

Daily calorie intake requirements during pregnancy: Does one size fit all?

Women with obesity can maintain their daily calorie intake during pregnancy, according to the results of a prospective observational study of 54 pregnant women with obesity. For women with obesity who gained the recommended 11 to 20 lb during pregnancy, mean (SD) daily energy intake was 2,698 (99) kcal/day and energy expenditure was 2,824 (105) kcal/day. Therefore, to meet the recommended amount of weight gain, women had a negative energy balance (-125 [52] kcal/day).

Most J, St Amant M, Hsia DS, et al. Evidence-based recommendations for energy intake in pregnant women with obesity. J Clin Invest. 2019;129:4682-4690.

EXPERT COMMENTARY

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In 2009, the Institute of Medicine, now known as the National Academy of Medicine, updated its gestational weight gain guideline. This guideline's major difference, compared with the 1990 guideline, is a specific weight gain range for women with obesity: 5 to 9 kg, or 11 to 20 lb.¹ This weight gain range was chosen in part because it allows for a minimum weight gain that supports the growth and development of tissues (fetus, placenta, breast, uterus) and fluids (blood volume, intracellular and extracellular fluid), also known as the "fat-free" mass.

Many studies have since shown not only associations between lower-than-

guideline-recommended weight gain and improved pregnancy outcomes (for example, reductions in preeclampsia and cesarean deliveries), but also increases in low birth weight for infants of women with obesity.^{2,3} Although the weight gain guideline differs based on a woman's prepregnancy body mass index, the energy requirements, or how many additional calories a woman should consume daily, are the same for all, regardless of weight prior to pregnancy: an increase by 340 to 452 kcal/day in the second and third trimesters.¹

Recently, Most and colleagues challenged this recommendation for energy requirements with results from their prospective observational study of 54 women with obesity during pregnancy.⁴ They aimed to evaluate energy intake with the energy intake-balance method (doubly labeled water and whole-room indirect calorimetry and body composition) according to tests done at 13 to 16 weeks' gestation and 35 to 37 weeks' gestation and according to the current National Academy of Medicine gestational weight gain guideline (inadequate, recommended, or excessive weight gain groups).⁴

FAST TRACK

The 2009 guideline weight gain range (11-20 lb) was chosen in part because it allows for a minimum weight gain that supports the growth and development of tissues and fluids, also known as the "fat-free" mass

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WHAT THIS EVIDENCE MEANS FOR PRACTICE

Most and colleagues' data suggest that maintaining energy balance can support obligatory growth and development of women and their fetuses during pregnancy (fat-free mass). In doing so, women with obesity meet the current gestational weight gain guideline. It is hoped that this important research will be used in future studies, with larger sample sizes, to evaluate energy requirements during pregnancy, especially in women with different classes of obesity. Ultimately, these new recommendations for energy requirements should be combined with studies of health behavior interventions for gestational weight gain.

The study by Most and colleagues supports the concept that energy requirements need to be individualized for women to meet the recommended amount of gestational weight gain. If women meet their gestational weight gain goals, they have the potential to improve their health and the health of their offspring.

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Details of the study

Women who participated in this study were recruited from the Pennington Biomedical Research Center in Louisiana and were mostly multiparas (57%); about half had a college degree or higher (52%) and 41% were African American. The investigators found that gestational weight gain in their participants was similar to that found in other large epidemiologic studies in that 67% of women had excessive gestational weight gain.⁵

Findings. For women who gained the recommended amount of weight ($n = 8$), mean (SD) daily energy intake was 2,698 (99) kcal/day and energy expenditure was 2,824 (105) kcal/day. Therefore, to meet the recommended amount of weight gain, these women had a negative energy balance (-125 [52] kcal/day). Women with inadequate weight gain ($n = 10$) also had a negative energy balance (-262 [32] kcal/day), but the difference was

not significantly different compared with that in the recommended gestational weight gain group ($P = .08$). By contrast, women with excessive gestational weight gain ($n = 36$) had a mean (SD) positive energy balance of 186 (29) kcal/day.

Fat-free mass and fat mass weight gains.

The body weight gains of the fat-free and fat mass compartments also were compared with linear mixed effect models among the 3 weight gain groups. There were no differences in the amount of fat-free mass gained among the 3 weight gain groups ($P > .05$), but women with excessive gestational weight gain had significantly higher increases in fat mass compared with the other 2 weight gain groups ($P < .001$).

Pregnancy outcomes. Although there were no differences in cesarean deliveries or birth weight among the 3 weight gain groups, the study was not powered to detect these differences.

Study strengths and limitations

It is important to note that this study by Most and colleagues was not a health behavior intervention for gestational weight gain. Women who participated in the study did not receive specific directions or advice on diet or physical activity. Furthermore, the study used the current gestational weight gain guideline as a reference to determine energy intake. As such, findings from this study alone cannot be used to adapt the current gestational weight gain guideline for women with obesity.

The study methods were rigorous in terms of the energy intake measurements, but a larger and more diverse sample size is needed to confirm the study findings. ●

References

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