Indian Diabetes

EDUCATOR JOURNAL

RESEARCH SOCIETY FOR THE STUDY OF DIABETES IN INDIA

Theme of the Month

Women's Day: GDM and Beyond

To keep Members of Diabetes Care team abreast about DSME/DSMS - (Diabetes Self management Education/Support) Concepts

2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026

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RSSDI Indian Diabetes EDUCATOR JOURNAL

1st time in India
To keep the members of diabetes care team abreast with DSME and DSMS concepts

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*DSME: Diabetes Self-Management Education, DSMS: Diabetes Self-Management Support

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FOREWORD

The Research Society for the Study of Diabetes in India (RSSDI), founded in 1972 by Prof. M.M.S. Ahuja, is the largest scientific association of healthcare professionals dedicated to advancing diabetes education and research in India. RSSDI is pleased to collaborate with USV in their vision to make India the "Diabetes Care Capital of the World." Through this partnership, RSSDI seeks to further strengthen the community of diabetes educators by providing them with the latest advancements in diabetes management, thereby enhancing their ability to effectively bridge the gap between physicians and patients. Today, the rule of 50% is prevailing in terms of awareness, detection, treatment, and control in T2DM. We aspire to achieve 90-90-90-90, i.e., 90% of people with diabetes should be made aware, 90% should be detected, 90% of those detected should be treated, and 90% of those treated should reach their goals.

The Indian Diabetes Educator Journal (IDEJ) is the first of its kind in India and the longest-running monthly journal for diabetes educators, published since April 2015. It continues its mission to promote awareness, disseminate knowledge, and support healthcare teams in effectively managing individuals with diabetes while empowering them for self-care. RSSDI IDEJ remains committed to keeping members of the diabetes care team updated with key concepts of Diabetes Self-Management Education and Support (DSME/S), with a digital outreach of over 44,000 doctors and diabetes educators.

This March edition of IDEJ highlights the theme "Women's Day: GDM and Beyond," focusing on the unique challenges and opportunities in diabetes care across a woman's life course. From gestational diabetes to long-term metabolic health, women face distinct physiological, hormonal, and social factors that influence diabetes risk and management. This issue equips diabetes educators with practical, evidence-based insights to support women through different stages, such as preconception, pregnancy, and postpartum. Emphasis is placed on early screening, lifestyle interventions, psychosocial support, and continuity of care to reduce future risk of type 2 diabetes and cardiovascular disease, reinforcing the educator's role in empowering women beyond pregnancy.

I congratulate chief editor Dr Sunil Gupta and the entire editorial board for their consistent and successful efforts for diabetes education in the country. We also sincerely thank our contributors for their valuable efforts in making this issue an engaging and enriching read for our audience. We dedicate this journal to all the healthcare professionals who are working relentlessly towards making "India–The Diabetes Care Capital of the World."

Sincere Regards,

Dr. V Mohan
MD, PhD, DSc
Chairman, Dr. Mohan's Diabetes Specialities
Centre & Madras Diabetes Research Foundation

*DSME: Diabetes Self-Management Education, DSMS: Diabetes Self-Management Support

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Article: Gestational Diabetes Mellitus: A Window to Future Diabetes

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MD (Medicine)

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Article: Hormonal Fluctuations Across the Menstrual Cycle and Glycemic Variability

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Article: Association Between Gestational Diabetes Mellitus and Postpartum Depression

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Article: PCOS, Obesity, and Diabetes Risk in Young Women

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Article: Interview of the Month with Dr. Mayura Kale

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Article: Use of Continuous Glucose Monitoring in Pregnancy

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Article: Preconception Care in Women with Diabetes

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Article: Diabetes Educator's Toolkit: Skill of the Month – Time Management

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Article: Frequently Asked Questions on Women's Day: GDM and Beyond

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RSSDI Indian Diabetes EDUCATOR JOURNAL

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Gestational diabetes mellitus (GDM) serves as an important early marker of a woman's metabolic health, unravelling an underlying predisposition to insulin resistance and future type-2 diabetes. Similar to the physiological changes that occur during pregnancy, GDM almost disappears after delivery as the hormone levels return to normal.

National GDM awareness day in India is observed on 10th March every year. It is crucial to raise an in-depth understanding of GDM, its health implications, and the long-term prevention of type 2 diabetes in women.

What is GDM

GDM is characterized by high glucose levels that develop during pregnancy due to increased insulin resistance caused by pregnancy hormones. It is a condition where high glucose levels develop during the 2nd trimester (24 to 28 weeks) or the 3rd trimester of pregnancy. Plasma glucose levels of 140 and above, 2 hours after ingestion of 75 g of anhydrous glucose dissolved in 250 mL of water, irrespective of fasting, are taken as a cut-off for the diagnosis of GDM. This is the single test procedure recommended by the Diabetes in Pregnancy Study Group India (DIPSI) for screening GDM. American Diabetes Association (ADA) criteria to diagnose GDM are: Fasting above 92 mg%, oral glucose tolerance test (OGTT) with 75 g glucose: 1 hour postprandial more than 180 mg%, 2 hours postprandial more than 153 mg%.

Two types of GDM is recently introduced:

1. Early GDM (E-GDM): Hyperglycemia detected in early pregnancy (before 24 weeks) that does not satisfy the criteria for overt diabetes but satisfies the criteria for GDM (fasting glucose ≥92 mg/dL but <126 mg/dL and postprandial or post–glucose load glucose ≥140 mg/dL).
2. Conventional GDM (C-GDM): GDM diagnosed between 24 to 28 weeks or at 32 weeks and above.

Women with GDM have a higher risk of developing type 2 diabetes within 3–5 years post-delivery. Maternal prepregnancy overweight or obesity, increasing maternal age, and family history of diabetes are common risk factors for GDM. In addition, women with high gestational weight gain (GWG) are 3–4 fold more vulnerable to developing abnormal glucose tolerance.

Gestational diabetes and implications for mother and fetus

In most cases, pregnant women with GDM will have a healthy pregnancy and healthy baby. But if the condition is not detected and treated, it can lead to complications both in the mother and the baby. In the mother, GDM can lead to pregnancy-induced hypertension and preeclampsia, along with difficulty in delivery and a higher chance of cesarean section. In the fetus, the condition can result in macrosomia (fetal overgrowth), fetal hyperglycemia, and fetal hyperinsulinemia due to maternal hyperglycemia. This causes excessive fat deposition and faster growth, making the fetus larger than normal for gestational age (LGA). Both macrosomia and LGA can cause birth trauma for the newborn.

Post-delivery women with previous GDM also have an increased likelihood of cardiovascular risk factors such as hypertension, dyslipidemia, and metabolic syndrome. Babies who are born to women with GDM have higher chances of developing obesity by the time they reach adolescence and other complications such as high blood pressure and type 2 diabetes as adults.

Management and dietary guidance

In women with GDM, frequent antenatal visits are scheduled to monitor the growth of the fetus and review blood glucose readings. Self-monitoring and keeping a track of blood glucose levels, along with dietary management and physical activity, helps manage GDM. However, in some cases, medications or insulin may also be advised. Emphasizing well-balanced meals by following the food order to provide adequate nutrition in addition to glucose control is important. Starting a meal with fiber-rich foods like salad or soup and a protein source like curd/buttermilk/paneer/dals/pulses/egg/chicken/fish, followed by carbohydrates, rice/chapatti, helps keep blood glucose levels in control.

Postpartum care

Postpartum screening for diabetes among women with GDM is recommended six weeks after delivery. Breastfeeding and lifestyle modification are recommended for weight management and to reduce the future risk of type 2 diabetes. Women with a history of GDM who are found to have prediabetes should be encouraged to undertake intensive lifestyle interventions and/or receive oral anti-diabetic medications. Postpartum care should also incorporate psychosocial assessment and support to promote effective self-care.

Thus, awareness of early detection and proper management of GDM (dietary, lifestyle practices, and pharmacological approach as needed) is crucial. In addition, Postpartum follow-up offers a critical opportunity for diabetes prevention and a healthier future for women post-delivery.

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3. Sakeena K, Ravindran TS. The "missing window of opportunity" for preventing diabetes: A mixed method study on postpartum screening for diabetes among women with gestational diabetes mellitus in Kerala, India. *International Journal of Noncommunicable Diseases.* 2017;2(3):78.

Hormonal Fluctuations Across the Menstrual Cycle and Glycemic Variability

Dr. Pratibha Phadke

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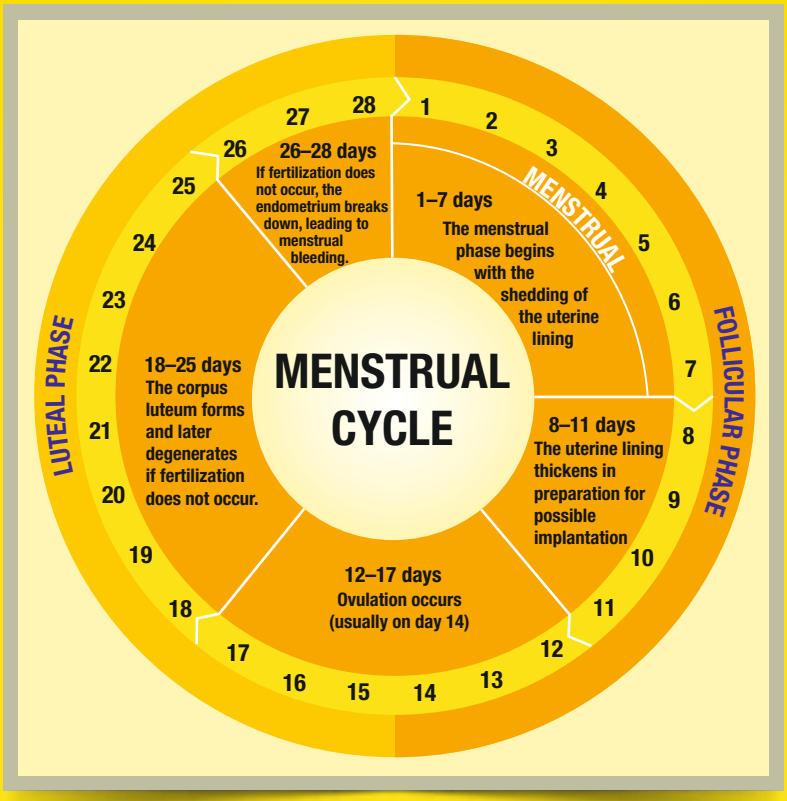
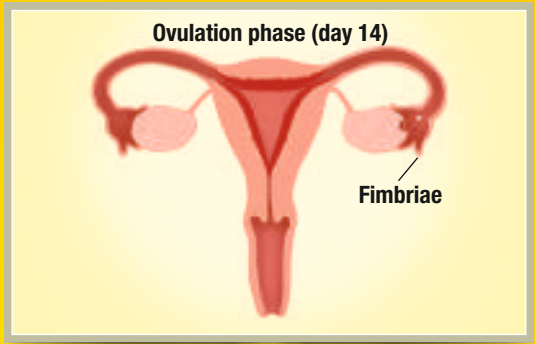
The menstrual cycle is a complex, cyclical physiological process regulated by coordinated fluctuations in ovarian hormones, primarily estrogen and progesterone. These hormonal changes not only govern reproductive function but also exert significant effects on glucose metabolism, insulin sensitivity, and overall energy homeostasis. As a result, variations in glycemic patterns are commonly observed across different phases of the menstrual cycle. The menstrual cycle is broadly divided into three phases: The follicular phase, the ovulatory phase, and the luteal phase.



Follicular phase: During the early follicular phase, which begins with the onset of menstruation, both estradiol and progesterone levels are relatively low. This is generally associated with enhanced insulin sensitivity, improved peripheral glucose uptake, and more stable glycemic control.

Ovulation: As the cycle progresses towards ovulation, estradiol levels rise steadily and peak just before ovulation, while progesterone remains low. Estrogen plays a facilitative role in glucose metabolism by enhancing insulin sensitivity in skeletal muscle and adipose tissue, improving beta-cell function, and modulating glucose transport mechanisms. Peak estrogen levels around ovulation may therefore contribute to optimal insulin action and relatively stable glycemic patterns. Some women may even experience a tendency toward hypoglycemia during this phase, particularly those using insulin or insulin secretagogues.



Luteal phase: Following ovulation, the luteal phase is characterized by a significant rise in progesterone along with moderate elevations in estrogen. Progesterone has been shown to exert antagonistic effects on insulin action by promoting insulin resistance, increasing hepatic gluconeogenesis, and reducing insulin-mediated glucose uptake in peripheral tissues. Additionally, progesterone influences appetite regulation, fluid retention, and energy expenditure, which may further contribute to higher caloric intake and postprandial glucose excursions. Consequently, many women experience elevated fasting glucose levels, increased postprandial hyperglycemia, and greater glycemic variability during the luteal phase.

These hormonal effects are particularly relevant in women with type 1 diabetes, type 2 diabetes, or gestational diabetes, where endogenous insulin secretion or insulin sensitivity is already compromised. Beyond insulin sensitivity, estrogen and progesterone also influence counter-regulatory hormones such as cortisol, growth hormone, and leptin, further modulating glucose homeostasis. Estrogen tends to exert protective metabolic effects, whereas progesterone promotes a more insulin-resistant state. These adaptive physiological changes, although normal, can pose clinical challenges in glycemic management, particularly when unrecognized.

Understanding menstrual cycle-related glycemic variability has important clinical implications. Recognizing predictable patterns allows for personalized treatment strategies, including phase-specific insulin dose adjustments, dietary modifications, and targeted monitoring. Integrating menstrual cycle tracking into diabetes care can enhance patient awareness, improve self-management, and reduce frustration related to unexplained glucose fluctuations.

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2. Li Z, Yardley JE, Zaharieva DP, Riddell MC, Gal RL, Calhoun P. Changing glucose levels during the menstrual cycle as observed in adults in the type 1 diabetes exercise initiative study. *Can J Diabetes.* 2024;48(7):446–451. doi:10.1016/j.jcjd.2024.06.004
3. Schmalenberger KM, Tauseef HA, Barone JC, *et al*. How to study the menstrual cycle: Practical tools and recommendations. *Psychoneuroendocrinology*. 2021;123:104895. doi:10.1016/j.psyneuen.2020.104895

Association Between Gestational Diabetes Mellitus and Postpartum Depression

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Gestational diabetes mellitus (GDM) is characterized by glucose intolerance that is first identified during pregnancy and represents one of the most common metabolic complications affecting pregnant women. GDM is associated with a range of adverse maternal and fetal outcomes, however, in recent years, increasing attention has been directed towards its association with maternal mental health disorders, particularly depression and postpartum depression (PPD).

Depression is defined by a persistent depressed mood or loss of interest or pleasure, accompanied by symptoms such as sleep disturbances, fatigue, impaired concentration, changes in appetite, and suicidal tendencies. During pregnancy and the postpartum period, women are particularly vulnerable to depressive disorders due to hormonal fluctuations, psychosocial stressors, and physiological changes.

Postpartum depression is classified as a major depressive episode occurring within four weeks after childbirth and is commonly identified using standardized diagnostic criteria. Screening instruments such as the Edinburgh Postnatal Depression Scale (EPDS) and the Montgomery–Åsberg Depression Rating Scale (MADRS) are widely used for early detection.

Burden of depression during pregnancy: Systematic reviews estimate the prevalence of clinically significant antenatal depression to be approximately 16.4%, while with recent meta-analyses reporting prevalence rates exceeding 25% among pregnant women. Identified risk factors include a personal history of depression, low self-esteem, low socioeconomic status, unplanned pregnancy, inadequate social or partner support, history of abuse, prenatal anxiety, chronic medical illness, viral infections, and exposure to certain medications. Women diagnosed with GDM often experience heightened emotional distress related to strict glucose monitoring, dietary modifications, fear of fetal complications, financial strain, and uncertainty regarding pregnancy outcomes. Studies indicate that women with GDM who experience antenatal depression report poorer quality of life and face a higher risk of adverse pregnancy outcomes.

The diagnosis and management of GDM may increase psychological stress and contribute to depressive symptoms, while depression itself may adversely affect glycemic control through behavioral pathways such as reduced treatment adherence and impaired lifestyle modification. Biological mechanisms have also been proposed, including inflammatory activation, dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis, alterations in serotonergic signalling, and psycho-behavioral stress responses.

Evidence consistently demonstrates a higher prevalence of depression among individuals with diabetes compared to the general population, with rates reported to be threefold higher in type 1 diabetes and twofold higher in type 2 diabetes. In line with these findings, pregnant women with GDM have been shown to have a significantly increased risk of postpartum depression. Postpartum depression is associated with serious maternal and infant consequences, including impaired mother–infant bonding, reduced breastfeeding duration, and adverse long-term cognitive and emotional outcomes in children.

In conclusion, gestational diabetes mellitus is not solely a metabolic disorder but also a significant risk factor for antenatal and postpartum depression; therefore, holistic care addressing both glycemic control and maternal mental health should be an integral part of GDM management.

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PCOS, Obesity, and Diabetes Risk in Young Women

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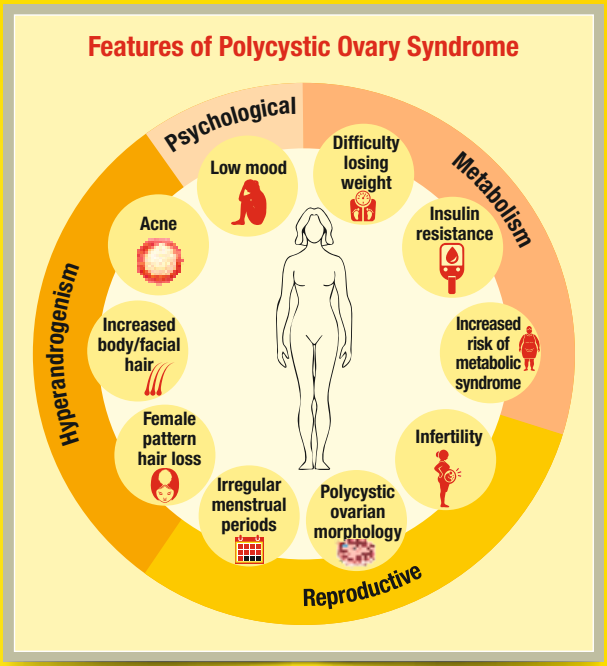
Consultant Diabetologist, Saurashtra Diabetes Centre, Rajkot

Polycystic ovarian syndrome (PCOS): PCOS is a common endocrine–metabolic disorder affecting 5–15% of women of reproductive age worldwide. It is strongly associated with metabolic syndrome, insulin resistance, obesity, prediabetes, and type 2 diabetes mellitus (T2DM). Hyperandrogenism, the hallmark feature of PCOS, manifests as hirsutism, polycystic ovaries, chronic oligo-anovulation, and oligomenorrhea, often leading to infertility.



Obesity: Insulin resistance represents the key pathophysiological link between PCOS and dysmetabolic traits, including obesity. Excess adiposity, particularly visceral fat, promotes the release of free fatty acids and pro-inflammatory cytokines that impair insulin signaling. This results in compensatory hyperinsulinemia, further exacerbating hormonal imbalance and metabolic dysfunction in PCOS.

T2DM and PCOS: Women with PCOS have a significantly higher risk of developing impaired glucose tolerance and T2DM compared with body mass index–matched controls. This increased risk is driven by shared mechanisms, primarily insulin resistance and β-cell dysfunction.

Obesity amplifies diabetes risk in PCOS: Evidence from meta-analyses indicates that women with PCOS have a higher likelihood of developing T2DM, with obesity further amplifying this risk compared with lean women with PCOS. Notably, studies suggest that younger women (18–24 years) with PCOS exhibit the highest relative risk of progression to T2DM. These findings highlight the importance of early intervention, particularly lifestyle modification targeting weight management and glycemic control, to reduce long-term diabetes risk in young women with PCOS.

Resources:

1. Livadas S, Paparodis R, Anagnostis P, *et al.* Assessment of type 2 diabetes risk in young women with polycystic ovary syndrome. *Diagnostics.* 2023; 13(12):2067.
2. Liao WT, Huang JY, Lee MT, Yang YC, Wu CC. Higher risk of type 2 diabetes in young women with polycystic ovary syndrome: A 10-year retrospective cohort study. *World Journal of Diabetes.* 2022; 13(3):240–250.

In uncontrolled T2DM with A1c >8.5%, **Choose 1st**

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UDAPA-Trio

Dapagliflozin 10 mg + Sitagliptin 100 mg + Metformin 500 mg XR

Abridged Prescribing Information

UDAPA-TRIO Forte, UDAPA-TRIO, Dapagliflozin, Sitagliptin & Metformin Hydrochloride Extended Release Tablets

Composition: Dapagliflozin 10 mg, Sitagliptin 100 mg & Metformin Hydrochloride Extended Release 1000 mg tablets Dapagliflozin propanediol monohydrate eq. To Dapagliflozin 10 mg Sitagliptin Phosphate Monohydrate IP Eq. Sitagliptin 100 mg Metformin Hydrochloride IP (as Extended Release) 1000 mg Dapagliflozin10 mg, Sitagliptin 100 mg & Metformin Hydrochloride Extended Release 1000 mg tablets Dapagliflozin propanediol monohydrate eq. To Dapagliflozin 10 mg Sitagliptin Phosphate Monohydrate IP Eq. Sitagliptin 100 mg Metformin Hydrochloride IP (as Extended Release) 500 mg **Indication:** It is indicated as an adjunct to diet and exercise to improve Glycemic Control adults with type 2 diabetes mellitus **Recommended Dosage:** As directed by the physician. **Method of Administration:** Oral **Adverse Reactions:** Most common adverse reactions reported are: Dapagliflozin - Female genital mycotic infections, Nasopharyngitis, Urinary tract infections. Sitagliptin - Upper respiratory tract infection, nasopharyngitis and headache. Metformin - Diarrhea, nausea/vomiting, flatulence, asthenia, indigestion, abdominal discomfort, and headache. **Warnings and Precautions:** Dapagliflozin: Volume depletion; Ketoacidosis in patients with Diabetes Mellitus; Urosepsis and Pyelonephritis; Hypoglycemia; Genital mycotic infections Sitagliptin: General: Sitagliptin should not be used in patients with type 1 diabetes or for the treatment of Diabetic Ketoacidosis. Acute pancreatitis: Hypoglycemia is used in combinations when combined with other anti-hyperglycemic medicinal product; Renal impairment: Hypersensitivity reactions including anaphylaxis, angioedema, and exfoliative skin conditions - Steven johnson syndrome; Bullous pemphigoid Metformin Hydrochloride: Lactic acidosis; In case of dehydration (severe diarrhea or vomiting, fever or reduced fluid intake), metformin should be temporarily discontinued and contact with a healthcare professional is recommended. **Contraindications:** Hypersensitivity to the active substance of Dapagliflozin, Sitagliptin & Metformin or to any of the excipients listed. Any type of acute metabolic acidosis (such as lactic acidosis, diabetic ketoacidosis). Diabetic pre-coma; Severe renal failure (eGFR < 30ml/min); Acute conditions with the potential to alter renal function such as: Dehydration, Severe infection, Shock; Acute or chronic disease which may cause tissue hypoxia such as: Cardiac or respiratory failure, Recent myocardial infarction, Shock, Renal Impairment, Acute intoxication, Alcoholism. **Use in special population:** Pregnant women: Due to lack of human data, drugs should not be used during pregnancy. Lactating women: It should not be used during breastfeeding. Pediatric patients: The safety and efficacy of drugs has not yet been established. No data is available. Geriatric Patients: In patients >65 years, it should be used with caution as age increases. For Additional Information/full prescribing information, please write to us: USV Private Limited, Arvind Vithal Gandhi Chowk, B.S.D. Marg, Govandi, Mumbai - 400088 Last updated on 02/04/2024.

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Ref.: L Ravikumar et al.Cardiology and Cardiovascular Medicine. 2023; 7: 141-144. |

Abridged Prescribing Information

Composition: Each Film Coated Tablet Contains: Dapagliflozin Propanediol Monohydrate eq. to Dapagliflozin (10 mg) + Sitagliptin Phosphate Monohydrate IP eq. to Sitagliptin (100 mg). **Indications:** For the treatment of type 2 diabetes mellitus inadequately controlled on Metformin monotherapy. Recommended Dosage: As directed by the physician. **Method of Administration:** Oral. **Adverse Reactions:** Female genital mycotic infections, nasopharyngitis, and urinary tract infections are most common adverse reactions associated with dapagliflozin. While, upper respiratory tract infection, nasopharyngitis, and headache are most common adverse reactions associated with sitagliptin. **Warnings and Precautions: Risk of Volume Depletion in Elderly** - Before initiating Dapagliflozin and Sitagliptin, assess volume status and renal function in the elderly, patients with renal impairment or low systolic blood pressure, and in patients on diuretics. Monitor for signs and symptoms during therapy. **Ketoacidosis in Patients with Diabetes Mellitus** - Assess patients who present with signs and symptoms of metabolic acidosis for ketoacidosis regardless of blood glucose level. If suspected, discontinue UDAPA™-S, evaluate and treat promptly. Before initiating UDAPA™-S, consider risk factors for ketoacidosis. Patients on UDAPA™-S may require monitoring and temporary discontinuation of therapy in clinical situations known to predispose to ketoacidosis. **Urosepsis and Pyelonephritis** - Evaluate for signs and symptoms of urinary tract infections and treat promptly, if indicated. Hypoglycemia - Consider a lower dose of insulin or the insulin secretagogue to reduce the risk of hypoglycemia when used in combination with Dapagliflozin and Sitagliptin. **Necrotizing Fasciitis of the Perineum** - Serious, life-threatening cases have occurred in patients with diabetes, both females and males. Assess patients presenting with pain or tenderness, erythema, or swelling in the genital or perianal area, along with fever or malaise. If suspected, institute prompt treatment. **Genital Mycotic Infections** - Monitor and treat, if indicated. **Contraindications:** Patients with a history of hypersensitivity reaction to the active substance or to any of the excipients. In patients with varying degrees of renal impairment, adjusting the dosage is advised based on the severity of the condition. Prohibited medications include strong CYP2C8 inhibitors/ inducers, drugs increasing/decreasing hypoglycemic action, drugs known to cause QT prolongation, or other oral hypoglycemic agents other than study medications.

For Additional Information/full prescribing information, please write to us:
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Updated on 20th March 2024

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USV Private Limited.
Arvind Vithal Gandhi Chowk, BSD Marg, Station Road, Govandi East, Mumbai -400 088. India.

Optimizing Glycaemic Control in Working Women
A Doctor's Experience with the MyCare Patient Support Program

Dr. A. K. Manchanda

MBBS, MD (Medicine), FCCP, PGDP (Diabetes and Cardiology)

A 37-year-old woman with type 2 diabetes was managed by Dr. A. K. Manchanda.

Here's what Dr. A. K. Manchanda has to say:

A 37-year-old school teacher living with type 2 diabetes visited my clinic with persistently uncontrolled blood glucose levels. Her investigations revealed glycated hemoglobin (HbA1c): 10.9%, fasting blood sugar (FBS): 198 mg/dL, and postprandial glucose (PPG): 312 mg/dL, despite being regular with anti-diabetic medications. During the discussion, it became clear that her hectic teaching schedule, long commuting hours, and emotional stress were major barriers to maintaining a healthy routine. She frequently skipped meals, relied on packaged snacks, and had minimal physical activity. She also reported disturbed sleep and frequent headaches, further affecting her daily functioning. Recognising that lifestyle and routine challenges were significantly contributing to her poor glycemic control, I referred her to MyCare Diabetes Educator (MDE), Ms. Saima Sadir, for structured diabetes education and lifestyle counselling.

MDE Saima conducted a detailed assessment of her daily routine and developed a realistic and sustainable plan tailored to her work timings. She advised her to carry easy-to-make balanced meals, include healthy snack options, and avoid long fasting gaps during school hours. Simple chair-based exercises and short walking breaks between classes were introduced to improve daily activity without disrupting her professional responsibilities. She was also counselled on stress management strategies, including breathing exercises and sleep hygiene practices. After six weeks, she demonstrated meaningful improvement. She lost 3 kg, her HbA1c reduced to 8%, and she reported better sleep, fewer headaches, and improved stamina during her teaching hours.

Ms. Saima Sadir

NDEP and T1DE Certified Diabetes Educator

Here's what MDE Ms. Saima Sadir has to say:

This case highlights how structured diabetes education and small, consistent lifestyle changes can significantly improve glycemic control. Once she understood how meal timing, stress, sleep disturbance, and inactivity were contributing to her high glucose levels, she became more mindful and proactive.

By focusing on practical solutions that fit into her professional routine, she gained confidence and learned to manage her diabetes effectively without compromising her work responsibilities. Her progress reinforces the importance of individual-centred counselling and continued support in achieving sustainable diabetes outcomes.

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*PWD: People with Diabetes

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Interview of the Month with Dr. Mayura Kale

Dr. Mayura Kale

MBBS, D. Diabetology, DNB (Medicine)
Consultant Diabetologist and Physician,
Dr. Kale's Diabetes and Psychiatry Clinic,
Aurangabad

Dr. Mayura Kale is a highly respected consultant diabetes specialist at Dr. Kale's Diabetes and Psychiatry Clinic in Aurangabad, bringing over 20 years of experience to her work. Known for her holistic approach, she focuses on managing diabetes and lifestyle disorders through sustainable health practices and individualized care. Her dedication to patient education and long-term health outcomes has made a positive impact on countless lives. Dr. Kale has served as a consultant at a 150-bed multispecialty hospital, presented at conferences, and lectured extensively. She has also been a brand ambassador for diabetes prevention campaigns and volunteered during the Covid-19 pandemic, impacting thousands of lives with her compassionate, patient-centered care.

Women's Day: GDM and Beyond

1. Which clinical and lifestyle factors place women at higher risk of developing GDM?

Women at higher risk of gestational diabetes mellitus (GDM) often have the following clinical and lifestyle factors:

Clinical factors

- Advanced maternal age (typically ≥25–35 years)
- Family history of diabetes or personal history of GDM in prior pregnancies
- Prepregnancy overweight or obesity (body mass index [BMI] >25, or >23 in Asians)
- Macrosomia in previous births, polycystic ovary syndrome, and prepregnancy impaired gestational glucose tolerance also contribute strongly
- Multiparity, history of stillbirth, or certain ethnic backgrounds (e.g., South Asian) further increase susceptibility

Lifestyle factors

- Physical inactivity before or during early pregnancy increases the risk of GDM
- Excessive adiposity from a poor diet compounds this risk

- Pregestational smoking and low socioeconomic factors like limited education or income, indirectly heighten vulnerability through related habits

2. Are any oral antidiabetic drugs considered safe or acceptable during pregnancy?

No oral antidiabetic drugs are universally Food and Drug Administration (FDA)-approved as fully safe for use during pregnancy, with insulin remaining the gold standard for glycemic control.

Metformin and glyburide (glibenclamide) have been studied most extensively and are considered acceptable options by some guidelines (e.g., National Institute for Health and Care Excellence [NICE] in the United Kingdom) for GDM when insulin is not feasible, particularly after the first trimester. Meta-analyses show no significant increase in major malformations or short-term neonatal risks compared with insulin, although metformin may slightly increase preterm birth rates and the incidence of small-for-gestational-age infants, and glyburide may increase the risk of neonatal hypoglycemia. They may not be adequate to achieve optimum blood glucose control during pregnancy, and insulin addition may be required subsequently.

Long-term offspring outcomes (e.g., metabolic effects, cognitive development) lack robust data, and use in pregestational diabetes requires caution due to placental crossing. Other agents, such as sulfonylureas (except glyburide), dipeptidyl peptidase-4 (DPP-4) inhibitors, sodium-glucose cotransporter 2 (SGLT2) inhibitors, or glucagon-like peptide-1 (GLP-1) agonists, are generally avoided due to insufficient safety evidence.

3. When should insulin therapy be initiated, and how beneficial is it for women with GDM?

Insulin therapy for GDM is initiated when medical nutrition therapy (MNT) and exercise fail to achieve glycemic targets, typically after 1–2 weeks of monitoring. It is highly beneficial, reducing risks of macrosomia, neonatal hypoglycemia, and other adverse perinatal outcomes by normalizing maternal glucose levels. Insulin should be initiated before planning conception in women who have prepregnancy diabetes or a history of GDM in a previous pregnancy.

4. How does suboptimal glycemic control in GDM impact maternal and fetal outcomes?

Suboptimal glycemic control in GDM significantly worsens both maternal and fetal outcomes by promoting fetal hyperinsulinemia and hyperglycemia.

Maternal impacts

Poor blood glucose control increases preeclampsia risk (up to 2–4 times higher), need for cesarean delivery (odds ratio [OR] 1.5–2.0), and postpartum hemorrhage due to polyhydramnios. It also shortens gestation, raising preterm labor odds, and heightens future type 2 diabetes progression and increases the risk of metabolic diseases postpregnancy.

Fetal and neonatal impacts

Macrosomia (>4 kg) occurs in 20–30% of cases, leading to shoulder dystocia, birth trauma, and neonatal intensive care unit (NICU) admissions. Neonatal hypoglycemia affects 15–28%, alongside jaundice, respiratory distress, and lower appearance (skin color), pulse (heart rate), grimace (reflex irritability), activity (muscle tone), and respiration (breathing effort) (Apgar) scores. Long-term, offspring face higher childhood obesity, diabetes, and attention-deficit/hyperactivity disorder (ADHD) risks.

5. How can the long-term risk of type 2 diabetes be managed post-delivery in women with GDM?

Postpartum management of GDM focuses on screening and lifestyle interventions to reduce the elevated lifetime risk of type 2 diabetes.

Screening protocol

Perform a 75 g oral glucose tolerance test (OGTT) at 4–12 weeks postpartum to detect prediabetes or diabetes, with annual or biennial screening thereafter. Breastfeeding should be encouraged, as it improves insulin sensitivity and lowers diabetes risk.

Lifestyle interventions

Diet and exercise programs (e.g., 150 min/week moderate activity, low-glycemic-index diets) reduce the risk of type 2 diabetes, with significant improvements in weight, BMI, and waist circumference. Multicomponent approaches via apps, counselling, or groups are effective for sustained adherence.

Pharmacologic options

For persistent impaired glucose tolerance, metformin may delay progression, though lifestyle remains first-line. Monitor cardiovascular risks (e.g., lipids, blood pressure) and counsel on contraception/preconception planning.

Early Menopause in Women with Diabetes Mellitus

Dr. Ashwini Joshi

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Menopause is defined as the absence of menstruation for 12 consecutive months, reflecting permanent ovarian failure. It has significant implications for long-term metabolic, cardiovascular, and bone health. Increasing evidence indicates that women with type 2 diabetes mellitus (T2DM) experience menopause at an earlier age than non-diabetic women, thereby amplifying cardiometabolic risk and highlighting the importance of focused diabetes education and early risk stratification.

Mechanism: Several biological mechanisms explain why menopause occurs earlier in women with diabetes. Chronic hyperglycemia leads to oxidative stress and microvascular damage within ovarian tissue, impairing follicular blood supply and accelerating follicular atresia. Insulin resistance and compensatory hyperinsulinemia disrupt the hypothalamic–pituitary–ovarian (HPO) axis, altering gonadotropin secretion and impairing normal ovarian function. In addition, prolonged exposure to elevated glucose levels reduces ovarian reserve and compromises oocyte quality, contributing to premature ovarian aging.

Prevalence: In a cross-sectional study of 600 postmenopausal women conducted at a tertiary care center in South India, the mean age at menopause was 44.65 years among women with diabetes compared with 48.18 years in women without diabetes. Another study reported that 74.5% of women with diabetes experienced early menopause (before 45 years). These women also had a longer duration of diabetes (>13 years) and a higher prevalence of microvascular complications, further supporting the role of chronic metabolic stress in accelerating reproductive aging.

Bidirectional association: The association between early menopause and T2DM is bidirectional. A systematic review and meta-analysis of observational studies demonstrated that both conditions share common pathophysiological pathways, including insulin resistance, central obesity, oestrogen deficiency, and chronic low-grade inflammation. Oestrogen normally enhances insulin sensitivity and protects β-cell function; therefore, declining oestrogen levels worsen glucose metabolism and accelerate metabolic deterioration. Furthermore, menopause-related hormonal changes promote central adiposity, which aggravates insulin resistance and systemic inflammation. Simultaneously, chronic hyperglycemia induces mitochondrial dysfunction and endothelial damage in ovarian follicles, leading to follicular depletion and early ovarian failure. This creates a self-perpetuating cycle of metabolic and reproductive aging.

Incorporating menopausal status into routine diabetes care represents an important step towards comprehensive, women-centered diabetes management. Early identification of menopausal transition in women with diabetes offers a valuable opportunity to intervene and mitigate long-term cardiometabolic and skeletal complications.

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Use of Continuous Glucose Monitoring in Pregnancy

Dr. Ashutosh Chaturvedi

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Pregnancy alters glucose metabolism, increasing risks of hyper- and hypoglycemia in some women, leading to complications such as preeclampsia, macrosomia, neonatal hypoglycemia, and higher cesarean rates. Unlike self-monitoring of blood glucose (SMBG), continuous glucose monitoring (CGM) provides continuous glucose trends, capturing nocturnal and postprandial fluctuations and improving glycemic control and pregnancy outcomes.

CGM uses a subcutaneous sensor with a transmitter and receiver/smartphone to measure interstitial glucose every 1–5 minutes, offering trends, alerts, and metrics such as time in range (TIR), time above range (TAR), time below range (TBR), and glucose variability. Evidence from randomized controlled trials (RCTs), including continuous glucose monitoring in women with type 1 diabetes in pregnancy trial (CONCEPTT), suggests real-time (rt)-CGM in type 1 diabetes pregnancy lowers glycated hemoglobin (HbA1c), raises TIR (63% vs. 53%), and reduces large for gestational age births and neonatal intensive care unit (NICU) hospitalizations compared to SMBG, with each 5% TIR rise decreasing risk. In gestational diabetes mellitus (GDM), CGM enhances postprandial control and early hyperglycemia detection, capturing dysglycemic patterns linked to macrosomia that routine testing often misses.

Targets: Pregnancy requires tighter glycemic targets due to placental glucose transfer and fetal insulin sensitivity. CGM goals in pregnancy are TIR >70% (<140 mg/dL), TBR <4% (<63 mg/dL), <1% (<54 mg/dL), and TAR <25% (>140 mg/dL), thresholds linked to fewer neonatal complications. CGM detects nocturnal hypoglycemia and postprandial excursions missed by SMBG while providing trend data for timely therapy adjustments and greater patient engagement. Alerts reduce hypoglycemia anxiety, and metrics like TIR offer more precise outcome prediction than HbA1c.

In India, CGM uptake during pregnancy is limited by cost, device access, and infrastructure gaps in remote settings. Effective use also requires trained care teams and patient education to interpret trends, manage sensors, and integrate CGM into antenatal care. CGM has transformed pregnancy glycemic management by providing continuous glucose insights that outperform SMBG, improving maternal control and neonatal outcomes, in women with diabetes/GDM. Wider adoption in India requires overcoming cost and training barriers, with diabetes educators central to CGM use, data interpretation, and achieving target profiles.

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Preconception Care in Women with Diabetes

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Pre-existing diabetes mellitus during pregnancy is associated with a substantially increased risk of adverse maternal and fetal outcomes. These include higher rates of miscarriage, congenital malformations, stillbirth, preterm birth, and fetal macrosomia, as well as long-term metabolic and cardiovascular complications for both the mother and offspring. The magnitude of risk correlates strongly with the degree of glycemic control at conception and during early gestation. Therefore, optimizing metabolic health before pregnancy is a critical determinant of pregnancy outcomes in individuals with diabetes. The primary goal of preconception care in women with diabetes is to minimise metabolic, cardiovascular, and fetal risks by ensuring optimal health before conception occurs. Key objectives include:

- Achieving near normal glycemia
- Identifying and managing diabetes-related complications
- Optimizing medication regimens for pregnancy safety
- Supporting informed reproductive decision-making

Effective preconception care has been shown to significantly reduce congenital anomalies, perinatal mortality, and maternal morbidity. The uptake of preconception care remains limited due to several key barriers at the individual, provider, and healthcare system levels. Many women of reproductive age have low awareness and understanding of preconception care and the pregnancy-related risks associated with diabetes, while the high prevalence of unintended pregnancies further reduces opportunities for timely intervention. Socioeconomic factors such as limited access to healthcare and competing life priorities also hinder engagement. In addition, time constraints among healthcare providers, along with poor integration of preconception services into routine diabetes care, contribute to missed opportunities for optimizing health before pregnancy.

Preconception care for individuals with diabetes should include all routine interventions recommended for anyone planning pregnancy, alongside diabetes-specific measures. Core components include:

1. Preconception counselling emphasizing on glucose control
2. Routine screening for comorbidities
3. Vaccination
4. Nutritional supplementation
5. Medication review
6. Psychosocial support

Achieving optimal glycemic control prior to conception is the most critical modifiable factor in reducing adverse pregnancy outcomes. Preconception counselling should emphasize the relationship between hyperglycemia in early pregnancy and the risk of congenital malformations and miscarriage. Individualized glycemic targets should be established, with close monitoring and timely

therapy intensification as needed. Diabetes self-management education plays a central role in supporting sustained glycemic control.

Individuals with diabetes planning pregnancy should undergo comprehensive screening for diabetes-related complications, including retinopathy, nephropathy, neuropathy, hypertension, and cardiovascular disease. Early detection allows for stabilization or treatment before conception, reducing the risk of disease progression during pregnancy. Screening for thyroid dysfunction and sexually transmitted infections should also be incorporated into routine preconception assessment.

Lifestyle optimization is a foundational element of preconception care. Nutritional counselling should focus on achieving balanced macronutrient intake, appropriate gestational weight goals, and micronutrient sufficiency. Counselling should also address regular physical activity, avoidance of tobacco, alcohol, and recreational drugs, and strategies to support long-term behavior change.

In individuals with type 2 diabetes planning pregnancy, GLP-1 receptor agonists should ideally be discontinued prior to conception rather than during early pregnancy. Abrupt discontinuation without appropriate therapeutic substitution may lead to hyperglycemia and weight gain, increasing the risk of miscarriage and congenital malformations. Transition to alternative anti-hyperglycemic therapies should be carefully planned, with close monitoring to maintain glycemic control. The timing of discontinuation should be individualized based on medication type, likelihood of conception, and metabolic risk.

Preconception care is a cornerstone in the management of diabetes in women of reproductive age, as optimal glycemic control before conception significantly reduces maternal and fetal complications. Integrating structured counselling, medication review, and lifestyle interventions into routine diabetes care can transform pregnancy outcomes.

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Diabetes Educator's Toolkit:
Skill of the Month – Time Management

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Time management is an important behavioral skill within diabetes self-management education and support (DSMES). People with diabetes perform multiple daily self-care activities such as blood glucose monitoring, timely medication or insulin, meal planning, and physical activity. Barriers like time constraints, caregiving roles, work pressure, financial stress, and lack of a structured approach often hinder effective self-management.

Recent evidence shows that proactive and structured time management is associated with better self-care behaviors and improved glycemic control in individuals with diabetes. DSMES programs that emphasize planning, routine building, and prioritization help reduce irregular meals, missed doses, and poor lifestyle adherence.

Digital tools further enhance time management by enabling flexible learning, reducing travel time, and improving participation in DSMES, especially for those with competing responsibilities. Automated reminders support adherence to medications, glucose monitoring, meals, and physical activity. Incorporating time management strategies into DSMES improves self-efficacy, reduces stress, and supports sustainable self-care. Studies have shown that time management significantly strengthens the link between self-care behaviors and health outcomes.

- **Assessment:** Diabetes educators should evaluate the time management skills of the individuals.
- **Goal-setting:** Breaking tasks into simple, scheduled activities improves consistency.
- **Addressing barriers:** Identifying obstacles such as work, caregiving, or financial constraints helps integrate self-care into daily routines.
- **Behavioral coaching:** Time-bound action plans and routine-focused follow-ups improve adherence.

By strengthening time management skills, diabetes educators can empower individuals to better integrate self-care into daily life. This leads to improved consistency, reduced treatment burden, and more sustainable diabetes management.

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Frequently Asked Questions on Women's Day: GDM and Beyond

Dr. Parth Jethwani

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1. My 12-year-old daughter has type 1 diabetes and started her periods last month. Since then, her blood sugar levels have been very unpredictable. What can be the reason, and how can we manage it better?

Answer: This change is common around puberty and the onset of menstruation. Hormonal changes can affect insulin sensitivity, fluctuating the blood glucose levels. During this time, your daughter may need more frequent blood glucose checks, particularly around her periods. To manage this better:

- Insulin doses may need temporary adjustment, which should be done in consultation with the diabetes care team.
- Keeping a record of menstrual cycles along with blood glucose readings can help identify patterns.
- Maintaining regular meals, adequate sleep, and physical activity can help improve glucose stability.

2. I have type 2 diabetes and conceived last month. My doctor has advised me to start insulin because my blood sugar levels are high, but I am hesitant and worried about taking insulin during pregnancy. Is it really necessary and safe for my baby?

Answer: Managing blood glucose well during pregnancy is extremely important for both mother and baby. When blood glucose levels are high, insulin is often the safest and most effective treatment. Insulin does not cross the placenta and therefore does not harm the baby. Many oral diabetes medicines are not recommended in pregnancy. Starting insulin early helps maintain stable glucose levels and significantly reduces pregnancy-related risks. Starting insulin early helps ensure a healthy pregnancy and better outcomes for both mother and baby.

In addition, good glycemic control with insulin reduces the risk of complications such as miscarriage, congenital anomalies, preeclampsia preterm delivery, excessive fetal growth (macrosomia), birth injuries, and neonatal hypoglycemia. It also supports optimal placental function and healthy fetal development. With appropriate education and monitoring, insulin therapy can be safely adjusted throughout pregnancy to meet changing insulin requirements.

3. I am 30 years old and have a family history of diabetes and heart disease. I want to understand my risk of developing diabetes or heart problems and how I can prevent them. I have also heard about the Indian Diabetes Risk Score (IDRS).

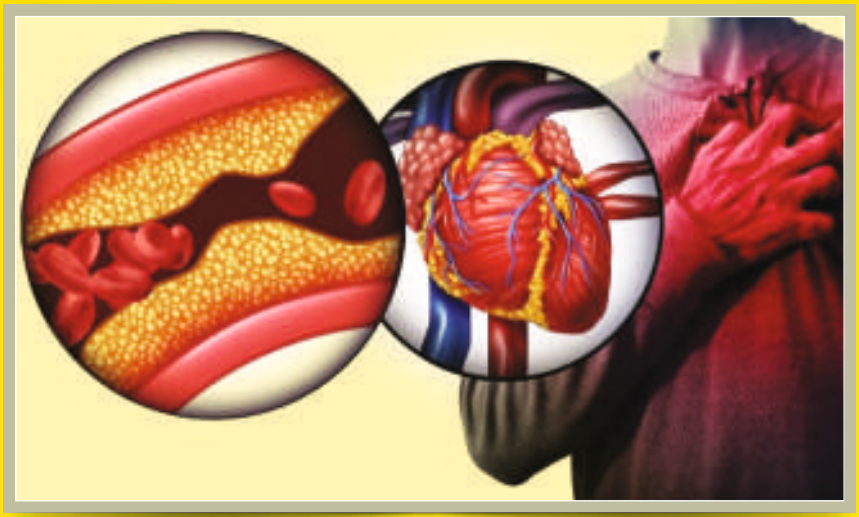
Answer: Having a family history of diabetes and heart disease does increase future risk, but it does not mean these conditions are inevitable. Early assessment and lifestyle changes can be helpful.

You can reduce the risk by maintaining a healthy weight, staying physically active, eating a balanced diet, managing stress, and getting adequate sleep. Regular screening for blood glucose, blood pressure, and cholesterol is important, especially with a family history.

- IDRS is a simple tool based on age, waist circumference, physical activity, and family history. It helps identify the risk of developing type 2 diabetes early. A higher score indicates the need for lifestyle changes and regular health screening.

Early lifestyle intervention is the most effective way to prevent or delay diabetes and heart disease.

The key message is that while family history cannot be changed, adopting healthy habits early can go a long way in protecting long-term health.



Did You Know? Women with Diabetes Have a Higher Risk of Depression Than Men with Diabetes

Diabetes mellitus and depression are two major global health concerns. Type 2 diabetes mellitus increases the risk of psychiatric disorders such as anxiety and depression. Conversely, individuals with depression or those diagnosed with major depressive disorder (MDD) show an elevated risk of developing type 2 diabetes mellitus. MDD is characterized by a persistently low or depressed mood, feelings of guilt or worthlessness, low energy levels, poor concentration, changes in appetite, and sleep disturbances. Studies suggest that women with diabetes are about twice as likely to be diagnosed with depression compared to men with diabetes between the ages of 30 and 69 years, resulting in a significant gender gap. The widest gender gap in MDD among individuals with diabetes has been observed between the ages of 40 and 49 years.

Several factors may contribute to higher rates of depression in women, including hormonal fluctuations and the burden of diabetes self-management combined with caregiving responsibilities. Certain side effects of medications and an inactive lifestyle may also negatively impact mental health. Additionally, lack of physical and emotional support, along with economic constraints, can further exacerbate the condition. In contrast, depressive symptoms in men are often under-reported and less likely to be identified.

Women with type 2 diabetes are also observed to have a greater risk of cardiovascular disease and mortality compared to men. Therefore, it is important to implement gender-tailored care that addresses the specific health needs of women, advocates early screening for mental and physical health issues, and provides appropriate medical and psychological support. Alongside this, dietary interventions and regular physical activity can help manage both diabetes and depression, leading to improved health outcomes.

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Role Play

Mrs. Leena, a 44-year-old homemaker, has recently been diagnosed with diabetes. She has a fasting blood glucose level of 150 mg/dL and a postprandial blood glucose level of 200 mg/dL. Owing to the condition, she finds it difficult to prioritize her health and manage family responsibilities. She has visited a diabetes educator (DE) along with her husband for dietary counseling and needs guidance on adopting lifestyle changes that can make her diabetes care manageable.

Mrs. Leena: Hello, Doctor. I have been diagnosed with diabetes. I feel weak, and my sugar levels have been high. I'm quite worried about this as I don't even eat much sweets or sugary foods.

DE: That's understandable. It is important to know that diabetes is not caused by sugar alone. Excess weight, an unhealthy diet that is high in refined carbohydrates, processed foods, irregular meals, and no physical activity can affect how the body utilizes insulin, leading to high blood glucose levels. You may feel weak as glucose stays in the blood and cannot enter the body cells to be utilized for energy. Hence, despite high blood glucose readings, your body feels low on energy and weak. Do you keep a track of your blood glucose readings regularly?

Mrs. Leena: Yes, I have started monitoring my sugars recently. But I observe there are fluctuations. I eat a smaller portion of food, but I may not always be able to eat on time due to household chores.

DE: I'll explain the reasons for fluctuations. High fasting glucose levels could be due to hormone–triggered glucose release (dawn phenomenon) and late or heavy dinner. A spike in post-meal blood glucose readings is usually due to the higher intake of carbohydrates and poor intake of protein and fiber. Erratic meal timings and skipping meals may also lead to blood glucose fluctuations. Maintaining regular meal timings is important as it helps keep the blood glucose levels stable. Try to schedule your household chores around regular meal times to avoid skipping meals.

Husband: I also remind her to eat on time. Besides, what other aspects do we need to look at while managing meals at home?

DE: Start by planning meals together and stock healthier food options at home so that the entire family eats healthy meals. For a person managing their diabetes, it is important to follow the food order. Having a fiber source (salad/soup) and a protein source (curd/buttermilk), and then carbohydrates, roti/rice, along with the main meal, helps support blood glucose control. This will also help in portion control, thereby supporting weight management. Include small snacks in between meals, such as fruit with nuts at mid-morning, and moderate carb and protein-rich snacks in the evening, like roasted chana with peanuts, sprouts, etc.

Husband: That's very informative. Any further modifications to support weight loss? How can I be a part of the process?

DE: Both diet and exercise are key aspects of diabetes management as they help your body's cells respond better to insulin and decrease blood glucose levels. Simple daily activities like going together for a 10-minute walk post-meals, playing a sport together (e.g., badminton), or taking the stairs can make a difference. Focusing on a 30-minute brisk walk in the routine, five to six times a week, will help burn calories and keep blood glucose levels in control.

Husband: That was very insightful. Understood. Thank you for the suggestions.

DE: You're welcome. All the best!

NOTES

NOTES

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Metformin Hydrochloride 1000 mg SR + Glimepiride 4 mg

Abridged Prescribing Information

Active Ingredients: Metformin hydrochloride (as sustained release) and glimepiride tablets **Indication:** For the management of patients with type 2 diabetes mellitus when diet, exercise and single agent (glimepiride or metformin alone) do not result in adequate glycaemic control. **Dosage and Administration:** The recommended dose is one tablet daily during breakfast or the first main meal. Each tablet contains a fixed dose of glimepiride and Metformin Hydrochloride. The highest recommended dose per day should be 8 mg of glimepiride and 2000mg of metformin. Due to prolonged release formulation, the tablet must be swallowed whole and not crushed or chewed. **Adverse Reactions:** For Glimepiride: hypoglycaemia may occur, which may sometimes be prolonged. Occasionally, gastrointestinal (GI) symptoms such as nausea, vomiting, sensations of pressure or fullness in the epigastrium, abdominal pain and diarrhea may occur. Hepatitis, elevation of liver enzymes, cholestasis and jaundice may occur; allergic reactions or pseudo allergic reactions may occur occasionally. For Metformin: GI symptoms such as nausea, vomiting, diarrhea, abdominal pain, and loss of appetite are common during initiation of therapy and may resolve spontaneously in most cases. Metallic taste, mild erythema, decrease in Vit B12 absorption, very rarely lactic acidosis, Hemolytic anemia, Reduction of thyrotropin level in patients with hypothyroidism, Hypomagnesemia in the context of diarrhea, Encephalopathy, Photosensitivity, hepatobiliary disorders. **Warnings and Precautions::** For Glimepiride: Patient should be advised to report promptly exceptional stress situations (e.g., trauma, surgery, febrile infections), blood glucose regulation may deteriorate, and a temporary change to insulin may be necessary to maintain good metabolic control. Metformin Hydrochloride may lead to Lactic acidosis; in such cases metformin should be temporarily discontinued and contact with a healthcare professional is recommended. Sulfonylureas have an increased risk of hypoglycaemia. Long-term treatment with metformin may lead to peripheral neuropathy because of decrease in vitamin B12 serum levels. Monitoring of the vitamin B12 level is recommended. Overweight patients should continue their energy-restricted diet, usual laboratory tests for diabetes monitoring should be performed regularly. **Contraindications:** Hypersensitivity to the active substance of glimepiride & Metformin or to any of the excipients listed. Any type of acute metabolic acidosis (such as lactic acidosis, diabetic ketoacidosis, diabetic pre-coma). Severe renal failure (GFR<30ml/min). In pregnant women. In lactating women.Acute conditions with the potential to alter renal function (dehydration, severe infection, shock, intravascular administration of iodinated contrast agents); acute or chronic disease which may cause tissue hypoxia (cardiac or respiratory failure, recent myocardial infarction, shock); hepatic insufficiency; acute alcohol intoxication; alcoholism. **Use in a special population:** Pregnant Women: Due to a lack of human data, drugs should not be used during pregnancy. Lactating Women: It should not be used during breastfeeding. Pediatric Patients: The safety and efficacy of drugs has not yet been established. Renal impairment: A GFR should be assessed before initiation of treatment with metformin containing products and at least annually thereafter. In patients at increased risk of further progression of renal impairment and in the elderly, renal function should be assessed more frequently, e.g. every 3-6 months.

Additional information is available on request.

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In case of any adverse events, kindly contact: pv@usv.in For the use of registered medical practitioner, hospital or laboratory.

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