

# Is there an association between a pregnant mother's diet and her child's weight?

March 15 2021

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Approximately one in five children and adolescents in the United States has obesity. These children have an increased risk of asthma, type 2 diabetes, and orthopedic disorders. Studies have also found links between childhood obesity and low self-esteem and poor academic performance. Children with obesity, in turn, are more likely to become

obese as adults. As adults with obesity, they will experience a higher risk of coronary artery disease, hypertension, stroke, chronic kidney and liver disease, many types of cancer, depression, and other mental health disorders.

Research has shown that accelerated [weight gain](#) in early childhood is associated with obesity later in childhood and during adolescence. Therefore, identifying the determinants of accelerated [weight](#) trajectories in children may set the stage for the development of strategies to successfully reduce obesity, as well as its associated conditions, in both childhood and adulthood.

The authors of "Maternal Diet in Pregnancy Is Associated with Differences in Child Body Mass Index Trajectories from Birth to Adolescence," published in *The American Journal of Clinical Nutrition*, believe that a mother's diet during pregnancy plays a pivotal role in determining their child's BMI trajectory. Childhood weight issues may originate during pregnancy because the pathways that program a child's metabolism, growth, and eating behaviors are sensitive to in utero influences. According to the study's lead author, Dr. Carmen Monthe-Drèze, "to date, studies linking [maternal nutrition](#) during pregnancy to offspring growth have focused on the newborn and early-childhood period, with limited data extending later into childhood. We wanted to better understand dynamic growth changes that occur from childhood through adolescence as a result of maternal nutrition in pregnancy. We specifically wanted to assess whether there are distinct periods between birth and adolescence when rates of weight gain are more susceptible to the programming effects of nutrition in pregnancy."

To conduct their research, the study team analyzed data from 1,459 mother-child pairs from Project Viva, an ongoing cohort study of maternal and child health conducted in Boston, Massachusetts, at the Harvard Pilgrim Health Care Institute. Dietary data were collected via

food questionnaires completed by mothers during their pregnancy. Using these data, the authors computed three dietary indices: the Dietary Inflammatory Index (DII), Mediterranean diet score, and the Alternate Healthy Eating Index-for Pregnancy. Following birth, the offspring's weight and height were measured several times between birth and adolescence. From these data, body mass index (BMI) was computed. Next, the authors determined how the mother's dietary index scores were associated with offspring growth trajectories based on BMI during specific periods from birth through adolescence.

According to Dr. Monthé-Drèze, the results of the study "suggest maternal nutrition during pregnancy may have a long-term impact on children's weight trajectories, and that there are specific developmental periods when nutrition during pregnancy may influence offspring growth. For example, we found that a pregnancy diet with higher inflammatory potential was associated with faster BMI growth rates in children between three and ten years of age. We also found that lower adherence to a Mediterranean-style diet during pregnancy was associated with higher BMI trajectories through adolescence." Interestingly, mothers' Alternate Healthy Eating Index-for Pregnancy score did not predict their offspring's growth trajectory.

Given the results of this study, Dr. Monthé-Drèze stressed, "it is important to counsel women who are pregnant or planning to become pregnant on the importance of a healthy diet during pregnancy. In particular, women who are pregnant or may become pregnant should consider a Mediterranean diet, which may not only benefit their own health, but may also help their child maintain a healthy weight." A Mediterranean-style diet has low inflammatory potential and is rich in vegetables, fruits, legumes, nuts, low-mercury fish, and good quality oils such as extra virgin olive oil. These foods provide important sources of vitamin D, omega-3 polyunsaturated fatty acids, and other nutrients that have been shown to be beneficial for offspring health.

According to Dr. Monthé-Drèze, "research has shown that the foods that we eat during pregnancy may influence the metabolism of the growing child as well as their eating behaviors and food preferences.

Additionally, the food choices women make during pregnancy are likely to be similar to food choices they offer their children. Therefore, it is conceivable that maternal nutrition during pregnancy may be related to long-term weight issues in the offspring. Additional research is therefore needed to better understand the relationship between maternal diet in pregnancy and child BMI and weight gain patterns."

Dr. Monthé-Drèze also pointed out that healthcare providers need to be particularly alert to children at high risk for weight gain based on the mother's dietary habits during pregnancy, encouraging healthy and nutritious food choices to support healthy weight throughout infancy, childhood, and adolescence.

It is important to keep in mind that individual nutritional needs during pregnancy vary. Women who are pregnant or who may be considering [pregnancy](#) should consult their healthcare provider to choose the [diet](#) that is most appropriate to support their health and the health of their child.

"As scientists and as a society as a whole we have failed to stem the tide of rising [childhood obesity](#). This failure costs mothers and children dearly," according to Dr. Monthé-Drèze. "There is reason to be optimistic about the future; however, we must conceptualize the problem differently in order to solve it."

**More information:** *The American Journal of Clinical Nutrition* (2020). [DOI: 10.1093/ajcn/nqaa398](https://doi.org/10.1093/ajcn/nqaa398)

Provided by American Society for Nutrition

Citation: Is there an association between a pregnant mother's diet and her child's weight? (2021, March 15) retrieved 21 June 2024 from <https://medicalxpress.com/news/2021-03-association-pregnant-mother-diet-child.html>

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