Gestational Weight Gain Prior to Glucola and Risk of Gestational Diabetes Mellitus

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Gestational Weight Gain Prior to Glucola and Risk of Gestational Diabetes Mellitus

Authors
Anna BuAbbud, Katherine Callaghan, Xun Liao, and Tiffany A. Moore Simas

Comments
Medical student Anna BuAbbud participated in this study as part of the Senior Scholars research program at the University of Massachusetts Medical School.

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Materials and Methods

Objective
To investigate associations of GWG adherence as per 2009 IOM guidelines prior to 1-hour 50g glucose tolerance test (GTT), or gluccola, with GDM diagnoses in Latinos.

Materials and Methods

- Delivered by UMass Memorial faculty between 4/1/06-3/31/11
- Received prenatal care at faculty or resident practices
- Abstracted:
  - Pre-pregnancy weight and height
  - Gestational Weight Gain (GWG) & Gestational Age (GA) most proximate to gluclola
- Results 50g Gluccola & 10g GTT where appropriate
- Relevant demographics
- GWG categorized as inadequate, appropriate or excessive according to 2009 IOM Guidelines with adjustment for GA (Table 1), for example at time of gluclola at 28 weeks (Figure 1).

Background

- GDM complicates 4-7% of US pregnancies
- Latinos are at risk with higher rates of diabetes and obesity in Hispanic population compared to non-Hispanic whites
- Early-to-mid gestational weight gain (GWG) thought associated with increased prevalence of GDM, however 2009 Institute of Medicine (IOM) GWG guidelines concluded insufficient evidence regarding association

Table 1. 2009 IOM Gestational Weight Gain Recommendations

<table>
<thead>
<tr>
<th>Pre-pregnancy BMI</th>
<th>Total</th>
<th>Rates of GWG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>18.5</td>
<td>26.40</td>
</tr>
<tr>
<td>Normal/Weight</td>
<td>25.0-29.9</td>
<td>15.26</td>
</tr>
<tr>
<td>Overweight</td>
<td>30.0+</td>
<td>11.25</td>
</tr>
</tbody>
</table>

Table 2. Demographic Characteristics, Included (n=868) and Excluded (n=231) Subjects

<table>
<thead>
<tr>
<th>Age</th>
<th>Education Level</th>
<th>Language Preference</th>
<th>Hispanic</th>
<th>Family History of Diabetes</th>
<th>Prior Pregancy with Gestational Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-28/86 91</td>
<td>25/111.25</td>
<td>1/11 (0.97)</td>
<td>1 (1.0)</td>
<td>1/11 (0.97)</td>
<td>1 (1.0)</td>
</tr>
<tr>
<td>20-28/80 79</td>
<td>30/101.25</td>
<td>0.5 (0.4-0.6)</td>
<td>1 (1.0)</td>
<td>0.0 (0.0)</td>
<td>0.0 (0.0)</td>
</tr>
<tr>
<td>0.049</td>
<td>0.052</td>
<td>0.049</td>
<td>0.052</td>
<td>0.049</td>
<td>0.052</td>
</tr>
</tbody>
</table>

Results

- Subjects used in analysis (n=1156, Fig. 2)
- Demographic Characteristics, comparison between included (n=868) and excluded (n=231) subjects (Table 2), BMI (n=838, Fig. 3) and GWG Adherence (n=838, Fig. 4) of included subjects.
  - Excluded subjects with significantly higher gravidity (p=0.049), and more Spanish-only speakers (p=0.025).
  - 86 of 838 diagnosed with GDM (10.3%, Fig. 5)
  - By 2009 IOM guidelines, 1/189 (6.9%), 2/204 (10.8%) and 5/445 (11.5%) with inadequate, appropriate and excessive gain respectively diagnosed with GDM (Fig. 6), OR (95% CI) 1.07 (0.63-1.82) for overgainers and 0.61 (0.30-1.25) for undergainers.
  - No significant association between pre-gluccola GWG & GDM (p=0.211).

Conclusions

- Rate of GDM in preliminary cohort of Latina women almost double that of the general population (10.3%) excluding subjects with more unknown demographic data (education level, family history of diabetes).
- More overgainers diagnosed with GDM than under- or appropriate gainers.
  - Although there is a trend toward increased weight gain associated with increased gestational diabetes risk, this association was not statistically significant.
  - Further evaluation warranted within high-risk subgroups.
  - Data to be combined and re-assessed with larger study from UMass Amherst.