Maternal obesity and gestational weight gain: associations with maternal and infant outcomes

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Introduction

- Obesity among women of childbearing age has become a major public health issue with one in five women now entering pregnancy classified as obese ¹
- Additionally, excessive gestational weight gain (GWG) has been implicated as a risk factor for pregnancy complications and can lead to retained weight postpartum and increased rates of obesity ²
- Currently, there are no evidence-based UK guidelines for weight-gain during pregnancy, with the routine weighing of women being discouraged ³

Aim

- To examine the influence of BMI and GWG on maternal and infant birth outcomes across normal weight, overweight and obese pregnant women

Methods

- Data were collected from an ongoing observational study in normal weight, overweight and obese pregnant women
- A total of 240 pregnant women without current complications, aged ≥18 years and having a singleton pregnancy were recruited
- Maternal weight (kg) was measured at three time points

- Infant anthropometric measures at birth and other maternal and infant outcomes were recorded from maternal/paediatric notes
- GWG and birth outcomes were assessed, across and within BMI groups
- GWG was calculated for each BMI group and classified as either low or high GWG according to being below or above the median within that BMI group
- Data were not-normally distributed; the non-parametric Mann-Whitney U, Chi square and Kruskal Wallis tests were used as appropriate

Results

Table 1. Maternal baseline characteristics in normal weight, overweight and obese pregnant women

	Normal N=80	Overweight N=79	Obese N=80	P value
Age (yrs)	31.0 (25.2,33.7)	30.0 (26.0, 34.0)	30.0 (25.0, 32.0)	0.529
Weight (kg)	60.0 (54.5, 64.2) ^a	71.7 (67.1, 77.4) ^b	88.6 (83.2, 99.6) ^c	<0.0001
Height (m)	1.63 (1.58, 1.68)	1.63 (1.58, 1.68)	1.63 (1.59, 1.67)	0.947
Weeks gestation	13.0 (12.0, 13.6)	13.0 (12.0, 13.6)	12.6 (12.1, 13.4)	0.945
Smoker n(%)	8 (10)	11 (13.8)	11 (14.1)	0.679
Parity n(%)				
0	28 (35.4)	35 (44.3)	33 (42.3)	0.826
1	30 (38)	25 (31.3)	27 (34.6)	
2+	21 (26.6)	19 (24.1)	18 (23.1)	

Data presented as median (IQR) or n (percentage). Kruskal Wallis and Chi square test used to compare differences between BMI groups. Values in a row with different superscript letters indicate significant difference (P<0.05)

Table 2. Total GWG in normal weight, overweight and obese pregnant women

	Normal N=57	Overweight N=48	Obese N=51	P value
Total GWG (kg)	11.4 (9.0,13.4) ^a	8.1 (6.6,12.2) ^b	8.8 (3.6,11.7) ^b	0.004*

Data presented as median (IQR), Kruskal Wallis test used to compare differences between BMI groups. Values in a row with different superscript letters indicate significant difference (P<0.05) P<0.

Figure 1: Delivery outcomes comparing high to low GWG within normal weight, overweight and obese categories

- Normal weight women who were in the high GWG group required significantly more assisted deliveries than normal weight women in the low GWG group
- These differences were not observed in the overweight or obese group

Conclusions

- These findings demonstrate that in normal weight women, a higher GWG is associated with an increased need for assisted delivery
- This research highlights the need for revised maternal policy on the monitoring of weight gain during pregnancy with the view to improving maternal and infant outcomes

References

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