



Study Summary

ECHO Research Identifies Variety of Low-calorie, Nutrient-rich Foods for Optimal Prenatal Nutrition

Authors: Katherine Sauder, Catherine Cohen, et al.

Who sponsored this study?

The Environmental influences on Child Health Outcomes (ECHO) Program, Office of The Director, National Institutes of Health supported this research.

Why was this study needed?

Most pregnant people in the U.S. are at risk of not getting enough of nutrients like vitamin A, vitamin D, folate, calcium, iron, and omega-3 fatty acids from foods alone. Previous [ECHO Cohort research](#) found that only one prenatal supplement available in the U.S. may give pregnant people the optimal amounts of each of these six nutrients. However, that supplement costs \$200 per month and requires the patient to take seven pills a day. Researchers in this study turned to diet to explore energy-efficient foods that could provide the right amounts of these nutrients for pregnant patients.

What were the study results?

Researchers in this study identified more than 2,300 low-calorie foods with enough of at least one of the six nutrients important in pregnancy, including many with reasonable serving amounts to avoid excessive intake. For instance, consuming an additional 0.2 cups of raw carrots could provide the optimal amount of vitamin A. An additional 2.6 cups of reduced-fat milk could provide the optimal amount of vitamin D. An additional 0.4 cups of edamame could provide the optimal amount of folic acid. An additional 1 cup of a nutritional drink or shake could provide the optimal amount of calcium. An additional 0.9 cups of multigrain cereal could provide the optimal amount of iron. An additional 0.1 cups of canned chicken could provide the optimal amount of omega-3 fatty acids.

However, no single food evaluated gave enough of all six nutrients. Seaweed (raw or cooked without fat) provided sufficient vitamin A, folate, calcium, iron, and omega-3s but would require consumption of more than 5 cups per day. Twenty-one other foods and beverages (mainly fish, vegetables, and beverages) provided target amounts of four of the six key nutrients. Few foods met targets for vitamin D or iron, suggesting that dietary supplements may be necessary to meet those nutrient needs. Other foods could be added in limited amounts to help meet intake targets without exceeding caloric recommendations or nutrient safety limits.

Footnote: Results reported here are for a single study. Other or future studies may provide new information or different results. You should always consult with a qualified healthcare provider for diagnosis and for answers to your personal questions.

What was the study's impact?

Results highlight the difficulty in meeting nutritional requirements from diet alone and can inform pregnant people and their doctors about dietary changes and additional supplements that can improve nutrition during pregnancy. Pregnant people can focus on boosting prenatal intake of low-mercury fish, low-fat dairy, green and leafy vegetables, and fortified cereals to meet nutrient recommendations.

Who was involved?

This study included 2,450 pregnant participants from six ECHO Cohort Study Sites located across the U.S.

What happened during the study?

The researchers compared over 2,300 foods and beverages consumed in the U.S., focusing on the nutrients that are most important for maternal and infant health: vitamin A, vitamin D, folic acid, calcium, iron, and omega-3 fatty acids. ECHO researchers looked at foods and drinks that pregnant participants consumed during their pregnancies and then calculated how much of these six nutrients they were getting from their diet. The researchers compared the participants' diets to nutrition recommendations for pregnancy to determine the amount of nutrients the participants would need from foods to make up for the gaps in their diet.

What happens next?

Future research may focus on studying exactly how much of these nutrients are needed for pregnant people.

Where can I learn more?

Access the full journal article, titled "Identifying Foods that Optimize Intake of Key Micronutrients During Pregnancy" in [The Journal of Nutrition](#).

The content is the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.