Systematic Review of Lifestyle Interventions during Pregnancy and Postpartum Related to Gestational Diabetes Mellitus

Shuyuan Huang, MSN, MPH, RN*, Cherlie Magny-Normilus, PhD, FNP-BC**, Erin McMahon, CNM, Ed.D*, Robin Whittemore, PhD, APRN, FAAN*
*Yale School of Nursing, **Connell School of Nursing, Boston College

Background

- Women with a history of gestational diabetes mellitus (GDM) have a ten-fold risk of progressing to type 2 diabetes (T2D).
- Lifestyle interventions provided during pregnancy and postpartum have the potential to address key barriers to initiating and maintaining lifestyle change.

Purpose & Methods

To examine the characteristics and effectiveness of lifestyle interventions provided during pregnancy and postpartum for women with or at high-risk for GDM to prevent T2D.

- Systematic review
- PRISMA guidelines (Moher et al., 2009)
- Quality Assessment: Cochrane RoB 2 & NHLBI Quality Assessment of Controlled Intervention Studies

Search Strategy

<table>
<thead>
<tr>
<th>Databases</th>
<th>OvidMEDLINE, CINAHL, OvidEMBASE, COCHRANE Central, Web of Science, OvidPsycINFO, and ProQuest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Up to Jan 2021</td>
</tr>
</tbody>
</table>

Results

- A total of 1,753 records identified
- 66 articles - full-text review
- 11 articles from 7 studies selected
- 1 RCT - excellent quality, 5 other RCTs - some risk of bias, 1 quasi-experimental study - low quality

Sample sizes

- 25 - 1,783
- total 2,569
- Mean age 27-34

Study Characteristics

United States (n=5)
Australia (n=1)
Finland (n=1)

5 out of 7 studies had diverse samples: 3 studies had 40% - 50% Asian people

Intervention components

- Focused on weight management
- healthy lifestyle behaviors
- diet and physical activity

Pregnancy component

- 1st trimester (n=1)
- 3rd trimester (n=6)
- Majority 1 or 2 sessions

Postpartum component

- Duration 3 weeks to 12 months
- In person, group sessions or telephone/SMS coaching
- 9 sessions on average

Retention rates

- ≥74% (n=5)
- 45 - 51% (n=2)

Significant effect of interventions

- Improved glucose regulation and/or weight (n=3)
- Improved lifestyle behaviors or knowledge only (n=3)
- No significant effect (n=1)

Themes

Features from the more successfully interventions

- Clear goal setting
- Individualized care
- Large sample size
- Good retention rates

Features from less successful interventions

- Pilot or feasibility study
- No individualized care
- Less involvement during pregnancy
- Suboptimal retention rates

Implications & Conclusion

- Only half of the studies had effect on glucose regulation and/or weight change; more high-quality studies with larger sample size needed
- Interventions starting in pregnancy may help women engage and maintain behavior change postpartum
- Providers need to provide individualized care with clear goal setting to achieve better health outcomes for T2D prevention