DiabetesAsia Journal

Diabetes Asia Journal
Vol. 1, Issue 4, Dec 2024, Edition: Online
Publisher: Diabetes Asia Journal under JHRC
eISSN: 3048-8192
Cross Ref DOI: https://doi.org/10.62996/daj.45122025
Journal Homepage: https://diabetesasia.org/journal/

GDM Mother of Non-Communicable diseases

VeerasamySeshiah[1], Anjalakshi. C[2], Vidyaa krubanidhi[3], Pikee saxena[4], A. Geethalakshmi[5], N. Bhavatharini[6], Rajesh Jain[7], A. Panneerselvam[8]

1.Hony Distinguished professor of the Tamilnadu Dr. MGR. Medical University Chennai, India; 2. Prof. Obstetrics and Gynecology, Madras Medical College Chennai India; 3. Prof. Obstetrics and Gynecology, Lady Hardinge Medical College and associated Hospitals, New Delhi, India, 4. Prof. Obstetrics and Gynecology, Madras Medical College, Chennai, India; 5. SRC Diabetes Centre, Erode, India; 6. Jain Hospital and Research Centre, Kanpur, India, 7. Senior Diabetologist, Chennai

Submitted: 20 December 2025; Accepted: 25 December 2024; Published: 29 December 2024

Corresponding Author: Dr Veerasamy Seshiah Hony, Distinguished professor of the Tamilnadu Dr. MGR. Medical University Chennai, India. Email: vseshiah@gmail.com

Introduction

The findings from the 11th edition unequivocally demonstrate that diabetes is one of the most pressing global health challenges of the 21st century. By 2024, a staggering 589 million adults aged 20 to 79 were living with diabetes. Among them, over 9.5 million had type 1 diabetes, including 1.9 million children and adolescents under the age of 20. Projections show that the total number of people living with diabetes will reach 853 million by 2050. There is a significant and alarming population at high risk of developing diabetes. In 2024, approximately 635 million people were estimated to have impaired glucose tolerance, while 488 million were found to have impaired fasting glucose. Additionally, over 3.4 million people aged 20 to 79 died from diabetes-related causes in 2024. For the first time, direct health expenditures related to diabetes have exceeded one trillion USD, and this figure will continue to rise. Furthermore, the IDF Diabetes Atlas 11th edition indicates that hyperglycaemia in pregnancy (HIP) affects roughly one in five pregnancies—an alarming statistic in itself. Equally concerning is the fact that 43% of individuals with diabetes remain undiagnosed, predominantly with type 2 diabetes. This stark reality highlights the urgent need to improve diagnostic capabilities for those unaware of their condition and to ensure immediate access to appropriate care [1]. Gestational Diabetes Mellitus (GDM) is the mother of all Non-communicable Diseases (NCDs).

Seshiah's Spot test"in1986 venous Plasma Glucose ~110 mg [2]

NIH study by Hinkle et al. in 2018 pointed out that an HbA1c of > 5.3% in the 10th week predicts GDM (correlating to blood sugar >110 mg/dl) [3].

Hernandez - 2011 in his meta-analysis found that 2hr PPBS as 99±10 mg (110mg%) [3]

It has been found that fetal renal thresh hold is 110mg% (Lois Jovanovic) when maternal blood sugar exceeds 110mg% at 10 wks gestation, the Islet cells which has developed and starts functioning around 10wks commences to produce more insulin (Fetal Hyperinsulinemia) and the metabolic memory is retained. To prevent fetal hyperinsulinemia, the maternal BS has to be brought down to <110mg%.

Metformin use in pregnancy did not show any adverse effects compared with insulin on long term outcome in children [4,5].

Subject Expert Committee Government of India; has recommended the consideration of Metformin SR 500mg & Metformin SR 1000mg for use during pregnancy, as an adjunct or alternative to insulin therapy on 25 Nov2024[6].

With this background We, from the Prof.Seshiah Academic Foundation for Metabolism (AFM) worked on the Path-breaking concept of Prof.V. Seshiah that is "Prediction and Prevention of GDM by early screening of pregnant women" in the first trimester between 8 to 9 weeks of pregnancy with cut off value of 2 hr Post Prandial Blood Sugar (PPBS) ≥110mg/dl[7,8] and managing those women with Medical Nutrition Therapy (MNT) and tab. Metformin [9,10] the preliminary studies done at renowned Medical colleges, Institute of Social Obstetrics and Govt. Kasthur Ba Gandhi Hospital, Chennai and Lady Harding Medical College, New Delhi, **it has been found that with no intervention when the 2hr PPBS was ≥110 mg/dl 95.9% of subjects developed GDM and with intervention 98.6% did not develop GDM and when 2hr PPBS at 8 weeks <110mg% ,98.8% did not develop GDM**; Similar study with Metformin and MNT in Kanpur Results in improvement of Primary neonatal outcomes in Tertiary hospital cohort[11], giving us great hope and scope for prevention of GDM and thereby prevention of T2 DM and NCDs in the mother and her offspring. Thus, the early screening with a 2hr PPBS by using plasma glucose calibrated glucometer at 8 weeks, if ≥ 110mg/dl and with intervention keeping the 2hr PPBG < 110mg/dl will go a long-way in the prevention of NCDs.

Recommendation:

Universal screening of Pregnant subjects with 2hr PPBS at 8 weeks gestation and intervention (MNT + MET) accordingly, and maintain PPBS <110 mg/dl throughout pregnancy by using plasma glucose caliberated glucometer and routine GDM screening in 12 – 14 wks and if negative to repeat in 24-28 wks and at 32weeks

Table 1. The results of ISO GKGH- Chennai study

Gestational diabetes	<110mg/dl No.82	≥110mg/dl No.70(with Intervention)	Total	P Value
Absent	**81(98.8%)**	**69(98.6%)**	150	p<0.002546
Present	**1(1.2%)**	**1(1.4%)**	2	
Total	82(100%)	70(100%)	152 (100%)	

Table 2. Results Lady Harding's medical college- New Delhi study

Gestational diabetes	<110mg/dl No.92	$\geq 110 mg/dl$ No.97(without Intervention)	Total	P value
Absent	**88 (95.65%)**	**4 (4.12%)**	92 (48.68%)	p<0.0001
Present	**4**	**93**	97	

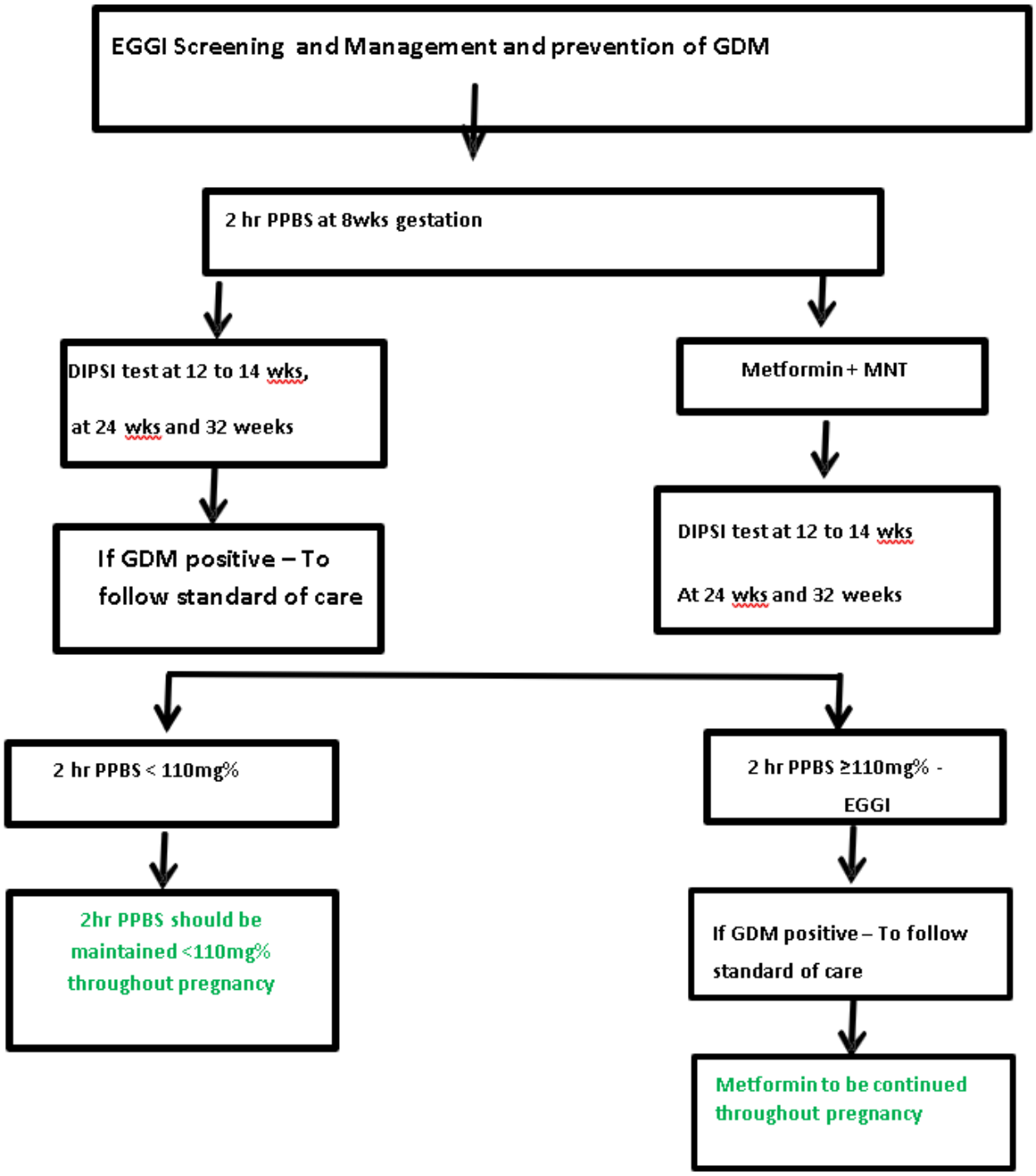
	(4.35%)	**(95.88%)**	(51.32%)	
Total	92(100%)	97(100%)	189(100%)	

These reports clearly show that we can predict GDM when the 2hr PPBS in early weeks exceeds 110 mg/dl (EGGI) and timely intervention prevents the occurrence of GDM. This should be our first step in the primordial prevention of Diabetes

By detecting GDM we are able to identify beta cell dysfunction in the individuals

By detecting EGGI we will be able to prevent beta cell dysfunction in generations

Preventive Medicine (Diabetes) Starts Before Birth



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- **Informed Consent**

  Written Consent taken from Patients

- **Conflict of Interest Statement**

All the authors declared “No Conflict of Interest” with this publication.

- **Additional Information**

- **DOI:** https://doi.org/10.62996/daj.45122025

Cite this Article: VeerasamySeshiah[1], Anjalakshi. C[2], vidyaa krubanidhi[3], Pikee saxena[4], A. Geethalakshmi[5], N. Bhavatharini[6], Rajesh Jain[7], A. Panneerselvam[8].GDM Mother of Non-Communicable diseases; 1(4):70-74. https://doi.org/10.62996/daj.45122025