RSSDI Indian Diabetes

EDUCATOR JOURNAL

Theme of the Month

From Hormones to Heart Health: Women and Diabetes

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

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

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FOREWORD

Research Society for the Study of Diabetes in India (RSSDI) founded by Prof. MMS Ahuja in the year 1972 is the biggest scientific association of healthcare professionals involved in promoting diabetes education and research in India. RSSDI is happy to collaborate with USV to support their endeavour to make India the 'Diabetes care capital of the world'. Through this collaboration, RSSDI would like to strengthen the cadre of diabetes educators by empowering them with recent updates in diabetes management helping bridge the gap between the physician and the patient. Today, the rule of 50% is prevailing in terms of awareness, detection, treatment and control in T2DM. Our aspiration is 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.

Indian Diabetes Educator Journal (IDEJ) is the first of its kind in India, and the longest running monthly diabetes educator journal since April 2015 and continues its endeavour to spread awareness, knowledge and enable healthcare teams to manage individuals with diabetes and empower them for self-care. RSSDI IDEJ will continue to keep the members of diabetes care team abreast with concepts of Diabetes Self-Management Education/Support (DSME/S) with a reach of 44000 doctors and diabetes educators digitally.

This month's theme, "From Hormones to Heart Health: Women and Diabetes" celebrates Women's Day by highlighting the critical connection between hormonal health, cardiovascular well-being, and diabetes management in women. It explores how diabetes uniquely impacts women's hormonal balance during different life stages, including preconception, menopause, and beyond, while emphasizing the importance of personalized care and lifestyle management. This edition of IDEJ aims to empower diabetes educators with strategies to support the diverse aspects of women's health while effectively managing diabetes. We hope this issue provides valuable insights and inspiration to help educators enhance the lives of women living with diabetes.

We sincerely thank our contributors for making this issue delightful reading for our readers. 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. Sanjay Agarwal
RSSDI Secretary

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

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Article: Gestational Diabetes Mellitus and Postpartum Depression: A Dual Challenge for Maternal Health

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Article: Pre-conception Care for Women with Diabetes

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Article: Diabetes and Breast Cancer Risk

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Cover Story: Diabetes in Women

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Overview

- Diabetes is a significant global health challenge that affects men and women differently.
- Women face more pronounced hormonal fluctuations and physical changes due to reproductive factors, impacting their diabetes management.
- Across different age groups, girls, adolescents, and women face unique challenges requiring tailored treatment regimens.

Key challenges across life stages

- **Childhood and adolescence:**
  - Physical activity varies from active to non-active days during school years.
  - Puberty increases glucose levels, while menarche and menstrual cycles further complicate management.
  - Adolescents may face peer pressure related to food, alcohol, or substance use, which can disrupt diabetes care.
  - Transitioning into the workforce presents additional challenges in maintaining diabetes management.

Reproductive health and glucose levels

- Women with diabetes often experience higher glucose levels during the luteal phase of the menstrual cycle.
  - Adjustments in physical activity, insulin/drug regimens, and lifestyle behaviors are recommended during this phase.
- **Conditions like polycystic ovary syndrome (PCOS):**
  - Overweight or obese women are at higher risk of diabetes due to PCOS.
  - Poor metabolic control in type 1 diabetes may lead to hypothalamic amenorrhea, while type 2 diabetes with obesity and PCOS can cause reproductive disturbances.
- Education about these risks and preventive strategies is crucial for women.

Pregnancy and diabetes care

- Pregnancy poses specific risks for women with diabetes, such as:
  - The need for optimized blood glucose control.
  - Importance of folic acid intake to prevent nervous system malformations.
- Women who attend pre-pregnancy care show better early pregnancy glycated hemoglobin (HbA1c) levels and reduced risks.
- Psychological impacts, including depression, diabetes distress, and emotional concerns about pregnancy, are prevalent.
  - Concerns about passing diabetes to babies or breastfeeding impact decision-making and emotional well-being.
- Comprehensive care must include addressing psychological issues alongside medical management.

Menopause and diabetes

- Studies link type 2 diabetes to early menopause (before 45 years).
- Hormonal changes during menopause increase obesity and cardiovascular disease risks.
- Women with diabetes face higher cardiovascular complications and mortality risks than men.
- Additional care is advised to mitigate cardiovascular risks during menopause.

Self-management barriers

- Women report challenges in balancing medication, diet, and exercise.
  - Low adherence to exercise is often due to a lack of motivation, delayed results, and insufficient education.
  - Ethnic disparities in medication adherence exist, with non-Hispanic Black, Hispanic, and Asian women reporting higher non-adherence rates.
  - Barriers include high costs of healthy foods and competing priorities such as full-time work and family responsibilities.
- Attending diabetes management classes improves understanding and highlights the importance of communication and active involvement in care.

Holistic approach to care

- Healthcare professionals must understand the unique physical and psychological experiences of women across various life stages.
- Tailored care and educational support can significantly improve diabetes management for women.

Resources:

1. Celik A, Forde R, Racaru S, *et al.* The Impact of Type 2 Diabetes on Women's Health and Well-being During Their Reproductive Years: A Mixed-methods Systematic Review. *Curr Diabetes Rev.* 2022;18(2):e011821190403. doi:10.2174/1573399817666210118144743
2. Kautzky-Willer, A., Leutner, M. & Harreiter, J. Sex differences in type 2 diabetes. *Diabetologia* 66, 986–1002 (2023). https://doi.org/10.1007/s00125-023-05891-x
3. Thong EP, Codner E, Laven JSE, Teede H. Diabetes: A metabolic and reproductive disorder in women. *Lancet Diabetes Endocrinol.* 2020;8(2):134–149. doi:10.1016/S2213-8587(19)30345-6

Gestational Diabetes Mellitus and Postpartum Depression: A Dual Challenge for Maternal Health

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Gestational diabetes mellitus (GDM) is a condition of glucose intolerance developing during pregnancy and resolving postpartum. Women with a history of pre-pregnancy depression are at higher risk for GDM, while GDM increases the likelihood of postpartum depression (PPD) by 1.5 times. PPD, affecting about 17% of women globally, arises within a year of childbirth. Symptoms include low self-esteem, sadness, exhaustion, self-blame, and hostility toward the infant, typically appearing around four weeks postpartum and lasting up to six months or longer. PPD adversely impacts maternal health, social functioning, and self-care, with the potential for chronic or recurrent depression.

Factors linking GDM to PPD

The connection between GDM and PPD involves biological and psychosocial factors. Hormonal dysregulation, including fluctuations in estrogen, progesterone, cortisol, insulin resistance, and hyperglycemia, impacts brain function and mood regulation. Systemic inflammation, marked by elevated cytokines like interleukin-6 (IL-6) and tumor necrosis factor alpha (TNF-α), and hypothalamic-pituitary-adrenal (HPA) axis dysfunction, further contribute to PPD risk. Psychosocial stressors such as dietary restrictions, fear of complications, and stigma can exacerbate depressive symptoms, while partner and family support, along with lifestyle interventions, help mitigate risks.

Despite increasing facility-based deliveries in many low- and middle-income countries, a significant number of women still give birth at home. In India, most women are discharged from health facilities within 48 hours after delivery and thus miss opportunities for counseling on PPD. Low rates of postpartum visits further hinder the detection and management of PPD, particularly for home deliveries. Cultural practices, like postpartum seclusion, and social taboos surrounding depression discourage care-seeking and open discussion. Additionally, community health workers prioritize infant care over maternal mental health during postnatal visits, contributing to the lack of reliable data on PPD in these regions.

The American College of Obstetricians and Gynecologists (ACOG) recommends screening for depression and anxiety at least once during the perinatal period using a validated tool. A comprehensive assessment of mood and emotional well-being, including PPD and anxiety, should occur during the postpartum visit. If screening was done during pregnancy, additional screening is advised postpartum.

Interventions for PPD should address both the psychological and physical aspects of maternal health. Cognitive behavioral therapy (CBT) has been shown to be effective in treating PPD, as it addresses negative thought patterns and behaviors and can be integrated with other therapeutic approaches. Pharmacological treatment may also be necessary for moderate to severe cases of PPD. Additionally, interventions targeting GDM, such as managing blood glucose levels through diet and exercise, can help reduce the risk of developing PPD. Studies highlight the importance of social support, including partner involvement and counseling, in mitigating depressive symptoms postpartum. Overall, a multidisciplinary approach, combining mental health screenings, therapeutic interventions, and support systems, is key to managing PPD in women with a history of GDM.

Key points

- Women with GDM are 1.5 times more likely to develop PPD.
- GDM and PPD share hormonal imbalances, inflammation, and psychosocial stressors.
- Limited postpartum visits and cultural barriers hinder PPD detection.
- Routine screening for depression and anxiety during pregnancy and postpartum is essential.
- CBT, pharmacological treatments, lifestyle changes, and social support are key for managing PPD.

Resources:

1. Shuffrey LC, Lucchini M, Morales S, *et al.* Gestational diabetes mellitus, prenatal maternal depression, and risk for postpartum depression: An Environmental influences on Child Health Outcomes (ECHO) Study. *BMC Pregnancy Childbirth.* 2022;22(1):758. doi:10.1186/s12884-022-05049-4
2. Saeed Alqahtani SA, Alasmre FA, Alasmre HA, *et al.* The Relationship Between Gestational Diabetes and Postpartum Depression: A Systematic Review. *Cureus.* 2024;16(7):e64219. doi:10.7759/cureus.64219
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Pre-conception Care for Women with Diabetes

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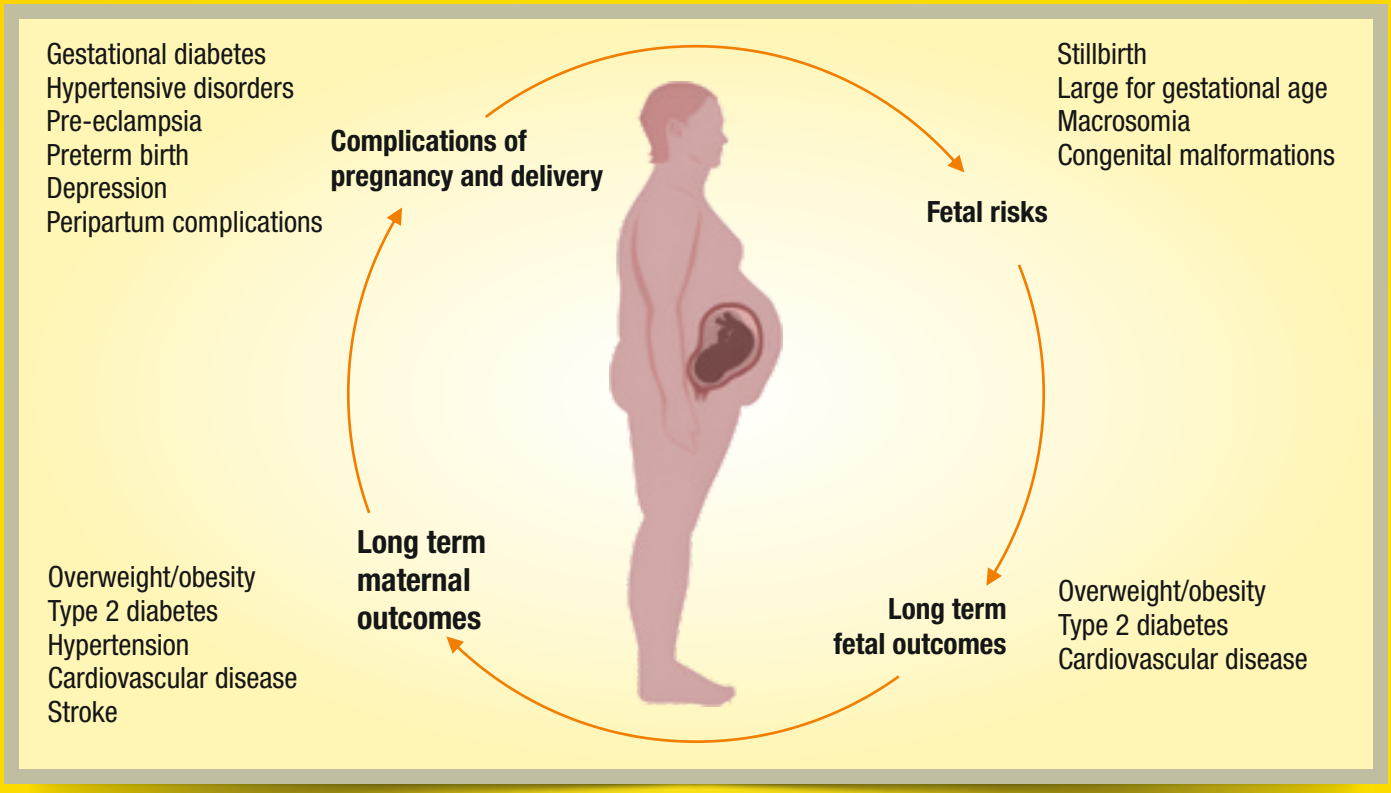
The preconception period, which refers to the time before pregnancy, is crucial for women of childbearing age to maintain good health. It is a critical yet often overlooked phase in the reproductive cycle. Diabetes, a common medical condition nowadays, complicates pregnancy, and both pre-existing diabetes and gestational diabetes can pose risks to both the mother and fetus.



Preconception care for women with diabetes

1. Folic acid: Women with diabetes, as part of regular pre-pregnancy care, should take folic acid until twelve weeks of gestation to reduce the risk of neural tube defects.

2. Body weight: Women with diabetes who have a body mass index (BMI) above 27 kg/m² should be provided with guidance on healthy weight loss methods before pregnancy.

3. Blood glucose control: These women should be advised to regularly monitor their blood glucose levels. Pre-conception blood glucose target ranges for all types of diabetes should align with the recommended guidelines: Fasting plasma glucose: 90–126 mg/dL and plasma glucose before meals and at other times: 72–126 mg/dL.

4. Glycated hemoglobin (HbA1c): Women trying to conceive should have their HbA1c levels below 6.5%, if achievable, without causing problematic hypoglycemia. Women with an HbA1c above 10% should be advised not to become pregnant.

5. Ketone testing and diabetes ketoacidosis: Women with diabetes planning a pregnancy should also ensure they have blood ketone testing strips and a meter. They should be advised to test for ketones if they experience hyperglycemia or feel unwell.

6. Medication: Metformin, commonly used for diabetes management, is generally safe and effective before and during pregnancy. Recommendations suggest continuing its use before conception and during pregnancy. Some women with type 2 diabetes may be advised to initiate insulin before or during pregnancy to ensure glucose control within the target range. Antihypertensive medications that are safe during pregnancy should be used.

7. Retinal assessment: Women should be offered a retinal assessment at their pre-conception appointment unless they have had a retinal assessment in the last six months.

8. Renal assessment: Women should be offered renal assessment, including the measurement of albuminuria. They should be referred to a nephrologist if:

- Serum creatinine is >120 µmol/L
- Urinary albumin-creatinine ratio is >30 mg/mmol
- Estimated glomerular filtration rate is <45 mL/min

The pre-conception plan should be customized based on the individual's current health condition and the presence of comorbidities. This comprehensive preconception care plan is essential for optimizing maternal and fetal health, minimizing pregnancy-related risks, and ensuring better outcomes for both mother and child.

Resources:

1. Hillstorm, K., *Nutrition During Pregnancy*. Jones & Bartlett Learning, p.32.
2. National Institute for Health and Care Excellence (NICE). *Diabetes in pregnancy: Management from preconception to the postnatal period*. NICE guideline, No. 3. Published December 16, 2020. Available from: https://www.ncbi.nlm.nih.gov/books/NBK555331/
3. Broughton C, Douek I. An overview of the management of diabetes from pre-conception, during pregnancy and in the postnatal period. *Clin Med (Lond)*. 2019;19(5):399–402. doi:10.7861/clinmed.2018-0288

Diabetes and Breast Cancer Risk

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The association between type 2 diabetes mellitus (T2DM) and breast cancer is significant, with various mechanisms contributing to the increased risk of cancer development. Studies indicate that individuals with diabetes are at a higher risk of developing advanced-stage breast cancer and are more likely to develop cancer in general.

Some studies have reported that the risk of breast cancer for people with diabetes is 20% greater than for those without diabetes.

This association is due to shared risk factors such as age, obesity, and insulin resistance. The presence of overweight/obesity and type 2 diabetes (T2D) is associated with a higher incidence of metastasis, recurrence, and the triple-negative breast cancer (TNBC) subtype. Mechanisms linking T2D to breast cancer include the activation of the insulin and insulin-like growth factor (IGF) pathways, chronic hyperglycemia (Warburg effect), and hormonal imbalances. Elevated levels of IGF-1 and insulin promote cell proliferation and metastasis in breast cancer. Additionally, IGF-1 binds to IGF binding protein-3 (IGFBP-3), and the ratio of IGF-1/IGFBP-3 is critical in determining breast cancer risk. Overproduction of IGF receptors and mutations in related genes have been identified in several cancers, including breast cancer.

Insulin resistance results in increased androgen production and decreased estrogen levels, particularly in postmenopausal women, which contributes to higher cancer risk. A decreased level of estrogen due to insulin resistance increases the risk of developing cancer in organs with high estrogen receptors, including the breast, endometrium, and ovaries. Furthermore, inflammatory cytokines, especially interleukin-6, secreted by tumors linked to diabetes, promote insulin resistance and cancer progression. T2D also increases the risk of chemotherapy-related toxicity and worsens outcomes in breast cancer patients. Studies suggest that lifestyle modifications, such as weight loss and increased physical activity, can reduce these risks. However, mortality is higher in breast cancer patients with T2D, especially when diagnosed after cancer, and aggressive screening may be necessary for early detection in women with diabetes.

Effective management of diabetes and lifestyle interventions may help mitigate these risks and improve outcomes for breast cancer patients. Further research is necessary to clarify the exact mechanisms and refine screening and treatment strategies for this population.

Resources:

1. Eketunde AO. Diabetes as a Risk Factor for Breast Cancer. *Cureus*. 2020;12(5):e8010. Published 2020 May 7. doi:10.7759/cureus.8010
2. Milani I, Gaita C. The intricate relationship between obesity, type 2 diabetes and female breast cancer: A retrospective study of 335 women. August 9, 2024. https://onlinelibrary.wiley.com/doi/epdf/10.1002/osp4.786

Interview with Dr. Ami Sanghvi

Dr. Ami Sanghvi
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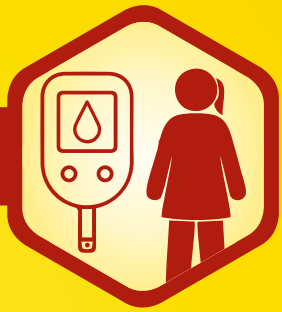
Consultant Diabetologist and Director,
Sanghvi Eye & Diabetes Care Centre, Mumbai

Dr. Ami Sanghvi is a highly accomplished Consultant Diabetologist and the Director of Sanghvi Eye & Diabetes Care Centre in Mumbai. With extensive expertise in managing diabetes and related conditions, she has earned accolades for her exceptional contributions to the field. Dr. Sanghvi is a distinguished faculty member, an active contributor to prominent diabetes conferences, and a prolific author, editor, and mentor. Known for her patient-centric approach, she focuses on improving the quality of life for individuals living with diabetes through personalized treatment plans, lifestyle modification guidance, and cutting-edge medical interventions. Her commitment to excellence and compassionate care has earned her the trust and respect of her patients.

From Hormones to Heart Health: Women and Diabetes



1. What are the unique challenges women face in managing diabetes as compared to men?

Ans. Women do tend to face unique challenges in managing diabetes due to physiological, hormonal, and societal factors that influence the progression of the disease, its complications, and overall health outcomes. Some of them are cited below:

- Hormonal fluctuations like during the menstrual cycle, pregnancy, and menopause can pose challenges in diabetes management due to insulin resistance.
- Increased risk of cardiovascular complications due to hormonal changes and delayed diagnosis as women do tend to delay in seeking medical assistance.
- Psychosocial and behavioral factors like women prioritizing caregiving responsibilities over their health and at times their own struggles with body image issues. Women with diabetes are at a higher risk of depression and anxiety, which can adversely impact self-care routines and blood glucose control.
- Reproductive health concerns like polycystic ovarian disease (PCOD), contraceptive use, and fertility issues in women who have uncontrolled blood glucose levels.

- Social determinants of health like healthcare literacy and healthcare access due to financial constraints, cultural norms, or gender disparities in certain regions.
- Women with diabetes can be at a greater risk of complications such as kidney disease, neuropathy, and retinopathy, maybe due to differences in disease biology or healthcare access.
- Advocacy and awareness gap as diabetes research often focuses predominantly on men, leading to gaps in understanding how gender differences affect disease management and outcomes.

2. How do hormonal changes during menopause affect the blood glucose levels?

Ans. Menopause marks a significant hormonal transition in a woman's life, with profound effects on metabolism, including blood glucose regulation. The declining levels of estrogen and progesterone during this phase influence insulin sensitivity, glucose metabolism, and cardiovascular health, making diabetes management more challenging.

Some of the challenges during menopause can be increased insulin resistance, altered fat distribution, fluctuating blood glucose levels, increased risks of cardiovascular complications, sleep disturbances, stress, hormone replacement therapy, and impact on emotional well-being.

By understanding how menopause affects blood glucose levels, women can take proactive steps to maintain their health and reduce the risk of long-term complications by regularly monitoring their blood glucose levels, maintaining a healthy weight, managing stress and sleep, and consulting a specialist on a regular basis. This critical stage is an opportunity for both education and empowerment.

3. Does diabetes increase the risk of osteoporosis in women?

Ans. Yes, diabetes significantly increases the risk of osteoporosis in women, especially postmenopausal women, due to the interplay of hormonal changes, blood glucose control, and metabolic factors. Osteoporosis is a condition characterized by reduced bone density and an increased risk of fractures. Women are inherently at higher risk due to hormonal shifts after menopause, and diabetes further exacerbates this vulnerability.

Impact of type 1 diabetes on bone health: Low bone marrow density and thereby increasing fracture risks.

Impact of type 2 diabetes on bone health: High risk for fractures due to chronic hyperglycemia and oxidative stress.

Additional risk factors for women with diabetes can be vitamin D deficiency, sedentary lifestyle, medications, complications like diabetic nephropathy, menopause, and estrogen deficiency.

Women with diabetes can reduce their risk of osteoporosis and fractures by adopting proactive measures like monitoring bone health, keeping diabetes in check, taking calcium and vitamin D supplements regularly, regular exercise and yoga, avoiding smoking, and limiting alcohol.

4. How can busy women such as working mothers or caregivers effectively manage their diabetes while balancing responsibilities?

Ans. For working mothers, caregivers, and women juggling multiple responsibilities, managing diabetes may seem overwhelming. However, with strategic planning and practical habits, it is possible to prioritize both personal health and daily obligations. Here are some actionable strategies to help busy women effectively manage diabetes while maintaining work-life balance:

- Prioritize self-care without guilt: Schedule "me time" and start communicating with your loved ones.
- Plan and prepare balanced meals.
- Incorporate physical activity in any form into the daily routine.
- Simplify blood glucose monitoring by using technology like continuous glucose monitoring system (CGMS).
- Stress management and mental health care by practicing mindfulness, delegating tasks, and seeking support when required.
- Make health appointments also a priority.
- Involve your support system as diabetes is not a solo journey.
- Create diabetes-friendly routines by building healthy habits.
- Look after sleep and energy needs by prioritizing sleep hygiene and combat fatigue.
- Keep a long-term perspective by celebrating small wins and learning from the setbacks.

5. How do cultural and social norms influence diabetes care for women?

Ans. Cultural and social norms play a significant role in shaping how women manage their diabetes. These norms influence access to care, health-seeking behavior, lifestyle choices, and the support women receive in their daily lives. For women, particularly in caregiving roles or in regions with gender disparities, these factors often add complexity to diabetes management. A few amongst them are:

- Traditional gender roles and prioritization of family over self which leads to delayed health-seeking behavior and limited time for self-care.
- Stigma around chronic illness which leads to marriage and family concerns and secrecy in management.
- Dietary practices and cultural food norms can be a big challenge, especially for women.
- Financial barriers and access to care.
- Physical activity constraints and time constraints.
- Impact of mental health and stress due to the emotional burden and undiagnosed depression.
- Health literacy and education gap with limited awareness and misinformation.
- Social support and empowerment.

Cultural and social norms have a profound impact on how women manage diabetes, shaping their access to care, lifestyle choices, and emotional well-being. By understanding these influences, healthcare providers and policymakers can develop gender-sensitive strategies to empower women, ensuring they can prioritize their health while navigating the complexities of their roles in society.

Identifying Barriers, Improving Outcomes: A Doctor's Experience on the MyCare Support Program for People with Diabetes

Dr. Debasish Paul

MBBS, PGDD (VMU), MDRC (MVD-Chennai)
Consultant - Diabetologist/Thyroid Disorder
Diabetic Foot Speciality/Endocrine Practitioner
Endocrinology - Ex-Physician, GMCH, Guwahati

A 54-year-old woman with type 2 diabetes mellitus was managed by Dr. Debasish Paul for uncontrolled blood glucose levels.

Here's what Dr. Debasish Paul has to say:

A 54-year-old woman with type 2 diabetes mellitus consulted for persistently elevated glucose levels. She presented with diabetic retinopathy, glycosylated hemoglobin (HbA1c) level of 12.1%, random blood glucose levels of 385 mg/dL, and elevated creatinine levels, likely due to prolonged hyperglycemia. Given her significantly high glucose levels, she was initiated on insulin therapy in addition to oral anti-diabetic agents to achieve better control.

Despite insulin therapy, follow-up assessments revealed persistently elevated blood glucose levels. She reported fasting blood glucose levels of 299 mg/dL and postprandial levels of 481 mg/dL, indicating continued poor glycemic control. Upon further evaluation, it was discovered that she was not administering insulin properly. Additionally, poor dietary habits exacerbated her condition.

To address these challenges, she was referred to MyCare Diabetes Educator (MDE), Ms. Sangeeta Kalita. Ms. Sangeeta played a crucial role in providing the patient with comprehensive diabetes education. She taught the correct techniques for insulin administration, including the importance of timely injections, proper site rotation to prevent lipohypertrophy, and storage guidelines for insulin. She also advised a customized meal plan tailored to the patient's food preferences to promote better glucose control and adherence.

An additional challenge was the patient's hearing impairment, which made communication difficult and necessitated a patient adaptive approach. Through simplified instructions and ongoing reinforcement, Ms. Sangeeta ensured the patient understood and adhered to the recommendations. Over time, her fasting and postprandial glucose levels improved significantly, and she gained a better understanding of managing her diabetes.

Ms. Sangeeta Kalita

NDEP and T1DE Certified Diabetes Educator

Here's what MDE Sangeeta has to say:

The combination of personalized education, dietary guidance, and continuous follow-up enabled the patient to gradually achieve better glycemic control. This case underscores the importance of a collaborative and individualized approach in diabetes care, highlighting the role of diabetes educators in empowering patients to overcome barriers and achieve better outcomes.

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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 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) 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.

Reference :

1. Böhm AK et al. Regimen simplification and medication adherence: Fixed-dose versus loose-dose combination therapy for type 2 diabetes. PloS one. 2021 May 4;16(5):e0250993; **2.** DAPAGLIFLOZIN, SITAGLIPTIN, AND METFORMIN ER FDC IN INDIAN TYPE 2 DIABETES MELLITUS PATIENTS WITH INADEQUATE GLYCEMIC CONTROL ON METFORMIN MONOTHERAPY: A MULTICENTER RANDOMIZED Double- Blind Parallel Study" oral paper presented in Diabetes India – Jan 2024; **3.** McMurray JJ,et al. Dapagliflozin in patients with heart failure and reduced ejection fraction. New England Journal of Medicine. 2019 Nov;381(21):1995-2008; **4.** Wiviott SD et al. Dapagliflozin and cardiovascular outcomes in type 2 diabetes. New England Journal of Medicine. 2019 Jan 24;380(4):347-57; **5.** Green JB, Bethel MA, Armstrong PW, Buse JB, Engel SS, Garg J, Josse R, Kaufman KD, Koglin J, Korn S, Lachin JM. Effect of sitagliptin on cardiovascular outcomes in type 2 diabetes. New England Journal of Medicine. 2015 Jul;373(3):232-42; **6.** Benes J, Kotric M, Kroupona K, Wohlfahrt P, Kovar J, Franekova J, Hegarova M, Hoskova L, Hoskova E, Pelikanova T, Jarolim P. Metformin treatment is associated with improved outcome in patients with diabetes and advanced heart failure (HFrEF). Scientific Reports. 2022 Jul;12(1):13038; **7.** Heerspink HJ et al. Dapagliflozin in patients with chronic kidney disease. New England Journal of Medicine. 2020 Oct 8;383(15):1436-46; **8.** Tanner C et al.. Metformin: time to review its role and safety in chronic kidney disease. Medical Journal of Australia. 2019 Jul;211(1):37-42.

USV Private Limited Corvette Team

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In T2DM uncontrolled on DPP4i & DPP4i+Metformin

TREAT EARLY
TREAT RIGHT

UDAPA-S

Dapagliflozin 10 mg + Sitagliptin 100 mg Tablets

Seamless Future Ready Care

Swift Glycemic control[1] & Cardio-Renal Care[3-8]

-1.54 %
HbA1c Reduction

Vs

Sitagliptin 100 MG

Superior Adherence

Preferred Choice

96%
Diabetes Experts[2]

Ref: [Ravikumar et al Cardiology and Cardiovascular Medicine. 2023; 7: 141-146.]

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 28th March 2024

PV - In case of any adverse events, kindly contact:pv@usv.in

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

Impact of Diabetes-related Microvascular Complications on Pregnancy Outcomes

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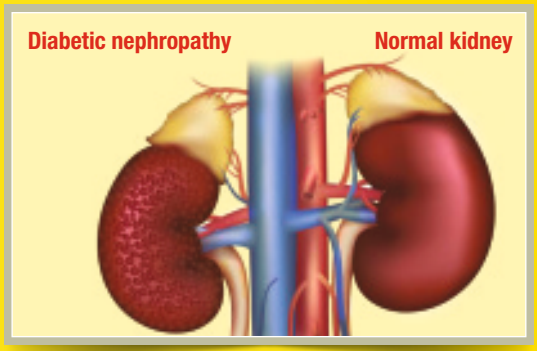
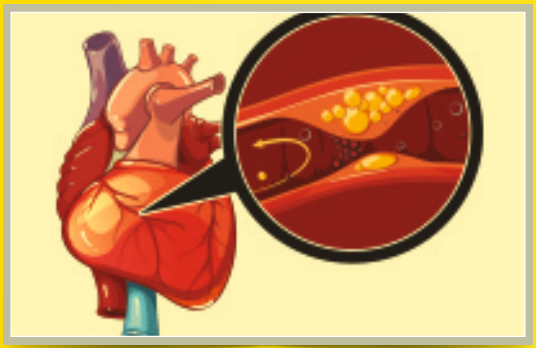
Diabetes-related microvascular complications, such as retinopathy, nephropathy, neuropathy, and coronary artery disease (CAD), significantly affect pregnancy outcomes. These conditions, driven by hyperglycemia, require careful management to mitigate risks.

Complications and their effects during pregnancy

- **Diabetic retinopathy:** Retinopathy progression during pregnancy is closely linked to baseline severity. Women without pre-existing retinopathy are at low risk, while those with proliferative retinopathy face higher risks. Some cases of progression regress within 1–2 years postpartum, but the extent of irreversible changes due to pregnancy versus natural disease progression remains unclear. Factors like hormonal shifts, strict glycemic control, hypertensive complications, and hemodynamic stresses may contribute.
- **Diabetic nephropathy:** Increases risks of pre-eclampsia and proteinuria. Severe nephropathy can lead to preterm birth and, in rare cases, progression to end-stage renal disease. However, achieving strict control of blood pressure and blood glucose levels leads to positive outcomes.
- **Diabetic neuropathy:** Diabetic neuropathy, though less studied in pregnancy, can exacerbate autonomic dysfunction, potentially affecting gastrointestinal motility and glucose regulation. Symptoms may increase transiently, but long-term progression may be unaffected.





- **CAD:** Although rare during pregnancy due to younger maternal age, CAD poses serious risks, including myocardial infarction. Improved maternal care has significantly reduced mortality, but preconception counseling and close monitoring remain essential.
- **Maternal and fetal outcomes:** Uncontrolled complications increase risks of fetal growth restriction, preterm delivery, and stillbirth. Comprehensive preconception counseling and multidisciplinary care are crucial for optimizing outcomes.

Strict glycemic control, regular monitoring, and individualized care are critical to managing diabetes-related complications in pregnancy. Close collaboration among obstetricians, endocrinologists, and other specialists ensures better outcomes for both mother and child.

Resource:

Bond MJ, Umans JG. Microvascular complications and the diabetic pregnancy. *Curr Diab Rep*. 2006;6(4):291–296. doi:10.1007/s11892-006-0063-2

Menopausal Hormone Therapy in Women with Type 2 Diabetes Mellitus

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Menopause is a significant transition in a woman's life, marked by the cessation of menstruation and a decline in estrogen levels. This hormonal shift can lead to various health challenges, particularly for women with pre-existing conditions such as type 2 diabetes mellitus (T2DM). The interaction between menopausal hormone therapy (MHT) and T2DM is complex, as MHT may influence glucose metabolism and overall health outcomes in this population.

Women with T2DM often experience changes in glucose levels during and after menopause. The decrease in estrogen levels is believed to contribute to insulin resistance and altered glucose homeostasis, which can exacerbate the challenges faced by these women. As such, MHT has been considered as a potential therapeutic option to mitigate menopausal symptoms while also addressing metabolic concerns associated with diabetes.

Effects of hormone therapy on glycemic control

Recent studies have demonstrated that MHT can have beneficial effects on glycemic control in postmenopausal women with T2DM. A systematic review of randomized controlled trials indicated that MHT significantly reduced glycated hemoglobin (HbA1c) levels by an average of 0.56% and fasting glucose levels by approximately 1.15 mmol/L. These findings suggest that MHT may improve insulin sensitivity and overall glycemic control in this population.

Moreover, another review article highlighted that MHT could improve insulin resistance, showing a reduction in homeostasis model assessment of insulin resistance (HOMA-IR) by an average of 36% among women with T2DM. This improvement in insulin sensitivity is crucial for managing diabetes effectively and reducing the risk of associated complications.

Risks and considerations

Despite its potential benefits, the use of MHT in women with T2DM is not without risks. MHT is not recommended for women with T2DM who are over 60 years old or more than 10 years post-menopause. In women with established atherosclerosis, MHT may destabilize mature atherosclerotic plaques, increasing the risk of thromboembolic events. This recommendation aligns with the "timing hypothesis," which suggests that initiating MHT within 10 years of menopause offers optimal cardiovascular protection.

Some studies have also reported an increased risk of developing diabetes among women who use MHT, particularly those who are older or have other cardiovascular risk factors. For instance, observational studies indicated that current or past use of MHT was associated with a higher incidence of diabetes. Therefore, clinicians must carefully evaluate the risk-benefit profile for each patient considering MHT.

Additionally, there are concerns regarding the type of hormone therapy used. Different formulations (e.g., estrogen-only vs. combined progestin and estrogen) may have varying impacts on metabolic health. The choice of administration route (oral vs. transdermal) also plays a role in determining the overall effects on glucose metabolism and cardiovascular risk.

Individualized treatment approach

Given the complexities surrounding MHT and its effects on women with T2DM, an individualized approach is essential. Factors such as age, duration since menopause, body mass index (BMI), and existing cardiovascular risks should guide treatment decisions. Women who are within ten years post-menopause or under 60 years old may be more likely to benefit from MHT without significant risks.

Key considerations

Patient history: Thorough assessment of medical history to identify any contraindications.

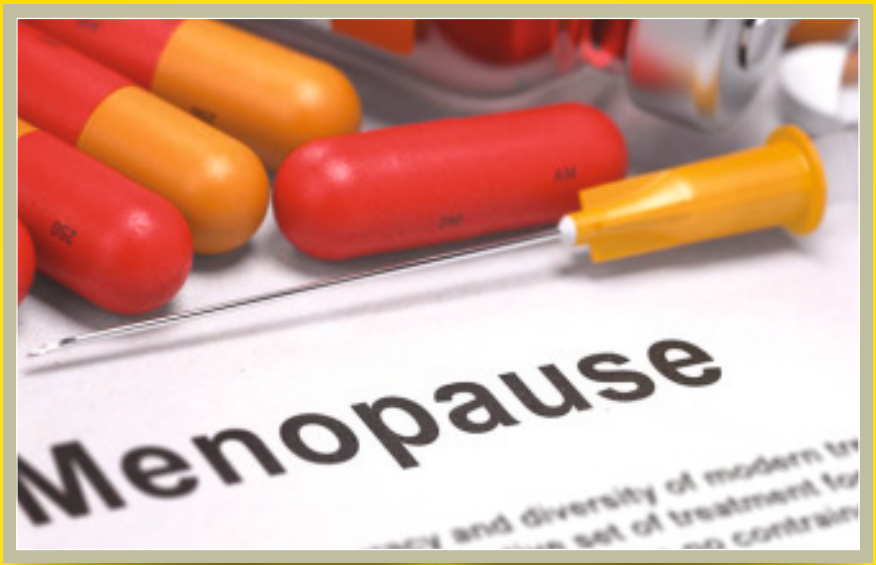
Monitoring: Regular monitoring of glycemic control and cardiovascular health during MHT.

Patient education: Informing patients about potential risks and benefits to facilitate informed decision-making.

MHT offers a promising option for managing menopausal symptoms in women with type 2 diabetes (T2DM), with potential benefits for glycemic control. However, initiating MHT requires a personalized approach, carefully weighing the risks and benefits for each individual. Further research is needed to clarify the long-term impacts of MHT on metabolic health and diabetes management in postmenopausal women. As evidence evolves, healthcare providers will be better equipped to guide their patients through this important life transition.

Key points

- MHT can improve glycemic control in women with T2DM by reducing HbA1c levels, fasting glucose, and insulin resistance.
- The use of MHT in women with T2DM requires careful risk-benefit assessment due to potential thromboembolic risk and diabetes risk in older women or those with established cardiovascular disease.
- The effects of MHT vary based on hormone formulations (estrogen-only vs. combined) and administration routes (oral vs. transdermal).
- An individualized approach is essential, considering factors like age, BMI, and cardiovascular risks, with regular monitoring and patient education.
- While MHT shows promise in managing menopausal symptoms and improving glucose metabolism, further research is needed to understand its long-term impact on metabolic health in women with T2DM.



Resources:

1. Speksnijder EM, Ten Noever de Brauw GV, Malekzadeh A, *et al.* Effect of Postmenopausal Hormone Therapy on Glucose Regulation in Women With Type 1 or Type 2 Diabetes: A Systematic Review and Meta-analysis. *Diabetes Care.* 2023;46(10):1866–1875. doi:10.2337/dc23-0451
2. Kapoor E, Kling JM, Lobo AS, Faubion SS. Menopausal hormone therapy in women with medical conditions. *Best Pract Res Clin Endocrinol Metab.* 2021;35(6):101578. doi:10.1016/j.beem.2021.101578
3. Ebong IA, Watson KE, Hairston KG, *et al.* Body fat distribution, menopausal hormone therapy and incident type 2 diabetes in postmenopausal women of the MESA study. *Maturitas.* 2016;91:147–152. doi:10.1016/j.maturitas.2016.06.020
4. Yoshida Y, Chen Z, Baudier RL, *et al.* Menopausal hormone therapy and risk of cardiovascular events in women with prediabetes or type 2 diabetes: A pooled analysis of 2917 postmenopausal women. *Atherosclerosis.* 2022;344:13–19. doi:10.1016/j.atherosclerosis.2022.01.016
5. Paschou SA, Athanasiadou KI & Papanas N. Menopausal Hormone Therapy in Women with Type 2 Diabetes Mellitus: An Updated Review. *Diabetes Ther* 15, 741–748 (2024). https://doi.org/10.1007/s13300-024-01546-1

Effect of Diabetes on Reproductive and Sexual Health

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Diabetes mellitus, a chronic metabolic disease, has a substantial impact on sexual and reproductive health. Elevated glucose levels impair neurological, vascular, and endocrine processes, which can result in sexual dysfunction and reproductive problems, especially in women. This article investigates these consequences using current data to highlight the importance of comprehensive treatment.

Impact of diabetes on reproductive health: Hormonal balance is vital for reproductive health, but diabetes poses significant challenges. Women with diabetes often experience irregular menstruation, reduced fertility, and difficulties with conception. Hyperglycemia disrupts ovarian function and endometrial receptivity through inflammation and oxidative stress, increasing the risk of miscarriage and lowering conception chances. Preconception counseling and strict glycemic control are essential to mitigate these risks and support reproductive health.

Diabetes and sexual dysfunction: Sexual dysfunction is a frequently overlooked complication of diabetes, significantly affecting women's health and well-being. Common issues include dyspareunia (painful intercourse), reduced arousal, and diminished sexual desire. Hyperglycemia-related vascular damage and neuropathy impair blood flow and sensation, reducing sexual receptivity. Psychological factors like depression, anxiety, and low self-esteem further aggravate these issues, with fatigue and emotional distress often compounding the challenges. The stigma surrounding diabetes can strain intimate relationships and erode self-worth. A multidisciplinary approach addressing both physical and psychological aspects is essential to improve sexual health and overall quality of life in women with diabetes.

Hormonal dysregulation and its effects: Diabetes and reproductive hormones interact in a complex way. Women with type 2 diabetes frequently are shown to have greater levels of androgens and lower levels of sex hormone-binding globulin (SHBG), which can lead to polycystic ovary syndrome (PCOS). In addition to impairing fertility, PCOS raises the risk of metabolic syndrome, which feeds a vicious cycle that makes diabetes concerns severe.

Management approaches: A personalized approach is essential for managing sexual and reproductive health in diabetes. Key strategies include maintaining optimal blood glucose, blood pressure, and cholesterol levels, adopting a healthy diet, staying physically active, achieving a healthy weight, avoiding smoking, and addressing psychological concerns.

Given diabetes' complex impact on sexual and reproductive health, an integrated care model is critical. Raising awareness among patients and healthcare providers ensures timely intervention. Future research should focus on these health domains to enhance the well-being of individuals living with diabetes.

Key points

- Diabetes impairs key physiological processes, with hyperglycemia disrupting ovarian function and endometrial receptivity through oxidative stress and inflammation, leading to reduced fertility and an increased risk of miscarriage.
- Vascular damage and neuropathy brought on by diabetes frequently result in decreased sexual desire, painful intercourse, and problems with arousal. Challenges with sexual health are further aggravated by psychological elements such as stigma and despair.
- Medical attention, psychological support, and lifestyle modifications are essential for successful management.

Resources:

1. Celik A, Forde R, Racaru S, Forbes A, Sturt J. The Impact of Type 2 Diabetes on Women's Health and Well-being During Their Reproductive Years: A Mixed-methods Systematic Review. *Curr Diabetes Rev.* 2022;18(2):e011821190403.
2. Barnard KD, Naranjo D, Johnson N, *et al.* Diabetes and female sexual health: An ongoing challenge. *Pract Diab.* 2019;36(5):165–169.
3. Andlib N, Sajad M, Thakur SC. Association of diabetes mellitus with risk of reproductive impairment in females: A comprehensive review. *Acta Histochemica.* 2024;126(5–7):152173.
4. Diabetes, Sexual, & Bladder Problems. National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). Updated June 2018. Accessed December 24, 2024. Available at: https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/sexual-bladder-problems

Women, Diabetes, and Family Health

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Diabetes mellitus is not just a personal battle; it is a challenge for the entire family. Adjusting to the lifestyle changes brought on by diabetes can disrupt family dynamics, with women bearing a unique burden. Compared to the general population, women with diabetes are more likely to experience inactivity, weight gain, and negative emotional states. These factors often lead to a reduced quality of life, as women struggle with both managing the disease and fulfilling familial responsibilities.

Barriers women face in managing diabetes: Women often take on the role of caregivers in their families, which makes it harder for them to focus on their own health. Many hesitate to seek or accept support from others, resulting in difficulties managing their illness. This can lead to greater emotional distress and challenges in adhering to treatment plans like healthy eating and regular exercise.

Family impact of diabetes: Diabetes doesn't just affect the individual–it affects the entire family. Family members may experience concerns about complications, reduced social interactions, and insecurity about the future. Mothers with diabetes might struggle with parenting, potentially reducing the quality of interactions with their children. This can adversely affect the physical and psychological well-being of children, ultimately weakening their health-related quality of life (HRQoL).

Emotional and psychological effects: The emotional toll of diabetes on women is immense, often manifesting as anxiety and depression. Women with diabetes are more likely to use maladaptive coping strategies, such as avoidance, which exacerbate emotional distress. Additionally, diabetes-related sexual dysfunction in women further reduces self-esteem and mental well-being.

The spousal burden: The strain of caring for a partner with diabetes often impacts the spouse's physical and mental health. Spouses of women with diabetes frequently report higher levels of anxiety, depression, and physical ailments.

Impact on children: Children of mothers with diabetes can also suffer. Maternal mental health challenges, including anxiety and depression, often lead to increased parenting stress and less effective parenting practices. This can result in physical and psychological health problems in children, including poor nutritional habits and fewer healthy behaviors.

Empowering women for better outcomes: To break this cycle, it is crucial to support women in managing their diabetes effectively. Empowering women with the tools and coping strategies can enhance their quality of life. In turn, this leads to improved relationships and better health outcomes for their spouses and children.

Diabetes mellitus is not just a medical condition; it is a family challenge. The ripple effects of diabetes on spouses, children, and overall family dynamics underscore the importance of supporting women with this condition. By addressing their unique needs and empowering them with effective coping strategies, we can improve the well-being of entire families.

Resources:

1. Moeineslam M, Amiri P, Karimi M, *et al.* Diabetes in women and health-related quality of life in the whole family: A structural equation modeling. *Health Qual Life Outcomes.* 2019;17(1):178.
2. Shaffer KM, Jacobs JM, Coleman JN, *et al.* Anxiety and Depressive Symptoms Among Two Seriously Medically Ill Populations and Their Family Caregivers: A Comparison and Clinical Implications. *Neurocrit Care.* 2017;27(2):180–186.
3. Theofilou P, Vlastos DD. The Psychological Burden of Families with Diabetic Children: A Literature Review Focusing on Quality of Life and Stress. *Children (Basel).* 2023;10(6):937.

Frequently Asked Questions on Women and Diabetes

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Care Clinic, Ranchi, Jharkhand

1. I had gestational diabetes during my pregnancy. Does that mean I'm at higher risk for developing type 2 diabetes or heart disease later? How can I protect myself and stay healthy?

Ans. Yes, having gestational diabetes mellitus (GDM) does increase your risk of developing type 2 diabetes and cardiovascular disease later in life. During pregnancy, hormonal changes reduce insulin sensitivity, and underlying obesity can exacerbate high blood glucose levels. Even after delivery, increased adiposity contributes to this heightened risk. Research indicates that approximately 50% of women with GDM develop type 2 diabetes within 10 years. With diabetes, the risk of other metabolic health conditions, such as heart disease, also increases. Factors like high blood pressure, unhealthy cholesterol levels, and being overweight post-pregnancy can further contribute.

- Get tested regularly: Check for type 2 diabetes initially after 6–12 weeks postpartum and then every 1–3 years for glucose levels.
- Adopt a healthy diet: Focus on whole grains, fruits, vegetables, lean proteins, and healthy fats to stabilize blood glucose levels.
- Stay active: Aim for at least 150 minutes of moderate exercise weekly, such as walking, swimming, or yoga.
- Maintain a healthy weight: Gradual and sustainable weight loss post-pregnancy can significantly lower your risk.
- Monitor your heart health: Keep an eye on your blood pressure, cholesterol, and triglycerides during routine health checks.

By staying proactive with your health and lifestyle, you can significantly reduce your risk and live a healthy life. Always feel free to consult your healthcare team for personalized advice!

2. I have type 1 diabetes, and I'm entering menopause. I've heard that menopause can make managing diabetes more difficult. What complications should I watch out for, and how can I manage my blood glucose better during this phase?

Ans. Menopause can indeed make blood glucose management more challenging for women with diabetes. During this time, the levels of hormones like estrogen and progesterone fluctuate and eventually drop. These hormones influence how your body responds to insulin, which can lead to more unpredictable blood glucose levels, with frequent highs and lows.

In addition, menopause increases the risk of complications like heart disease as estrogen–which offers some heart protection–declines. Women with type 1 diabetes already face a higher heart disease risk, so this is an important

area to monitor. Bone health can also be affected, as both menopause and diabetes contribute to reduced bone density, raising the chance of osteoporosis. Vaginal dryness and urinary tract infections may become more common, especially if blood glucose levels are not well controlled.

To manage these challenges, close monitoring of blood glucose levels and adjusting insulin doses as necessary are essential. Maintaining a healthy diet, engaging in regular exercise, and ensuring adequate intake of calcium and vitamin D are vital for supporting heart and bone health. Hormone replacement therapy (HRT) may be recommended to alleviate menopause symptoms. It also influences blood glucose levels; thus, careful monitoring is crucial. While menopause can present unique challenges, adopting a proactive and informed approach can make this phase manageable.

3. My 68-year-old mother has been living with diabetes for several years, and I've recently heard that diabetes can increase the risk of severe osteoarthritis (OA). Is this true, and if so, what steps can we take to protect her joint health?

Ans. Research indicates that individuals with type 2 diabetes are at a higher risk of developing severe OA, independent of factors like age and body mass index (BMI). OA is a degenerative joint condition where cartilage breaks down, causing pain, stiffness, and limited mobility.

While age and obesity are common risk factors, diabetes plays a significant role through mechanisms like the accumulation of advanced glycation end products (AGEs) from high blood glucose levels, which stiffen and damage joint tissues. Additionally, diabetes-associated systemic inflammation accelerates joint degeneration and nerve damage (diabetic neuropathy).

To protect your mother's joint health and reduce the risk of OA, focus on maintaining optimal blood glucose levels to minimize AGEs and inflammation. Encourage regular low-impact exercises like walking or yoga to strengthen muscles, improve flexibility, and ease stiffness.

Support healthy weight management to reduce stress on weight-bearing joints and promote a balanced diet rich in anti-inflammatory foods like fruits, vegetables, whole grains, lean proteins, and omega-3 fatty acids. Regular check-ups are essential to monitor her diabetes and joint health, allowing for early intervention if needed.

Recipe: Yogurt Fruit Parfait

Serves: 2

Ingredients	Amount
Yogurt	1 cup (200 g)
Fruit, chopped	1 cup (chopped)
Chopped nuts	2 tbsp
Granola	4 tbsp

1 cup: 200 mL; 1 tablespoon: 15 mL; 1 teaspoon: 5 mL

Method

1. Whisk the yogurt smooth. Keep aside.
2. Chop the fruit.
3. Take a medium-sized water glass or a small mason jar. Make sure it is clean and dry. Add yogurt at the bottom.
4. Add a layer of chopped fruit, followed by 1 tbsp of granola.
5. Add another layer of yogurt, followed by chopped fruit and granola.
6. Top with nuts and serve chilled.

Dia-Games

Word search

O	S	T	E	O	P	O	R	O	S	I	S	S	L
T	S	A	I	N	S	E	S	T	R	O	G	E	N
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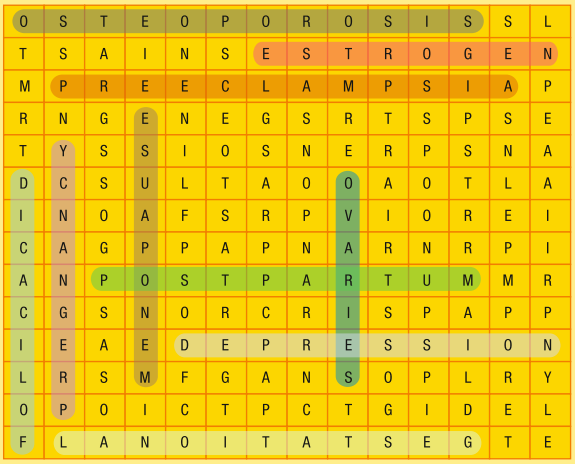
MENOPAUSE
DEPRESSION
ESTROGEN
OVARIES
PREECLAMPSIA
PREGNANCY
POSTPARTUM
FOLIC ACID
GESTATIONAL
OSTEOPOROSIS



NOTES

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In T2DM Across Continuum,

START STRONG STAY LONG

Glycomet®-GP 0.5
Metformin Hydrochloride 500 mg SR + Glimepiride 0.5 mg

Glycomet®-GP 1
Metformin Hydrochloride 500 mg SR + Glimepiride 1 mg

Glycomet®-GP 2
Metformin Hydrochloride 500 mg SR + Glimepiride 2 mg

Glycomet®-GP 0.5 FORTE
Metformin Hydrochloride 1000 mg SR + Glimepiride 0.5 mg

Glycomet®-GP 3/850
Metformin Hydrochloride 850 mg SR + Glimepiride 3 mg

Glycomet®-GP 1 FORTE
Metformin Hydrochloride 1000 mg SR + Glimepiride 1 mg

Glycomet®-GP 2/850
Metformin Hydrochloride 850 mg SR + Glimepiride 2 mg

Glycomet®-GP 2 FORTE
Metformin Hydrochloride 1000 mg SR + Glimepiride 2 mg

Glycomet®-GP 3 FORTE
Metformin Hydrochloride 1000 mg SR + Glimepiride 3 mg

Glycomet®-GP 4 FORTE
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.

Last updated: March 13, 2023

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

USV Private Limited Corvette Team

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