

# Ethnic Variations in Glucose, Maternal Weight and Fetal Overgrowth in a Multi-Ethnic Inner City Antenatal Cohort

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## Background and aims:

The Hyperglycaemia and Adverse Outcomes in Pregnancy Study group clearly demonstrated a continuum between glucose and proportion of infants born large for gestational age (LGA:  $\geq 90^{\text{th}}$  centile). We aimed to determine if this varied according to ethnicity.

## Materials and Methods:

Pregnant women who underwent a 24-28 week 75g oral glucose tolerance test in an inner-city healthcare centre were retrospectively analysed (n=4562). Baseline maternal demographics, glycaemia and fetal birthweight/ birthweight centile were compared across five ethnic groups: White Caucasian (n=1379), Black African-Caribbean (n=591), South Asian (n=392), Mixed ethnicity/ any other Asian ethnicity (n=1499) and Other/ Ethnicity unknown (n=701). Variations in the proportion of LGA infants by category of glycaemia and BMI were examined.

Figure 1: Categories of Ethnicity

<b>Group 1: White (n=1379)</b>	<ul style="list-style-type: none"> <li>White British</li> <li>White Irish</li> <li>White - any other white background</li> </ul>
<b>Group 2: Black African Caribbean (n=591)</b>	<ul style="list-style-type: none"> <li>Black - African</li> <li>Black - Caribbean</li> <li>Black - any other black background</li> </ul>
<b>Group 3: South Asian (n=392)</b>	<ul style="list-style-type: none"> <li>Asian - Indian</li> <li>Asian - Pakistani</li> <li>Asian - Bangladeshi</li> </ul>
<b>Group 4: Mixed/ Any Other Asian (n=1499)</b>	<ul style="list-style-type: none"> <li>Mixed Ethnicity</li> <li>Chinese</li> <li>Asian - Any Other Asian Background</li> </ul>
<b>Group 5: Other (n=701)</b>	<ul style="list-style-type: none"> <li>Other - not stated</li> <li>Other - not known</li> </ul>

Table 1: Maternal demographics, glycaemia and fetal birthweight

	Group 1: White	Group 2: Black African Caribbean	Group 3: South Asian	Group 4: Mixed / Other Asian	Group 5: Other/ Ethnicity Unknown	P Value
Number(%)	1379(30.2)	591(13.0)	392(8.6)	1499(32.9)	701(15.3)	
Mean (SD) Age(Years)	34.1(±5.3)	30.8(±6.0)	31.9(±4.2)	32.0(±5.5)	32.2(±5.6)	<0.001
Mean (SD) BMI (kg/m)	25.5(±6.1)	28.1(±6.0)	25.4(±4.9)	25.4(±5.8)	25.5(±5.3)	<0.001
Primigravida %(n)	53.4 (736)	40.4 (239)	49.8 (195)	54.5(817)	60.6(425)	<0.001
Proportion with GDM % (n)	5.1(70)	8.1(48)	13.0(51)	9.3(140)	8.0(56)	<0.001
Mean (SD) FPG (mmol/L)	4.33(±0.46)	4.35(±0.66)	4.47 (±0.69)	4.39(±0.60)	4.30 (±0.52)	<0.001
Mean (SD) 120 min glucose (mmol/L)	5.42(±1.36)	5.54(±1.52)	6.09 (±1.74)	5.70(±1.61)	5.61 (±1.60)	<0.001
Mean (SD) fetal birth weight (g)	3391(±562)	3266(±551)	3074 (±552)	3269(±546)	3294 (±524)	<0.001
%LGA (n)	12.3 (169)	7.1 (42)	5.1(20)	6.1(91)	5.4(38)	<0.001

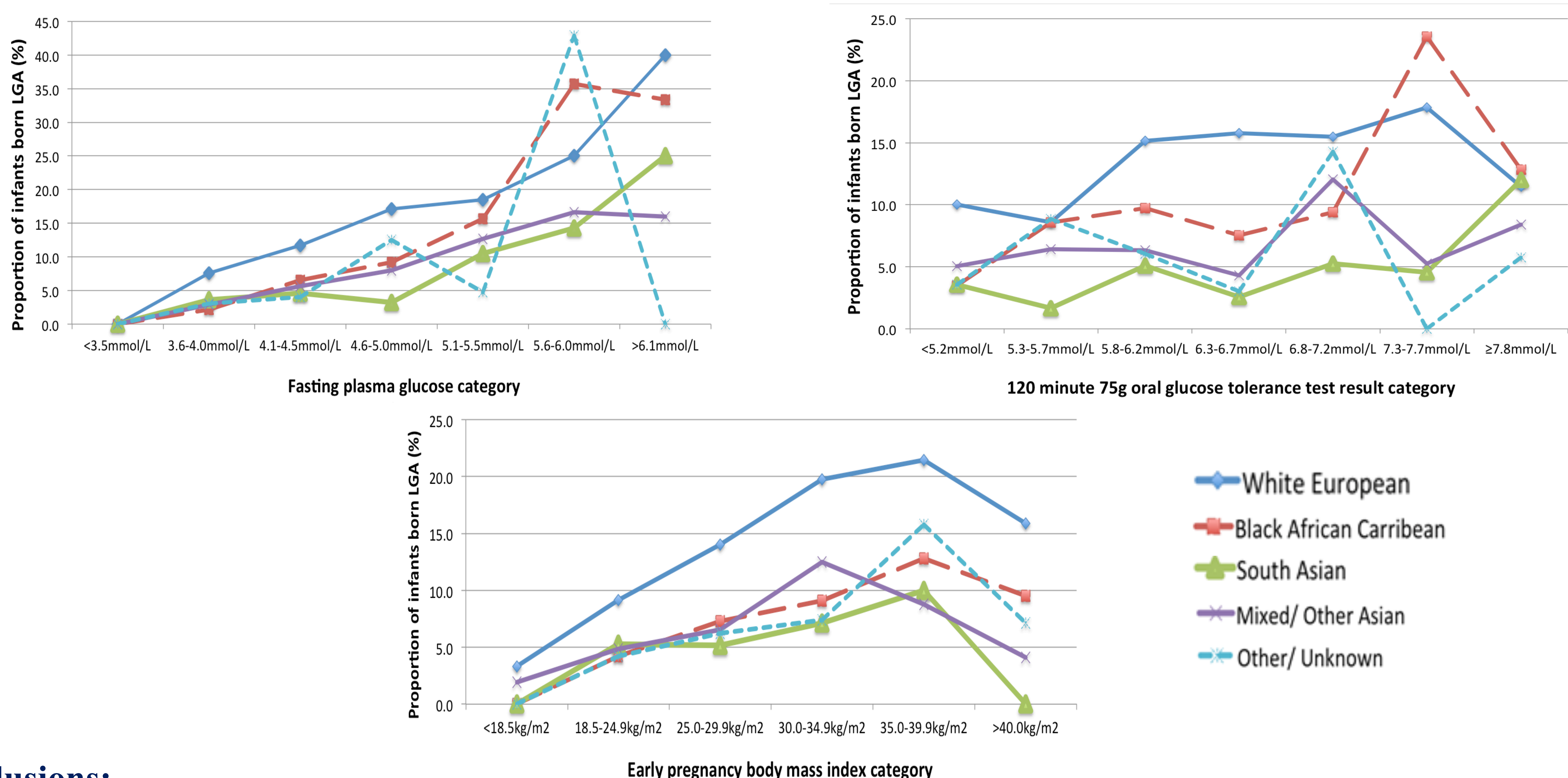
## Results:

Significant differences were observed in maternal demographics, glycaemia, fetal birthweight and birthweight centile across the groups.

The proportion of infants born LGA increased with each increment in FPG category in four of the ethnic groups but not in the Other/ Unknown group: variations in LGA incidence were significant. In contrast, no clear pattern emerged between 120-minute glucose values and LGA incidence: variations in LGA incidence were only significant in Black African-Caribbean and the Other/ Unknown ethnic groups

An overall trend towards an increasing proportion of LGA infants with each 5.0kg/m<sup>2</sup> increment in BMI was observed: variations in LGA incidence were only significant in women of White and Mixed/ Other Asian ethnicity.

Figures 2a,b,c: Proportions of infants born LGA with variations of fasting plasma glucose, 75g OGTT, and BMI across different ethnicities



## Conclusions:

These data suggest that the impact of glucose and BMI on fetal overgrowth varies according to ethnicity.

Footnotes: SD Standard deviation, BMI Body mass index, GDM Gestational diabetes mellitus, FPG Fasting plasma glucose.