# Overweight pregnant women can safely cut calories, restrict weight gain

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Being obese or overweight during pregnancy can result in serious health problems for the mother and child. Obstetricians are often reluctant to recommend restricted weight gain for pregnant women due to safety

concerns for the baby and lack of time and tools to safely guide women in their weight control efforts.

A new Northwestern Medicine study shows with proper nutrition guidance it is safe and feasible to restrict weight gain in obese and overweight pregnant women. The obese and overweight women in the study gained five pounds less during their pregnancy than those in the control group. Their babies were born in the normal weight range.

The approach included nutritional counseling on a healthy diet and lifestyle as supported by a commercially available smartphone diet app, with ongoing coaching via the phone and online.

"We need to help these women, who make up the majority of pregnancies in the U.S, leverage this unique opportunity during their pregnancy to adopt a healthier diet and lifestyle plan that they can follow throughout pregnancy and, hopefully, post-partum," said lead study author Linda Van Horn, professor of preventive medicine at Northwestern University Feinberg School of Medicine. "These results show promise in harnessing modern technology to help a mom achieve those goals."

The majority of U.S. women of reproductive age are overweight or obese, and the risk of excess gestational weight gain is higher for them than women of healthy weight. Among the risks for women and their babies: diabetes, preeclampsia, hypertension and birth defects.

Van Horn, along with obstetrician colleague Dr. Alan Peaceman, developed and led the study, called MOMFIT (Maternal Offspring Metabolics: Family Intervention Trial). It was part of the Lifestyle Interventions for Expectant Moms (LIFE-Moms) Consortium, a National Institutes of Health (NIH)-supported research project, with each study implementing separate interventions.

The Northwestern study was novel because it concentrated on improving diet quality and healthy lifestyle in the moms using modern tools and focused on potential maternal fetal nutrition advantages that could have lifelong benefits, Van Horn said.

The study will be published Sept. 24 in the *American Journal of Preventive Medicine*.

This is believed to be the first study of obese and overweight pregnant women using a technologically advanced, commercially available weight-loss smartphone app to test the effects of a specially tailored diet combined with modest physical activity.

Existing commercial weight control technologies target non-pregnant women and don't address prenatal energy and nutrient needs, the authors said. Most commercial apps are designed to support weight loss. During pregnancy, weight gain is anticipated and appropriate, but it should be curtailed in overweight and obese women.

"MOMFIT demonstrates the feasibility of counseling pregnant women in healthy diet and lifestyle behaviors through nutrition coaching using modern technology," Van Horn said. "Applying this approach in a clinical setting could help women achieve recommended weight-gain goals during pregnancy and improve postpartum lifestyle behaviors for the whole family."

One unusual outcome of the trial was a higher rate of cesarean sections for the women in the intervention group. Researchers are investigating possible contributors to this finding.

## Will MOMFIT kids have less risk of developing obesity?

"The next big question is whether the children born to moms who restricted their weight gain will have a reduced risk of becoming obese themselves compared to children whose moms were in the control group," Van Horn said.

Children born to overweight and obese moms have more than a 50 percent chance of becoming overweight themselves. If both parents are overweight or obese, this risk can increase to more than 70 percent, according to epidemiological data.

The difference in the children's obesity risk won't be evident until they are three, four and five years old, which is when weight trajectories start to separate. Van Horn and colleagues have recently launched a new study—KIDFIT—to monitor the children of the women in her MOMFIT study and determine whether prenatal and/or postpartum diet and lifestyle counseling can help these children lower their risk of obesity.

## Rebooting the whole family's diet

The study's goal was not weight loss. "Weight loss during pregnancy is not encouraged. Rather, we aimed for controlled weight gain by developing healthy diet habits and increasing physical activity that could be sustained long term.

"The overarching goal of MOMFIT was to help the mom make these changes while she was still pregnant, a time when many women are more motivated to do what is right for their babies, and then maintain these new behaviors and become a role model for the family and better informed about how to feed them," Van Horn said.

"The perpetuation of obesity is a never-ending cycle. We're attempting to interrupt that cycle and successfully influence the risk for developing pediatric obesity starting in utero and—with additional follow

up—protect that child from adopting that parental heritage in the family home."

Fewer participants in the intervention group, 68.6 percent versus 85 percent, exceeded the National Academy of Medicine recommendations for pregnancy weight gain for obese and overweight women, which is limited to 11 to 25 pounds compared to 25 to 35 pounds for women of healthy weight. This is important evidence demonstrating the challenges of encouraging pregnant women to adhere to recommended diet and activity levels at a time when emotional-eating and reluctance to exercise tend to increase.

## How the study worked

MOMFIT studied 281 ethnically diverse overweight or obese women ages 18 to 45, who were divided into the intervention or control group. Women in the intervention group met with a nutritionist who calculated the appropriate amount of calories for each participant and counseled her on a DASH-type diet—higher in fruits, vegetables, whole grains, nuts, fish and lean protein. It was modified to the restricted weight gain recommendations for each participant.

The DASH (Diet Approach to Stopping Hypertension) eating pattern is ideally suited to pregnancy, providing a pregnant woman with the calcium, potassium and protein she needs without the salt, sugar and saturated fat that she does not need, Van Horn said.

The women were also encouraged to walk at least 30 minutes or take 10,000 steps per day. The nutrition coach tracked each woman's weight gain, food intake and exercise. Telephone, text message prompts and e-mail reminders encouraged women to adhere to the program.

"It was technologically convenient yet strategic and nutritionally

individualized," Van Horn said. "MOMFIT took a precision medicine approach to healthy eating utilizing a commercially available product."

Women tracked their food intake with the Lose It! app. Participants were also encouraged to sleep seven to nine hours daily, because sleep deprivation hampers metabolism and contributes to weight gain.

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