**PUBLIC RELEASE: 8-AUG-2016**

Mom's high-fat diet may have a lasting impact on baby's gut

BIOMED CENTRAL

[SHARE](http://www.eurekalert.org/pub_releases/2016-08/bc-mhd080416.php)

[PRINT](http://www.eurekalert.org/pub_releases/2016-08/bc-mhd080416.php) [E-MAIL](http://www.eurekalert.org/pub_releases/2016-08/bc-mhd080416.php)

A mother's high-fat diet during pregnancy could have a lasting impact on the bacteria living in her baby's gut, according to a study published in the open access journal *Genome Medicine*. Researchers at Baylor College of Medicine in the US examined a cohort of 157 women and their newborn babies, and found an association between the mothers' diets and distinct changes in their offspring's microbiome, which could affect energy extraction from food and early immune development.

The changes in the babies' microbiomes were present from birth until at least six weeks of age. The findings have implications for dietary recommendations in pregnancy, the researchers suggest.

Dr. Kjersti Aagaard, the corresponding author on the study and associate professor of obstetrics and gynecology at Baylor, said: "Diet is very amenable to change and women are highly motivated to make healthy changes during pregnancy. Traditionally, dietary interventions during pregnancy have focused on micronutrients, such as iron and folic acid. We speculate that there may be a sound argument to also discuss and estimate fat intake."

To study the potential impact of the maternal diet during pregnancy and lactation on the gut microbiome of newly-born children, the researchers examined stool samples from 157 newborn babies that were taken at 24 to 48 hours post-delivery. Out of these 157, a subset of 75 babies was further sampled at four to six weeks of age.

The mothers' eating habits during pregnancy were assessed by use of the Dietary Screener Questionnaire, a set of 26 questions asking how often common foods and beverages were consumed in the last month. Responses were used to estimate daily intakes of added sugars, fat and fiber during the month prior to delivery which represented the latter part of the third trimester of pregnancy.

The researchers found that the mothers' dietary intake of calories from fat per day ranged from 14.0% to 55.2%. The average daily intake of calories from fat was 33.1%. The daily intake as recommended by the Institute of Medicine in the US is between 20 and 35 percent.

Using DNA-sequencing to analyze the composition of the bacterial community present in the infants' stool, the researchers noticed that a high-fat diet in the mothers was significantly associated with fewer numbers of Bacteroides microbes in the infants' microbiome both in samples taken shortly after birth and at four to six weeks of age.

Bacteroides are involved in breaking down and extracting energy from certain carbohydrates. As a consequence of depletion of Bacteroides, these carbohydrates could become unusable to the infant or other microbes. A persistent reduction of Bacteroides species in the infant gut could thus have significant consequences for energy extraction from food and immune development, according to the researchers.

Dr. Kjersti Aagaard said: "We were surprised when we observed the association between fewer Bacteroides and a high fat maternal diet during pregnancy. These findings open up whole new lines of research, and emphasize the importance of including maternal diet questionnaires and data when studying early changes in the microbiome. However, further studies are needed to demonstrate if changes in women's diets have a beneficial impact on their infants in the immediate and longer term."

Observational studies such as this contribute to the evidence showing that a mother's diet is related to her baby's gut, but because other factors cannot be ruled out with this type of research, cause and effect cannot be established. In addition, the findings of this prospective cohort study may be limited by its use of self-reported data.

Yet while certain aspects such as total caloric intake could not be assessed, the researchers showed that the questionnaire used in this study adequately captured maternal dietary intake during the third trimester of pregnancy in a way that was consistent with the general US population and clinical expectations.

###