

2017-05-17

The effect of timing and composition of gestational weight gain in obese pregnant women on infant birth weight: A prospective cohort study.

Redfern, Kathy

<http://hdl.handle.net/10026.1/10090>

10.1159/000468958

Obesity Facts

Karger Publishers Open Access

All content in PEARL is protected by copyright law. Author manuscripts are made available in accordance with publisher policies. Please cite only the published version using the details provided on the item record or document. In the absence of an open licence (e.g. Creative Commons), permissions for further reuse of content should be sought from the publisher or author.

The effect of timing and composition of gestational weight gain in obese pregnant women on infant birth weight: A prospective cohort study.

Redfern, K.¹; Rees, G.¹; Pinkney, J.¹

¹Plymouth University

Introduction: Numerous maternal factors, such as body mass index (BMI), gestational weight gain (GWG), diet, physical activity (PA) and the development of gestational diabetes mellitus (GDM), have been shown to impact infant birth weight - a key determinant of infant health¹. In the UK, antenatal care tends to be based on pre-pregnancy BMI and women are not weighed routinely during pregnancy nor are there guidelines for GWG. However, it is widely acknowledged that maternal obesity and GWG in excess of the American Institute of Medicine guidelines are associated with increased risk of fetal macrosomia and recent studies have suggested a role of the timing and composition of GWG beyond that of BMI^{2,3}. The purpose of this study is to examine the effects of timing and composition of GWG on neonatal anthropometric outcomes in a prospective cohort study amongst women with a BMI \geq 30 in Plymouth, UK.

Methods: Data are presented for 32 women from an ongoing study. Women were recruited at 12 weeks gestation. Maternal height, weight, body composition using skinfolds, were collected at baseline and repeated at 28 and 36 weeks gestation. Following delivery, infant weight and gestational age were obtained, and neonatal anthropometric measurements were recorded within 72 hours of delivery.

Results: Total GWG varied considerably among the participants (mean 8.57kg, standard deviation 6.16kg, range -3.00kg – 22.20kg). Multiple regression analysis identified several significant predictors of birth weight centile ($F(14,17) = 3.846$, $p = 0.005$, adj. $R^2 = 0.562$). These were maternal pre-pregnancy BMI, total GWG, rate of GWG (total, trimester 2 and trimester 3) and infant length (all $p < 0.05$). Maternal sum of skinfolds was associated with birth weight centile in trimester 1 ($p = 0.001$) but not in trimesters 2 or 3 ($p = 0.099$ and $p = 0.291$, respectively).

Conclusions: The timing and composition of GWG in women with obesity is highly variable. The current study shows the sum of triceps, biceps and subscapular skinfolds in the first trimester to be an interesting potential predictor of infant birth size that will be further investigated in a larger sample. Diet and activity patterns contributing to weight gain will also be explored.

References:

1 Scott-Pillai R et al. (2013) The impact of body mass index on maternal and neonatal outcomes: a retrospective study in a UK obstetric population, 2004–2011. *BJOG*.120(8):932–9.

2 Davenport MH et al. (2013) Timing of excessive pregnancy-related weight gain and offspring adiposity at birth. *Obstet Gynecol*.122(2 Pt 1):255–61.

3 Kent E et al. (2013) Correlation between birth weight and maternal body composition. *Obstet Gynecol*.121(1):46–50.

Conflict of interest: None disclosed

Funding: No Funding