18 April 2011 Last updated at 18:51

**BBC**

**Mother's diet during pregnancy alters baby's DNA**

By James Gallagher Health reporter, BBC News



A mother's diet during pregnancy can alter the DNA of her child and increase the risk of obesity, according to researchers.

The study, to be published in the journal Diabetes, showed that eating low levels of carbohydrate changed bits of DNA.

It then showed children with these changes were fatter.

The British Heart Foundation called for better nutritional and lifestyle support for women.

It is thought that a developing baby tries to predict the environment it will be born into, taking cues from its mother and adjusting its DNA.

Epigenetics

Studies in animals have shown that changes in diet can alter the function of genes - known as epigenetic change.

It is a growing field trying to understand how the environment interacts with genes.

In this study, the researchers took samples from the umbilical cord and looked for "epigenetic markers".

They showed that mothers with early pregnancy diets low in carbohydrates, such as sugars and starch, had children with these markers.

They then showed a strong link between those same markers and a child's obesity at ages six and nine.

Professor Keith Godfrey, who is from the University of Southampton and led the international study, told the BBC: "What is surprising is that it explains a quarter of the difference in the fatness of children six to nine years later."

The report says the effect was "considerably greater" than that of birth weight and did not depend on how thin or fat the mother was.

The changes were noticed in the RXRA gene.

This makes a receptor for vitamin A, which is involved in the way cells process fat.

Professor Godfrey said: "It is both a fascinating and potentially important piece of research.

"All women who become pregnant get advice about diet, but it is not always high up the agenda of health professionals.

"The research suggests women should follow the advice as it may have a long term influence on the baby's health after it is born."

Professor Mark Hanson, of the British Heart Foundation, said: "This study provides compelling evidence that epigenetic changes, at least in part, explain the link between a poor start to life and later disease risk.

"It strengthens the case for all women of reproductive age having greater access to nutritional, education and lifestyle support to improve the health of the next generation, and to reduce the risk of the conditions such as diabetes and heart disease, which often follow obesity."