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Indian Diabetes

EDUCATOR JOURNAL

Theme of the Month

Diabetes and Pregnancy

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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RSSDI Indian Diabetes EDUCATOR JOURNAL

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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 & 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.

National gestational diabetes mellitus (GDM) day is celebrated in India on 10th March and international women's day is celebrated on 10th March. Diabetes during pregnancy, including type 1, type 2, or gestational diabetes can have significant effect on the health of women and their babies. This month's IDEJ aims at throwing light on the various management techniques of diabetes during pregnancy. We hope that this issue will motivate diabetes educators to embark on a journey through the latest research and clinical insights to explore the challenges and advancements in the realm of diabetes during pregnancy.

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: Importance of Medical Nutrition Therapy in Gestational Diabetes

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Article: Management of Pre-Existing Diabetes during Pregnancy

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Article: Gestational Diabetes: A Closer Look at Screening, Diagnosis, and Monitoring

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Article: Update on the Use of Metformin for Hyperglycemia in Pregnancy

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Article: Postpartum Care for Woman with Gestational Diabetes Mellitus (GDM)

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Article: Frequently Asked Questions on Diabetes and Pregnancy

RSSDI Indian Diabetes
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Importance of Medical Nutrition Therapy in Gestational Diabetes

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Alongside diabetes prevalence, gestational diabetes mellitus (GDM) prevalence also seems to be increasing. GDM is any degree of glucose intolerance with onset or first recognition during pregnancy. Because of possible epigenetic changes, GDM has both short-term and long-term impacts on both mother and offspring.

Therefore, efforts to manage GDM soon after diagnosis are crucial.

GDM management requires a co-ordinated approach to reduce the risk of complications and minimize the risk of maternal and neonatal morbidity. These infants are at a higher risk of neonatal complications because of exposure to high maternal blood glucose levels during fetal development. Macrosomia (large birth weight) is a common consequence of maternal diabetes and increases the risk of adverse neonatal outcomes. Maternal and fetal risks because of GDM have been listed in Table 1.

Table 1: Maternal and fetal risks of GDM

Maternal risks	Fetal risks
Abortion	Spontaneous abortion
Polyhydramnios	Intra-uterine death
Pre-eclampsia	Stillbirth
Pre-term labor	Congenital malformation
Premature rupture of membranes	Shoulder dystocia
Recurrent UTIs	Neonatal hypoglycemia
Prolonged labor	Infant respiratory distress syndrome
Obstructed labor	Hypothermia
Cesarean section	Hypocalcemia
Uterine atony	Polycythemia
Postpartum hemorrhage	Hyperbilirubinemia
Infection	Hyperviscosity syndrome

Abbreviations: GDM: Gestational diabetes mellitus; UTIs: Urinary tract infections

Glycemic control and following a healthy diet during pregnancy is important, as women with GDM have a higher risk of developing diabetes 5-10 years post-natal, and their children too have a high-risk of developing obesity and type 2 diabetes in the future. Treatment should aim to keep blood glucose level under strict control and involves specialized meal plans, regular physical activity, daily blood glucose testing, and if required pharmacotherapy.

Lifestyle behavioral change is a fundamental component in the management of GDM. All national and international guidelines suggest medical nutrition therapy (MNT), along with weight management and physical activity (PA), as the initial mainstay for the management of GDM.

MNT for GDM is defined as a "carbohydrate-controlled" meal plan providing adequate nutrition while ensuring appropriate weight gain and fetal well-being to meet increased requirements of energy, protein, and micronutrients, achieve normoglycemia, and also prevent nutritional ketosis. Choosing nutrient-dense carbohydrate foods that are low-to-moderate in glycemic index and glycemic load with a focus on the correct amount and even distribution of carbohydrates at meals, helps in controlling postprandial glucose excursions which is the main challenge in GDM. Morning blood glucose levels can be difficult to control because of increased insulin resistance, secondary to dawn phenomenon seen in women with GDM. Here, splitting of meals at breakfast has been shown to improve post-breakfast blood glucose levels.

Monitoring weight changes is required to ensure adequacy of MNT and to gain weight within the recommended limits. For the first two weeks post-diagnosis with GDM, guidelines suggest GDM management using MNT along with PA, and regular blood glucose monitoring. If two-hour postprandial blood glucose level is maintained below <120 mg/dL, it is advised to continue with the current regimen. If two-hour postprandial blood glucose level remains ≥120 mg/dL, medical intervention (insulin/metformin) is suggested along with MNT as per the guidelines.

Evidence has shown that lifestyle modification alone is sufficient to control blood glucose in 70–85% of the women who are diagnosed with GDM. Thus, MNT plays a very significant role in GDM management and may delay the need for pharmacological intervention.

Key takeaway points

- GDM management is important to reduce maternal and fetal morbidity risk.
- Lifestyle behavioral intervention comprising MNT and PA is the initial mainstay in the management of GDM.
- MNT alone is sufficient for management of GDM for most individuals (70-85%), while some need pharmacological intervention (metformin/insulin).

Resources:

1. Seshiah, V., Balaji, V., Chawla, R. *et al.* Diagnosis and management of gestational diabetes mellitus guidelines by DIPSI (Revised). *Int J Diabetes Dev Ctries* 43, 485–501 (2023). https://doi.org/10.1007/s13410-023-01222-3.
2. American Diabetes Association. Management of diabetes in pregnancy: Standards of medical care in diabetes–2021. *Diabetes Care.* 2021;44 (Suppl 1):S200–10 doi: 10.2337/dc21-S014.
3. Salis, S., Vora, N., Syed, S., Ram, U., and Mohan, V. Management of gestational diabetes mellitus with medical nutrition therapy: A comprehensive review. *Journal of Diabetology.* 2021;12, 52-58.

Management of Pre-Existing Diabetes during Pregnancy

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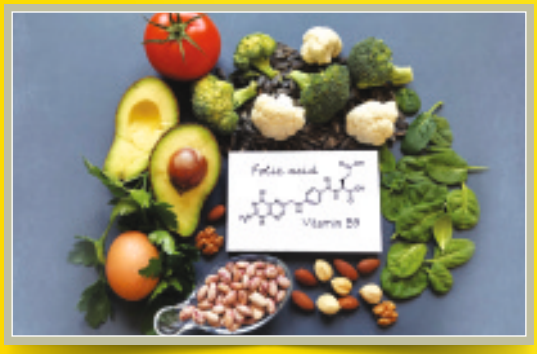
Managing pre-existing diabetes during pregnancy, whether it's type 1 or type 2 presents distinctive challenges requiring careful attention to ensure the well-being of both the mother and the fetus. Uncontrolled blood glucose levels can give rise to a range of complications, including pre-eclampsia, congenital defects, pre-term delivery, macrosomia, and stillbirth. Notably, type 2 diabetes carries a higher risk of perinatal mortality, while pregnant women with type 1 diabetes may experience elevated rates of diabetic ketoacidosis (DKA) and cesarean delivery. Strategic planning and optimization of glycemic control before conception play a pivotal role in mitigating these risks, emphasizing the need for preconception counseling for women with pre-existing diabetes.

Preconception planning

Preconception counseling should emphasize on the importance of achieving glucose levels as close to normal as is safely possible, ideally A1C <6.5% before conception and trying to maintain euglycemia throughout pregnancy. Discussions about congenital anomaly risks with unplanned pregnancies, the importance of effective contraception, and timely referrals to maternal-fetal medicine specialists are essential components of this preparatory phase.

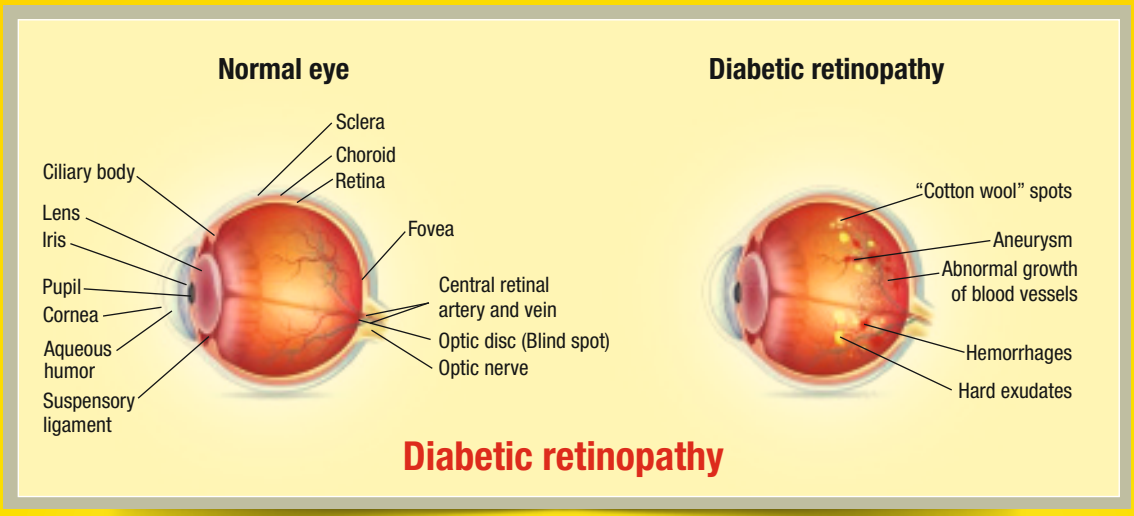
Weight and nutrition optimization



The presence of obesity in individuals with diabetes heightens the risk of congenital malformations. Therefore, initiatives that target both weight optimization and glycemic control become paramount. This involves dietary consultations, increased intake of folic acid, and ensuring the right balance of additional nutrients to enhance the health of both the mother and the fetus.

Diabetes complications screening

Timely screening for diabetic complications, including retinopathy and nephropathy, forms a crucial aspect of pre-pregnancy care. Testing should include A1C, creatinine, and urinary albumin-to-creatinine ratio. Regular retinal examinations and continuous monitoring for any signs of worsening retinopathy are integral to safeguard visual health. Pregnant women with nephropathy require multidisciplinary monitoring due to their elevated perinatal risks. Special attention should be paid to review the medication list for potentially harmful drugs, i.e., angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARBs), and statins.



Blood pressure management

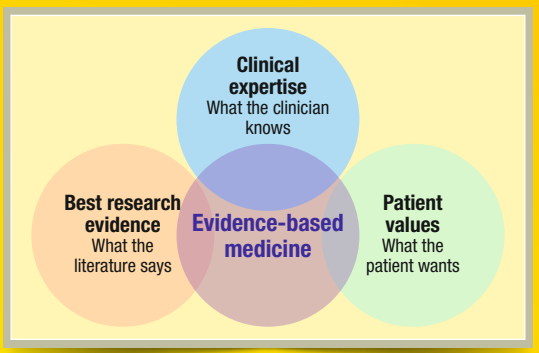
Strategies for managing blood pressure in pregnant women with diabetes revolve around preventing fetal growth impairment. Lowering blood pressure thresholds may be considered for individuals with diabetic nephropathy. Safely replacing teratogenic medications with alternatives and initiating low-dose aspirin play crucial roles in reducing the risks of pre-eclampsia.

Thyroid health and additional considerations

For women with type 1 diabetes planning pregnancy, thyroid-stimulating hormone levels should be assessed.

Care during pregnancy

Strict glycemic control with A1C target being <6% without significant hypoglycemia should be the goal. Fasting, pre-meal, and post-meal blood glucose monitoring are recommended in women with diabetes in pregnancy to achieve optimal glucose levels. Continuous glucose monitoring is recommended in women with pre-existing type 1 diabetes. For women with pre-existing diabetes, glycemic goals are usually achieved through a combination of insulin and medical nutrition therapy. It is important to have a customized meal plan from a qualified dietitian to moderate the carbohydrates, match the insulin to carbohydrate intake, and attain the weight goals. Physical activity unless contraindicated, is critical to achieve the glycemic targets.



The evidence-based management of pre-existing diabetes during pregnancy demands a holistic approach encompassing preconception planning, rigorous glycemic control, weight optimization, complication screening, and meticulous blood pressure management. By addressing the unique challenges posed by diabetes in pregnancy and implementing a comprehensive management plan, healthcare providers can optimize outcomes for both the mother and the baby. Continuous education, regular monitoring, and a supportive healthcare team remain integral components of successful management.

Key takeaway points

- Effectively managing pre-existing diabetes in pregnancy is crucial for the well-being of both the mother and the fetus.
- Strategic preconception planning, adhering to HbA1c targets (<6.5%) before conception is important.
- Weight optimization, nutritional balance, and careful monitoring for complications, like retinopathy and nephropathy are the key.
- Blood pressure management and thyroid health assessments, along with discontinuing certain medications, like ACE inhibitors, ARBs, and statins contribute to a holistic approach.
- Efforts must be made to maintain euglycemia throughout pregnancy with HbA1c target being <6% without hypoglycemia.
- Regular monitoring, medical nutrition therapy, physical activity, and insulin administration help in achieving these strict targets.

Resources:

1. Alexopoulos AS, Blair R, Peters AL. Management of Preexisting Diabetes in Pregnancy: A Review. *JAMA*. 2019;321(18):1811-1819. doi:10.1001/jama.2019.4981
2. ElSayed NA, Aleppo G, Aroda VR, *et al.* 15. management of diabetes in pregnancy: standards of care in diabetes–2023. *Diabetes Care.* 2022; 46(Supplement_1). doi:10.2337/dc23-s015

Gestational Diabetes: A Closer Look at Screening, Diagnosis, and Monitoring

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Pregnancy-related diabetes or gestational diabetes mellitus (GDM), offers a window of opportunity for early detection and treatment to avert non-communicable diseases (NCDs). Due to potential epigenetic modifications, GDM raises the risk of type 2 diabetes and other diabetes in the future for both the mother and the child. As a result, it is imperative to screen all expectant mothers for glucose intolerance using a low-cost, trustworthy test that has been approved by the Indian Ministry of Health and Family Welfare and suggested by Diabetes in Pregnancy Study Group India (DIPSI).

Screening for GDM

Ideally testing for diabetes should start at the planning stage to rule out undiagnosed diabetes. The current recommendation is to screen for GDM in the early weeks of pregnancy, preferably at the first antenatal visit. If the first test is negative, testing for GDM should be done at 24-28 weeks of pregnancy and again at 32-34 weeks, if the results are negative. The two tests should be separated by at least four weeks. Testing is recommended for all expectant mothers, regardless of when they get pregnant.

DIPSI procedure for diagnosis of GDM

In this single step procedure, 75 g of glucose is administered orally after being dissolved in roughly 300 mL of water, regardless of the pregnant woman's previous meal timing. It's crucial to finish consuming the solution in five to ten minutes.

- Two hours following the oral glucose load, plasma glucose should be measured using a standardized plasma-calibrated glucometer.

- If vomiting happens within 30 minutes of ingesting glucose orally, the test needs to be re-done the following day. If vomiting occurs after 30 minutes, the test proceeds without any problems.
- The cut-off point for the diagnosis of GDM is defined as a plasma glucose value of ≥140 mg/dL.

Monitoring

- It is recommended that women regularly self-monitor their blood glucose (SMBG) levels in order to keep them within normal ranges.
- It is ideal to perform a 7 point testing with all three pre-meal and two hours post-meal glucose tests in addition to the bedtime glucose test, particularly for all GDM patients on rigorous insulin treatment.
- To attain ideal glycemic control, however, a minimum of four glucose readings: Daily fasting and two hours following each meal, must be taken.
- If intensive self-monitoring is not feasible, then carefully regulated GDM or limited care settings may implement weekly fasting on medical nutrition therapy (MNT) and 2 hours after meals.
- In addition to SMBG, continuous glucose monitoring (CGM) when accessible and affordable/acceptable, can be used to measure glycemic fluctuation, which may be linked to macrosomia.

Target glycemic control

Achieving glycemia comparable to non-diabetic pregnancies has been the aim in pregnancies complicated by diabetes. Neonatal hypoglycemia is not a worry in women with GDM, and maintaining a fasting plasma glucose level below 90 mg/dL helps prevent unfavorable outcomes including macrosomia and pre-eclampsia. Compared to non-pregnant women, pregnant women are less likely to experience hypoglycemia in response to insulin. The American College of Obstetricians and Gynecologists recommends fasting 90 mg/dL and 2 hour postprandial glucose 120 mg/dL, which is in line with the DIPSI recommendation.

Glycemic targets in pregnancy

Parameter	Target
HbA1c	≤6%
Fasting glucose	≤90 mg/dL
Postprandial glucose post 1 hour	≤140 mg/dL
Postprandial glucose post 2 hours	≤120 mg/dL

Resources:

1. Seshiah V, Balaji V, Chawla R, *et al.* Diagnosis and management of gestational diabetes mellitus guidelines by DIPSI (Revised). *International Journal of Diabetes in Developing Countries*. 2023;43(4):485–501.
2. Salis S, Vora N, Syed S, Ram U, Mohan V. Management of Gestational Diabetes Mellitus with Medical Nutrition Therapy: A Comprehensive Review. *Journal of Diabetology*. 2021;12(Suppl 1):pS52-S58. doi: 10.4103/jod.jod_44_21

Update on the Use of Metformin for Hyperglycemia in Pregnancy

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Insulin is the preferred choice of treatment for treating hyperglycemia in pregnancy, including gestational diabetes mellitus (GDM). When insulin cannot be utilized and cost, storage, and compliance are logistical concerns, metformin can be administered as a safe and effective oral hypoglycemic medication for GDM. This is especially true in low resource situations. Experience has shown that Indian obstetricians prefer to keep women on metformin even after they become pregnant. According to the 2020 Metformin in women with type 2 diabetes in pregnancy (MITy) trial, using metformin while pregnant did not result in any significant side effects. After 20 weeks of gestation, the National Guidelines in the Diagnosis and Management of GDM (Ministry of Health, Government of India) consistently prescribe metformin. A register-based cohort analysis published in BMJ Open Diabetes Research and Care found no evidence of an elevated long-term risk linked to metformin exposure during pregnancy (either alone or in conjunction with insulin) as compared to insulin. According to a recent European study published in February 2022, metformin is safe to take throughout the pregnancy. According to the National Institute for Health and Care Excellence (NICE) guidelines, metformin can be used in place of or in addition to insulin throughout the preconception and pregnancy phases where there is a greater likelihood of benefiting from better blood glucose management than there is of harm.

If a pregnant woman is unwilling to take insulin or cannot use insulin, metformin can be prescribed after weighing the benefits and drawbacks, as long as her gestational age is greater than 12 weeks and there are no contraindications to the medication's use. To minimize mild gastrointestinal side effects, the starting dose of metformin is 500 mg twice daily with meals. Higher doses are then titrated gradually. There is a 2 g daily maximum dosage. However, if the highest tolerated dose of metformin along with nutrition therapy does not give glycemic control, insulin should be started without any further delay.

Resource:

1. Seshiah V, Balaji V, Chawla R, *et al.* Diagnosis and management of gestational diabetes mellitus guidelines by DIPSI (revised). *International Journal of Diabetes in Developing Countries.* 2023;43(4):485-501. doi:10.1007/s13410-023-01222-3
2. Hyer, S., Balani, J., and Shehata, H. (2018). Metformin in Pregnancy: Mechanisms and Clinical Applications. *International journal of molecular sciences,* 19(7), 1954. https://doi.org/10.3390/ijms19071954

Interview with Dr. Uma Ram

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Dr. Uma Ram is the director and lead consultant in obstetrics and gynecology at the Seethapathy Clinic & Hospital, Chennai, with over 28 years of experience. Her areas of interest are high-risk obstetrics especially gestational diabetes, fetal growth, and multiple pregnancies. She is the Chairperson of "The International Representative Committee, RCOG (Royal College of Obstetricians and Gynaecologists, UK) India South" and is also one of the founder members of the association of Tamil Nadu members of RCOG. She is actively involved in clinical research projects and has been the obstetric lead for international collaborative projects on gestational diabetes mellitus (GDM). She has organized conferences and workshops and has been an invited faculty to many national conferences. She has many publications to her credit and has authored multiple chapters in textbooks. She has been actively involved in postgraduate teaching both for the Diplomate National Board (DNB) and Member of the Royal College of Obstetricians and Gynaecologists (MRCOG).

Diabetes and Pregnancy

1. What are the key considerations and challenges for women with pre-existing diabetes who are planning to conceive?

Ans. The most important point to keep in mind for women with diabetes is that the pregnancy has to be planned. They need to use effective contraception until they are well controlled and all the preconception care is given.

High blood sugars in early pregnancy increases the risk of structural abnormalities in the baby, including neural tube and cardiac. All organs of the baby are formed within the first 3 months and the neural tube which becomes the spinal cord actually closes by 28 days. Most women are not even aware that they are pregnant by this time. Therefore, pregnancy is adviced only when the glycemic control is good. The number to watch for is a HbA1c of <6.5%.

Of course for some women with Type 1 diabetes, this may be relaxed a bit as they may find it very difficult to achieve this HbA1c without episodes of hypoglycemia.

The second thing that women with diabetes need to be aware of is that the blood glucose values we like to see in pregnancy are tighter and lower than that of the non-pregnant ones. These target numbers of a fasting <95 mg/dL and 1 hour post-meal of 140 mg/dL/2 hour post-meal of 120mg/dL have to be explained.

Weight optimization is important as women who are overweight or obese have an increased chance of problems in pregnancy.

If they have any other medical problems such as hypertension or renal or eye issues from long standing diabetes, then the chance of increased blood pressure and other complications also increases. However, it is possible to achieve a safe delivery, if all these are addressed ahead of the woman getting pregnant.

If women are on any medication either for the diabetes or other medical conditions, we need to ensure that these medications are safe to continue in pregnancy. Some oral hypoglycemic agents are not safe for use in pregnancy and these need to be switched ahead of time to insulin or metformin and then glycemic control needs to be ensured post the switch.

All women planning pregnancy need to be on supplements of folic acid 4 mg pre-pregnancy to reduce the chance of birth defects. Their immunization status especially for Rubella and chicken pox needs to be checked.

Some of the challenges for women with diabetes are social and not just linked to achieving glycemic control. Sometimes, families are unaware and this can become a big issue and needs to be navigated with sensitivity.

2. How does diabetes impact pregnancy, both for women who had diabetes before becoming pregnant and for those who develop gestational diabetes during pregnancy?

Ans. Women who have diabetes in pregnancy need to be aware of how the disease can impact them. If women have diabetes before they become pregnant or have an increase in blood sugars in early pregnancy before 12 weeks, then this increase in blood sugar can cause certain problems. This is particularly true if the control is poor. There is a higher chance of a miscarriage and of the baby having a birth defect. In women without any medical problems, the chance that they can have a birth defect is 1-2/100 women. With diabetes, this chance can be 3-4/100 birth and with poor control the risk increases. HbA1c is a measure of control, therefore, when that is high the chance of problems is higher.

When women do not have diabetes but develop gestational diabetes later in the late second trimester of pregnancy they do not have the risk of miscarriage or anomalies. However, when glycemic control is poor and sugars are high later in pregnancy, this impacts fetal growth. Babies can become bigger and this can cause some problems at the time of delivery. Women with diabetes in pregnancy are also at a higher risk of having a still birth. More frequent scans and monitoring is therefore recommended.

There is a higher chance of developing higher blood pressure in pregnancy, of having an induced labor, and an instrumental delivery or cesarean section when compared to women without diabetes.

3. What could be the reason for increasing prevalence of gestational diabetes in India?


Increasing Prevalence

Ans. There is a generally higher chance of type 2 diabetes and pre-diabetes in younger men and women in India. This increase in dysglycemia as well as an increase in insulin resistance increase the chance of women developing diabetes in pregnancy. More sedentary lifestyles, lack of exercise, and eating habits that now include more processed food and fat all contribute to the increased risk.

4. How important is regular blood glucose monitoring during pregnancy?

Ans. Regular blood sugar monitoring is extremely important in pregnancy. We have a short window of time and the concern is the impact on the baby. For this reason, we do not have the luxury of time to give a longer duration to achieve control.

Initially to assess control, we would ask to monitor sugar by using a glucometer 4 times a day, at least to decide if diet and exercise are working or if medication is needed. Many times women are advised only to check once in 2 weeks for one set of values. While, this may be adequate once we know that the glycemic control is good and the woman is compliant, it is not enough information to base decision on how the control is initially.

When women are on metformin or insulin they need regular monitoring with glucometer. Once we have 4-6 point sugars done and we know the control is good, we can stager the tests and ask them to do 4-6 times a week rotating the post-meal checks to ensure control continues to be good.

5. In your experience, how has medical technology evolved to support pregnant women with diabetes? Are there any recent advancements or emerging trends that could improve the management of diabetes during pregnancy?

Ans. Medical technology is very useful to help support women with diabetes especially pre-existing diabetes. Women with type 1 are used to continuous monitoring and this has been shown to be effective in achieving better control. The data for use in pregnancy is just beginning to come but this can be used in women who need a large amount of insulin in pregnancy as well.

Besides this, using apps to communicate with the obgyn/physician with remote monitoring can be a boon for women and they need not visit just to show the results.

The only additional point to emphasize is the long-term impact of gestational diabetes. Women who develop GDM are at higher risk of developing type 2 diabetes and this seems to be happening much earlier in our women compared to the west. These women are also at a higher risk of cardiovascular disease. Therefore, they need long-term follow-up as do their babies.

In T2DM Uncontrolled on DPP4i + Metformin, SGLT2i + Metformin, SGLT2i + DPP4i,

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

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Abridged Prescribing Information

Indication: It is indicated as an adjunct to diet and exercise to improve glycaemic control in adults with type 2 diabetes mellitus.
Dosage and Administration: The recommended dose is one tablet daily. Each tablet contains a fixed dose of dapagliflozin, Sitagliptin and Metformin Hydrochloride.
Adverse Reactions: Most common adverse reactions reported are: Dapagliflozin- Female genital mycotic infections, nasopharyngitis, and 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; Hypoglycaemia; 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: Hypoglycaemia when used in combination with other anti-hyperglycaemic medicinal product; Renal impairment; Hypersensitivity reactions including anaphylaxis, angioedema, and exfoliative skin conditions- Stevens-Johnson syndrome; Bullous pemphigoid. Metformin Hydrochloride: Lactic acidosis; In case of dehydration (severe diarrhoea 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, Hepatic Impairment, Acute Alcohol intoxication, alcoholism
Use in a special population: Pregnant Women: Due to lack of human data, drug should not be used during pregnancy. Lactating Women: It should not be used during breastfeeding. Paediatric Patients: The safety and efficacy of drug has not yet been established. No data are available. Geriatric Patients: In Patients > 65 years, it should be used with caution as age increases.

Additional information is available on request.
Last updated: January 03, 2023

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Personalized Counseling for Individuals with Type 2 Diabetes Mellitus with Multiple Co-Morbidities: A Doctor's Experience on the MyCare Patient Support Program

Dr. Jaya Raju Bathula

MD

Senior Consultant Physician (Diabetic Care and Internal Medicine)

Jaya Cardio-Diabetes Care, JRB Health Care Hospital, Hyderabad

A lady with type 2 diabetes mellitus and multiple co-morbidities was managed by Dr. Jaya Raju Bathula.

Here's what Dr. Jaya Raju Bathula has to say:

A woman with diabetes mellitus was referred to me. During the first consultation I observed that her blood glucose levels were severely deranged. She was also suffering from hypertension. She had a history of coronary artery bypass graft surgery (CABG) and elevated uric acid levels. I suggested that she enroll into the MyCare support program.

The patient enrolled into the support program, and she was introduced to her MyCare diabetes educator (MDE). The MDE counseled the patient on the importance of maintaining glycemic control and the detrimental effect of uncontrolled glucose levels on health and the importance of a customized balanced meal plan. The MDE explained that the diet will also help in regulating her blood pressure, as well as elevated uric acid levels. We asked her to follow the meal plan and come back after a period of 10 days for a follow-up.

During these 10 days, she followed the meal plan diligently and returned with normalized blood glucose levels within the range of 92 mg/dL (fasting) and 156 mg/dL (postprandial). However, her uric acid levels were still elevated. The MDE went into depths to find the root-cause, but to no avail. After a period, the MDE realized that the patient was consuming a protein powder prescribed by another doctor. We asked her to avoid the protein powder for a while and recheck the uric acid levels. She came back with reduced uric acid levels – 6.6 mg/dL.

Mr. Srinivasa Chary

NDEP and T1DE Certified Diabetes Educator

Here's what the MDE Mr. Srinivasa Chary had to say:

After counseling the woman on the importance of balanced meal plan for diabetes control, blood pressure, and uric acid regulation, she diligently adhered to the meal plan, leading to normalized glucose levels within 10 days. Further dietary modifications helped her to bring down her uric acid levels as well. A maintenance plan was given to her to prevent derangement in these parameters again.

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*PWD: People with Diabetes

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January 2023[1]

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Long term continuous usage of High Dose Glimepiride:

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1. Glimepiride use is associated with reduced cardiovascular mortality in patients with type 2 diabetes and chronic heart failure, a prospective cohort study | European Journal of Preventive Cardiology | Oxford Academic (oup.com) 2. Ther Adv Endocrinol Metab 2020. Vol 11:1-12 DOI: 10. 1177/2042018820926000. # Data on file * As compared to non-glimepiride group
EET: Epoxyeicosatrienoic acid; sEH: soluble Epoxide Hydrolase; AHAs: antihyperglycemic agents; T2DM: Type 2 Diabetes Mellitus

Prescribing Information

Information: Metformin hydrochloride (as prolonged release) and glimepiride tablets. Glycomet-GP 0.5/Glycomet-GP 0.5 Forte/ Glycomet-GP 1/ Glycomet-GP 1/850/ Glycomet-GP 2/ Glycomet-GP 2/850/ Glycomet-GP 3/ Glycomet-GP 3/850/ Glycomet-GP 4/ Glycomet-GP 4/850/ Glycomet-GP 1 Forte/ Glycomet-GP 2 Forte/ Glycomet-GP 3 Forte/ Glycomet-GP 4 Forte Abridged Prescribing Information **Composition:** Glycomet GP 0.5mg: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500mg and glimepiride IP 0.5mg.• Glycomet GP 0.5 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 0.5mg.• Glycomet GP 1: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 1 mg. • Glycomet GP 1/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 1 mg. • Glycomet GP 2: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 2 mg. • Glycomet GP 2/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 2 mg.• Glycomet GP 3: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 3 mg. • Glycomet GP 3/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 3 mg. • Glycomet GP 4: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 4 mg. • Glycomet GP 4/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 4 mg. • Glycomet GP 1 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 1mg. • Glycomet GP 2 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 2mg. • Glycomet GP 3 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 3mg. • Glycomet GP 4 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 4mg. **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

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Postpartum Care for Woman with Gestational Diabetes Mellitus (GDM)

Dr. Rutul Gokalani

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Consultant Diabetologist, AHC Diabetes Clinic, Ahmedabad

The postpartum period following gestational diabetes requires tailored care, addressing specific health considerations for both the mother and the baby. All babies born to women with GDM are evaluated for immediate hypoglycemia (<45 mg/dL) within the first hour after birth and at 4 hour intervals using a glucometer until four stable readings of glucose values are achieved (≥45 mg/dL). These babies are also monitored for respiratory distress, convulsions, and hyperbilirubinemia. GDM mothers should receive counseling about future risk of diabetes, how to prevent type 2 diabetes, and family planning before discharge. A few pointers to keep in mind while at the hospital as well as at home are given below.

At the hospital

Post-delivery, the medical team meticulously reassesses and adjusts or stops insulin or metformin tablet treatments to align with evolving postpartum needs. Rigorous blood glucose level checks before hospital discharge ensure a seamless transition from the controlled environment of medical care to the comfort of home.

At home

After childbirth, it's expected that blood glucose levels normalize; however, if it doesn't, discussions about concerns should be directed to the diabetes care team. Planning a glucose tolerance test 6-8 weeks post-delivery provides insights into the body's response and glycemic status. Annual blood glucose testing is suggested thereafter to diagnose any development of glucose intolerance.

Future risk of GDM

Gestational diabetes typically resolves after childbirth, but the risk of developing diabetes later remains high. Adopting a healthy lifestyle and maintaining normal weight is crucial to prevent diabetes and its complications.

Breastfeeding in GDM

Encouragement and facilitation of exclusive breastfeeding is very important because of the short-term as well as long-term health benefits to the infant and the reduced risks for subsequent obesity and diabetes in the mother.

Lifestyle modification

It is important to aim for at least 30 minutes of moderate exercise on at least five days a week, such as swimming, yoga, walking, or jogging to reduce the risk of glucose intolerance.

It is recommended to adopt a balanced diet emphasizing fruits, vegetables, and whole grains. One must practice mindful eating, make healthier food choices, and limit the intake of sugar and saturated fats for sustained blood glucose control. Fiber intake must be increased, like fruits, vegetables, beans, and whole grains.

In conclusion, annual screening for diabetes and lifestyle modification are the key. Especially after a pregnancy impacted by diabetes. Early detection of diabetes or pre-diabetes is vital in preventing complications, like heart disease, stroke, and kidney issues.

Resource:

1. What is gestational diabetes (GDM). Post Natal Care for Gestational Diabetes. Accessed December 15, 2023. Available at: https://www.bfwh.nhs.uk/wp-content/uploads/2015/08/Gestational_Diabetes.pdf.
2. Much D, Beyerlein A, Roßbauer M, Hummel S, Ziegler AG. Beneficial effects of breastfeeding in women with gestational diabetes mellitus. *Mol Metab.* 2014;3(3):284-292. Published 2014 Jan 21. doi:10.1016/j.molmet.2014.01.002

Navigating the Unknown: Psychological Well-Being During Pregnancy with Diabetes

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Becoming a mother is a life-altering event that is frequently discussed in theories of development, stress, and adaptability. There is significant psychological strain on the woman when this shift is coupled with an additional medical problem. Uncontrolled diabetes can result in pregnancy-related difficulties. Thus, for them simply planning a pregnancy causes a great deal of worry. Mother's anxiety about their underlying medical condition increases when they receive counseling regarding the impact of elevated HbA1c on the fetus. An increased risk of miscarriage in the first trimester is linked to poor glycemic control of diabetes. A miscarried pregnancy, a spontaneous miscarriage, or an induced abortion due to birth defects leave the mother deeply grieving. It's possible that the mother won't receive enough psychological and emotional assistance, and that her spouse and family will ignore the matter.

Studies have shown that the feeling of losing control over their body and their diabetes was a major worry for women with diabetes who were expecting. Many women believed they could no longer rely on their bodies to alert them to hypoglycemia symptoms. This made controlling the blood glucose swings challenging. Women monitored their blood glucose levels more frequently in an attempt to adjust for the unpredictable variations in their blood glucose levels. This caused disruptions to their daily routines and their sleep, which added to the stress. Uncontrolled diabetes during pregnancy whether gestational, type 1, or type 2 is also linked to a higher risk of various obstetric problems, like full-term fetal death. With appropriate monitoring, a biophysical profile, and prompt management, this problem shouldn't develop; but, in the event that it does, the grieving lady should receive additional psychological support and counseling. According to a number of studies, pregnant women with type 1 diabetes reported higher levels of anxiety, discomfort as well as more hostile and depressed moods than pregnant women without the condition. In comparison to pregnant women without diabetes, they also reported less happy emotions and stronger negative pregnancy-related sensations. Compared to women who receive an overt diabetes diagnosis during pregnancy, women who have known they have diabetes prior to conception are more aware of their illness and the signs of hypoglycemia. Before becoming pregnant, women with diabetes are familiar with their food regimen and have already adapted to a low glycemic index (low-GI) diet. Pregnant women often have desires for a variety of meals, and those who have been diagnosed with diabetes during pregnancy may struggle to overcome their cravings for sweets and other foods that should be avoided due to their condition. Another significant life shift for a woman is the period following childbirth. Women often feel happy and stressed at the same time. During this time, a partner's support is crucial in helping women manage their diabetes and a newborn's daily needs.

The mother-in-law has a major role in an Indian household. Thus, her supportive attitude can mitigate a lot of the negative aspects of emotional distress. Including the mother-in-law in the care of the mother and baby is a wise approach. She has to be given a good understanding of the condition and how it affects the mother's and the child's health. When the woman receives social support, there is a higher likelihood that all aspects of management (adhering to the food plan and taking medications on time) are followed.

In addition to helping women attain the best possible pregnancy outcomes, healthcare professionals play a critical role in giving them the self-assurance to control their diabetes both during and after pregnancy.

- Seeking preconception counseling from an obstetrician and endocrinologist may enable the woman to achieve optimal blood glucose levels, ensuring safe pregnancy.
- Display informational posters and pamphlets that are helpful to these women beyond diabetes.
- Promote any events, clubs, social gatherings, meetings, and peer support sessions.
- Consider alternative approaches of initiating a discussion establishing rapport and trust.

Managing psychological well-being during pregnancy with diabetes is crucial for both maternal and fetal health. Implementing holistic support systems, including counseling, education, and social networks can contribute significantly to fostering a positive psychological environment, ultimately enhancing the overall well-being of pregnant women navigating diabetes.

Resources:

1. Sharma JB, Zangmo R. Psychosocial aspects of diabetes in pregnancy. *J Soc Health Diabetes.* 2017;5:9-11.
2. Lorna.Adamson. Diabetes and psychological care. Diabetes UK. Accessed December 14, 2023. Available at: https://www.diabetes.org.uk/for-professionals/improving-care/good-practice/psychological-care.

Hypertension and Diabetes: Dual Complications in Pregnancy

Dr. Amarinder Sandhu

MBBS, DFM (RCGP, UK), DDM, PGDID (NSW, Aus)

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Gestational diabetes mellitus (GDM) and hypertensive disorders of pregnancy (HDP) are two of the most prevalent pregnancy complications that adversely impact both short-term and long-term maternal and fetal outcomes.

GDM

The diagnosis of GDM recognizes women with insulin resistance and/or β-cell dysfunction in the course of pregnancy. Based on consistent epidemiological data, mothers with a history of GDM were found to have a 30-84% recurrence in succeeding pregnancies, and 17-63% type 2 diabetes (T2D) development within 5-16 years of delivery.

HDP

An estimated 14% of maternal fatalities worldwide are attributed to HDP, making it one of the major causes of morbidity and mortality among pregnant women and newborns worldwide. Notably, HDP including gestational hypertension, pre-eclampsia (PE), and eclampsia is more periodic among GDM mothers.

Association between HDP and GDM

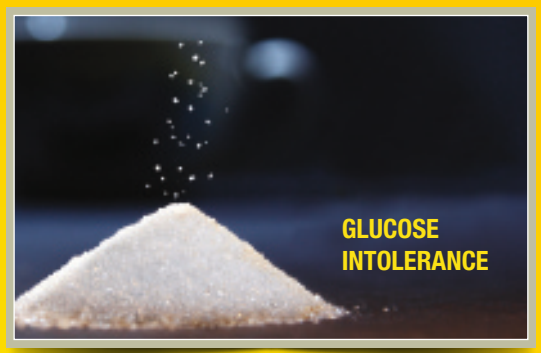
Hypertensive disorders in pregnancy	Shared risk factors	Gestational diabetes mellitus
• Primipara • Multiple pregnancy • Alcohol intake	• Age • Previous history of HDP and/or GDM • Family history • Genetic susceptibility • Pre-existing disease: T2DM, chronic hypertension • Overweight or obesity • Dietary pattern • Some environmental factors • Socioeconomic factors	• Parity • Male fetus • PCOS • Cigarette smoking

Abbreviations: HDP: Hypertensive disorders of pregnancy; GDM: Gestational diabetes mellitus; T2DM: Type 2 diabetes mellitus; PCOS: Polycystic ovary syndrome

Figure 1: Major risk factors for maternal cardio-metabolic disorders. (Jiang L, *et al*., 2022)

GDM and HDP are two significant and common complications throughout pregnancy. Both of these share several risk factors, including advanced maternal age, nutrition (such as reduced calcium and vitamin D3 intake), overweight or obesity, and dietary patterns before and/or during pregnancy. Figure 1 shows common risk factors in HDP and GDM. According to studies, gestational hypertension and PE were associated with an increased risk of co-morbidity in complicated GDM pregnancies

and could recur in subsequent pregnancies in mothers who did not have GDM. Patients with conditions linked to elevated insulin resistance may be more susceptible to pregnancy-induced hypertension, essential hypertension, hyperinsulinemia, hyperlipidemia, and elevated levels of tumor necrosis factors-alpha, leptin, and plasminogen activator inhibitor-1. Even though GDM and HDP may appear to be unrelated, due to their distinct clinical manifestation and diagnostic criteria, researchers suggest that glucose intolerance might influence vascular dysfunction and vice versa. In addition, both gestational complications share common risk factors, such as parity, maternal age, and pre-pregnancy body mass index (BMI), which suggests that there may be pathophysiological changes associated with both conditions that make them more likely to recur in the future and to postpartum cardio-metabolic disorders in the long run.



Prevention and management

There is currently scarce information on strategies that are successful in preventing the onset of these maternal cardio-metabolic disorders, such as HDP and GDM in mothers and the detrimental effects they have on their health. Strategies at various levels and in conjunction with multisector partnerships should be made in addition to prevention and treatment at the individual level by addressing lifestyle and behavioral factors that influence health.

Key takeaway points

- HDP and GDM are prevalent cardio-metabolic concerns of pregnancy.
- They both share common risk factors, like parity, maternal age, and pre-pregnancy BMI which explains their co- existence in many pregnancies.
- Understanding of the prevalence of the conditions, its risk factors, and the clinical implications of GDM and HDP has advanced significantly. However, further research is needed to investigate the underlying pathophysiology to develop accurate and reliable early screening and diagnostic tools, and to explore novel, effective, and safe treatment strategies at the population level.

Resources:

1. Jiang L, Tang K, Magee LA, *et al.* A global view of hypertensive disorders and diabetes mellitus during pregnancy. *Nat Rev Endocrinol.* 2022;18(12):760-775. doi:10.1038/s41574-022-00734-y
2. Li LJ, Aris IM, Su LL, *et al.* Effect of gestational diabetes and hypertensive disorders of pregnancy on postpartum cardiometabolic risk. *Endocr Connect.* 2018;7(3):433-442. doi:10.1530/EC-17-0359
3. Sullivan SD, Umans JG, Ratner R. Hypertension complicating diabetic pregnancies: pathophysiology, management, and controversies. *J Clin Hypertens (Greenwich).* 2011;13(4):275-284. doi:10.1111/j.1751-7176.2011.00440.x

Role of Exercise in Gestational Diabetes Mellitus

Dr. Kunjal Jain

BHMS, PGDHMM

Certified Diabetes Educator, Head of Education Department - The Diabesties Foundation

Gestational Diabetes Mellitus (GDM), affecting 13.4% of pregnancies in India requires lifestyle changes. Following dietary recommendations and staying active are crucial to manage blood glucose levels.

Gestational diabetes arises due to increased insulin demands during pregnancy, leading to higher blood glucose. Exercise is crucial for managing GDM. Regular exercise enhances glucose uptake by muscles, making them more insulin-sensitive, and ultimately reducing blood glucose levels. One must consult a doctor before starting any exercise routine. GDM women on insulin should follow guidelines similar to type 1 diabetes during pregnancy. GDM women who are not on insulin can follow the guidelines for type 2 diabetes.

Indeed, the impact of exercise on blood glucose levels can vary. Moderate exercise typically lowers blood glucose levels but for those on glucose-lowering medications like insulin, extended moderate exercise may lead to hypoglycemia. Balancing exercise intensity and duration is crucial, especially for individuals managing gestational diabetes with medication.

It is important to ensure a check-up before starting a pregnancy exercise program, personalize it, and focus on gradual warm-ups, muscle strengthening, flexibility, and low-impact activities.

Moderate exercise is generally considered safe during pregnancy and is beneficial for both the mother and the baby. While high-intensity strenuous exercise is often not harmful, it can place additional strain on the pregnant woman's heart due to increased blood volume and should be undertaken only after consulting the doctor. Overall, maintaining a balance and choosing appropriate exercise levels is crucial for promoting maternal health without compromising the well-being of the baby.

Exercise recommendations for GDM

Exercise recommendations for GDM	Aerobic	Resistance	Flexibility–balance
Frequency	3-4 times/week	At least 2 times/week	2–3 times/week
Intensity	–	–	Stretch till slight discomfort
Time	45 min with 5 min breaks every 15 min	5-10 exercises, 10-15 repetitions (1 set)	Stretch 10-30 sec, 2-4 repetitions/exercise
Type	Walking, jogging, running, elliptical machine, cycling, swimming, and aqua-aerobics	Sitting position exercises, pilates, yoga, exercises with free weights, elastic band exercises, and weight-bearing exercises	Yoga, pilates, tai chi, dynamic stretch, and static stretch

Abbreviation: GDM: Gestational diabetes mellitus

Pregnant women often avoid exercise but supervised sessions are safe, beneficial for treating GDM, regulating glucose, and improving insulin sensitivity.

Resources:

1. Bakshi, Ravleen Kaur; Kumar, Akshay; Gupta, Vandana; Radhika, A.G.; Misra, Puneet; Bhardwaj, Pankaj. Review of the screening guidelines for gestational diabetes mellitus: How to choose wisely. *Indian Journal of Community Medicine.* 2023;48(6):p828-834.
2. Savvaki D, Taousani E, Goulis DG, *et al.* Guidelines for exercise during normal pregnancy and gestational diabetes: A review of international recommendations. *Hormones (Athens).* 2018;17(4):521-529. doi:10.1007/s42000-018-0085-6
3. Exercising with gestational diabetes. Available at: https://www.diabetes.co.uk/gestational-diabetes/exercising-with-gestational-diabetes.html. Accessed December 27, 2023.

Frequently Asked Questions on Diabetes and Pregnancy

Dr. Rohit Hasani

MBBS, MD (Medicine), DNB Cardiology

Consultant Interventional Cardiologist,
Raebareli Heart Centre, Raebareli

1. I am a 31-year-old female, I just delivered my second child. However, during this pregnancy I developed gestational diabetes mellitus (GDM). Is it safe to breastfeed my baby and are there specific precautions that I need to take?

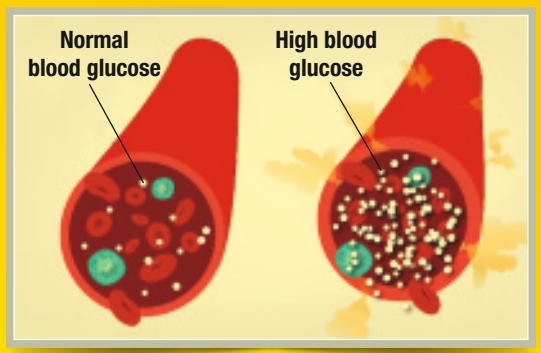
Ans. Yes, breastfeeding is not only encouraged but also provides crucial postpartum health benefits for both mother and the baby. For women with a history of GDM, breastfeeding aids in postpartum weight loss, improves insulin sensitivity, and helps regulate blood sugar levels, potentially reducing the risk of type 2 diabetes later in life. However, women with GDM should be mindful of monitoring blood sugar levels, maintaining a balanced diet, and staying hydrated during lactation. In essence, exclusive breastfeeding for 6 months fostering the well-being of both the mother and the newborn with proper monitoring and healthy lifestyle is recommended.

2. I am 29-year-old lady with type 1 diabetes mellitus. I am currently pregnant in my first trimester with my first child. I used to inject insulin on my abdomen which helped with my blood glucose control. Now, since my pregnancy I am very afraid to do the same. Is it safe for me to inject on my abdomen?

Ans. The abdomen is generally a safe site for injections during pregnancy too. Use a 4 mm pen needle for added safety.

Insulin is injected into the subcutaneous tissue which is just beneath the skin. You can use the lateral part of your abdomen to inject the insulin, to stay away from the skin overlying the fetus. Your healthcare team can help you identify the safe areas to inject when you go for your ultrasound. In the third trimester also, you can continue to inject on the abdomen making sure the skinfold is properly raised. If you feel very anxious, then you can use other sites like the arm or upper thigh to inject.

3. My wife has developed GDM. So far, her blood glucose levels have been in control, however, I wanted to know will my baby also be born with diabetes, since, my wife has got it during pregnancy?



Ans. The mother has developed GDM due to insulin resistance that happens due to hormonal changes in pregnancy. This does not mean that she passes on the diabetes to the baby. However, babies born to mothers who have GDM may be at increased risk of developing obesity and type 2 diabetes later in life. Your wife too has an increased risk of developing type 2 diabetes later in life. To prevent this, it is recommended that the whole family follows a healthy lifestyle with balanced diet and regular physical activity.

4. I am having diabetes since 2 years and I have conceived recently. I was taking methi seeds to control my blood glucose levels. Can I continue taking them in pregnancy as well?

Ans. Intake of methi seeds is not advised during pregnancy. They have been shown to induce premature uterine contractions and are therefore best avoided. Some studies have also linked methi seeds with increased risk of birth defects. While the amount of these seeds causing any negative impact may be large, it is advised to avoid them in pregnancy. They can be continued post-delivery as they are also believed to be a galactagogue which helps in enhanced milk production for breastfeeding.

Recipe: Oats Moong Dal Dosa

Serves: 2

Ingredients	Amount
Yellow moong dal (soaked)	½ cup
Rolled oats	1 tbsp
Red chili powder	¼ tsp
Jeera powder	½ tsp
Coriander powder	½ tsp
Grated carrot	½ cup
Grated bottle gourd	½ cup
Coriander leaves	Few
Salt	To taste
Oil	1 tsp

1 cup: 250 mL; 1 tablespoon: 15 mL; 1 teaspoon: 5 mL

Method

1. Blend-soaked yellow moong dal and rolled oats in a mixer.
2. Add the grated bottle gourd and grated carrot, red chili powder, jeera powder, coriander powder, and salt to the blenderized mixture and mix it well.
3. Add coriander leaves.
4. To proceed, spray cooking oil on a dosa pan, spread mixture on the pan.
5. Cook for a minute. Turnover and cook the other side till done.
6. Serve hot with coriander mint chutney.

Dia-Games

Multiple choice questions

1. **What is the primary purpose of metformin in pregnancy?**

   a. To induce labor

   b. Lowering insulin resistance

   c. Preventing hypertension

   d. Enhancing fertility

2. **What is the minimum amount of carbohydrate required in the diet during pregnancy?**

   a. 135 g/day

   b. 155 g/day

   c. 175 g/day

   d. 225 g/day

3. **What is the suggested starting dose of metformin with meals to minimize gastrointestinal side effects during pregnancy?**

   a. 500 mg twice daily

   b. 250 mg once daily

   c. 1000 mg once daily

   d. 2000 mg once daily

4. **How many times in a day minimum, women with gestational diabetes mellitus (GDM) should monitor their blood glucose levels?**

   a. 2 times/day

   b. 4 times/day

   c. 9 times/day

   d. 10 times/day

5. **What is the recommended timeframe for planning a glucose tolerance test post-delivery for women with a history of gestational diabetes?**

   a. 2-4 weeks

   b. 6-8 weeks

   c. 10-12 weeks

   d. 3-6 months

6. **What is the maximum daily dosage of metformin during pregnancy?**

   a. 1 g daily

   b. 4 g daily

   c. 3 g daily

   d. 2 g daily

7. **What should be the blood glucose target post 1 hour of meals in a woman with GDM?**

   a. <90 mg/dL

   b. <120 mg/dL

   c. <140 mg/dL

   d. >140 mg/dL

8. **The preconception target of HbA1c in a woman with diabetes planning a pregnancy should be:**

   a. <5.7%

   b. <7%

   c. <6.5%

   d. <6%

Answers:
1. B, 2. C, 3. A, 4. B, 5. B, 6. D, 7. C, 8. C

NOTES

In Newly Diagnosed & Young T2DM,

Start Early with

Glycomet®-GP 0.5

Metformin Hydrochloride 500 mg SR + Glimepiride 0.5 mg

Glycomet®-GP 0.5 FORTE

Metformin Hydrochloride 1000 mg SR + Glimepiride 0.5 mg

Recent Glycomet®-GP Real World SWITCH STUDY 2023[1] Patients[1]

94% of **T2DM patients Switched** from DPP4i with or without Metformin combination to Low Dose Glimepiride + Metformin

Resulted in

significant **HbA1c reduction** of **1.65%**

THE SUSTAINABLE POWER OF BETTER HALF

- **Global Innovator with 100% Accessibility**
- **Lesser Risk of Hypoglycemia**
- **Lower Risk of Weight Gain[2]**

T2DM: Type 2 Diabetes Mellitus; **HbA1c**: Hemoglobin A1c

1. SWITCH STUDY (Data on file). 2. Diabetes Ther Metab 2017; 10(1):89-102. Endocrinol Journal 2018; 81 (12): 1163-1170.

Information

Metformin hydrochloride as prolonged release and glimepiride tablets.

Glycomet GP 0.5/Glycomet GP 0.5 Forte/ Glycomet GP 1/ Glycomet GP 1 HDS/ Glycomet GP 2/ Glycomet GP 2 HDS/ Glycomet GP 3/ Glycomet GP 3 HDS/ Glycomet GP 4/ Glycomet GP 4 HDS/ Glycomet GP 1 Forte/ Glycomet GP 2 Forte/ Glycomet GP 3 Forte/ Glycomet GP 4 Forte.

Abridged Prescribing Information

Compositions: • Glycomet GP 0.5 mg: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 500 mg and glimepiride IP 0.5 mg. • Glycomet GP 0.5 Forte: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 1000 mg and glimepiride IP 0.5 mg. • Glycomet GP 1: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 500 mg and glimepiride IP 1 mg. • Glycomet GP 1 HDS: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 850 mg and glimepiride IP 1 mg. • Glycomet GP 2: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 500 mg and glimepiride IP 2 mg. • Glycomet GP 2 HDS: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 850 mg and glimepiride IP 2 mg. • Glycomet GP 3: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 500 mg and glimepiride IP 3 mg. • Glycomet GP 3 HDS: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 850 mg and glimepiride IP 3 mg. • Glycomet GP 4: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 500 mg and glimepiride IP 4 mg. • Glycomet GP 4 HDS: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 850 mg and glimepiride IP 4 mg. • Glycomet GP 1 Forte: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 1000 mg and glimepiride IP 1 mg. • Glycomet GP 2 Forte: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 1000 mg and glimepiride IP 2 mg. • Glycomet GP 3 Forte: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 1000 mg and glimepiride IP 3 mg. • Glycomet GP 4 Forte: Each uncoated tablet contains metformin hydrochloride IP as prolonged release form 1000 mg and glimepiride IP 4 mg. **Indications:** Glycomet GP is indicated for the management of patients with type 2 diabetes mellitus (T2DM) when diet, exercise and single agent metformin hydrochloride or glimepiride alone do not result in adequate glycemic control. **Dosage and Administration:** Dosage of Glycomet GP should be individualized on the basis of effectiveness and tolerability while not exceeding the maximum recommended daily dose of glimepiride 8mg and metformin 2000 mg. Initial dose: 1 tablet of Glycomet GP should be administered once daily during breakfast or with the first main meal. Do not crush or chew the tablet. In several cases the tablet may remain intact during transit through the gastrointestinal (GI) tract and will be eliminated in feces as hydrated mass (ghost matrix). Patients should be advised that, this is normal as all drug components have already been released during GI transit. **Contraindications:** In patients hypersensitive to glimepiride, other sulfonylureas, other sulfonamides, metformin or any of the excipients of Glycomet GP, pregnancy and lactation, diabetic ketoacidosis, diabetic pre-coma, in patients with eGFR<30 ml/min/1.73 m², 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 (myocardial infarction, shock, cardiac/respiratory failure, hepatic insufficiency, acute alcohol intoxication, alcoholism). **Warnings:** Keep out of reach of children. 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 in insulin may be necessary to maintain good metabolic control. In case of lactic acidosis, patient should be hospitalized immediately. **Precautions:** In the initial weeks of treatment, the risk of hypoglycemia may be increased and, consequently, especially careful monitoring. Glucose conditional levels should be determined before initiating treatment and regularly thereafter, at least annually in patients with normal renal function. Intravascular contrast studies with iodinated materials can lead to acute alteration of renal function. In patients in whom such study is planned, Glycomet GP should be temporarily discontinued at the time of or prior to the procedure, and withheld for 48 hours subsequent to the procedure and reinstituted only after renal function has been re-evaluated and found to be normal. Use of Glycomet GP should be discontinued 48 hours before any surgical procedure. **Adverse reactions:** For glimepiride : hypoglycaemia, temporary visual impairment, GI symptoms like nausea, vomiting, abdominal pain, diarrhoea, may occur. Increased liver enzymes, cholestasis and jaundice may occur. Allergic reactions may occur occasionally. For metformin – GI symptoms like nausea, vomiting, abdominal pain or discomfort may occur.

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

For the use of registered medical practitioner, hospital or laboratory.

USV Private Limited

Anand Nihal Gandhi Chowk, R. S. D. Marg, Sewarsi, Mumbai - 400 088. | Tel. 91 22 2556 4048 | Fax. 91 22 2556 4025 | www.usvindia.com

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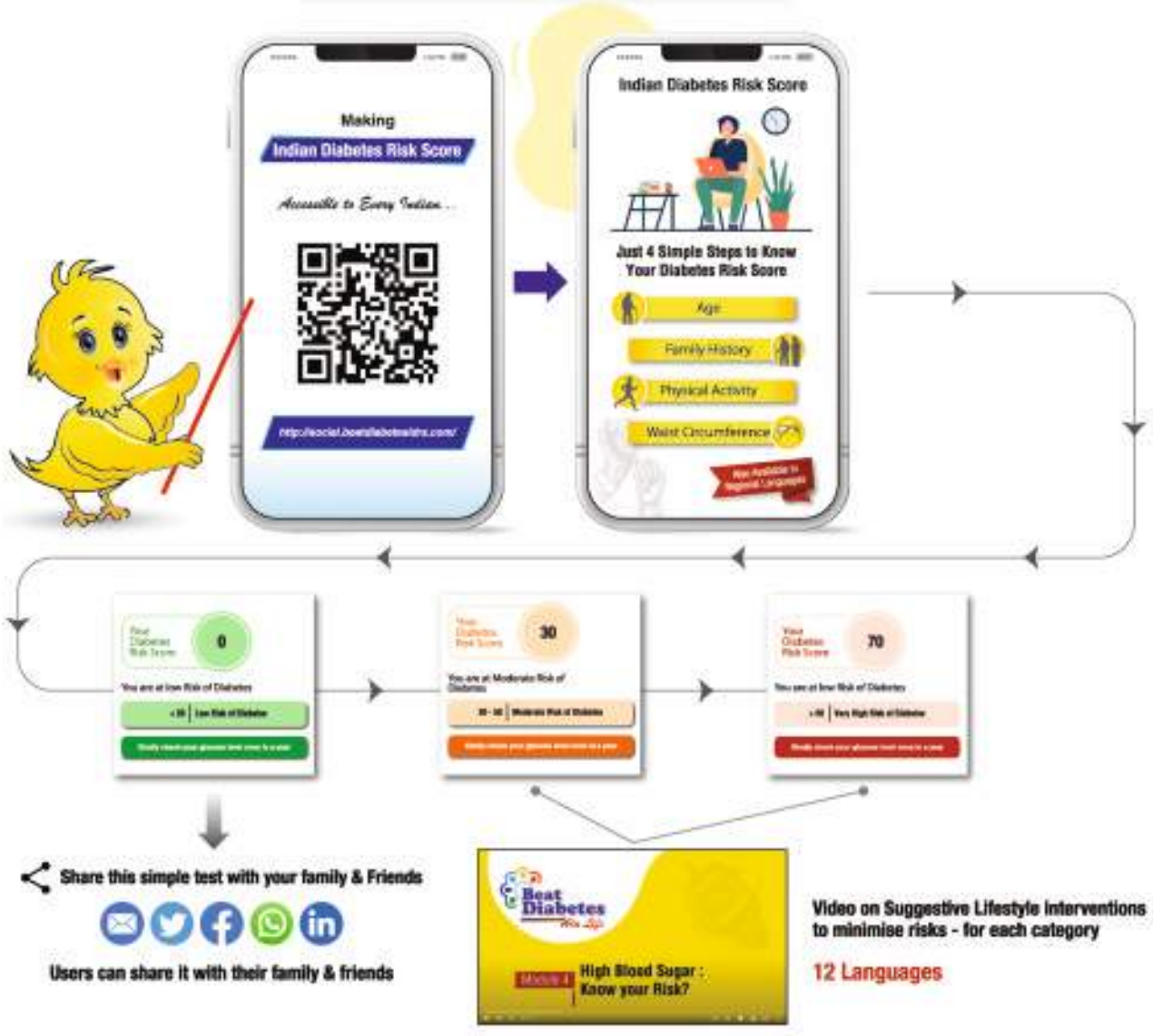
Win Life

For screening people with High & Moderate Risk of Diabetes

Indian Diabetes Risk Score



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Accessible to Every INDIAN

For Screening people with High & Moderate Risk of Diabetes

TO KNOW YOUR RISK OF DIABETES SCAN HERE

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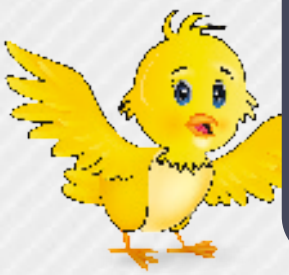

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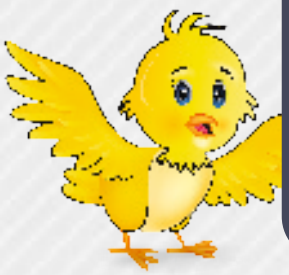

Beat Diabetes Win Life

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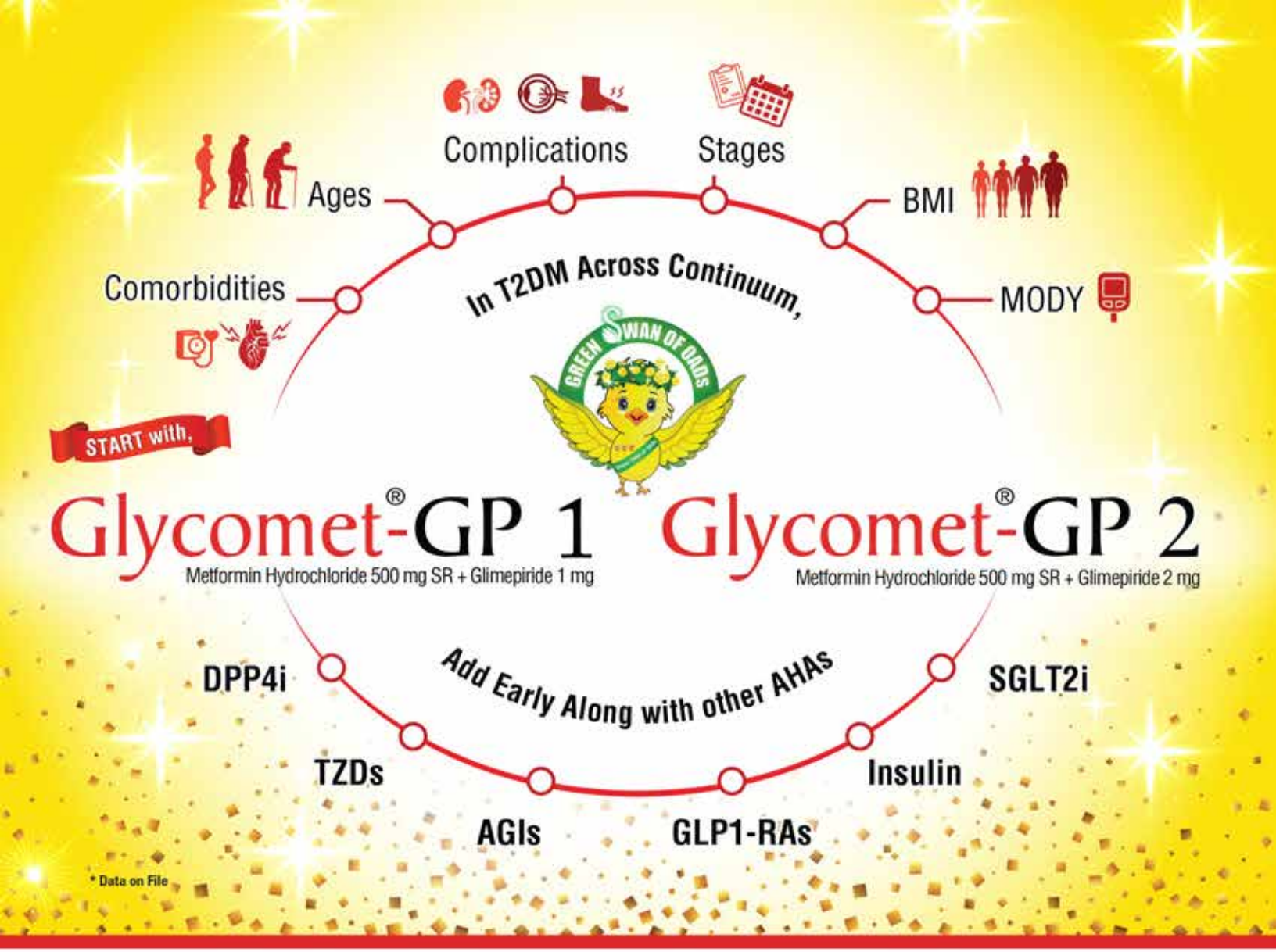

1. Asian Journal of Diabetology, Vol. 23, No. 2, April-June 2022: YALAMANCHI SADASIVA RAO etal, 2. Asian Journal of Diabetology, Vol. 23, No. 2, April-June 2022; SAUMITRA RAY etal, 3. Cureus 2020; 12(9): e10.7759/cureus.1070 4. CMARC Data 5. Healthplix Data 6. Lim L-L, Lau ESH, Cheung JTK, et al. Real-world usage of sulphonylureas in Asian patients with type 2 diabetes using the Joint Asia Diabetes Evaluation (JADE) register. Diabetes Obes Metab. 2022;1-14. Doi:10. 1111/dom.14865;

Prescribing Information

Information: Metformin hydrochloride (as prolonged release) and glimepiride tablets. Glycomet-GP 0.5/Glycomet-GP 0.5 Forte/ Glycomet-GP 1/ Glycomet-GP 1/850/ Glycomet-GP 2/ Glycomet-GP 2/850/ Glycomet-GP 3/ Glycomet-GP 3/850/ Glycomet-GP 4/ Glycomet-GP 4/850/ Glycomet-GP 1 Forte/ Glycomet-GP 2 Forte/ Glycomet-GP 3 Forte/ Glycomet-GP 4 Forte Abridged Prescribing Information **Composition:** Glycomet GP 0.5mg: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500mg and glimepiride IP 0.5mg.• Glycomet GP 0.5 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 0.5mg.• Glycomet GP 1: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 1 mg. • Glycomet GP 1/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 1 mg. • Glycomet GP 2: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 2 mg. • Glycomet GP 2/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 2 mg.• Glycomet GP 3: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 3 mg. • Glycomet GP 3/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 3 mg. • Glycomet GP 4: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 4 mg. • Glycomet GP 4/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 4 mg. • Glycomet GP 1 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 1mg. • Glycomet GP 2 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 2mg. • Glycomet GP 3 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 3mg. • Glycomet GP 4 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP mg. **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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