

Online supplementary data**Online supplementary table 1** Baseline characteristics of subjects according to the risk of gestational diabetes mellitus

N	GDM case [n(%)]		P-value
	No (n= 157,426)	Yes (n= 6,627)	
Age (years)	30.70 ± 3.08	31.78 ± 3.26	<0.001
Body mass index (kg/m ²)	20.61 ± 2.59	21.34 ± 3.11	<0.001
Body weight (kg)	53.76 ± 7.38	55.26 ± 8.61	<0.001
Systolic blood pressure (mmHg)	109.61 ± 10.50	110.80 ± 10.93	<0.001
Diastolic blood pressure (mmHg)	69.02 ± 7.92	69.78 ± 8.18	<0.001
Total cholesterol (mg/dl)	176.60 ± 28.46	183.03 ± 30.25	<0.001
Fasting glucose (mg/dL)	85.57 ± 7.43	86.82 ± 7.59	<0.001
Mean FPG (mg/dL)	85.95 ± 5.99	87.67 ± 6.84	<0.001
FPG-VIM variability	6.95 ± 4.07	7.42 ± 4.60	<0.001
Current smoker (%)	4532 (2.88)	227 (3.43)	0.009
Alcohol consumption (%)	8804 (5.59)	349 (5.27)	0.257
Regular exercise (%)	2995 (1.90)	130 (1.96)	0.730
Family history of diabetes (%)	122,774 (77.99)	5,448 (82.21)	<0.001

Data are expressed as the means ± SD or n (%).

Online supplementary table 2 Odds ratios and 95% confidence intervals for the risk of gestational diabetes mellitus according to quartiles of glucose variability assessed by FPG-CV, FPG-SD, and FPG-ASV.

	Events (n)	Unadjusted	Model 1	Model 2	Model 3	Model 4
FPG-CV						
Q1 (n=41,017)	1,516	1	1	1	1	1
Q2 (n=40,996)	1,627	1.08 (1.00 to 1.16)	1.09 (1.01 to 1.17)	1.08 (1.01 to 1.16)	1.08 (1.00 to 1.16)	1.10 (1.02 to 1.18)
Q3 (n=41,027)	1,656	1.10 (1.02 to 1.18)	1.11 (1.04 to 1.20)	1.10 (1.03 to 1.18)	1.10 (1.02 to 1.18)	1.14 (1.06 to 1.22)
Q4 (n=41,013)	1,828	1.22 (1.13 to 1.30)	1.25 (1.16 to 1.34)	1.23 (1.15 to 1.32)	1.23 (1.14 to 1.32)	1.23 (1.14 to 1.32)
P-value		<0.001	<0.001	<0.001	<0.001	<0.001
P for linear trend		<0.001	<0.001	<0.001	<0.001	<0.001
FPG-SD						
Q1 (n=41,694)	1,498	1	1	1	1	1
Q2 (n=40,290)	1,585	1.099 (1.022 to 1.181)	1.11 (1.03 to 1.19)	1.10 (1.02 to 1.18)	1.10 (1.02 to 1.18)	1.10 (1.03 to 1.19)
Q3 (n=41,032)	1,633	1.112 (1.035 to 1.195)	1.12 (1.05 to 1.21)	1.11 (1.03 to 1.19)	1.11 (1.03 to 1.19)	1.11 (1.04 to 1.20)
Q4 (n=41,037)	1,911	1.311 (1.223 to 1.404)	1.33 (1.25 to 1.40)	1.31 (1.22 to 1.40)	1.30 (1.22 to 1.40)	1.23 (1.15 to 1.32)
P-value		<0.001	<0.001	<0.001	<0.001	<0.001
P for linear trend		<0.001	<0.001	<0.001	<0.001	<0.001
FPG-ASV						
Q1 (n=41,015)	1,484	1	1	1	1	1
Q2 (n=41,011)	1,621	1.06 (0.99 to 1.14)	1.07 (0.99 to 1.15)	1.06 (0.99 to 1.14)	1.06 (0.99 to 1.14)	1.06 (0.99 to 1.14)
Q3 (n=41,012)	1,656	1.13 (1.05 to 1.21)	1.14 (1.06 to 1.22)	1.13 (1.05 to 1.21)	1.12 (1.05 to 1.21)	1.12 (1.05 to 1.21)
Q4 (n=41,015)	1,866	1.26 (1.18 to 1.35)	1.28 (1.19 to 1.37)	1.26 (1.17 to 1.35)	1.25 (1.17 to 1.34)	1.18 (1.10 to 1.26)
P-value		<0.001	<0.001	<0.001	<0.001	<0.001
P for linear trend		<0.001	<0.001	<0.001	<0.001	<0.001

FPG, fasting plasma glucose; CV, coefficient of variation; SD, standard deviation; ASV, average successive variability

Model 1: adjusted for age

Model 2: adjusted for model 1 plus body mass index

Model 3: adjusted for model 2 plus smoking status, alcohol consumption, regular exercise, family history of diabetes

Model 4: adjusted for model 3 plus mean fasting plasma glucose

Online supplementary table 3 Odds ratios (95% CI) of newly diagnosed gestational diabetes mellitus (GDM) by deciles of FPG-VIM

Glucose variability deciles	Events (n)	Unadjusted	Adjusted
GDM			
D1 (n=16,443)	583	1	1
D2 (n=16,367)	590	1.02 (0.91 to 1.14)	1.02 (1.00 to 1.15)
D3 (n=16,396)	615	1.06 (0.95 to 1.19)	1.05 (1.00 to 1.18)
D4 (n=16,415)	645	1.11 (0.99 to 1.25)	1.12 (1.00 to 1.25)
D5 (n=16,405)	672	1.16 (1.04 to 1.30)	1.17 (1.05 to 1.32)
D6 (n=16,406)	642	1.12 (0.99 to 1.24)	1.12 (1.00 to 1.25)
D7 (n=16,412)	666	1.15 (1.03 to 1.29)	1.16 (1.04 to 1.30)
D8 (n=16,401)	687	1.19 (1.06 to 1.33)	1.20 (1.08 to 1.35)
D9 (n=16,403)	709	1.23 (1.10 to 1.37)	1.24 (1.10 to 1.38)
D10 (n=16,405)	818	1.43 (1.28 to 1.59)	1.30 (1.17 to 1.45)
P for linear trend		<0.001	<0.001
GDM without insulin therapy			
D1 (n=16,380)	520	1	1
D2 (n=16,302)	525	1.02 (0.90 to 1.15)	1.02 (0.90 to 1.15)
D3 (n=16,333)	552	1.07 (0.94 to 1.21)	1.06 (0.94 to 1.20)
D4 (n=16,340)	570	1.10 (0.98 to 1.24)	1.11 (0.98 to 1.25)
D5 (n=16,325)	592	1.15 (1.02 to 1.29)	1.16 (1.03 to 1.31)
D6 (n=16,330)	566	1.09 (0.97 to 1.24)	1.11 (0.98 to 1.25)
D7 (n=16,331)	585	1.13 (1.00 to 1.28)	1.15 (1.02 to 1.29)
D8 (n=16,326)	612	1.19 (1.05 to 1.34)	1.21 (1.07 to 1.36)
D9 (n=16,298)	604	1.17 (1.04 to 1.32)	1.18 (1.05 to 1.33)
D10 (n=16,269)	682	1.33 (1.18 to 1.49)	1.25 (1.11 to 1.40)

P for linear trend		<0.001	<0.001
GDM with insulin therapy			
D1 (n=16,352)	63	1	1
D2 (n=16,458)	65	1.04 (0.73 to 1.47)	1.03 (0.73 to 1.46)
D3 (n=16,396)	63	1.00 (0.71 to 1.42)	0.97 (0.68 to 1.38)
D4 (n=16,416)	75	1.19 (0.85 to 1.67)	1.18 (0.84 to 1.66)
D5 (n=16,404)	80	1.27 (0.92 to 1.77)	1.26 (0.90 to 1.75)
D6 (n=16,405)	76	1.21 (0.87 to 1.69)	1.18 (0.85 to 1.66)
D7 (n=16,413)	81	1.29 (0.93 to 1.79)	1.26 (0.91 to 1.76)
D8 (n=16,394)	75	1.19 (0.85 to 1.67)	1.16 (0.83 to 1.63)
D9 (n=16,406)	105	1.68 (1.23 to 2.29)	1.61 (1.18 to 2.20)
D10 (n=16,409)	136	2.17 (1.61 to 2.93)	1.58 (1.16 to 2.16)
P for linear trend		<0.001	<0.001

FPG, fasting plasma glucose; VIM, variability independent of the mean; D, decile

Adjusted by age, body mass index, smoking, alcohol, exercise, family history of diabetes, and mean fasting plasma glucose

Online supplementary table 4 Odds ratios and 95% confidence intervals for the risk of gestational diabetes mellitus (GDM) according to quartiles of FPG-VIM: Sensitivity analysis excluding subjects with FPG 100-126mg/dL during health exam from January 2002 to pregnancy.

	Events (n)	Unadjusted	Adjusted
GDM total			
Q1 (n=30,977)	1,052	1	1
Q2 (n=30,979)	1,086	1.03 (0.95 to 1.13)	1.05 (0.96 to 1.14)
Q3 (n=30,968)	1,136	1.08 (1.00 to 1.18)	1.14 (1.04 to 1.24)
Q4 (n=30,986)	1,112	1.06 (0.97 to 1.15)	1.17 (1.07 to 1.27)
P- value		0.296	<0.001
P for linear trend		0.114	0.002

Adjusted by age, body mass index, smoking, alcohol, exercise, family history of diabetes, and mean fasting plasma glucose

Online supplementary table 5 Odds ratios and 95% confidence intervals for the risk of gestational diabetes mellitus (GDM) according to quartiles of FPG-VIM: Sensitivity analysis excluding subjects with history of polycystic ovarian syndrome

	Events (n)	Unadjusted	Adjusted
GDM total			
Q1 (n=40.022)	1,434	1	1
Q2 (n=40.021)	1,568	1.10 (1.02 to 1.18)	1.10 (1.02 to 1.18)
Q3 (n=40.029)	1,605	1.12 (1.05 to 1.21)	1.14 (1.06 to 1.22)
Q4 (n=40.024)	1,788	1.26 (1.17 to 1.35)	1.22 (1.13 to 1.31)
P-value		<0.001	<0.001
P for linear trend		<0.001	<0.001

Adjusted by age, body mass index, smoking, alcohol, exercise, family history of diabetes, and mean fasting plasma glucose