2DM. Prevalence increases significantly among individuals who are over 40, reflecting cumulative exposure to metabolic risk factors (14,16).

Sex-related patterns are less consistent. Some studies suggest higher prevalence among men in rural settings, while others indicate that women are more likely to experience poor disease control and complications (18).

3.2.2 Anthropometric and Metabolic Factors

Excessively overweight and obesity, particularly central obesity, are major contributors to T2DM. Increased waist circumference has been consistently identified as a strong predictor of disease (14,19). This aligns with global evidence linking abdominal fat accumulation to insulin resistance (19,20).

Hypertension and dyslipidemia are also commonly seen among individuals with T2DM. These conditions often cluster together, significantly increasing the risk of cardiovascular complications (21,22).

3.2.3 Lifestyle Factors

Lifestyle plays a central role in the development of T2DM. Physical inactivity is widespread and strongly associated with both disease onset and poor glycemic control (22).

Dietary patterns in Afghanistan further contribute to this risk. High consumption of rice-based meals combined with the use of saturated fats has been linked to increased diabetes prevalence (15,23). These dietary habits reflect broader nutritional transitions observed in many developing countries (23).

3.2.4 Genetic and Family Factors

Family history remains a major predictor of T2DM. Individuals with affected relatives are more likely to develop the disease, reflecting both genetic susceptibility and shared environmental factors (14,16).

3.2.5 Health System and Behavioral Factors

Health system limitations play an important role in shaping disease outcomes. Many individuals are diagnosed at a late stage, often after complications have developed (18).

Poor adherence to medication, irregular monitoring, and limited access to healthcare services further contribute to inadequate disease control (24,25). Mental

Kateb Journal of Medical Sciences and Biotechnology (Scientific - Research)
Vol. 4, No. 1, Spring and Summer 2025

health factors, particularly depression, also negatively affect adherence and glycemic control (26).

3.3 Comorbidities and Complications

T2DM is mostly associated with other chronic conditions, most notably hypertension. Studies show that between 55% and 70% of individuals with diabetes also have elevated blood pressure (21,27).

Poor glycemic control is another major concern, with up to 75% of patients failing to achieve recommended targets (24). This significantly increases the risk of complications, including cardiovascular disease, chronic kidney disease, and microvascular damage (22,28).

These complications not only reduce quality of life but also place a significant challenge on healthcare systems.

Table 2. Determinants of Type 2 Diabetes

Category	Risk Factors	Strength of Evidence
Demographic	Age (>40), sex	Strong
Anthropometric	Obesity, waist circumference	Very strong
Lifestyle	Physical inactivity	Very strong
Diet	High rice intake, saturated fats	Strong
Clinical	Hypertension, dyslipidemia	Strong
Genetic	Family history	Strong
Behavioral	Poor adherence	Moderate
Mental Health	Depression	Emerging
Condition	Prevalence (%)	Interpretation
Hypertension	55–70	Very high coexistence
Poor glycemic control	~75	Major system failure
Undiagnosed diabetes	~6–10	Hidden burden

Table 2 highlights that the major determinants of type 2 diabetes are interconnected, with obesity, physical inactivity, and unhealthy diet forming the core risk cluster. Demographic and clinical factors such as age, hypertension, and family history further increase the risk. The table also shows that behavioral and mental health factors, particularly poor adherence and depression, contribute to disease progression. Overall, diabetes risk in Afghanistan is driven by a combination of biological, lifestyle, and systemic factors.

Table 3. Comorbidities and Disease Control

Condition	Prevalence (%)	Interpretation
Hypertension	55–70	Very high coexistence
Poor glycemic control	~75	Major system failure
Undiagnosed diabetes	~6–10	Hidden burden

Table 3 mentions that the burden of diabetes extends beyond prevalence to include serious issues in disease management. A large proportion of patients have

Kateb Journal of Medical Sciences and Biotechnology (Scientific - Research)
Vol. 4, No. 1, Spring and Summer 2025

hypertension, indicating strong comorbidity. Even more concerning is that most patients have poor glycemic control, reflecting gaps in diagnosis, treatment, and follow-up care. This suggests that the healthcare system faces significant challenges in controlling diabetes.

4. Discussion

Type 2 Diabetes Mellitus (T2DM) in Afghanistan between 2015 and 2025 shows a clear vertical trend, reflecting a broader epidemiological transition from communicable to non-communicable diseases (NCDs) in low- and middle-income countries (LMICs) (1,2). This transition is consistent with regional patterns observed across South Asia and the Eastern Mediterranean region (7). Afghanistan faces more severe structural and healthcare system limitations that maximize disease burden and complications (6).

A key finding across the reviewed studies is the steady increase in T2DM prevalence, particularly in urban populations such as Kabul, Herat, and Mazar-e-Sharif (13,14). This urban-rural disparity aligns with global evidence indicating higher diabetes prevalence in urban settings, driven by lifestyle changes, dietary shifts, and reduced physical activity (3,4).

Lifestyle-related risk factors remain the dominant contributors to the rise of type 2 diabetes mellitus (22,23). Dietary patterns characterized by high intake of refined carbohydrates and sugars, combined with low fiber consumption, are widely reported across studies (23). Physical inactivity is another major determinant (22).

Socioeconomic status is strongly associated with both incidence and outcomes of T2DM (6). Healthcare system limitations significantly influence disease progression and outcomes (24,25).

Recent evidence highlights the role of conflict-related determinants such as chronic stress, food insecurity, and disrupted healthcare access (29,30). Undiagnosed diabetes remains a major challenge due to limited screening systems (13,31,32).

Innovative approaches such as community-based screening using mobile health technologies have shown potentially positive outcomes (33). Early-life and intergenerational factors may also contribute to disease risk (34). Environmental and urban design factors influence lifestyle behaviors and physical activity patterns (35).

Overall, the evidence suggests that T2DM in Afghanistan is driven by a complex interaction of behavioral, socioeconomic, environmental, and systemic healthcare factors (1–35).

5. Limitations

This review has several limitations:

- Limited number of nationally representative studies
- Regional data gaps
- Predominance of cross-sectional designs
- Variability in diagnostic criteria

6. Conclusion

T2DM represents a major and growing health challenge in Afghanistan. The combination of increasing prevalence, poor disease control, and high rates of complications underscores the urgency of intervention (13–15).

Key priorities include:

- Expanding national screening programs
- Promoting healthier lifestyles
- Strengthening primary healthcare
- Improving long-term disease management

Without coordinated action, the burden of diabetes will continue to rise, placing increasing strain on individuals and the healthcare system.

Kateb Journal of Medical Sciences and Biotechnology (Scientific - Research)
Vol. 4, No. 1, Spring and Summer 2025

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Kateb Journal of Medical Sciences and Biotechnology (Scientific - Research)
Vol. 4, No. 1, Spring and Summer 2025