

Supplementary table 1 The frequencies of women classified under one of the four groups by ethnicities and HAPO study centers

Categories	Numbers of participants	Non-GDM by both IADPSG & NICE	GDM by IADPSG but Non-GDM by NICE	GDM by NICE but Non-GDM by IADPSG	GDM by both IADPSG & NICE
Overall	6544 (100)	5037 (77.0)	551 (8.4)	284 (4.3)	672 (10.3)
Ethnicities					
White	2583 (39.5)	2057 (79.6)	185 (7.2)	120 (4.6)	221(8.6)
Hispanic	1677 (25.6)	1193 (71.1)	246 (14.7)	42 (2.5)	197 (11.7)
Asian *	1732 (26.5)	1354 (78.2)	72 (4.2)	106 (6.1)	200 (11.5)
Black	324 (5.0)	253 (78.1)	38 (11.7)	4 (1.2)	29 (9.0)
Other	228 (3.5)	180 (78.9)	11 (4.8)	12 (5.3)	25 (11.0)
Centers					
Bellflower	1981 (30.3)	1429 (72.1)	281 (14.2)	47 (2.4)	224 (11.3)
Cleveland	797 (12.2)	563 (70.6)	100 (12.5)	35 (4.4)	99 (12.4)
Brisbane	1444 (22.1)	1197 (82.9)	76 (5.3)	68 (4.7)	103 (7.1)
Newcastle	668 (10.2)	534 (79.9)	41 (6.1)	32 (4.8)	61 (9.1)
Hong Kong	1654 (25.3)	1314 (79.4)	53 (3.2)	102 (6.2)	185 (11.2)

Data are expressed as number (%). GDM, gestational diabetes mellitus; IADPSG, International Association of the Diabetes and Pregnancy Study Groups; NICE, National Institute for Health and Care Excellence. * Over 92% of the Asians in the cohort were Chinese ethnicity.

Supplementary table 2 The baseline characteristics and pregnancy outcomes compared by ethnicities

	Overall	White	Hispanic	Asian [#]	Black	P
	6397	2551	1611	1695	314	
Maternal characteristics						
Age (years)	29.4±5.4	29.3±5.5 ^{*†‡}	28.8±5.5 ^{*§}	30.7±4.9 ^{†§¶}	26.2±5.6 ^{‡ ¶}	<0.001
Nulliparity	3013 (47.1)	1273 (49.9) ^{*†‡}	470 (29.2) ^{*§}	1026 (60.5) ^{†§¶}	131 (41.7) ^{‡ ¶}	<0.001
Smoker	470 (7.3)	386 (15.1) ^{*†‡}	10 (0.62) ^{*§}	37 (2.2) ^{†§¶}	18 (5.7) ^{‡ ¶}	<0.001
GA at OGTT (weeks)	27.6±1.7	27.9±1.5 ^{*†‡}	26.9±2.0 ^{*§}	27.7±1.4 ^{†§¶}	27.5±2.0 ^{‡ ¶}	<0.001
GA at birth (weeks)	39.5±1.6	39.6±1.7 ^{*†‡}	39.4±1.6 [*]	39.3±1.5 [†]	39.2±1.9 [‡]	<0.001
BMI at OGTT (kg/m ²)	28.2±5.6	29.2±5.7 ^{*†‡}	29.9±5.3 ^{*§}	24.6±3.3 ^{†§}	31.0±7.2 [‡]	<0.001
GH/PE	1015 (16.4)	384 (15.6) ^{*†‡}	352 (22.3) ^{*§}	166 (10.0) ^{†§¶}	85 (29.0) ^{‡ ¶}	<0.001
Primary CS	1025 (18.2)	434 (19.2) [*]	169 (12.6) ^{*†}	333 (21.3) [†]	45 (17.0)	<0.001
OGTT results						
Fasting (mmol/L) / (mg/dL)	4.5±0.39 / (81.2±7.0)	4.5±0.38 / (81.1±6.8) ^{*†‡}	4.7±0.39 / (83.7±7.1) ^{*§}	4.4±0.34 / (78.8±6.1) ^{†§¶}	4.6±0.40 / (82.4±7.2) ^{‡ ¶}	<0.001
1-h (mmol/L) / (mg/dL)	7.4±1.7 / (135.3±30.1)	7.5±1.6 / (134.1±28.3) ^{*†}	7.6±1.8 / (136.1±32.1) [‡]	7.7±1.7 / (137.8±30.4) ^{*§}	7.1±1.6 / (127.0±28.8) ^{†‡§}	<0.001

2-h (mmol/L) / (mg/dL)	6.3±1.3 / (113.0±23.2)	6.2±1.2 / (112.0±22.4) ^{*†‡}	6.1±1.3 / (110.4±23.0) ^{*§}	6.6±1.3 / (117.9±23.1) ^{†§}	5.9±1.4 / (106.8±24.6) [‡]	<0.001
Neonatal outcomes						
Sex (male)	3304 (51.6)	1309 (51.3)	814 (50.5)	880 (51.9)	182 (58.0)	0.112
Birth weight (g) [#]	3378±525	3486±537 ^{*†‡}	3448±513 ^{*§}	3176±437 ^{†§}	3243±575 ^{‡ ¶}	<0.001
LGA [#]	608 (9.5)	244 (9.6)	152 (9.4)	161 (9.5)	27 (8.6)	0.957
Body fat (%) [#]	11.6±3.6	12.1±3.5 ^{*†}	12.7±3.5 ^{*‡§}	10.0±3.3 ^{†§}	11.6±3.8 [‡]	<0.001
Adiposity [#]	498 (9.6)	190 (9.5)	119 (9.8)	146 (9.5)	22 (9.6)	0.999
Clinical hypoglycemia ^{**††}	102 (1.6)	30 (1.2) ^{*†}	4 (0.25) ^{*‡}	63 (3.7) ^{†‡§}	1 (0.32) [§]	<0.001
Hyperinsulinemia ^{**}	492 (8.7)	181 (8.8)	143 (9.5)	128 (7.8)	24 (9.5)	0.368

Continuous variables are expressed as mean ± SD, and compared by using Kruskal-Wallis test. Categorical variables are expressed as numbers (%), and compared by Chi-square test, except for ^{††} by Fisher's exact test. Post-hoc pairwise comparisons were corrected by Wilcoxon test and false discovery rate, respectively.

BMI, body mass index; CS, caesarean section; GA, gestational age; GDM, gestational diabetes mellitus; GH/PE, gestational hypertension / preeclampsia; IADPSG, International Association of the Diabetes and Pregnancy Study Groups; LGA, large for gestational age; NICE, National Institute for Health and Care Excellence; OGTT, oral glucose tolerance test. Body fat is available in 5154 (80.6%) of the participants.

^{*†‡§||¶} P<0.05. [#] Over 92% of the Asians in the cohort were Chinese ethnicity. ^{**} Missing data were excluded.

Supplementary table 3 Incidences of adverse pregnancy outcomes in women with GDM by IADPSG and NICE criteria, respectively, in each ethnicity

	Overall		White		Hispanic		Asian [†]		Black	
	GDM by IADPSG	GDM by NICE	GDM by IADPSG	GDM by NICE	GDM by IADPSG	GDM by NICE	GDM by IADPSG	GDM by NICE	GDM by IADPSG	GDM by NICE
	1101 (17.2)	835 (13.1)	378 (14.8)	313 (12.3)	379 (23.5)	177 (11.0)	249 (14.7)	283 (16.7)	61 (19.4)	27 (8.6)
Maternal adverse outcomes										
GH/PE	249 (24.8)	152 (20.3)	87 (24.7)	70 (24.0)	110 (30.1)	48 (28.1)	33 (14.1)	29 (10.9)	19 (35.8)	5 (26.3)
Primary CS	217 (23.5)	173 (23.7)	87 (26.1)	78 (27.8)	54 (17.8)	23 (16.1)	53 (24.8)	59 (23.5)	16 (34.0)	9 (37.5)
Neonatal outcomes										
LGA *	176 (16.0)	119 (14.3)	59 (15.6)	39 (12.5)	60 (15.8)	26 (14.7)	36 (14.6)	40 (14.2)	14 (23.0)	8 (29.6)
Adiposity *	138 (16.0)	93 (14.0)	44 (15.2)	28 (11.7)	41 (14.5)	14 (10.5)	34 (15.7)	40 (16.2)	11 (25.0)	3 (25.0)
Hypoglycemia *	23 (2.1)	21 (2.5)	7 (1.9)	9 (2.9)	1 (0.27)	0	13 (5.2)	11(3.9)	1 (1.6)	0
Hyperinsulinemia *	160 (16.3)	123 (16.8)	49 (16.3)	43 (17.3)	58 (15.9)	25 (15.0)	39 (16.4)	44 (16.2)	10 (19.2)	6 (30)

Data are expressed as numbers (%).

GDM, gestational diabetes mellitus; IADPSG, International Association of the Diabetes and Pregnancy Study Groups; NICE, National Institute for Health and Care Excellence.; GH/PE, gestational hypertension / preeclampsia; CS, caesarean section; LGA, large for gestational age.

* Missing data were excluded. [†] Over 92% of the Asians in the cohort were Chinese ethnicity

Supplementary table 4 Associations of GDM diagnosed by the IADPSG and NICE criteria with adverse pregnancy outcomes among all women whose OGTT remained blinded (n= 6397)

	Unadjusted				Adjusted							
					Model 1				Model 2			
	IADPSG		NICE		IADPSG		NICE		IADPSG		NICE	
	OR (95% CI)	AIC	OR (95% CI)	AIC	OR (95% CI)	AIC	OR (95% CI)	AIC	OR (95% CI)	AIC	OR (95% CI)	AIC
Maternal adverse outcomes												
GH/PE	1.91 (1.62-2.24) [§]	5474.2	1.34 (1.11-1.62) [‡]	5523.5	1.73 (1.46-2.05) [§]	5161.6	1.47 (1.20-1.79) [§]	5186.2	1.31 (1.10-1.58) [‡]	4888.5	1.32 (1.07-1.62) [*]	4890.6
Primary CS	1.48 (1.25-1.75) [§]	5329.3	1.48 (1.22-1.78) [§]	5332.8	1.54 (1.28-1.85) [§]	4909.6	1.33 (1.09-1.62) [‡]	4922.7	1.24 (1.02-1.50) [*]	4788.5	1.15 (0.93-1.40)	4791.6
Neonatal adverse outcomes												
LGA	2.14 (1.77-2.58) [§]	3961.2	1.73 (1.39-2.14) [§]	3995.6	2.22 (1.83-2.70) [§]	3977.6	1.74 (1.40-2.17) [§]	4014.5	2.08 (1.69-2.55) [§]	3844.1	1.86 (1.48-2.33) [§]	3864.1
Adiposity	2.09 (1.69-2.58) [§]	3236.7	1.65 (1.29-2.09) [§]	3264.1	2.26 (1.81-2.80) [§]	3245.2	1.75 (1.36-2.23) [§]	3276.5	1.99 (1.58-2.50) [§]	3206.8	1.72 (1.33-2.21) [§]	3223.6
Clinical hypoglycemia	1.41 (0.86-2.22)	1048.1	1.74 (1.05-2.78) [*]	1045.5	1.80 (1.09-2.88) [*]	976.5	1.52 (0.90-2.46)	979.1	1.66 (1.00-2.73) [*]	978.1	1.41 (0.83-2.31)	980.1

Hyperinsulinemia	2.54 (2.07- 3.11) [§]	3268.1	2.47 (1.97- 3.07) [§]	3284.7	2.41 (1.95- 2.97) [§]	3242.8	2.42 (1.92- 3.03) [§]	3252.7	2.10 (1.68- 2.60) [§]	3223.8	2.21 (1.75- 2.78) [§]	3224.6
------------------	-----------------------------------	--------	-----------------------------------	--------	-----------------------------------	--------	-----------------------------------	--------	-----------------------------------	--------	-----------------------------------	--------

Model 1 was adjusted for maternal age, parity, ethnicity and study center. Model 2 was adjusted for covariates in model 1 plus maternal height, body-mass index and gestational age at OGTT, smoking status, alcohol use, maternal urinary tract infection (for GH/PE only), hospitalization before delivery and mean arterial pressure at OGTT (except for GH/PE), family history of diabetes and baby's sex.

OR, odds ratio; CI, confidence interval; AIC, Akaike information criterion; GH/PE, gestational hypertension / preeclampsia; CS, caesarean section; LGA, large for gestational age. *P<0.05; †P<0.01; ‡P<0.005, §P<0.00

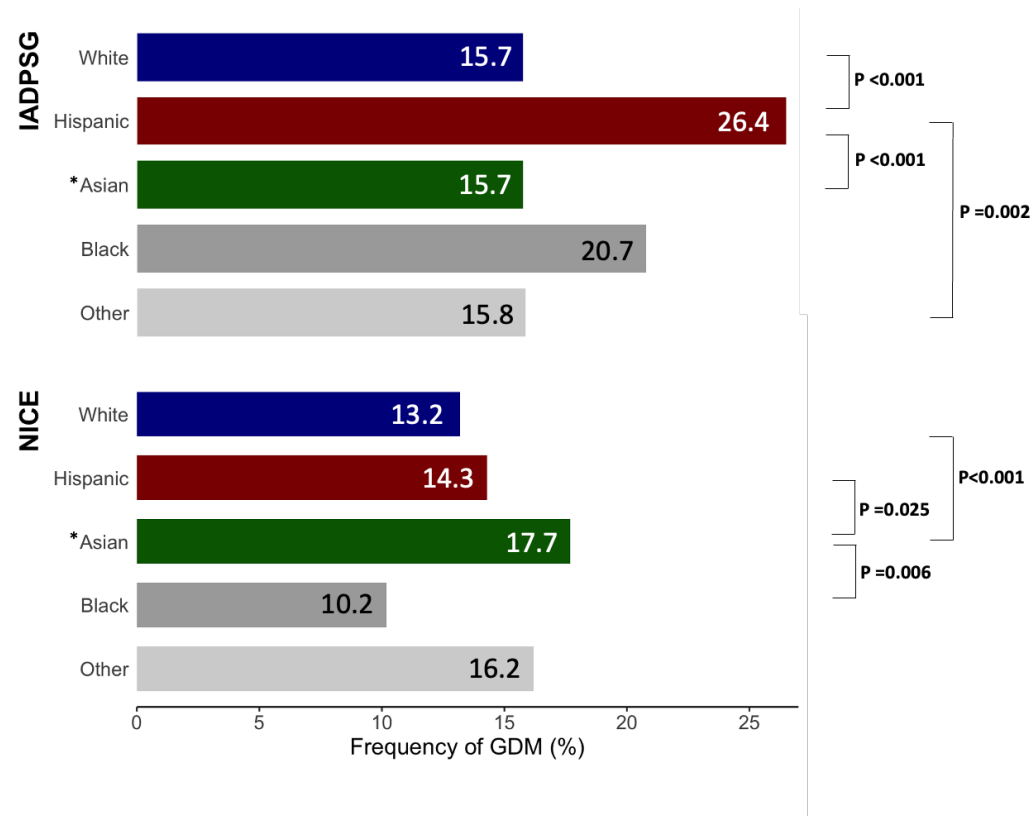
Supplementary table 5 Associations of women being GDM diagnosed by the IADPSG or NICE criteria with adverse pregnancy outcomes in Blacks (n = 314)

	Unadjusted				Adjusted							
					Model 1				Model 2			
	IADPSG		NICE		IADPSG		NICE		IADPSG		NICE	
	OR (95% CI)	AIC	OR (95% CI)	AIC	OR (95% CI)	AIC	OR (95% CI)	AIC	OR (95% CI)	AIC	OR (95% CI)	AIC
Maternal outcomes												
GH/PE	1.47 (0.79-2.76)	355.5	0.87 (0.30-2.48)	356.8	1.87 (0.91-3.85)	344.3	0.89 (0.29-2.71)	347.1	1.21 (0.55-2.69)	336.6	0.69 (0.21-2.31)	336.4
Primary CS	3.36 (1.62-6.87) [§]	235.2	3.42 (1.35-8.29) [†]	239.0	3.12 (1.35-7.19) [†]	223.7	3.60 (1.29-9.89) [*]	224.8	2.31 (0.92-5.75)	217.7	5.47 (1.74-17.50) [‡]	212.7
Neonatal outcomes												
LGA	5.48 (2.41-12.55) [§]	172.1	5.92 (2.20-15.00) [§]	176.6	4.43 (1.81-10.98) [‡]	175.5	4.64 (1.65-12.33) [‡]	177.9	6.47 (2.30-19.26) [§]	167.6	4.13 (1.27-12.95) [*]	174.6
Adiposity	5.15 (2.05-13.02) [§]	136.4	3.40 (0.71-12.57)	145.6	7.31 (2.33-25.01) [§]	129.7	2.78 (0.51-12.08)	139.8	9.19 (2.61-36.82) [§]	143.5	3.05 (0.51-14.97)	154.1
Hyperinsulinemia	3.16 (1.28-7.57) [*]	156.4	5.10 (1.64-14.46) [‡]	155.0	3.10 (1.14-8.31) [*]	161.2	5.10 (1.55-15.75) [†]	159.2	2.54 (0.87-7.28)	161.4	4.06 (1.08-14.16) [*]	160.0

Model 1 was adjusted for maternal age, parity, ethnicity and study center. Model 2 was adjusted for covariates in model 1 plus maternal height, body-mass index and gestational age at OGTT, smoking status, alcohol use, maternal urinary tract infection (for GH/PE only), hospitalization before delivery and mean arterial pressure at OGTT (except for GH/PE), family history of diabetes and baby's sex.

OR, odds ratio; CI, confidence interval; AIC, Akaike information criterion; GH/PE, gestational hypertension / preeclampsia; CS, caesarean section; LGA, large for gestational age. *P<0.05; †P<0.01; ‡P<0.005, §P<0.001.

Supplementary figure 1 Comparisons of the frequencies of GDM by ethnicities based on the IADPSG and NICE criteria respectively.



Numbers represent percentage of women diagnosed with GDM; the frequencies were compared by Chi-square test. Post-hoc pairwise comparisons were corrected by false discovery rate. GDM, gestational diabetes mellitus; IADPSG, International Association of the Diabetes and Pregnancy Study Groups; NICE, National Institute for Health and Care Excellence. * Over 92% of the Asians in the cohort were Chinese ethnicity.