

Gestational Diabetes

Alishba Akram

1st year MBBS, Islamabad Medical and Dental College

Key points:

- Introduction to Gestational Diabetes
- Causes and Symptoms
- Diagnosis
- Prevention and Control

Introduction

Gestational diabetes is defined as hyperglycemia first detected during pregnancy at glucose concentrations that are less than those of overt diabetes. Around 14% of pregnancies globally are affected by gestational diabetes; its prevalence varies with differences in risk factors and approaches to screening and diagnosis, and it is increasing in parallel with obesity and type 2 diabetes. ¹

Causes and Symptoms

Researchers don't really know the reason for gestational diabetes. The following can be the major causes of gestational diabetes:

- Being overweight or obese
- Not being physically active
- Having prediabetes
- Having had gestational diabetes during a previous pregnancy
- Having polycystic ovary syndrome
- Having an immediate family member with diabetes
- Having previously delivered a baby weighing more than 9 pounds (4.1 kilograms)
- Being of a certain race or ethnicity, such as Black, Hispanic, American Indian, or Asian American

Following are the major symptoms of gestational diabetes:

- Increased thirst
- Needing to pee more often than usual
- A dry mouth
- Tiredness
- Blurred eyesight
- Genital itching or thrush

Diagnosis

Gestational diabetes is diagnosed through blood tests, typically a glucose tolerance test (OGTT) between 24 and 28 weeks of pregnancy, or earlier for high-risk women. The test involves drinking a glucose solution and measuring blood sugar levels before and after.

Diagnostic Criteria is below.

Test Timing	Ranges
Fasting-plasma glucose	92 mg/dL (5.1 mmol/L) or higher
1-hour-post-75g glucose load	180 mg/dL (10.0 mmol/L) or higher.
2-hour-post-75g glucose load	153 mg/dL (8.5 mmol/L) or higher.

Prevention and Control

Interventions such as dietary changes, physical activity, a combination of both, metformin, and myoinositol have been shown to reduce the incidence of gestational diabetes mellitus (GDM) compared to control measures. Physical activity programs conducted in groups or healthcare facilities are more effective in preventing GDM than those implemented individually or within the community. Other factors, such as the use of e-health, do not significantly influence the effectiveness of lifestyle interventions, highlighting the need to tailor interventions to the local context.²

First Case

As early as 1824, German researchers reported the first incidence of gestational diabetes occurring in a pregnant woman. Lambie reported for the first time about the signs of diabetes to appear in the fifth or sixth month of pregnancy in 1926.³

Risk Factors

Hyperglycemic exposure of the mother during fetal development is also associated with short-term complications such as macrosomia and neonatal hypoglycemia and also increased the chance of developing T2DM and other metabolic diabetes in long term.⁴

Impact

According to research, menarche at a young age is an independent risk factor for GDM. Menarche, or the onset of first menstruation, marks the beginning of ovarian and other reproductive endocrine processes. It has been reported that early menarche is linked to an increased risk of developing type 2 diabetes. The development of GDM is characterized by chronic insulin resistance and pancreatic β -cell dysfunction, and early menarche is associated with increased insulin resistance. The study not only explored the correlation between age at menarche and GDM risk but also validated the relationship between menarche and plasma glucose levels.⁵

Treatment

Treatment for gestational diabetes focuses on managing blood sugar levels through diet, exercise, and potentially medication (insulin or metformin) if lifestyle changes are insufficient.

Here's a more detailed explanation:

Lifestyle Modifications:

- **Diet:** A balanced, carbohydrate-controlled diet is crucial, with a focus on whole foods, lean proteins, and fruits and vegetables.
- **Exercise:** Regular moderate-intensity exercise, such as walking, swimming, or prenatal yoga, is recommended.
- **Blood Sugar Monitoring:** Regular blood glucose monitoring helps track blood sugar levels and ensure they are within the target range.

Medication:

- **Insulin:** If lifestyle changes are not enough to control blood sugar, insulin injections may be necessary.
- **Metformin:** In some cases, an oral medication like metformin may be prescribed.

Monitoring During Pregnancy:

- **Fetal Growth:** Regular scans are important to monitor the baby's growth and overall health.
- **Fetal Movement:** Mothers should be aware of their baby's movements and report any changes to their healthcare provider.
- **Delivery:** Depending on the severity of gestational diabetes and the baby's health, induction of labor or a Cesarean section may be recommended.

Postpartum:

- Gestational diabetes usually resolves after delivery.

- Women who had gestational diabetes have an increased risk of developing type 2 diabetes later in life.
- Adopting a healthy lifestyle can help reduce this risk. ⁶

References

1. Sweeting A, Hannah W, Backman H, Catalano P, Feghali M, Herman WH, Hivert MF, Immanuel J, Meek C, Oppermann ML, Nolan CJ. Epidemiology and management of gestational diabetes. *The Lancet*. 2024 Jul 13;404(10448):175-92.
2. Takele WW, Vesco KK, Josefson J, Redman LM, Hannah W, Bonham MP, Chen M, Chivers SC, Fawcett AJ, Grieger JA, Habibi N. Effective interventions in preventing gestational diabetes mellitus: A systematic review and meta-analysis. *Communications medicine*. 2024 Apr 20;4(1):75.
3. Bogdanet D, O'Shea P, Lyons C, Shafat A, Dunne F. The oral glucose tolerance test—is it time for a change—a literature review with an emphasis on pregnancy. *Journal of clinical medicine*. 2020 Oct 27;9(11):3451
4. Xu T, Lai X, He K, Ma L, Fang H. Subsidy programme for gestational diabetes mellitus screening and lifestyle management in rural areas of western China: a study protocol for a multicenter randomized controlled trial. *BMJ open*. 2021 Jul 1;11(7) e045503.
5. Li H, Shen L, Song L, Liu B, Zheng X, Xu S, Wang Y. Early age at menarche and gestational diabetes mellitus risk: results from the Healthy Baby Cohort study. *Diabetes & Metabolism*. 2017 Jun 1;43(3):248-52.
6. Maqbool M, Zehravi M, Maqbool R, Ara I. An overview about treatment of gestational diabetes mellitus: A short communication. *CellMed*. 2021;11(3):12-.