



## DIABETES MELLITUS: CAUSES AND PREVENTION

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**Annotation.** Diabetes mellitus is one of the most common chronic diseases affecting millions of people worldwide. It is a metabolic disorder characterized by high blood glucose levels caused by insufficient insulin production or ineffective use of insulin in the body. Diabetes can lead to serious complications involving the cardiovascular system, kidneys, eyes, nerves, and other organs if not properly managed.

This article examines the main types of diabetes, their causes, symptoms, diagnostic methods, treatment approaches, and preventive measures. Special attention is given to lifestyle factors such as nutrition, physical activity, obesity, and stress, which play important roles in the development and prevention of diabetes. The study emphasizes that early diagnosis, public awareness, and healthy lifestyle habits are essential for reducing the global burden of diabetes and improving quality of life.

**Keywordsn.** Diabetes mellitus, blood glucose, insulin, prevention, healthy lifestyle, obesity, metabolic disorder, type 1 diabetes, type 2 diabetes, public health.

**Annotatsiya.** Qandli diabet butun dunyo bo'ylab millionlab odamlarga ta'sir qiladigan eng keng tarqalgan surunkali kasalliklardan biridir. Bu organizmda insulin



yetarli darajada ishlab chiqarilmasligi yoki samarasiz ishlatilishi natijasida qonda glyukoza miqdorining yuqori bo'lishi bilan tavsiflangan metabolik kasallikdir. Agar diabet to'g'ri davolanmasa, yurak-qon tomir tizimi, buyraklar, ko'zlar, asablar va boshqa organlar bilan bog'liq jiddiy asoratlarga olib kelishi mumkin.

Ushbu maqolada diabetning asosiy turlari, ularning sabablari, belgilari, diagnostika usullari, davolash usullari va profilaktika choralari ko'rib chiqiladi. Diabetning rivojlanishi va oldini olishda muhim rol o'ynaydigan ovqatlanish, jismoniy faollik, semirish va stress kabi turmush tarzi omillariga alohida e'tibor qaratilgan. Tadqiqotda erta tashxis qo'yish, jamoatchilikni xabardor qilish va sog'lom turmush tarzi odatlari diabetning global yukini kamaytirish va hayot sifatini yaxshilash uchun juda muhim ekanligi ta'kidlangan.

**Kalit so'zlar:** Qandli diabet, qon glyukozasi, insulin, oldini olish, sog'lom turmush tarzi, semirish, metabolik kasallik, 1-toifa diabet, 2-toifa diabet, jamoat salomatligi.

**Аннотация.** Сахарный диабет — одно из наиболее распространенных хронических заболеваний, поражающее миллионы людей во всем мире. Это метаболическое расстройство, характеризующееся высоким уровнем глюкозы в крови, вызванным недостаточной выработкой инсулина или неэффективным использованием инсулина в организме. При отсутствии надлежащего лечения диабет может привести к серьезным осложнениям со стороны сердечно-сосудистой системы, почек, глаз, нервной системы и других органов.

В данной статье рассматриваются основные типы диабета, их причины, симптомы, методы диагностики, подходы к лечению и профилактические меры. Особое внимание уделяется факторам образа жизни, таким как питание, физическая активность, ожирение и стресс, которые играют важную роль в развитии и профилактике диабета. В исследовании подчеркивается, что ранняя диагностика, информирование населения и здоровый образ жизни имеют



важное значение для снижения глобального бремени диабета и улучшения качества жизни.

**Ключевые слова:** сахарный диабет, уровень глюкозы в крови, инсулин, профилактика, здоровый образ жизни, ожирение, метаболическое расстройство, диабет 1 типа, диабет 2 типа, общественное здравоохранение.

Diabetes mellitus is a chronic metabolic disease that has become a major global health problem in recent decades. The disease affects people of all ages and social groups and significantly influences physical health, emotional well-being, and quality of life. The human body requires insulin, a hormone produced by the pancreas, to regulate blood sugar levels and provide energy to cells. When insulin production is insufficient or the body cannot use insulin effectively, glucose accumulates in the bloodstream, resulting in diabetes. The increasing prevalence of diabetes is associated with urbanization, unhealthy diets, sedentary lifestyles, obesity, stress, and population aging. According to medical studies, diabetes is one of the leading causes of cardiovascular disease, kidney failure, blindness, and lower-limb amputations worldwide. Understanding the causes and prevention of diabetes is essential for promoting public health and reducing disease-related complications.

Diabetes mellitus is a condition characterized by chronic hyperglycemia, meaning elevated blood glucose levels over a long period. Insulin helps glucose enter body cells where it is used for energy. Without proper insulin function, glucose remains in the bloodstream, causing metabolic imbalance.

There are several main types of diabetes. Type 1 diabetes is an autoimmune disease in which the immune system destroys insulin-producing cells in the pancreas. It usually develops in childhood or adolescence, requires lifelong insulin therapy, and may occur suddenly. Although the exact cause is not fully understood, genetic and environmental factors play important roles.

Type 2 diabetes is the most common form of diabetes. In this condition, the body becomes resistant to insulin or does not produce enough insulin. Major risk



factors include obesity, physical inactivity, unhealthy diet, family history, aging, and stress. Type 2 diabetes often develops gradually and may remain undiagnosed for years.

Gestational diabetes occurs during pregnancy and usually disappears after childbirth. However, it increases the risk of developing type 2 diabetes later in life.

Diabetes develops due to a combination of genetic, environmental, and lifestyle-related factors. Family history increases the risk of diabetes, and individuals with diabetic relatives are more likely to develop the disease. Excess body weight, especially abdominal obesity, significantly contributes to insulin resistance and type 2 diabetes. Diets high in sugar, processed foods, unhealthy fats, and excessive calories also increase the risk of diabetes. Lack of regular physical activity reduces insulin sensitivity and promotes weight gain. Chronic stress affects hormone balance and may contribute to increased blood glucose levels. In addition, certain hormonal disorders and medical conditions may increase diabetes risk.

The symptoms of diabetes may vary depending on disease type and severity. Common symptoms include excessive thirst, frequent urination, increased hunger, fatigue, blurred vision, slow wound healing, weight loss, and frequent infections. Early diagnosis is important because many people with type 2 diabetes may not notice symptoms during the early stages.

Poorly controlled diabetes can damage multiple organs and body systems. Diabetes increases the risk of cardiovascular diseases such as heart disease, stroke, and high blood pressure. High blood sugar levels may damage kidney function and lead to kidney failure. Diabetic retinopathy can cause vision problems and blindness. Nerve damage may result in pain, numbness, and reduced sensation, especially in the feet. Poor circulation and nerve damage also increase the risk of diabetic foot ulcers and infections.

Doctors use several methods to diagnose diabetes. Fasting blood sugar tests measure glucose levels after fasting. The oral glucose tolerance test evaluates how



the body processes sugar over time, while the HbA1c test measures average blood glucose levels over several months. Early diagnosis helps prevent serious complications and improves treatment outcomes.

Although diabetes cannot always be completely cured, proper treatment can effectively control the disease. People with type 1 diabetes and some patients with type 2 diabetes require insulin injections. Oral medications help regulate blood sugar levels and improve insulin sensitivity. A balanced diet is essential for diabetes management. Recommended foods include vegetables, fruits, whole grains, lean proteins, and fiber-rich foods. Sugary drinks, fast food, processed snacks, and excessive carbohydrates should be limited. Regular exercise improves insulin sensitivity and supports healthy body weight. Patients should also regularly monitor glucose levels to maintain proper disease control.

Prevention is especially important for type 2 diabetes because many risk factors are related to lifestyle. Maintaining a healthy body weight significantly reduces diabetes risk. Healthy eating habits help regulate blood sugar and prevent obesity. Important recommendations include limiting sugar intake, reducing processed foods, eating more vegetables and fruits, and drinking sufficient water. Regular physical exercise strengthens metabolism and improves insulin function. Reducing psychological stress supports hormonal balance and metabolic health. Avoiding smoking and excessive alcohol consumption is also important because these habits negatively affect blood circulation and metabolic function. Routine health examinations help detect diabetes and prediabetes early.

Public awareness campaigns play an important role in diabetes prevention. Educational programs should inform people about healthy lifestyles, proper nutrition, risk factors, early symptoms, and the importance of regular screening. Schools, healthcare institutions, and media organizations can contribute to promoting healthier communities.



Modern medicine continues to develop advanced technologies for diabetes treatment and prevention. Future innovations may include artificial pancreas systems, improved insulin therapies, genetic research, personalized medicine, and artificial intelligence in diabetes monitoring. These advancements may improve disease management and patient quality of life.

Diabetes mellitus is a serious chronic disease that affects millions of people worldwide. Genetic factors, obesity, unhealthy lifestyles, and physical inactivity are major contributors to the development of diabetes. If not properly controlled, diabetes may lead to severe complications involving the heart, kidneys, eyes, and nervous system. However, healthy nutrition, regular exercise, weight management, stress reduction, and early diagnosis can significantly reduce the risk of diabetes and improve treatment outcomes. Public health education and preventive healthcare strategies are essential for combating the global diabetes epidemic. Promoting healthy lifestyles and increasing awareness remain key steps toward protecting public health and improving quality of life for future generations.

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