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MATERNAL HEIGHT IS ASSOCIATED WITH THE RISK OF GESTATIONAL DIABETES MELLITUS

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INTRODUCTION

Adult height is manifested by nutritional, environmental, and genetic status during growth period. Nutritional deprivation during child growth is believed to contribute to short stature that impairs ß-cells' development and function in later life (1,2). Studies have reported an inverse association between type 2 diabetes mellitus (T2DM) and height, predominantly observed in women (3). As T2DM and gestational diabetes mellitus (GDM) share similar pathogenic factors, shorter height could also have the same effect on the risk of GDM (4,5).

OBJECTIVE

To determine the maternal height effects on the risk of GDM.

METHODOLOGY

STUDY DESIGN
Retrospective cohort

INCLUSION CRITERIA
Malaysian, age >18 years, normal glycaemia in OGTT at <14 week POA, singleton

EXCLUSION CRITERIA
Chronic diseases, type 1 or 2 DM & blood disorders

DATA COLLECTION
Extracted information: sosio-demographic data, height at booking (<14 week POA), obstetric data

STUDY POPULATION
1315 antenatal records in Kuala Muda district, Kedah, year 2016 to 2017

DATA ANALYSIS
SPSS version 22, t-test, chi square and ANOVA test to compare the data, multivariate analysis to determine the effects of maternal height with GDM risk

DISCUSSION AND CONCLUSION

- The height of GDM women in this study was significantly lower than that of non-GDM women.
- Women with height <1.50 m had 2-times increased risk of GDM compared to those with height >1.60 m (AOR: 1.75; 95% CI: 1.06 – 2.90; p = 0.029).
- A study in Kuala Lumpur found short maternal stature (≤1.55 m) was associated with GDM (AOR: 1.6; 95% CI: 1.1 – 2.2; p = 0.009) (6).
- Brazilian women with the shortest height (≤151 cm) had a 1.6-times risk of developing GDM compared to women with ≥1.60 m height (7).
- Shorter height was associated with the risk of GDM. For every 5 cm increment in height, the risk was decreased by 20% (8).
- Although literature supports that height is an independent risk factor for GDM, the predictive value for GDM risk was relatively low with poor discriminatory power value of ROC, low sensitivity (42.7%) and specificity (46.6%). Therefore, it was suggested that height is an unsuitable screening criterion for GDM (9).
- The high degree of heterogeneity between studies make it impossible to have a standard reference of maternal cut-off height that will increase GDM risk (8) .
- Malnutrition during childhood could lead to stunting and impaired glucose tolerance in adulthood (9, 10, 11). Therefore, it is crucial to ensure every child receives optimal nutrition and care to lower the diabetes risk.

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RESULTS

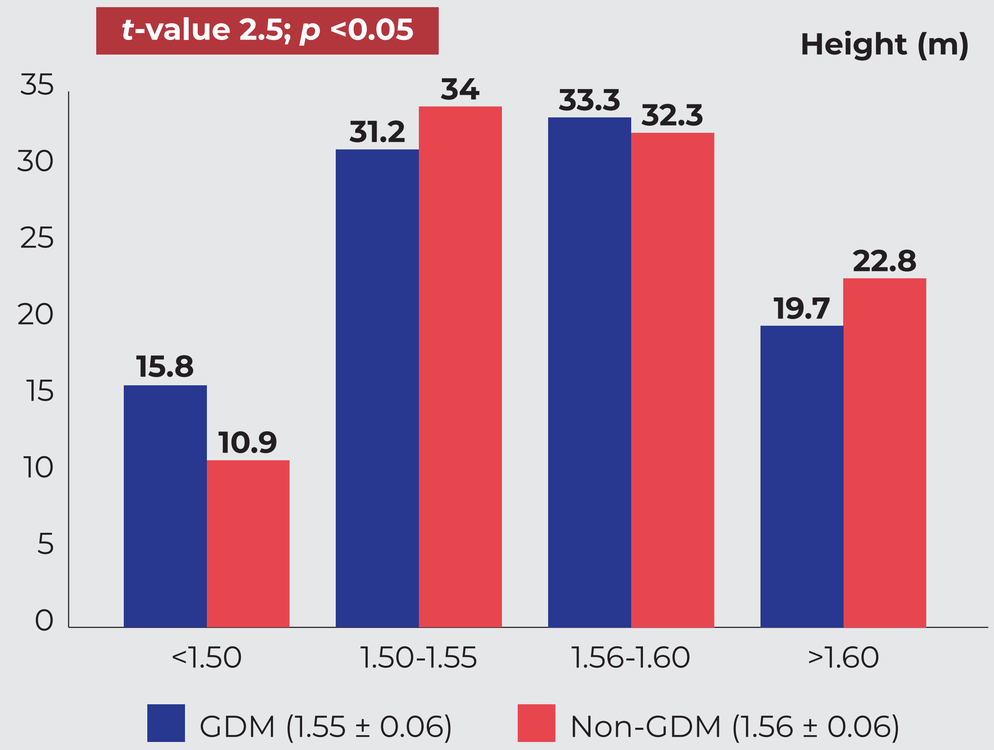
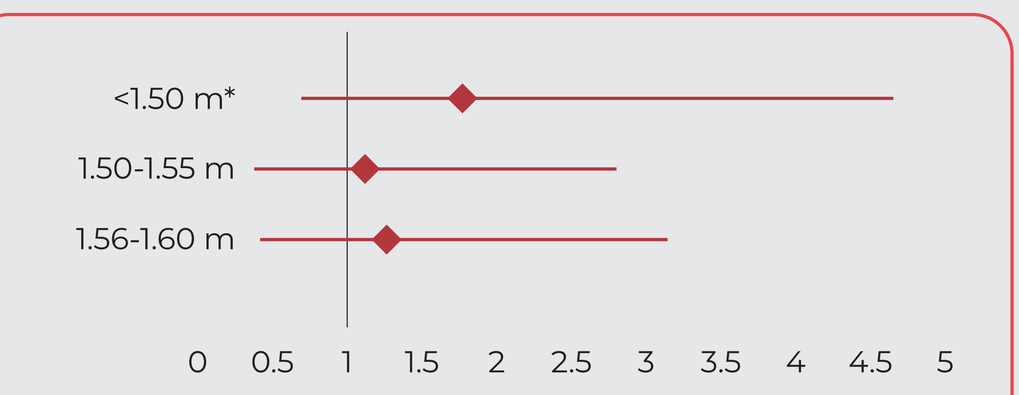


Figure 1: The associations between maternal height and gestational diabetes mellitus

Table 1: Crude OR and 95% CI for the associations between maternal height and risk of gestational diabetes mellitus

Variables	Crude OR [95% CI]	p-value
Height (m)	0.05 [0.00, 0.55]	0.015*
<1.50	1.68 [1.03, 2.72]	0.037*
1.50 – 1.55	1.06 [0.71, 1.59]	0.774
1.56 – 1.60	1.20 [0.80, 1.78]	0.381
>1.60	1.00	



Note: Maternal height >1.60 m as a reference group. Adjusted for age, gravidity, parity, history of GDM and family history of DM. *p<0.05

Figure 2: Adjusted OR and 95% CI for the associations between maternal height and risk of gestational diabetes mellitus

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