

Prevalence and Prevention of Diabetes in Uzbekistan: Systematic Review

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Abstract:

Diabetes mellitus represents a growing public health challenge in Uzbekistan, contributing to the increasing burden of non-communicable diseases (NCDs), which account for over 80% of total mortality. This review article employs qualitative analysis to examine trends in diabetes prevalence, associated risk factors, and the effectiveness of current policies. Data were collected from PubMed, Google Scholar, Scopus, and reports from the International Diabetes Federation (IDF), Global Burden of Disease (GBD), World Health Organization (WHO), and national sources, with comparisons to selected countries.

The findings indicate a rapid increase in diabetes prevalence, rising from approximately 813,000 cases in 2011 to 1.5 million in 2024, with projections reaching 2.2 million by 2050. A significant proportion of cases (74%) remain undiagnosed. The burden of disease, measured by disability-adjusted life years (DALYs), has increased markedly, with notable regional disparities. Key risk factors include obesity, physical inactivity, unhealthy diet, and hypertension, alongside limited awareness and inadequate screening. Despite ongoing national programs, challenges such as insufficient treatment coverage, outdated registries, and gaps in preventive care persist. Strengthening early detection, improving primary healthcare, and implementing targeted prevention strategies are essential to mitigate the growing impact of diabetes in Uzbekistan.

Keywords:

Diabetes mellitus, prevalence, risk factors, prevention, screening, public health, health policy, Uzbekistan

Introduction

Diabetes has become a major global health challenge. The International Diabetes Federation counted 529 million adults with diabetes in 2021, but by 2050, it'll cross 1.3 billion (1). Most of the surge hits low- and middle-income countries. Nearly all cases are type 2—driven by genetics, urban living, aging, and lifestyle factors. (2)

Uzbekistan is among the countries heavily impacted by this trend. By 2019, 80% of deaths were due to non-communicable diseases (3). Diabetes cases reached from 813,000 in 2011 to 1.5 million today, with 2.2 million expected by 2050. The rate jumped from 6.4% to 7.5% (1). Notably, approximately three out of four adults with diabetes remain undiagnosed and do not receive adequate care (4).

The country isn't ignoring the problem. Uzbekistan with the help of WHO and World Bank, is trying to shift from old-fashioned hospital care to prevention and primary care (3). National Health Strategy 2030 focuses on early detection, family medicine, and community-based prevention (5). The Sirdarya pilot project, in partnership with World Diabetes Foundation and WHO, aims to evaluate innovative approaches (3). This review article aims to bring together scattered information on prevalence, risk factors, screening, prevention, system capacity, and policy gaps to support more effective policies and research in addressing diabetes.

Prevalence of Diabetes in Uzbekistan

National and Regional Estimates

IDF shows diabetes is from 813,000 in 2011 to 1.5 million by 2024, shooting up to 2.2 million by 2050. The prevalence rose from 6.4% to 7.5%, though remaining slightly below the global average of 11.1%; however, this gap is shrinking rapidly (1). According to the GBD (Global Burden of Disease) 2021 study, diabetes accounted for

approximately 341,000 DALYs (6) (disability-adjusted life years), equivalent to 1,147 per 100,000 population. Since 1990, DALYs have nearly quintupled, with rates increasing by 151% (6), indicating not only rising prevalence but also a growing disease burden. The NCD Risk Factor Collaboration estimates that roughly 89% of untreated diabetes cases in Central Asia. Uzbekistan demonstrates lower screening coverage, highlighting the need to strengthen primary healthcare system (4).

Local and Regional Patterns of Diabetes

Diabetes prevalence in Uzbekistan shows notable regional variation influenced by lifestyle and geography. In Bukhara, diagnosed cases rose from 2.1% to 2.8% over five years (7). Higher prevalence is noticed in desert areas such as Kanimekh (12.7%) compared to mountainous regions like Nurota (~7%) (8). Prediabetes is also common, especially in desert populations, where poorer glycemic control, higher BMI, and lower physical activity levels are common (8). These key findings suggest the need for region-specific prevention strategies.

Samarkand shows a high-burden, with a large number of reported cases and a predominance of type 2 diabetes, particularly in individuals over 40 years of age (9). Hypertension is also prevalent among affected individuals (1), further increasing disease risk.

Type, Distribution and Risk Patterns

Type 2 diabetes accounts for over 90% of cases in Uzbekistan, consistent with global trends (2). Although pediatric data are limited, existing evidence recommends a growing concern due to rising childhood obesity and inactivity. A considerable part of the population is at high risk, with large numbers of individuals affected by impaired glucose regulation (2).

Regional Comparisons

Compared with other regions, Uzbekistan faces significant challenges in screening and diagnosis. Countries such as Iran reports lower portion of undiagnosed cases (10).

Uzbekistan is experiencing gaps in detection and registry systems (1). Strengthening primary healthcare and improving surveillance system is very important to address the rising burden of diabetes.

Risk Factors in Uzbekistan

Global Evidence

Bellou et al. list 142 non-genetic risk factors for type 2 diabetes. Top causes: bad food, inactivity, sugary drinks, high ALT or uric acid, low vitamin D, obesity, preterm birth, air pollution, metabolic issues, smoking, hypertension, low education, and odd blood lipids (11). Uzbekistan has all of them.

Local Data

One study followed 1,200 adults aged 35–75 years in clinics. Among 480 with T2DM: average BMI was 31.8, waist 102.3cm, BP 148/92, HbA1c 8.7%. Nearly three-quarters didn't exercise, most ate poorly, over half had high stress, and about a fifth smoked (12). The prediabetes group averaged 52.6 years old, BMI 29.4—borderline numbers all around. Metabolic troubles hit middle age hardest.

Demographic, Environmental and Socioeconomic Factors

Age is a major factor. In Samarkand, people over 40 had a 13.7% diabetes rate (12). Uzbekistan's adult population will jump from 21.9 million to over 30 million by 2050 (1)—so expect a increase wave of cases. Women show higher rates—68% in Samarkand and 71% in Tashkent (11). Climate also plays a real role—a desert region has double the T2DM rate compared to mountains, probably because heat keeps people indoors (8). Prevention needs to fit—maybe early morning or indoor exercise. Cost and access are major obstacles. With three-quarters undiagnosed, screening is very limited. Health literacy is also low (3). High out-of-pocket costs drive people away from care altogether.

Methods

This review article is based on a broad search of available literature and reports on diabetes in Uzbekistan and globally. Information was collected from databases such as

PubMed, Google Scholar and MEDLINE, as well as national Uzbek data sources. In addition, international reports from IDF (International Diabetes Federation) and WHO (World Health Organization) were used to ensure up-to-date and reliable data. Relevant studies, reports, and policy documents were selected based on their relevance to diabetes prevalence, risk factors, prevention strategies, and health system capacity. The gathered information was then compared and combined to provide a clear and comprehensive overview of the current situation.

Results:

Preventive Strategies and Programs

Primary Prevention—Stopping Diabetes before it starts

Uzbekistan fights diabetes mostly by health education and community outreach (5). Doctors and nurses advice patients for better diet, more exercise, and screening for those, who are at risk (3). Campaigns happen everywhere—often kicked off by Presidential orders (5). “Healthy Life” rounded up local officials, youth, religious leaders, women and men groups. In trial areas, 80% of people over 40 got screen out for hypertension and diabetes (5). WHO programs target clinics, focusing on alcohol, tobacco, bad nutrition and inactivity (3).

Other countries proved that primary prevention works. India and China lowered the rates with lifestyle programs. Schools, soda taxes, cooking classes, group support—all contribute to reduce risks (2).

Secondary Prevention—Screening and Early Detection

Uzbekistan’s big struggle is the missed diagnoses (4). Screening (especially over 40) is picking up (18). Navoi trained the nurses, handed out glucometers for screening. Andijan and Nukus ran similar drives during Diabetes Month (5). Rural and remote areas need more attention. Studies show universal screening costs too much so target high-risk groups (4). Strong primary care and referrals can change the things in better way (13).

Tertiary Prevention—Managing Diabetes



After diagnosis, it's all about control. Uzbekistan's situation has been improved with WHO Sirdaryo project—care is more patient-focused, staffs are trained, and teams are working together. Digital tools help manage follow-ups. They are trying to follow the WHO guidelines (3).

Still, in Tashkent, only about 13.5% of T2DM patients control their glucose, and regular HbA1c checks are rare (1). Management needs a lot of more work. Kazakhstan saw fewer deaths after improving diagnosis and care—good management saves lives (1).

Health System Reforms

Uzbekistan's Health System Strategy 2030 (backed by WHO and World Bank) focuses on stronger primary care and preventive care (5). When care is provided in local context, it keeps the cost low (3). NCDs cost over \$1 billion a year—medical bills, lost productivity and early deaths (18). Primary care saves money and delivers better results (3).

Policy and Health System Capacity

Diabetes Registries

Registration matters a lot, but this system is still weak in Tashkent(1). In 2016, 16,356 patients tracked, but only a fifth got lipid checks, just 3% had triglycerides tested, HbA1c barely reported (1). Only 13.5% kept glucose controlled (1).

Kazakhstan's electronic registry tracks more people, but real prevalence (2.1%) doesn't match surveys (8%) (10). Half remain undiagnosed (1). Electronic registries are better, but don't catch everyone. Bangladesh's registry is shaky—no national database (14).

Creative, Affordable Approaches

Other countries show what works:

— Train nurses, pharmacists, health workers to handle diabetes care. India, Pakistan saw improved blood lipids, blood pressure, and HbA1c (6).

— Text reminders help people stick to meds, healthy habits. Mobile eye screenings catch diabetes early, especially in remote spots (4).

— Mobile vans bring checkups to neighborhoods, covering those who are often missed (2).

— Schools run eating/exercise programs to tackle childhood obesity and future diabetes. Soda taxes work—a 20% increase in India and Mexico brought down obesity and diabetes (2).

— Universal insurance needs to mean real coverage—meds, support, continuous care (3).

Future Directions and Recommendations

So, what does Uzbekistan actually need to do?

1. Launch nationwide diabetes/prediabetes screening for everyone over 40—use clinics and mobile vans (5). Start with high-risk groups (18).

2. Adapt prevention according to regional context—cool indoor or early morning exercise where it's very hot (8,19).

3. Health education—push info through TV, social media, schools, workplaces, mosques (3). Early checkups should be a routine practice.

4. Invest in clinics. Every clinic needs the right test kits, trained staff, and systems to spot high-risk patients (4). Pay health workers for screening/counseling targets. Blood sugar and cholesterol checkups must be standard (20).

5. Tie diabetes prevention into other health efforts—maternal/child health, school meals, exercise, screenings for all pregnant women (21, 15).

6. Build a national diabetes registry—connect clinics, doctors. Gather data on cases, treatments, and complications (1).

7. Empower nurses/pharmacists, send text reminders, use mobile vans, school programs, and enforce soda tax (4).

8. Track everything—testing programs, monitor outcomes, costs, and barriers, so resources go where they actually help (4).

9. Make everyone part of the solution: coordinate health, education, agriculture, and local government. Social and environmental factors should be the part of the solution(22,23).

10. Implement universal health insurance—cover screenings, tests, meds like insulin/metformin, and ongoing care (3). Keep treatment affordable and available to all.

Conclusion:

Diabetes is becoming a serious and growing problem in Uzbekistan, with many people still undiagnosed and not receiving proper care. Since the country has started important reforms, particularly in prevention and primary care, there is still a long way to go. Strengthening early detection, improving public awareness, and making healthcare more accessible and affordable are key steps forward. Simple actions like community education, better screening, and stronger health system can make a big difference. With the right efforts and cooperation across sectors, Uzbekistan has a strong opportunity to slow down the rise of diabetes and improve the health of its population.

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