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Impact of Gestational Weight Gain according to 2009 IOM Recommendations on Neonatal Anthropometrics in Asians: A Pilot Study from Malaysia

Yong Ting Tai, MBBS, MRCP, Quan Hziung Lim, MBBS, MMed, Jeyakantha Ratnasingam, MD, MMed, Sharmila Sunita Paramasivam, MD, MRCP, Peng Chiong Tan, MBBS, FRCOG, Siti Zawiah Omar, MBBS, MMed, Karuthan Chinna, BScEd, PhD, Lee-Ling Lim, MBBS, PhD, and Shireene Ratna Vethakkan, MBBS, MMed, MD

Introduction: Gestational Weight Gain (GWG) modulates pregnancy outcomes and long-term offspring metabolic health [1,2]. Thus far, the widely used 2009 Institute of Medicine (IOM) recommendations on GWG have largely been evaluated in Caucasian populations and some mono-ethnic East Asian cohorts. We designed this study to determine if IOM GWG thresholds are applicable in a multi-ethnic Asian cohort of Malaysian mothers. **Methods:** In this prospective observational study, 875 mothers were recruited from a Malaysian tertiary urban center during screening for gestational diabetes. Amongst data collected were Total GWG (maternal weight at delivery – self-reported pre-gravid weight) and neonatal anthropometrics. BMI was stratified by Caucasian (overweight ≥25kg/m 2, obese ≥30 kg/m 2) and Asian (overweight ≥23kg/m 2, obese ≥27.5kg/m 2) thresholds, and patients categorized by 2009 IOM GWG recommendations. **Results:** This study included 67% Malay, 23% Chinese and 10% Indian mothers. There was a high prevalence of overweight/obesity regardless of cut-offs used (Asian 56.9% vs Caucasian 44%). When Asian BMI cut-offs were used, excessive GWG prevalence increased (34.1% → 40.6%) whilst inadequate GWG declined (30% → 24.9%). Prevalence of LGA, macrosomia, Birth Weight(BW)/Neonatal Fat Mass(NFM)/Sum of Skinfold Thickness(SSFT) >90th centile was highest ($p<0.05$) in those with excess GWG whether stratified by Caucasian or Asian BMI cut-offs. Upon multivariate analysis adjusting for age, parity, race, GDM, Ln HOMA2%S and baby gender, excessive GWG (by Asian BMI categories) was associated only with increased risk of SSFT >90th centile (aOR 5.7, 95% CI 2.33–14. 03). Excessive GWG (by Caucasian BMI categories) was associated with increased risk of macrosomia (aOR 8.65, 95% CI 1. 07–70. 01), NFM >90th centile (aOR 2.14, 95% CI 1. 02–4.45) and SSFT >90th centile (aOR 3.88, 95% CI 1.77–8.51). SGA status was associated with insufficient GWG by both Caucasian (aOR 4.26, 95% CI 2.46–7.38) and Asian BMI cut-offs (aOR 3.55, 95% CI 2. 07–6.10). **Conclusion:** The 2009 IOM recommendations, using either Caucasian or regional Asian BMI thresholds, are applicable in our multi-ethnic Asian cohort in terms of predicting increased neonatal adiposity and SGA status.

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