CONTINUED EXCESSIVE WEIGHT GAIN DURING GDM TREATMENT INCREASES THE LIKELIHOOD OF INSULIN INITIATION AND HAVING A LARGE FOR GESTATIONAL AGE INFANT

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Introduction:
- The traditional view of Gestational Diabetes Mellitus (GDM) has been dominated by the importance of maternal hyperglycaemia.
- Morbidities attributed to GDM are also strongly associated with maternal obesity and excessive maternal weight gain.
- Women with GDM have commonly exceeded Institute of Medicine (IOM) weight gain targets by first presentation to diabetes services.

Aim:
- Determine whether continued excessive gestational weight gain is associated with greater likelihood of insulin initiation and Large-for-Gestational-Age (LGA) infants.

Materials and Methods [1]:
- Prospectively collected (1992-2015) data from GDM pregnancies managed by Australasian Diabetes in Pregnancy Society guidelines were analysed (1,2).
- Women received two dietetic appointments, with weight measured at 1-2 weekly multidisciplinary clinic visit.
- Inclusion criterion: in excess of IOM weight gain targets (EGWG) according to self-reported pre-pregnancy BMI at first presentation to the Diabetes Centre. See Table 1 for details.
- Continued EGWG was assessed incrementally: ≤0kg, 0.1-2kg, 2.1-4.0kg, 4.1-6.0kg, 6.1-8.0kg, >8.0kg.
- Exclusions: last recorded weight >4 weeks pre-delivery; GDM managed for <3 weeks.
- Continued excessive gestational weight gain was included in multivariable logistic regression models adjusted for confounders predictive of insulin therapy and LGA infants.
- Outcomes: insulin therapy initiation, mean insulin dose and LGA rates.

Table 1: IOM Maternal Weight Gain Recommendations

<table>
<thead>
<tr>
<th>Prepregnancy BMI</th>
<th>Total Weight Gain Range (kgs)</th>
<th>EGWG</th>
</tr>
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<tbody>
<tr>
<td>Underweight ≤18.5</td>
<td>12.5 - 18.0</td>
<td>≥18.1</td>
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<tr>
<td>Healthy weight 18.5-24.9</td>
<td>11-16.0</td>
<td>≥16.1</td>
</tr>
<tr>
<td>Overweight 25.0-29.9</td>
<td>7.0-11.5</td>
<td>≥11.6</td>
</tr>
<tr>
<td>Obese ≥30.0</td>
<td>5.0-9.0</td>
<td>≥9.1</td>
</tr>
</tbody>
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EGWG = Excessive Gestational Weight Gain

Results:
- Of 3345 pregnancies, 776 (23.2%) met criteria.

Table 2: Patient Characteristics

<table>
<thead>
<tr>
<th>Patient Characteristics (n=723)</th>
<th>Mean±SD</th>
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<tr>
<td>Age</td>
<td>31.6 ± 6.8 years</td>
</tr>
<tr>
<td>GDM diagnosis</td>
<td>27.7 ± 4.2 weeks</td>
</tr>
<tr>
<td>Pre-pregnancy BMI</td>
<td>29.2 ± 8.0 kg/m²</td>
</tr>
<tr>
<td>Weight gain at presentation</td>
<td>16.3 ± 5.0 kg</td>
</tr>
<tr>
<td>Total maternal weight gain</td>
<td>18.0 ± 5.9 kg</td>
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<tr>
<td>Weight gain during GDM treatment</td>
<td>1.7 ± 2.2 kg</td>
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Continued excessive gestational weight gain was an independent predictor of:
- insulin initiation, (p<0.0001)
- higher mean insulin dose (p<0.0001), and
- LGA (p<0.0001).

Each incremental increase in continued excessive gestational weight gain was associated with:
- a 24.7% (95%CI 11.0-40.1) increase in insulin initiation risk and
- a 30.4% (95% CI 16.8-45.7) increase in risk of having a LGA infant.

Conclusions:
- Continued excessive gestational weight gain during GDM treatment was associated with a greater likelihood of insulin therapy initiation and having a LGA infant.
- Successful management of GDM with Medical Nutrition Therapy may also need to include weight management. Weight management should focus on prevention, and minimisation of excessive maternal weight gain – both prior to and during GDM treatment.
- Research evaluating strategies to minimise excessive weight gain in women with GDM are warranted.

References:

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