



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

Shuyuan Huang, MSN, MPH, RN*, Cherie 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

Databases	OvidMEDLINE, CINAHL, OvidEMBASE, COCHRANE Central, Web of Science, OvidPsycINFO, and ProQuest
Search terms	“GDM”, “lifestyle intervention”, “self-management intervention”, “diet”, “exercise” or “physical activity”, “T2D”, “prevention”
Time	Up to Jan 2021

Results

- A total of 1753 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

6 RCTs 1 quasi-experimental design	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	<ul style="list-style-type: none"> • Focused on weight management • healthy lifestyle behaviors • diet and physical activity
Pregnancy component	<ul style="list-style-type: none"> • 1st trimester (n=1) • 3rd trimester (n=6) • Majority 1 or 2 sessions
Postpartum component	<ul style="list-style-type: none"> • Duration 3 weeks to 12 months • In person, group sessions or telephone/SMS coaching • 9 sessions on average
Retention rates	<ul style="list-style-type: none"> • ≥74% (n=5) • 45 - 51% (n=2)
Significant effect of interventions	<ul style="list-style-type: none"> • 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	Features from less successful interventions
<ul style="list-style-type: none"> • Clear goal setting • Individualized care • Large sample size • Good retention rates 	<ul style="list-style-type: none"> • 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

