Diabetes Mellitus: A Growing Global Health Problem

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Key points:

- Introduction
- Types of Diabetes Mellitus
- Global Prevalence of Diabetes
- Risk Factors and Complications
- Prevention and Management
- Future Perspectives
- Conclusion

Introduction

Diabetes mellitus is a chronic metabolic disorder characterized by the body's inability to regulate blood glucose (blood sugar) levels effectively. This occurs when the pancreas produces insufficient insulin or when the body's cells become resistant to insulin. Insulin is a vital hormone that enables glucose to enter cells, where it is used to generate energy.[1]

Over the past few decades, diabetes mellitus has emerged as one of the leading non-communicable diseases worldwide. The increasing prevalence of the disease has been driven by unhealthy dietary habits, physical inactivity, rising obesity rates, population aging, and rapid urbanization. If left untreated or poorly controlled, diabetes can lead to serious damage affecting multiple organs and body systems.[2]

Types of Diabetes Mellitus

Diabetes mellitus is classified into three main types: Type 1 diabetes, Type 2 diabetes, and gestational diabetes.

Type 1 Diabetes

Type 1 diabetes is an autoimmune disorder in which the immune system attacks and destroys the insulin-producing β-cells of the pancreas. Consequently, the body is unable to produce sufficient insulin, making lifelong insulin replacement therapy essential for maintaining normal blood glucose levels.[3]

Type 2 Diabetes

Type 2 diabetes is the most common form of diabetes, accounting for approximately 90–95% of all cases. It develops when the body's cells become resistant to the effects of insulin and the pancreas is unable to produce enough insulin to meet the body's needs. This condition is strongly associated with obesity, physical inactivity, and other lifestyle-related factors.[4]

Gestational Diabetes

Gestational diabetes develops during pregnancy in women without previously diagnosed diabetes. Although blood glucose levels often return to normal after childbirth, women who experience gestational diabetes remain at an increased risk of developing type 2 diabetes later in life.

Global Prevalence of Diabetes

Diabetes mellitus is recognized as one of the most significant global public health challenges.

According to the International Diabetes Federation, an estimated **589 million adults** (20–79 years) were living with diabetes worldwide in 2024, and this number is projected to increase to **853 million by 2050**.[5]

The burden of diabetes is disproportionately greater in low- and middle-income countries, where limited healthcare resources, changing dietary patterns, physical inactivity, and increasing obesity contribute to its growing prevalence. Rapid urbanization, population aging, and lifestyle changes have further accelerated the global rise in diabetes cases.[6]

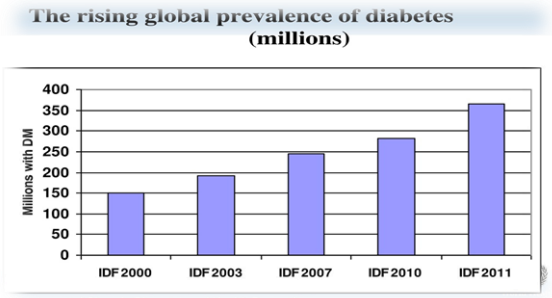


***Figure 1**: Global increase in diabetes prevalence over time*

Risk Factors and Complications

Several factors increase the likelihood of developing diabetes mellitus.

Risk Factors

The major risk factors for diabetes include obesity, physical inactivity, unhealthy dietary habits, advancing age, and genetic predisposition. Individuals with a family history of diabetes are at a higher risk of developing the disease. Additional factors such as hypertension, dyslipidemia, and urbanized lifestyles may also contribute to the development of type 2 diabetes.[6]

Health Complications

Poorly controlled diabetes can result in a wide range of serious health complications affecting multiple organs and body systems.

The most common complications include:

- Cardiovascular disease
- Diabetic neuropathy (nerve damage)
- Diabetic retinopathy (vision impairment)
- Diabetic nephropathy (kidney disease)

These complications can substantially reduce quality of life and may lead to permanent disability or premature death if diabetes is not adequately managed.[8]

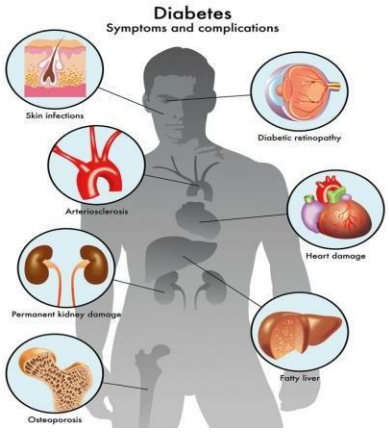


Figure 2: *Major complications associated with diabetes mellitus.*[8]

Prevention and Management

Although diabetes mellitus is a chronic disease, many cases of **type 2 diabetes** can be prevented through appropriate lifestyle modifications. Maintaining a healthy body weight, engaging in regular physical activity, and following a balanced diet are key strategies for reducing the risk of developing the disease. Early diagnosis, routine monitoring of blood glucose levels, and appropriate medical treatment are essential for achieving good glycemic control and preventing long-term complications. Public health education and awareness programs also play an important role in encouraging healthy behaviors and improving diabetes prevention and management.[2]

Conclusion: Future of Diabetes Control

Diabetes mellitus remains one of the most significant global public health challenges. The continued increase in its prevalence highlights the need for stronger prevention strategies, improved access to healthcare services, and early detection programs. Promoting healthy lifestyles, increasing public awareness, and ensuring effective disease management can substantially reduce the global burden of diabetes and its associated complications. With

appropriate medical care and self-management, individuals living with diabetes can maintain a good quality of life and reduce the risk of long-term health complications.[1]

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