ASSESSMENT OF RISK FACTORS IN THE TREATMENT AND PREVENTION OF TYPE 2 DIABETES MELLITUS

Ortikov B.B.
Suyunboyeva N.M.
Email: b.ortiqov@tashmeduni.uz
Email: suyuboyeva.n1407@gmail.com
Tashkent State Medical University
DOI:https://doi.org/10.5281/zenodo.23910832

Introduction. Type 2 diabetes mellitus (T2DM) is a common chronic metabolic disorder characterized by persistent hyperglycaemia resulting from impaired insulin secretion and reduced tissue sensitivity to insulin. According to the International Diabetes Federation's 2025 data, 589 million people aged 20–79 years worldwide are living with diabetes, more than 250 million of whom remain unaware of their condition [2]. Timely glycaemic control reduces the risk of complications, including retinopathy, nephropathy, neuropathy, and cardiovascular disease [1].

Keywords: diabetes mellitus, treatment, metformin, glycaemic control, risk factors, prevention.

Objective. To assess the risk factors associated with the treatment and prevention of type 2 diabetes mellitus in accordance with contemporary clinical principles.

Main body. The major risk factors for the development of T2DM include obesity, particularly abdominal obesity; physical inactivity; a family history of diabetes; age over 45 years; arterial hypertension; dyslipidaemia; a history of gestational diabetes; and prediabetes [1, 2]. Other contributing factors include polycystic ovary syndrome, smoking, an unbalanced diet rich in saturated fats and refined carbohydrates, excessive consumption of sugar-sweetened beverages, chronic stress, and sleep disturbances [1]. The diagnosis of diabetes is established when fasting plasma glucose is ≥7.0 mmol/L, glycated haemoglobin (HbA1c) is ≥6.5%, or plasma glucose measured two hours after an oral glucose tolerance test is ≥11.1 mmol/L [1].

Treatment should be individualised. For most adults, the target for glycaemic control is an HbA1c level below 7%, with assessment generally performed every three months when clinically indicated [1]. The cornerstone of management is lifestyle modification, including a balanced diet, weight reduction, and regular physical activity. Metformin is commonly used as an initial pharmacological treatment when not contraindicated [4, 5]. In patients with cardiovascular disease, heart failure, or chronic kidney disease, sodium–glucose cotransporter 2 (SGLT2) inhibitors or glucagon-like peptide-1 (GLP-1) receptor agonists are recommended according to the patient's clinical profile, irrespective of baseline glycaemic levels. GLP-1-based therapies may also facilitate weight reduction in individuals with obesity [1, 4]. If glycaemic targets are not achieved, combination therapy may be required, and insulin should be initiated when clinically indicated. The risk of hypoglycaemia must be considered when prescribing insulin or sulfonylureas [1].

Prevention. In individuals with prediabetes, lifestyle interventions aimed at reducing body weight by approximately 7% and achieving at least 150 minutes of physical activity per week have been shown to reduce the risk of developing T2DM by 58%, while metformin reduced the risk by 31% in the Diabetes Prevention Program [3]. Therefore, the early identification of high-risk individuals through regular blood glucose testing is essential. Preventive measures include limiting saturated fat and added sugar intake; consuming a diet rich in dietary fibre, whole grains, and vegetables; smoking cessation; and maintaining optimal blood pressure and lipid levels [1]. Screening is recommended from the age of 35 years, or earlier in individuals with excess body weight and additional risk factors. If initial results

© 2026 International Conference on Artificial Intelligence and Applications . All Rights Reserved.

are normal, screening should generally be repeated at least every three years, whereas individuals with prediabetes should undergo annual testing [1].

Conclusion. The effective treatment and prevention of type 2 diabetes mellitus require a comprehensive approach that includes accurate assessment of risk factors, individualised glycaemic targets, appropriate use of metformin and, when indicated, contemporary glucose-lowering medications, alongside sustained lifestyle modification. Maintaining a healthy body weight, engaging in regular physical activity, and identifying high-risk individuals at an early stage are essential strategies for reducing the incidence of T2DM and preventing its associated complications.

References

1. American Diabetes Association Professional Practice Committee. Standards of Care in Diabetes—2026. Diabetes Care. 2026;49(Suppl 1):S1–S377.
2. International Diabetes Federation. IDF Diabetes Atlas. 11th ed. Brussels: International Diabetes Federation; 2025.
3. Knowler W.C., Barrett-Connor E., Fowler S.E. et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med. 2002;346(6):393–403.
4. Davies M.J., Aroda V.R., Collins B.S. et al. Management of hyperglycemia in type 2 diabetes, 2022. Diabetes Care. 2022;45(11):2753–2786.
5. UK Prospective Diabetes Study (UKPDS) Group. Effect of intensive blood-glucose control with metformin on complications in overweight patients with type 2 diabetes (UKPDS 34). Lancet. 1998;352(9131):854–865.
6. Ermatov N. J. et al. Socio-hygienic analysis of risk factors in patients with diseases of the endocrine system. – 2023.

© 2026 International Conference on Artificial Intelligence and Applications . All Rights Reserved.