

DOES A VALIDATED GDM INSULIN PREDICTION MODEL WORK IN WOMEN FROM DIFFERENT ETHNIC BACKGROUNDS?

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Background: Ethnicity is associated with differing abnormal glucose profiles and percentage insulin use in women with Gestational Diabetes Mellitus (GDM). We previously developed a model for predicting therapy type in women with GDM – Medical Nutrition Therapy (MNT) only versus MNT+Insulin (MNT+I) therapy (1).

Aim: To test how our Therapy Prediction Model performed in women with GDM from different ethnic backgrounds.

Methods: We analysed de-identified prospectively collected data (1993-2014), for women diagnosed with GDM according to 1991 GDM Ad Hoc Working Party, thence 1998 ADIPS criteria. (2,3) in our multi-ethnic high-risk cohort. The model includes seven dichotomous predictors of therapy type: maternal age >30 years, family history of diabetes, pre-pregnancy obesity (BMI ≥ 30 kg/m²), prior GDM, early diagnosis of GDM (<24 weeks gestation), Oral Glucose Tolerance Test (OGTT) fasting BGL ≥ 5.3 mmol/L, and HbA1c at GDM diagnosis $\geq 5.5\%$. A receiver operator curve (ROC) of sensitivity plotted against 1-specificity was constructed based on number of predictors present (0-7) versus therapy outcome for each of the four main ethnicities in our database – European, Middle Eastern, South-East Asian and South Asian. These were compared to the ROC constructed from the pooled data of all ethnicities.

Results: A total of 3144 of 3317 women had complete data for these four ethnicities. Insulin use was highest in women of Middle Eastern background and lowest amongst South-East Asian women. Compared to Europeans, South East Asian women had significantly lower mean OGTT fasting glucose, whilst South Asian women had significantly higher mean HbA1c and both had higher mean OGTT 2hr glucose (see Table).

Table 1

Ethnicity	n=	ROC	95% CI	Insulin%	HbA1c%	Fasting	2 hr OGTT
ALL	3317	0.712	0.693-0.731	32.2	5.3 \pm 0.6	5.1 \pm 0.8	8.7 \pm 1.4
European	747	0.702	0.663-0.741	37.3	5.3 \pm 0.5	5.2 \pm 0.7	8.6 \pm 1.3
Middle Eastern	896	0.703	0.668-0.738	38.8	5.3 \pm 0.7	5.3 \pm 0.8	8.5 \pm 1.5
South-East Asian	1118	0.709	0.673-.745	21.5**	5.2 \pm 0.5	4.9 \pm 0.8*	8.9 \pm 1.3*
South Asian	383	0.661	0.602-.720	34.7	5.5 \pm 0.5*	5.2 \pm 0.8	9.0 \pm 1.5*

Mean \pm SD *P<0.001, **P<0.0001 compared to European

Conclusion: In this cohort, the GDM prediction model was similarly predictive of therapy type in all ethnicities, but least for women of South Asian background. This is despite significant differences in insulin use and glucose dynamics between most ethnicities.

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References:

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