

For women with gestational diabetes, study shows reduced risk of type 2 diabetes solely through dietary modification

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(Medical Xpress)—By sticking to a healthy diet in the years after pregnancy, women who develop diabetes during pregnancy can greatly reduce their risk of developing type 2 diabetes, a study supported by the National Institutes of Health has found.

Previously, it was not known how much the risk for [type 2 diabetes](#) in these [women](#) could be lowered through adhering to [healthy diet](#).

In about 5 percent of U.S. pregnancies, women who do not have diabetes before becoming pregnant develop high [blood sugar levels](#) in pregnancy. This condition, called [gestational diabetes](#), raises a woman's risk of developing type 2 diabetes later in life up to sevenfold, compared to pregnant women who don't have gestational diabetes. Little is known about the role healthy [lifestyle factors](#) may have in preventing progression from gestational diabetes to type 2 diabetes later in life.

The study found the greatest reductions in type 2 diabetes risk were for women who followed diets rich in whole grains, fresh fruits, vegetables, and legumes, and included poultry, seafood, and nuts, with limiting intake of red and [processed meats](#). Those who followed this type of diet in the years after having gestational diabetes consistently reduced their risk by about half that of women who did not.

"Our findings indicate that women with gestational diabetes aren't

necessarily preordained to develop type 2 diabetes," said senior author Cuilin Zhang, M.D., Ph.D., of the Epidemiology Branch at the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), the NIH institute where much of the analysis was conducted. "It appears they may have some degree of control. Sticking to a healthy diet may greatly reduce their chances for developing diabetes later in life."

In addition to Dr. Zhang's role in the study, funding support was provided by the NIH's National Institute of Diabetes and Digestive and Kidney Diseases (grants DK058845 and P30 DK046200-18) and the [National Cancer Institute](#) (grant CA58305).

Dr. Zhang led the multidisciplinary team that conducted the study, including the first author Deirdre K. Tobias, Sc.D., and colleagues Frank B. Hu, M.D., Ph.D., Jorge Chavarro, M.D., Sc.D., Bernard Rosner, Ph.D., and Dariush Mozaffarian, M.D., D.P.H., of the Harvard School of Public Health, Boston. Drs. Hu, Chavarro, Rosner and Mozaffarian are also affiliated with the Brigham and Women's Hospital and Harvard Medical School.

The study appears online in the *Archives of Internal Medicine*.

The body uses insulin, produced in the pancreas, to move the sugar glucose from the blood and into the cells. In people with [type 2 diabetes](#), cells do not respond appropriately to insulin, and, if untreated, blood sugar reaches high levels. Complications of diabetes include heart disease, stroke, [kidney disease](#), blindness and amputation.

Research has shown that, among the general population, healthy eating can reduce the risk of developing type 2 diabetes. Dr. Zhang and her colleagues have [shown previously](#) that, before they conceive, women who follow a diet low in cholesterol and animal fat, low in sugar

sweetened beverages, but high in fiber, and who are physically active have a reduced risk of gestational diabetes.

This study included 4,413 women who developed gestational diabetes between 1991 and 2001. The women were taking part in a long-term study of nurses called the Nurses' Health Study II. As part of the ongoing study, the nurses filled out questionnaires every other year on lifestyle and health. They completed a questionnaire every four years about their intake of several common food items during the previous year.

The researchers ranked the women's responses in terms of how closely they adhered to three widely studied diets: a [Mediterranean-style diet](#), the Dietary Approaches to Stop Hypertension—or [DASH](#)—diet and the [Healthy Eating Index](#), a measure of how closely an individual follows the healthy eating guidelines developed by the United States Department of Agriculture. All three diets promote eating fruits, vegetables, nuts, legumes and [whole grains](#).

Of the women in the study, 491 later developed type 2 diabetes. The researchers found that women who adhered most closely to these diets (scores in the top 25 percent) lowered their risk for type 2 diabetes considerably when compared to the least compliant group (lowest 25 percent):

- Mediterranean Diet (40 percent lower risk)
- Dash Diet(46 percent lower risk)
- Healthy Eating Index pattern (57 percent lower risk)

On average, these women developed type 2 diabetes about 14 years after they had experienced gestational diabetes.

"Our findings suggest that reaching out to women who have had [gestational diabetes](#) on the importance of a healthy diet might

significantly reduce the overall rate of type 2 diabetes," Dr. Tobias said.

Some women in the study who adhered to a healthy diet still developed type 2 diabetes. Dr. Zhang said her team is evaluating other factors, such as genes and physical activity levels and the interaction between genes and diet and lifestyle factors, that might affect a woman's [diabetes risk](#) as well, in a large ongoing study on U.S. and Danish women ([Diabetes & Women's Health Study](#), www.dwhstudy.org) supported by the NICHD.

Provided by National Institutes of Health

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