

DIABETES MELLITUS – A REVIEW

¹*Kobarne Harshad Popat, ²Tagad Shubham Vilas, ³Kobarne Yogita Rajendra and ⁴Gholap Suraj Machindra

^{1,2,3}Student of Mrs. Saraswati Wani College of Pharmacy Ganegaon.

⁴Assistant Professor At. Mrs. Saraswati Wani College of Pharmacy Ganegaon.

*Corresponding Author: Kobarne Harshad Popat

Student of Mrs. Saraswati Wani College of Pharmacy Ganegaon.

Article Received on 31/03/2023

Article Revised on 20/04/2023

Article Accepted on 10/05/2023

ABSTRACTS

Diabetes is a common condition that affects people of all ages. One of the most frequent noncommunicable diseases in the world is diabetes mellitus. India faces many challenges in diabetes management, including a rising prevalence in urban and rural areas, a lack of disease awareness among the public, limited healthcare facilities, a high cost of glycemic treatment, suboptimal control, and a rising prevalence of diabetic complications. I fixed it so that in 2010, there were globally 2085 million people (appropriate), mainly 6.4% of the adult population, suffering from this disease. The review is based on a search on Medline, the Cochrane database of systemic reviews and citation lists of relevant publications. There is definitely more intensive research in this field that will eventually reflect on the ultimate objective of improving diagnosis and therapy and minimizing the chance of chronic complications developing. The molecular genetics of diabetes has been extended in recent years by many prominent investigators and research groups in the biomedical field. Worldwide, people with poorly managed diabetes are controlling their diabetes and gaining body weight. An update of this review on unknown complications resulted in the management of treatment data for the disease. The article also provides a summary of disease management through various strategies.

KEYWORDS: diabetes mellitus, etiology, epidemiology, type 1 diabetes mellitus, type 2 diabetes mellitus.

INTRODUCTION

It is a metabolic disorder characterized by a high level of glucose in the blood. It decreased the secretion of insulin, and its action is known as diabetes mellitus. Diabetes mellitus is a chronic disorder of carbohydrates, fats, and protein metabolism. The International Diabetes Federation (IDF) estimates the total number of diabetes subjects to be around 40.9 million in India, often rising to 69.9 million by 2025. In people with diabetes, blood levels remain high.

It may cause insulin to not be produced at all. Clinical features similar to diabetes mellitus were described 3000 years ago by the ancient Egyptians. The disease is characterized by high blood sugar levels due to a deficiency in the concentration and activity of insulin. In this process, insulin is secreted by the beta (B) cells and glycogen is secreted by the alpha cells. Diabetes mellitus (DM) is commonly referred to as "sugar" and is the most common endocrine disorder. This usually occurs due to the deficiency of insulin. In today's world, diabetes is the most common disorder in our country and also worldwide. In the United States, it remains the seventh leading cause of death. Diabetes mellitus is also caused

by disturbances in protein and fat metabolism. It is a disease caused by an imbalance between insulin supply and demand. The WHO estimates more than 220 million people all over the world have diabetes, and the number will double in the coming decade of 2030. India China has the largest diabetes population.

They include mainly two subtypes of DM

Type 1 diabetes mellitus (T1DM)

Type 2 diabetes mellitus (T2DM)

Type 1 diabetes mellitus

- Type 1 diabetes mellitus is also known as insulin-dependent diabetes mellitus. In this type, insulin is not present, unlike in type 2 diabetes mellitus.
- 90% of people suffer from this type of diabetes.
- It is also called "non-insulin dependent."
- Another name is maturity-onset diabetes (MOD).

Classification

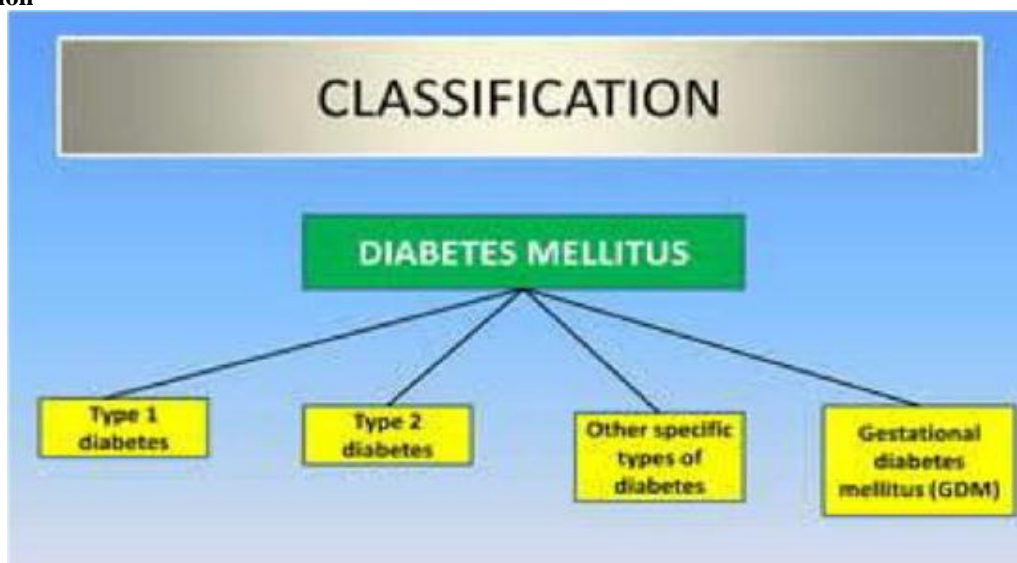


Fig 1.1.

Type 1 diabetes mellitus

- Type 1 diabetes was once called insulin-dependent or juvenile diabetes.
- It usually develops in children, teens, and young adults, but it can happen at any age.
- Diabetes occurs when your blood glucose, also called blood sugar, is too high.
- Insulin works like a key for glucose, unlocking the cells so that glucose can enter.
- Type 1 diabetes makes up between 5 and 10% of total diabetes cases in the United States.
- 6 million Americans have type 1 diabetes, including 187,000 children and adolescents.
- Type 1 diabetes is usually diagnosed before the age of 40.
- Most type 1 diabetes diagnoses occur in children between the ages of 4 and 14 years old.
- If one family member has type 1 diabetes, other relatives have an increased chance of developing the condition.
- When type 1 diabetes is triggered by a virus, someone predisposed to an autoimmune condition may develop an autoimmune response.

Managing Diabetes

- primary care doctor
- foot doctor, dentist
- Eye doctor
- Registered dietitian nutritionist
- Diabetes educator
- Pharmacist
- Also ask your family, teachers, and other important people in your life for help and support.

Type 1 Diabetes Treatment

- People who have type 1 diabetes can live long, healthy lives. You'll need to keep a close eye on your blood sugar levels.
- Your doctor will give you a range that the numbers should stay within. Adjust your insulin, food, and activities as necessary.
- Everyone with type 1 diabetes needs to use insulin shots to control their blood sugar.

Causes of type 1 diabetes

- The exact cause of type 1 diabetes is not known, but we do know it has a strong genetic link and cannot be prevented.
- People who develop diabetes may have one or a number of genes that make type 1 diabetes more likely, and then some sort of environmental trigger occurs to start the autoimmune reaction.
- Examples of triggers include an infection or a high level of stress.
- Triggers are not always easy to identify.
- Your doctor is likely to do a blood test to check if you have autoantibodies to confirm the diagnosis of type 1 diabetes.
- We know that type 1 diabetes has nothing to do with lifestyle, although maintaining a healthy lifestyle is very important in helping to manage all types of diabetes, including type 1.
- At this stage, nothing can be done to prevent or cure type 1 diabetes.

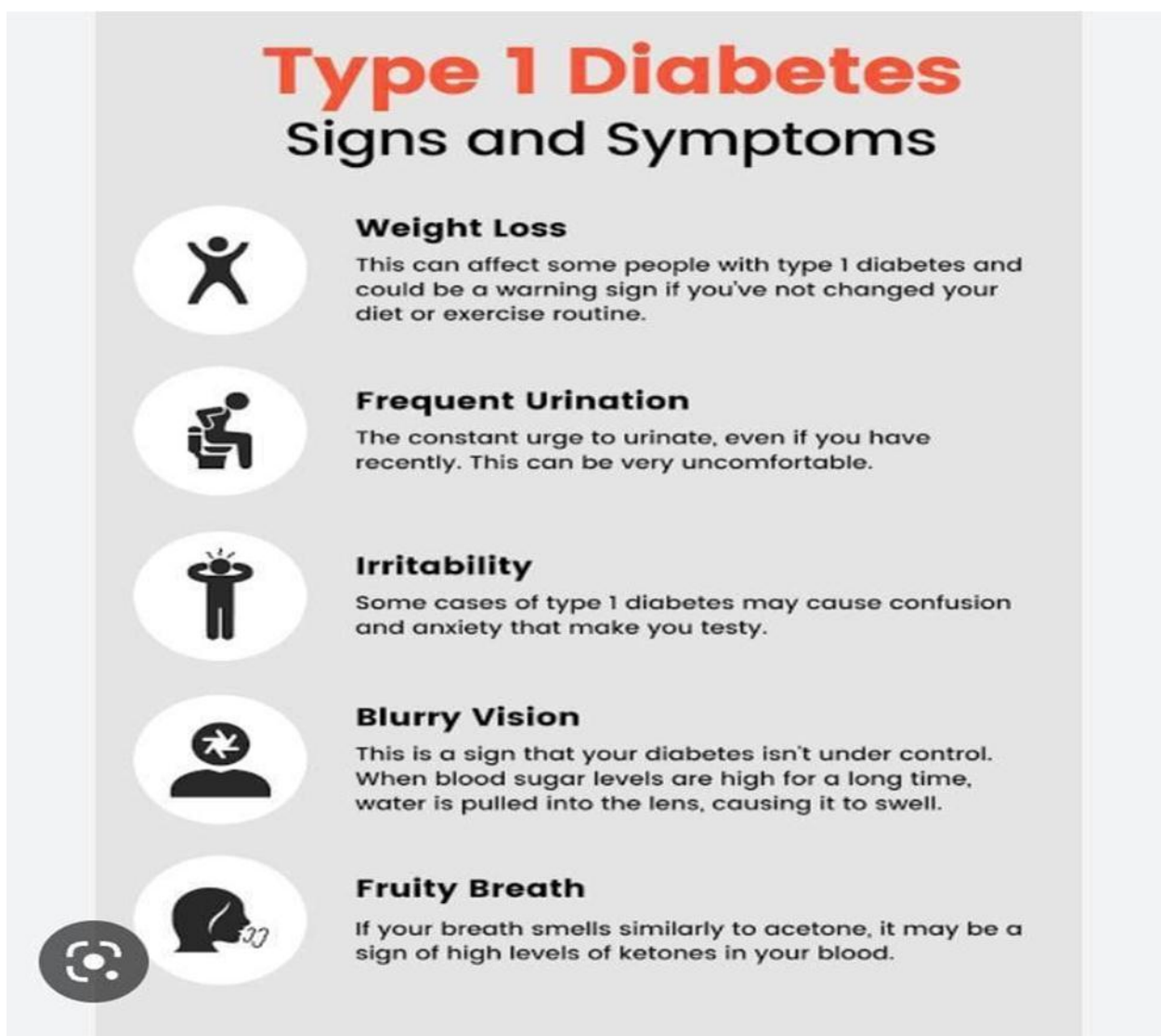


Fig :-1.2.

Type 2 diabetes mellitus

- Adult-onset diabetes is another name for type 2 diabetes mellitus.
- This is also known as the NIDDM.
- It results from a decrease in the sensitivity of the cells to insulin and a decrease in the amount of insulin produced.
- Long-term complications in blood vessels (kidney, eyes, and nerves) occur in both types and are the major cause of morbidity and death from diabetes.
- This type 2 diabetes is treated with diet and exercise, and if elevated glucose levels persist, supplement with oral hypoglycemia agents.
- There are probably many different causes of this form of diabetes.
- This form of diabetes frequently goes undiagnosed for many years because the hyperglycemia developed genetically and at earlier stages is often

not severe enough for the patient to notice any of the classic symptoms of diabetes.

- The cause is multifunctional, and the predisposing factor includes obesity.
- With the sedentary lifestyle, increasing age, and genetic factors, such patients are at increased risk of developing macrovascular and microvascular complications.

Signs and symptoms

1. There is an increase in urine output, which results from glycosuria secondary to hyperglycemia.
2. Fatigue is another symptom of diabetes mellitus.
3. signs such as sweating, trembling, and shakiness, which result from increased sympathetic stimulation, cause considerable discomfort.



Fig :- 1.3

Different Between Type 1 and Type 2 DM

DIABETES MELLITUS TYPE 1 VS TYPE 2	
TYPE 1 DIABETES	TYPE 2 DIABETES
<ul style="list-style-type: none"> Occurs when the pancreas is unable to produce enough insulin Tends to develop at a young age Cannot be prevented Require insulin therapy 	<ul style="list-style-type: none"> Occurs due to insulin resistance (i.e. when the body does not respond well to insulin) Tends to develop at an older age Can be prevented with lifestyle changes Can be managed with lifestyle modifications alone if diagnosed early
<ul style="list-style-type: none"> Both share symptoms of frequent urination, increased thirst, extreme hunger, unintentional weight loss, fatigue, blurry vision, sores or wounds that heal slowly, and numbness and tingling sensation in hands and feet. Both can benefit from lifestyle modifications such as a healthy diet, physical activity, blood sugar level monitoring, and management of stress and other existing health conditions. 	

Fig :- 1.4.

Gestational diabetes mellitus

- The glucose intolerance occurring for the first time or being diagnosed during pregnancy is referred to as gestational diabetes mellitus.
- It occurs in about 2–5% of all pregnancies and in about 30–40% of patients with gestational diabetes within 5–10 years.
- Gastric diabetes mellitus may develop during pregnancy and may disappear after delivery; in the

- longer term, children born to mothers with GDM are at greater risk of obesity.
- Type 2 diabetes in later life is attributed to the effects of intrauterine exposure to hyperglycemia. Impaired glucose tolerance and statistical risk groups are examples of gestational diabetes mellitus.
 - Statistical risk groups are individuals at greater risk than the general population of developing diabetes.
 - The risk factors include immediate family members with the disease and the presence of islet cell antibodies.

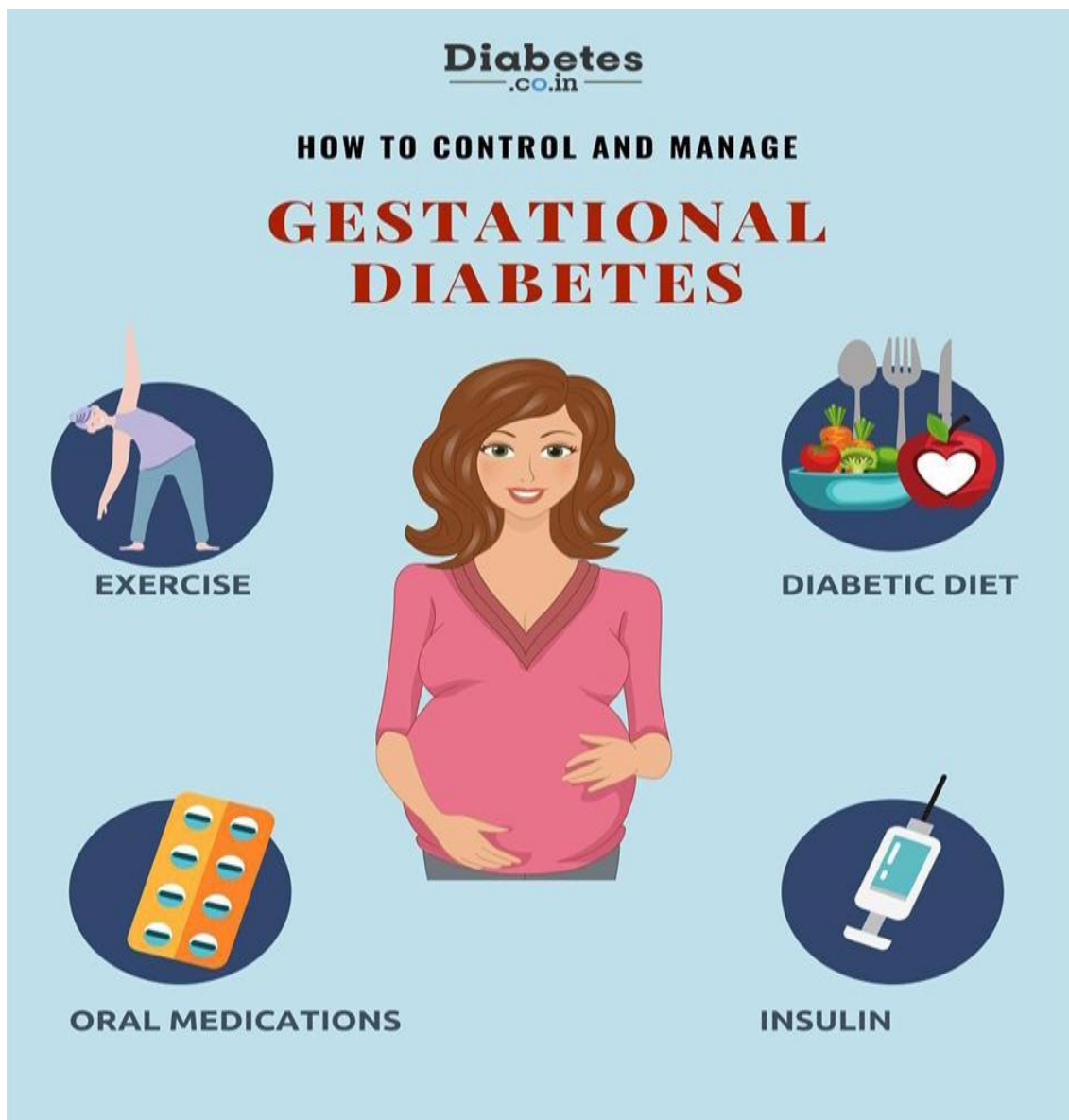


Fig :- 1.5.

Other specific types

- The most common form of monogenic diabetes is developed with mutations on chromosome 12 in a hepatic transcription factor.
- Some drugs are also used in combination with the treatment of HIV/AIDS or after organ transplantation.

Epidemiology

- Defects in the information of insulin
- decreased insulin sensitivity.
- Autoimmunity.

- It is due to pancreatic islet B-cell destruction predominantly by an autoimmune process.
- Diabetes mellitus is a metabolic disorder due to insulin deficiency or resistance.
- The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014.
- In the United States, approximately 800,000 new cases of diabetes are diagnosed each year.
- Diabetes mellitus affects about 17 million people, 5.9 million of whom are undiagnosed.
- Mortality is higher in the elderly.
- 80% of people with diabetes live in low- and middle-income countries.

- The prevalence of type 2 DM is increasing worldwide, much more rapidly because of obesity and reduced activity.

Pathophysiology

- Pathophysiology is the study of how a disease, injury, or other condition affects a patient, including both the physical and functional changes that occur.
- In type 1 diabetes, the lack of insulin causes hyperglycemia and impaired glucose utilization in skeletal muscle.
- Type 2 diabetes mellitus is characterized by peripheral insulin resistance, impaired regulation of hepatic glucose production, and declining B-cell function, eventually leading to B-cell failure.
- Type 1 diabetes mellitus results from the autoimmune destruction of B cells of the endocrine parenchyma.
- The pathogenesis of medical T-DM is different from that of diabetes mellitus, where both insulin resistance and reduced secretion of insulin by the B-cells play a synergistic role.
- The three main and broad subtypes of pathology are:
 - 1) Anatomical pathology;
 - 2) Clinical pathology;
 - 3) Molecular pathology

Risk factor

1. Are overweight.
2. Have prediabetes.
3. Have you ever had gestational diabetes (diabetes during pregnancy) or given birth to a baby who weighed over 9 pounds?
4. Unhealthy diet
5. Age, obesity, and physical inactivity
6. Drinking too much alcohol
7. Not having certain vaccinations
8. Smoking tobacco
9. Are 45 years of age or older.

Type 1 etiology

1. This is usually considered to be the result of autoimmune destruction of the pancreatic B cells.
2. Diabetes (cell destruction, usually leading to absolute insulin deficiency) is immune-mediated and idiopathic.

Type 2 etiology:

1. Most patients with T2DM in these countries and Europe are overweight or obese, but in India and China, most have T2DM.
2. Diabetes (which may range from predominant insulin resistance with relative insulin deficiency to predominately secretory defects with insulin resistance)

Complications of diabetes:

- I. Heart attack and stroke
- II. kidney problems (nephropathy)
- III. Nerve damage (neuropathy)
- IV. Gum disease and other mouth problems Diabetes foot problems are serious and can lead to amputation if untreated.

- V. Related conditions, like cancer
- VI. Heart disease
- VII. Chronic kidney disease and nerve damage
- VIII. Other problems with feet, oral health, vision, hearing, and mental health
- IX. Eye problem

Drugs for diabetes mellitus medicine

1. Glimpiride (Amaryl)
2. Glipizide and metformin
3. glyburide

Oral medication:

1. Meglitinides
2. Metformin
3. Alpha-glucosidase inhibitor
4. Thiazolidinediones

Advantages

1. You can eat whatever you want.
2. You can refuse food you don't want and blame diabetes; nobody will dare argue.
3. You'll get free prescriptions for life.
4. You'll get regular health checks for life.

Disadvantage

1. Over time, high blood glucose levels can damage the body's organs.
2. As the quantity obtained is less, insulin therapy becomes very costly.
3. Possible long-term effects include damage to large and small blood vessels, which can lead to heart attacks, strokes, and problems with the kidneys, eyes, gums, feet, and nerves.

CONCLUSION

Diabetes mellitus is a serious complication in day-to-day life. Diabetes mellitus is one of the most common non-communicable diseases in the world. This has had an impact on potential outcomes. Although type 1 diabetes is becoming more widespread, type 2 diabetes mellitus, which accounts for more than 90% of all diabetes cases, is the main cause of diabetic epidermic.

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