

What is the implication of HbA1C $\geq 5.7\%$ in patients with gestational diabetes?



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Background

- Hemoglobin A1c (HbA1c) of $\geq 5.7\%$ signifies impaired glucose regulation, but data is limited regarding its prognostic utility in GDM
- In our Diabetes in Pregnancy Program, HbA1c is routinely sent at diagnosis of GDM after 24 weeks

Objective

- To compare GDM patients with HbA1c $< 5.7\%$ to those with $\geq 5.7\%$ at diagnosis
- To assess if HbA1c $\geq 5.7\%$ predicted need for medication, or persistence of impaired glucose tolerance within one year postpartum

Study Design

- Retrospective cohort of GDM diagnosed at 24+ weeks
- Age, BMI, race, GTT values, history of thyroid disease, PCOS, IVF, previous GDM, family history of diabetes, need for medication, and diagnosis of impaired glucose tolerance or diabetes within one year postpartum were compared
- Odds ratios were calculated to assess likelihood of medication in pregnancy and impaired glucose tolerance postpartum with HbA1c $\geq 5.7\%$

Results

Table 1: Patient demographic and clinical characteristics at time of GDM diagnosis

Variable	ALL (n=405)	HbA1c < 5.7 (n=357)	HbA1c ≥ 5.7 (n=48)	P value
Age, years – median (range)	35.0 (23.0, 47.0)	35.0 (23.0, 47.0)	35.0 (24.0, 42.0)	< 0.01
BMI, kg/m ² – median (range)	23.8 (21.1, 53.9)	23.2 (21.1, 26.5)	30.7 (21.2, 53.9)	< 0.01
Fasting GTT, mg/dl – median (range)	82.0 (62.0, 149.0)	81.0 (62.0, 144.0)	97.0 (75.0, 149.0)	< 0.01
1-hour GTT, mg/dl – median (range)	187.0 (73.0, 264.0)	186.0 (73.0, 264.0)	193.0 (138.0, 259.0)	0.05
2-hour GTT, mg/dl – median (range)	160.5 (96.0, 274.0)	160.0 (96.0, 259.0)	177.0 (122.0, 274.0)	0.04
3-hour GTT, mg/dl – median (range)	123.0 (29.0, 246.0)	120.0 (29.0, 207.0)	138.0 (69.0, 246.0)	< 0.01
HbA1c level, % – median (range)	5.1 (4.4, 7.8)	5.1 (4.4, 5.6)	5.9 (5.7, 7.8)	
Race/Ethnicity – no. (%)				< 0.01
Asian – no. (%)	118 (32.4)	111 (34.8)	7 (15.6)	
Black – no. (%)	27 (7.4)	15 (4.7)	12 (26.7)	
Caucasian – no. (%)	162 (44.5)	149 (46.7)	13 (28.9)	
Hispanic – no. (%)	44 (12.1)	32 (10.0)	12 (26.7)	
Mixed – no. (%)	13 (3.6)	12 (3.8)	1 (2.2)	
Thyroid disease – no. (%)	68 (16.8)	61 (17.1)	7 (14.6)	0.98
PCOS – no. (%)	57 (14.1)	48 (13.4)	9 (18.8)	0.35
Twins – no. (%)	4 (1.0)	4 (1.1)	0 (0.0)	0.40
Family history of diabetes – no. (%)	252 (73.3)	211 (70.8)	41 (89.1)	< 0.01
Personal history of gestational diabetes – no. (%)	35 (9.1)	26 (7.6)	9 (22.5)	< 0.01
IVF – no. (%)	57 (20.6)	48 (20.3)	9 (22.0)	0.63

A greater proportion of patients with HbA1c $\geq 5.7\%$ had:

1. Personal history of GDM
2. Family history of diabetes
3. Hypoglycemic agents in pregnancy
4. Postpartum impaired glucose or diabetes

Table 2: Hypoglycemic medication by HbA1c group

Variable	ALL (n=405)	HbA1c < 5.7 (n=357)	HbA1c ≥ 5.7 (n=48)	P value
Glyburide – no. (%)	87 (21.5)	66 (18.5)	66 (43.7)	< 0.01
Insulin – no. (%)	97 (24.9)	80 (22.8)	17 (43.6)	< 0.01
Any hypoglycemic medication – no. (%)	173 (42.7)	136 (38.1)	37 (77.1)	< 0.01

Table 3: Incidence of PP DM, PP impaired glucose, and PP DM screening by HbA1c group

Variable	ALL (n=405)	HbA1c < 5.7 (n=357)	HbA1c ≥ 5.7 (n=48)	P value
Postpartum DM screening – no. (%)	81 (20.0)	72 (20.2)	9 (18.8)	0.82
Postpartum DM or impaired glucose – no./no. obs. (%)	12/81 (14.8)	5/72 (6.9)	7/9 (77.8)	< 0.01

Conclusion

- Patients with HbA1c of $\geq 5.7\%$ at diagnosis were 5.5 times as likely to need medication in pregnancy
- Patients with HbA1c of $\geq 5.7\%$ at diagnosis were 78 times as likely to be diagnosed with impaired glucose or diabetes postpartum
- Future initiatives should target postpartum screening in patients with HbA1c $\geq 5.7\%$, due to significant risks of impaired glucose regulation with its known health implications