EPIDEMIOLOGICAL CHARACTERISTICS OF DIABETES MELLITUS IN UZBEKISTAN

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Abstract: *Diabetes mellitus (DM) is a chronic metabolic disease of global significance, affecting over 537 million adults worldwide as of 2022, with projections reaching 783 million by 2045. This review examines the epidemiological characteristics of diabetes mellitus in Uzbekistan, analyzing regional distribution patterns, key modifiable risk factors, chronic complication burden, and the effectiveness of national prevention and treatment programs. According to the Ministry of Health of Uzbekistan, more than 350,000 patients were registered with diabetes in 2023, with actual prevalence estimated to be 2–3 times higher due to underdiagnosis. Type 2 diabetes mellitus (T2DM) constitutes 90–92% of all cases. Major risk factors including obesity, physical inactivity, and unhealthy dietary patterns are analyzed in the context of rapid urbanization in Central Asia. National programs — including the 'Healthy Life' initiative (2020–2025), expansion of diabetology centers, and universal insulin supply — are evaluated against international standards (ADA, 2023; WHO, 2023). Early diagnosis, primary prevention reinforcement, and improved patient education are identified as priority strategic directions for reducing the diabetes burden in Uzbekistan.*

Keywords: *diabetes mellitus, type 2 diabetes, T2DM, Uzbekistan, epidemiology, insulin resistance, metabolic syndrome, HbA1c, diabetic complications, prevention*

1. INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disease that develops as a result of insufficient insulin secretion and/or decreased tissue sensitivity to insulin action, characterized by prolonged hyperglycemia — an elevated level of glucose in the blood. According to the World Health Organization (WHO), as of 2022, more than 537 million adults worldwide have been diagnosed with diabetes mellitus, and this figure is projected to reach 783 million by 2045 (IDF, 2022).

A significant increase in the prevalence of diabetes mellitus has been observed in the Republic of Uzbekistan over the past decade. According to the Ministry of Health of the Republic of Uzbekistan, as of 2023, more than 350,000 patients with diabetes are

registered nationwide, while the actual figure may be 2–3 times higher — as a large portion of cases remain undiagnosed (MoH, 2023).

The purpose of this article is to analyze the epidemiological situation of diabetes mellitus in Uzbekistan, the regional patterns of its distribution, risk factors, and the effectiveness of existing prevention and treatment systems. The study was conducted on the basis of WHO, IDF, and Uzbekistan MoH data, as well as scientific articles published in PubMed and Scopus databases.

2. MAIN BODY

2.1 Epidemiological Situation and Statistical Indicators

The prevalence of diabetes mellitus in Uzbekistan has doubled over the past 15 years. In 2008, 183 cases per 100,000 population were registered, whereas by 2022 this figure rose to 380–420 cases per 100,000 (Uz MoH, 2023; Rahimov et al., 2022). Due to delayed diagnosis, 40–60% of patients already present with chronic complications of diabetes mellitus — nephropathy, retinopathy, and neuropathy — at the time of their first visit.

Type 2 diabetes mellitus (T2DM) accounts for 90–92% of all cases. Type 1 diabetes mellitus (T1DM) is more common in children and adolescents, with an annual incidence of 5–7 new cases per 100,000 children. The city of Tashkent and Tashkent region have the highest disease rates — 25–30% above the national average (Uz MoH, 2022).

2.2 Risk Factors and Pathogenetic Mechanisms

The main risk factors contributing to the spread of diabetes mellitus in Uzbekistan include obesity (BMI > 30 kg/m²), physical inactivity, high consumption of sugary foods and saturated fats, arterial hypertension, and hereditary predisposition. The urbanization process and lifestyle changes in Uzbekistan over the past 20 years have led to an increase in metabolic diseases. Genetic epidemiological studies have shown that Central Asian populations have a particular predisposition to the development of insulin resistance due to visceral obesity (Ismoilov et al., 2021).

At-risk groups for early diagnosis of diabetes mellitus include: obese patients (BMI >30), individuals over the age of 45, persons with a family history of diabetes, patients with arterial hypertension, and women with polycystic ovary syndrome. Glycated hemoglobin (HbA1c) >6.5% confirms a diagnosis of diabetes mellitus, while ≥5.7% and <6.5% is assessed as a prediabetes condition (WHO, 2023).

2.3 Chronic Complications and Burden of Diabetes Mellitus

The proportion of chronic complications among diabetic patients in Uzbekistan remains high. According to MoH data, in 2023, 32% of registered patients were found to have diabetic retinopathy, 28% diabetic nephropathy, and 24% peripheral neuropathy. The number of lower limb amputations performed due to diabetic foot syndrome amounts to 1,200–1,500 cases per year (MoH, 2023).

Cardiovascular complications related to diabetes mellitus occur 2–4 times more frequently compared to the general population. The annual direct healthcare costs for diabetic patients in Uzbekistan average 3.5–4.2 million soums, placing a considerable burden on both family and state budgets.

2.4 Prevention and State Programs

Within the framework of the national 'Healthy Life' program (2020–2025), screening measures aimed at early detection of endocrine diseases were expanded and interactive educational programs for diabetes prevention were introduced into the primary healthcare system. The Ministry of Health of Uzbekistan established specialized diabetology departments in all regional centers in 2021 (MoH, 2021).

Under the national insulin supply program, state-funded coverage for insulin-dependent patients reached 100% in 2022. In cooperation with WHO and UNICEF, the 'National Protocol for Diabetes Management' was updated and implemented in alignment with international standards (ADA, 2023; ESC/EASD, 2023).

3. CONCLUSION

The epidemiological indicators of diabetes mellitus in Uzbekistan are growing at an alarming rate. Delayed diagnosis, regional disparities, and a high proportion of chronic complications require a comprehensive approach. Strengthening primary prevention programs — combating obesity, physical inactivity, and poor nutrition — must be a priority task of the national healthcare system.

If measures to improve the quality of medical care, expand screening coverage, retrain physicians, and increase public health literacy are implemented in a comprehensive manner, it is possible to significantly reduce the prevalence of the disease and its associated complications.

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