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Cal Poly Study Aims to Curb Pregnancy Weight Gain and Danger in Obese Mothers-to-Be

SAN LUIS OBISPO, Calif. – Can replacing two meals a day with a liquid shake keep obese women from gaining a dangerous amount of weight during pregnancy? A Cal Poly professor has received a \$3.4 million grant from the National Institutes of Health to find out.

For the study, Kinesiology Professor Suzanne Phelan of Cal Poly's STRIDE center (Science through Translational Research in Diet and Exercise) will work with 215 obese pregnant women in San Luis Obispo and Santa Barbara counties in California as well as 215 in Rhode Island.

The study will be the first to evaluate the effects of a behavioral "lifestyle intervention" program that includes replacing some daily meals with meal replacement shakes, Phelan said.

"The research is important because more than 60 percent of obese women in America gain more than is recommended during pregnancy," Phelan said. According to the American College of Obstetricians and Gynecologists, more than 33 percent of U.S. women are obese.

For the purposes of the study, obesity is defined as having a pre-pregnancy body mass index (BMI) of more than 30. That translates roughly to a weight of 158 pounds for a woman 5 feet tall, 186 pounds for a woman 5 feet 6 inches tall, and 221 pounds for a woman 6 feet tall.

"We will be promoting healthy, non-excessive pregnancy weight gain in obese women and studying the impact that has on their health, as well as the growth and health of their infants," Phelan said.

In the study, 215 participating women will be placed on a lifestyle intervention program with a balanced nutrition plan that substitutes a liquid meal replacement shake, such as Ensure or Boost, for two meals each day. The women will also receive behavior modification strategies and a physical activity program along with standard prenatal medical care.

The intervention group will be compared with a control group of 215 obese pregnant women who will receive standard prenatal care.

Phelan is working with a team of investigators at Cal Poly and Brown Medical School. Thanks to the NIH grant, the team will now recruit and assess 430 obese women early in their pregnancies (between 12 and 16 weeks). Researchers will then assess the women again at 30 weeks, at delivery and at four weeks, six weeks, six months and 12 months after delivery.

The researchers will also measure and chart the growth of babies born to participating mothers. The babies will be assessed from birth through 12 months.

Cal Poly professors working on the study with Phelan include Statistics Professor Andrew Schaffner, who will compile and report the data gathered by the researchers; Kinesiology Professor Todd Hagobian, who will analyze changes in hormones and insulin, glucose and total cholesterol among the subjects; Food Science and Nutrition Professor Aydin Nazmi, who will help analyze and interpret data regarding infant growth and nutrition; and Modern Languages Professor Karen Munoz Christian, who is reviewing and creating Spanish-language materials for Spanish-speaking participants.

Phelan and other researchers at Cal Poly and Brown Medical School have already found that for normal-weight women, a low-intensity lifestyle intervention promoting healthy diet and moderate exercise during pregnancy can successfully prevent excessive gestational weight gain.

But for women who are already obese when they become pregnant, keeping those medically-excessive pounds off has proven difficult, Phelan said.

For obese mothers, gaining too much weight in pregnancy means increased risk of long-term weight gain and obesity after pregnancy as well as several complications during pregnancy.

Complications can include high blood pressure, diabetes and preeclampsia -- a rapid rise in blood pressure that can lead to seizure, stroke, multiple organ failure and death of the mother and/or baby. Obese mothers are also at risk for more difficult deliveries and long-term health problems, including cardiovascular disease and Type 2 diabetes.

Babies born to mothers who have gained too much weight while pregnant are also at greater risk of being born too heavy and developing obesity in childhood and adolescence. Babies of overweight mothers are also more likely to be born prematurely and to have neural tube defects.

This is the second pregnancy weight-related study for which Phelan has received NIH grant funding in 2011. In September, the NIH awarded her a \$3 million grant to test whether a new internet and text messaging weight-loss support program will help low-income multicultural mothers return to their pre-pregnancy weight within a year of giving birth. That separate study is currently launching in San Luis Obispo and Santa Barbara Counties.

For more details about Phelan's study or to refer a candidate for a study, contact Project Coordinator Anna Brannen at 805-756-5365.

About STRIDE:

Cal Poly founded the Science through Translational Research in Diet and Exercise (STRIDE) center in 2007. Based in the College of Science and Mathematics, the interdisciplinary center aims to promote healthy weight across the lifespan. STRIDE studies are funded by grants and private donations. To learn more, visit <http://stride.calpoly.edu>.

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