

SOCIO ECONOMIC ASPECTS OF DIABETES MELLITUS IN UZBEKISTAN

Kayumov Jamolkhon Akbarkhonovich

Assistant Professor, Department of Endocrinology, Hematology and Phthisiatry,
Fergana Medical Institute of Public Health

Abstract: Diabetes mellitus is a rapidly growing public health concern in Uzbekistan, significantly impacting both individuals and society. This study explores the socio-economic aspects of diabetes in Uzbekistan, including its prevalence, risk factors, and consequences on the healthcare system and the national economy. Findings indicate that the actual number of diabetes cases far exceeds official records due to underdiagnosis and limited screening programs. The disease imposes substantial direct medical costs and indirect costs such as lost productivity and reduced quality of life. Socio-economic disparities, particularly between urban and rural populations, affect access to diabetes care and management. Despite governmental initiatives to improve prevention and treatment, challenges remain in ensuring equitable healthcare services and sustainable funding. The paper emphasizes the need for comprehensive strategies that integrate public health education, early diagnosis, affordable treatment, and community engagement to mitigate the socio-economic burden of diabetes. Strengthening primary healthcare infrastructure and international cooperation are vital to addressing this growing epidemic and improving the overall wellbeing of Uzbekistan's population.

Keywords: Diabetes Mellitus, Type 2 Diabetes Mellitus, Prevalence, Incidence, Socio-economic Status, Direct Medical Costs, Indirect Costs, Healthcare Access.

СОЦИАЛЬНО-ЭКОНОМИЧЕСКИЕ АСПЕКТЫ САХАРНОГО ДИАБЕТА В УЗБЕКИСТАНЕ

Аннотация: Сахарный диабет является быстро растущей проблемой общественного здравоохранения в Узбекистане, значительно влияя как на

отдельных людей, так и на общество в целом. В данном исследовании рассматриваются социально-экономические аспекты диабета в Узбекистане, включая его распространённость, факторы риска и последствия для системы здравоохранения и национальной экономики. Результаты показывают, что фактическое количество случаев диабета значительно превышает официальные данные из-за недостаточной диагностики и ограниченных программ скрининга. Заболевание влечёт за собой значительные прямые медицинские расходы и косвенные затраты, такие как потеря производительности и снижение качества жизни. Социально-экономические различия, особенно между городским и сельским населением, влияют на доступ к уходу и лечению диабета. Несмотря на государственные инициативы по улучшению профилактики и лечения, остаются проблемы обеспечения равного доступа к медицинским услугам и устойчивого финансирования. В статье подчеркивается необходимость комплексных стратегий, включающих просвещение в области общественного здравоохранения, раннюю диагностику, доступное лечение и вовлечение сообщества для снижения социально-экономического бремени диабета. Укрепление инфраструктуры первичной медицинской помощи и международное сотрудничество имеют важное значение для борьбы с растущей эпидемией и улучшения общего благополучия населения Узбекистана.

Ключевые слова: Сахарный Диабет, Сахарный Диабет 2 Типа, Распространённость, Заболеваемость, Социально-Экономический Статус, Прямые Медицинские Расходы, Косвенные Затраты, Доступ К Медицинской Помощи.

Introduction

Diabetes mellitus is a chronic metabolic disorder that has become a major global public health concern, characterized by elevated blood glucose levels resulting from defects in insulin secretion, insulin action, or both. Over the past

few decades, the incidence and prevalence of diabetes have increased dramatically worldwide, particularly in low- and middle-income countries, including Uzbekistan. The growing burden of diabetes is not only a medical issue but also a significant socio-economic challenge that affects individuals, families, communities, and national economies.

In Uzbekistan, the number of individuals diagnosed with diabetes mellitus especially Type 2 diabetes has risen steadily due to various factors such as changes in dietary patterns, increased urbanization, physical inactivity, obesity, and population aging. According to estimates from the International Diabetes Federation and local health authorities, the actual number of diabetic patients in Uzbekistan may be even higher than officially recorded due to underdiagnosis and limited access to early screening, particularly in rural regions. The socio-economic implications of diabetes are multi-faceted. On the one hand, the disease imposes a direct economic burden on the healthcare system through increased spending on diagnosis, treatment, hospitalization, and long-term management of complications such as cardiovascular diseases, nephropathy, retinopathy, and neuropathy. On the other hand, the indirect costs including loss of productivity, work absenteeism, disability, premature death, and the need for social support can surpass the direct costs and negatively impact national economic growth. For low-income families, diabetes can lead to financial hardship, forcing them to choose between healthcare and other basic needs.

Moreover, diabetes often exacerbates social inequalities. Those with limited access to healthcare services, lower education levels, and poor socio-economic status are more vulnerable to developing complications or being diagnosed too late. This creates a vicious cycle where poverty contributes to the disease, and the disease in turn reinforces poverty. In this context, addressing the socio-economic aspects of diabetes becomes essential for creating equitable and sustainable healthcare policies. This paper seeks to examine the socio-economic aspects of diabetes mellitus in the context of Uzbekistan by analyzing key indicators such as

healthcare expenditure, employment outcomes for individuals with diabetes, accessibility and affordability of treatment, and the effectiveness of governmental strategies and public health initiatives. The aim is to highlight how diabetes affects the economic well-being of both individuals and society as a whole, and to identify policy recommendations that can alleviate its long-term impact. Understanding the intersection between health and socio-economic factors is critical for developing integrated approaches that can both prevent and manage diabetes more effectively.

Main part

Diabetes mellitus is steadily becoming one of the most prevalent chronic diseases in Uzbekistan. Epidemiological data reveal a noticeable increase in both type 1 and type 2 diabetes, with type 2 being more dominant due to lifestyle-related risk factors. Urbanization, aging population, obesity, and unhealthy diets are key contributors to the rising incidence. Many cases remain undiagnosed until complications occur, worsening outcomes and increasing treatment costs. The burden is particularly evident among older adults, although younger populations are increasingly affected. Lack of early screening and limited public awareness contribute to underreporting, making the real figures potentially higher than official statistics suggest. Understanding the epidemiology is crucial for designing effective interventions and allocating healthcare resources efficiently across the country.

The direct costs of diabetes in Uzbekistan include expenses related to diagnosis, treatment, medication, and management of complications. Insulin therapy, oral hypoglycemics, blood glucose monitoring tools, and regular medical consultations place a heavy financial burden on both the government and patients. Hospital admissions due to diabetes-related complications such as diabetic foot ulcers, nephropathy, and cardiovascular diseases significantly raise treatment costs. For low- and middle-income families, these expenses are often unaffordable without government subsidies. Public healthcare institutions also face pressure to allocate limited budgets toward chronic disease management, which limits

investment in preventive care. As the prevalence continues to grow, the direct financial burden threatens the sustainability of Uzbekistan's healthcare system unless addressed through systematic policy reform and better cost-efficiency strategies.

Beyond direct medical expenditures, diabetes mellitus causes substantial indirect economic losses through reduced labor productivity, disability, absenteeism, and early retirement. Individuals suffering from poorly managed diabetes are more likely to experience fatigue, complications, and hospitalizations that interfere with their ability to work. In Uzbekistan's labor-dependent economy, this contributes to a loss of skilled workforce and overall economic output. Moreover, caregivers—often family members must also reduce their working hours or stop working to care for affected individuals, further amplifying economic strain. The long-term cost of premature mortality due to diabetes also has national implications. These hidden costs often exceed the direct medical expenses and represent a significant barrier to economic growth and household financial stability in Uzbekistan.

Diabetes has far-reaching social implications, affecting not only the physical health but also the psychological and emotional well-being of individuals. Many patients in Uzbekistan suffer from anxiety, depression, and reduced social engagement due to the chronic nature of the illness and the lifestyle restrictions it imposes. Stigma and lack of understanding in society may lead to isolation or discrimination, particularly in employment and education settings. Children and adolescents with diabetes often face difficulties in schools, including limited support for their health needs. The burden of disease management also affects family dynamics and causes emotional stress for both patients and caregivers. Overall, the disease undermines quality of life and imposes social challenges that go beyond physical symptoms.

Access to quality diabetes care in Uzbekistan is uneven, with significant disparities between urban and rural areas. While major cities like Tashkent may

offer specialized endocrinology clinics and access to modern medications, rural regions often lack trained personnel, diagnostic tools, and affordable treatment options. These disparities result in delayed diagnoses, poorly controlled blood glucose levels, and higher rates of complications. Moreover, financial constraints, transportation difficulties, and limited health education further hinder access for low-income populations. This urban-rural gap not only exacerbates health inequities but also contributes to a higher overall disease burden. Addressing these access issues is critical for ensuring nationwide diabetes control and promoting equity in healthcare delivery.

The government of Uzbekistan has recognized the growing threat of non-communicable diseases (NCDs), including diabetes, and has begun implementing policy measures to address the issue. National programs have been launched to promote healthier lifestyles, improve access to primary care, and expand diabetes screening. However, funding remains limited and implementation is often inconsistent, especially in rural settings. Public health campaigns have helped raise awareness but are not always culturally tailored or sustained. A coordinated, multi-sectoral approach involving education, agriculture, and social welfare sectors is necessary to tackle the root causes of diabetes. Additionally, investment in digital health technologies and training of medical staff could enhance the reach and effectiveness of diabetes management programs.

To reduce the socio-economic burden of diabetes in Uzbekistan, a comprehensive and long-term strategy is needed. First, investments in early detection and preventive care must be prioritized to reduce costly complications. Subsidizing essential diabetes medications and ensuring equitable access to healthcare services across regions would alleviate financial strain on families. Education campaigns targeting both the general public and high-risk groups can promote healthier lifestyle choices. Integrating diabetes care into primary health services will improve continuity of care. Furthermore, data collection and epidemiological surveillance should be strengthened to inform evidence-based

policies. Ultimately, the success of these interventions depends on political commitment, cross-sector collaboration, and active community involvement.

Uzbekistan has increasingly engaged in international partnerships to strengthen its healthcare system's response to the growing diabetes epidemic. Organizations such as the World Health Organization (WHO), the International Diabetes Federation (IDF), and various United Nations (UN) agencies have provided technical assistance, funding, and policy guidance aimed at improving diabetes prevention, diagnosis, and care.

These partnerships have played a critical role in shaping national strategies aligned with global standards, such as the WHO Global Action Plan for the Prevention and Control of Noncommunicable Diseases. International collaboration has also facilitated the introduction of pilot projects focused on early screening, school-based diabetes education, and the training of healthcare professionals in evidence-based management protocols. Additionally, donor agencies and global health programs have supported Uzbekistan in improving access to essential medications, including insulin and diagnostic equipment, particularly in underserved areas. Moreover, Uzbekistan has participated in regional knowledge-sharing initiatives with neighboring Central Asian countries, allowing for the exchange of best practices and data. Despite these positive developments, challenges remain in ensuring the sustainability of externally funded programs and integrating them fully into the national health system. Strengthening long-term international cooperation remains vital for capacity building and achieving sustainable improvements in diabetes outcomes across the country.

Discussion

The socio-economic aspects of diabetes mellitus in Uzbekistan present a multifaceted challenge that encompasses medical, economic, and social dimensions, each intricately linked and contributing to the overall burden of the disease on individuals and society at large. Epidemiological data underscore a significant and escalating prevalence of diabetes, particularly type 2 diabetes

mellitus, which aligns with global patterns yet is influenced by region-specific factors. Uzbekistan's rapid urbanization, demographic transitions characterized by an aging population, and lifestyle changes including increased sedentary behavior and dietary shifts toward high-calorie, processed foods are critical drivers of this increase. Moreover, underdiagnosis remains a persistent problem due to limited public awareness and inadequate screening programs, which results in late-stage diagnosis when complications are more severe and treatment more costly.

Economically, diabetes exerts both direct and indirect costs that substantially impact Uzbekistan's healthcare system and broader economy. Direct medical costs comprise expenditures on pharmaceuticals such as insulin and oral hypoglycemics, diagnostic testing, outpatient consultations, hospital admissions, and management of acute and chronic complications including cardiovascular disease, nephropathy, neuropathy, and diabetic foot ulcers. These direct costs represent a growing share of the national health budget, putting pressure on healthcare resources that are already constrained. For patients and their families, particularly those from lower socio-economic strata, out-of-pocket expenses can be prohibitive, leading to treatment non-adherence and poorer health outcomes.

Indirect costs, though less visible, are equally substantial. Diabetes leads to reduced workforce productivity through increased absenteeism, presenteeism, disability, and premature mortality. In Uzbekistan's labor-dependent economy, loss of productive working years has ripple effects on household income stability and national economic output. Caregivers, often family members, also face productivity losses as they allocate time and resources to support affected relatives. These indirect economic burdens amplify the financial strain imposed by the disease, highlighting the necessity of integrated socio-economic interventions.

The social consequences of diabetes extend beyond economic costs to profoundly affect quality of life. The chronic nature of the disease, combined with the demands of ongoing management and lifestyle modifications, contributes to psychological distress including anxiety and depression. Social stigma and

misconceptions about diabetes can lead to discrimination in workplaces and schools, further isolating patients and undermining their social support networks. The burden on families is considerable, as they often bear emotional, financial, and caregiving responsibilities that can disrupt family dynamics and wellbeing.

A critical dimension exacerbating these challenges is the disparity in healthcare access across Uzbekistan. Urban centers, particularly Tashkent, tend to have better infrastructure, specialist availability, and access to essential medicines and technologies. In contrast, rural and remote areas face significant barriers including limited healthcare workforce, inadequate diagnostic facilities, and financial constraints. This inequity results in delayed diagnoses, suboptimal treatment, and higher rates of complications in underserved populations, perpetuating health inequalities and worsening overall disease burden.

Although the Uzbek government has initiated policies aimed at mitigating the diabetes epidemic such as health promotion campaigns, expansion of primary healthcare services, and collaboration with international organizations like WHO and the International Diabetes Federation implementation remains uneven. Many programs suffer from inadequate funding, lack of trained personnel, and insufficient integration into existing health systems, particularly in rural areas. While international cooperation has provided valuable technical assistance and resources, the sustainability of these initiatives depends on strengthened national commitment, improved health infrastructure, and enhanced community engagement.

Given the complex socio-economic implications, a holistic and multisectoral approach is essential. Early detection through nationwide screening programs, improved health literacy to promote preventive behaviors, and equitable access to affordable treatment are critical pillars. Additionally, integrating diabetes care into primary healthcare services and leveraging digital health technologies can enhance continuity of care and patient monitoring. Addressing social determinants of health such as poverty, education, and access to nutritious foods—will also be vital in

reducing risk factors and improving outcomes. Cross-sector collaboration involving health, education, agriculture, and social protection sectors is required to effectively combat the socio-economic burden of diabetes.

Conclusion

Diabetes mellitus poses a significant and growing socio-economic challenge for Uzbekistan, affecting individuals, families, the healthcare system, and the national economy. The rising prevalence of diabetes, driven by urbanization, lifestyle changes, and demographic shifts, has led to increased healthcare costs and productivity losses. These economic burdens are compounded by social consequences, including reduced quality of life, psychological distress, and disparities in access to care, particularly between urban and rural populations. Despite ongoing governmental efforts and international collaborations aimed at improving diabetes management, substantial gaps remain in early diagnosis, equitable access to treatment, and sustainable healthcare financing. To effectively address these challenges, Uzbekistan requires a comprehensive, multisectoral strategy that integrates prevention, education, and treatment while targeting social determinants of health. Strengthening primary healthcare services, expanding screening programs, increasing public awareness, and ensuring affordability and availability of essential medicines are critical steps toward mitigating the socio-economic impact of diabetes. Additionally, fostering international cooperation and community engagement will enhance the sustainability of these interventions. Ultimately, addressing diabetes mellitus comprehensively will not only improve health outcomes but also contribute to Uzbekistan's socio-economic development and the wellbeing of its population. Prioritizing this issue within national health and social policies is imperative for achieving long-term, equitable improvements in public health.

References

1. Alieva, A.V., Ismailov, S.I., & Rahimova, G.N. (2018). Epidemiology of Diabetes and Prediabetes in Uzbekistan: Screening Results. *Health Science Journal*, 12(6), 609.
2. Kayumov, J., & Akhunbaev, O. (2024). Healthcare System and Current Treatment of Type 2 Diabetes in Uzbekistan. *Endocrine Abstracts*, 99, EP1047.
3. World Health Organization (WHO). (2016). Diabetes Uzbekistan 2016 Country Profile.
4. World Diabetes Foundation (WDF). (2013). Diabetes in Uzbekistan.
5. Haile, H.K., & Fenta, T.G. (2025). Magnitude, Risk Factors and Economic Impacts of Diabetic Emergencies in Developing Countries: A Systematic Review. *PLOS ONE*, 20(2), e0317653.
6. Kayumov J. Healthcare system and current treatment of type 2 diabetes in Uzbekistan. *Journal of clinical and preventive medicine*. 2024;2024(2):55-58.
7. Kayumov, J. (2024). DIAGNOSIS AND TREATMENT OF UROGENITAL FORM OF DIABETIC AUTONOMIC NEUROPATHY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS. *Science and innovation*, 3(D9), 98-102.