
**DIABETESMELLITUS: PATHOGENESIS, CLINICALFEATURESAND
MANAGEMENT – (A REVIEW)**

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***Corresponding Author: Aafir Nazir Magray**B.Pharma4thyearstudent,Mewar UniversityGangrar,Chittorgarh(Raj.)DOI: <https://doi-doi.org/101555/ijarp.5669>**ABSTRACT:**

Diabetes mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia resulting from defects in insulin secretion, insulin action, or both. It represents one of the most significant global health challenges due to its rapidly increasing prevalence and its association with serious long-term complications affecting multiple organs. The disease can lead to cardiovascular disorders, kidney failure, neuropathy, and visual impairment if not properly managed. This review article discusses the classification, pathophysiology, clinical manifestations, diagnostic criteria, complications, and management strategies of diabetes mellitus. Emphasis is also placed on the importance of lifestyle modification, pharmacological therapy, and preventive strategies in controlling disease progression. Understanding the mechanisms underlying diabetes mellitus is essential for healthcare professionals, especially pharmacists, who play a key role in medication management, patient education, and therapeutic monitoring.

KEYWORDS:

- DiabetesMellitus
- Hyperglycemia
- Insulin Resistance
- Pharmacotherapy
- Pathophysiology

1. INTRODUCTION:

Diabetes mellitus is a group of metabolic disorders characterized by elevated blood glucose levels resulting from defects in insulin secretion, insulin action, or both. Insulin is a hormone produced by pancreatic beta cells that regulates carbohydrate, fat, and protein metabolism. When insulin production is insufficient or when body tissues fail to respond adequately to insulin, glucose accumulates in the blood stream leading to hyperglycemia. Over time, chronic hyperglycemia damages blood vessels and various organs including the heart, kidneys, eyes, and nerves. The global burden of diabetes has increased significantly over the past few decades due to urbanization, sedentary lifestyles, dietary changes, and increasing obesity rates. Effective management of diabetes requires a combination of lifestyle modification, pharmacological treatment, and continuous monitoring of blood glucose levels. Pharmacists play an important role in improving patient adherence, counseling on medications, and monitoring drug therapy.

2. Classification of Diabetes Mellitus:

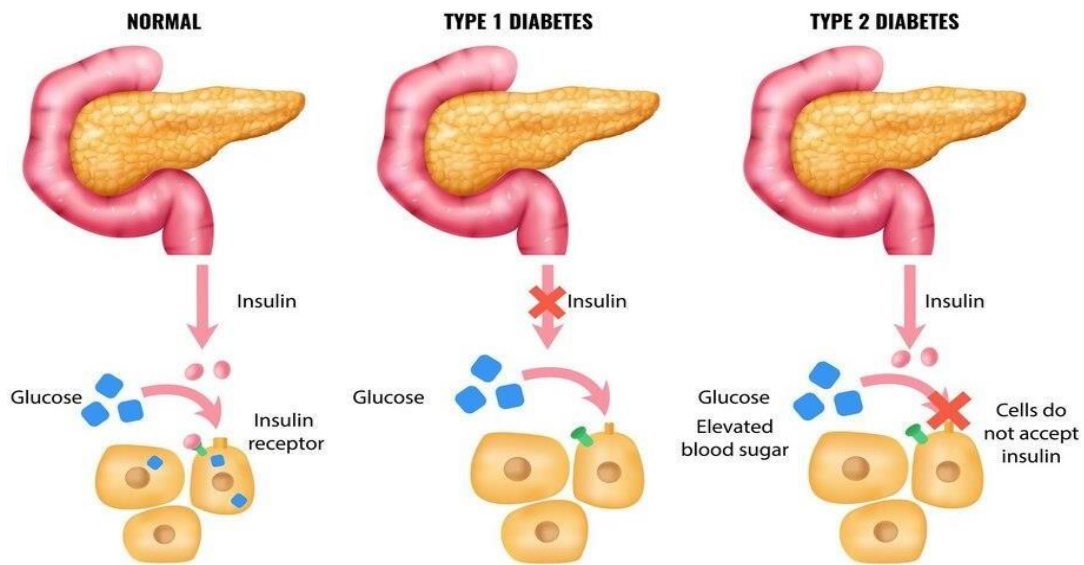
Diabetes mellitus is broadly classified into the following categories:

Type 2 Diabetes Mellitus: The most common form of diabetes, characterized by insulin resistance combined with relative insulin deficiency. It is strongly associated with obesity, genetic factors, and sedentary lifestyle.

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Gestational Diabetes Mellitus: This type occurs during pregnancy and usually resolves after delivery, although affected women have a higher risk of developing type 2 diabetes later in life.

DIABETES MELLITUS



3. Pathogenesis:

The pathogenesis of diabetes mellitus involves complex metabolic disturbances. In type 1 diabetes, autoimmune destruction of pancreatic beta cells results in complete insulin deficiency. In contrast, type 2 diabetes develops due to insulin resistance in peripheral tissues such as skeletal muscle, liver, and adipose tissue. Initially, pancreatic beta cells compensate by producing more insulin to maintain normal glucose levels.

However, prolonged metabolic stress leads to beta-cell dysfunction and reduced insulin secretion, resulting in chronic hyperglycemia. Oxidative stress, inflammation, and genetic predisposition are also important contributors to disease development.

4. Clinical Features:

Common symptoms of diabetes mellitus include polyuria, polydipsia, polyphagia, fatigue, unexplained weight loss, blurred vision, and slow wound healing. Some patients may also experience recurrent infections. In severe cases, acute complications such as diabetic ketoacidosis or hyperosmolar hyperglycemic state may occur. Early recognition of these symptoms is important for timely diagnosis and treatment.

5. Diagnosis:

Diagnosis of diabetes mellitus is based on laboratory measurements of blood glucose levels. The commonly used diagnostic tests include fasting plasma glucose (FPG), oral glucose tolerance test (OGTT), and glycated hemoglobin (HbA1c). A fasting plasma glucose level of 126 mg/dL or higher, a random plasma glucose level of 200 mg/dL or

higher with symptoms, or an HbA1c value of 6.5% or greater indicates diabetes mellitus.

6. Management:

Management of diabetes focuses on achieving optimal glycemic control and preventing long-term complications. Life style modifications such as a balanced diet, regular physical activity, and weight management are fundamental components of therapy.

Pharmacological treatment includes oral antidiabetic drugs such as metformin, sulfonylureas, DPP-4 inhibitors, and SGLT2 inhibitors. Insulin therapy may be required in patients with type 1 diabetes or advanced type 2 diabetes. Regular monitoring of blood glucose levels and HbA1c is essential for evaluating treatment effectiveness.

Pharmacists contribute significantly by educating patients about medication adherence, drug interactions, proper insulin administration and lifestyle management.

7. Complications:

Long-term complications of diabetes can be categorized into microvascular and macrovascular complications. Microvascular complications include diabetic retinopathy, nephropathy, and neuropathy. Macrovascular complications include cardiovascular disease, stroke, and peripheral vascular disease. Effective glycemic control significantly reduces the risk of these complications.

8. CONCLUSION:

Diabetes mellitus is a major public health problem worldwide. Early diagnosis, appropriate pharmacotherapy, lifestyle modifications, and patient education are essential to prevent disease progression and reduce complications. Healthcare professionals, especially pharmacists, play a crucial role in improving patient outcomes through medication management and counseling. Continuous research and public health initiatives are necessary to control the growing burden of diabetes.

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