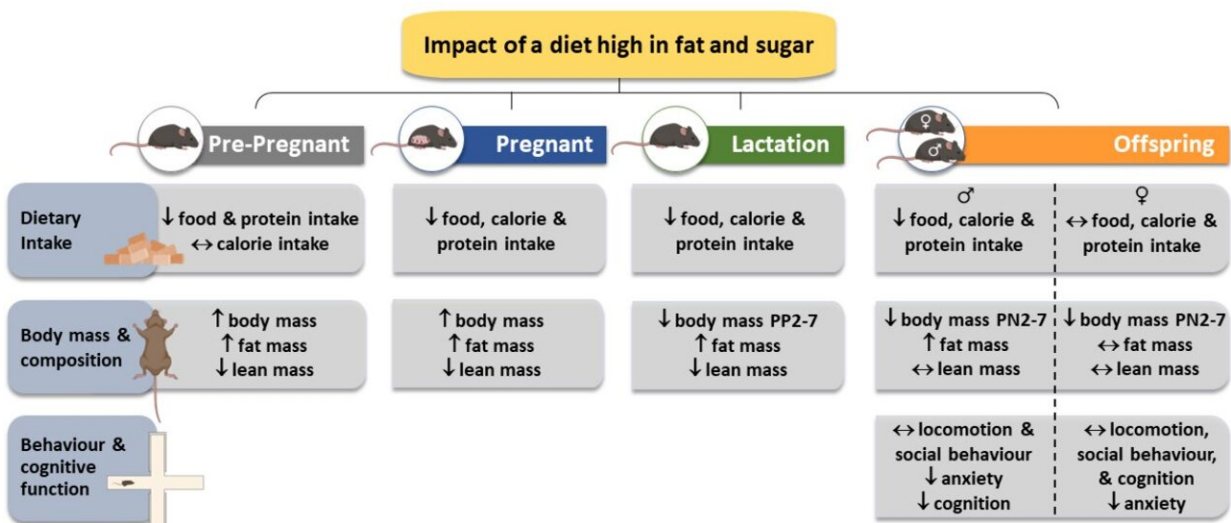


How does diet before and during pregnancy affect your child?

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Credit: *Nutrients* (2023). DOI: 10.3390/nu15214594

Every mother wants to have the healthiest child she can, and new research shows that the nutritional status of the mother during pregnancy can affect outcomes for the baby—with male and female offspring affected differently.

Dr. Emily Camm showed that achieving and maintaining optimal nutritional status, fitness and weight before and during pregnancy has immediate and long-term benefits for the health of both the mother and her child.

The latest work by the team from Hudson Institute of Medical Research and Cambridge University is [published](#) in the journal *Nutrients*, outlining research in a preclinical model that is relevant to humans.

Dr. Camm said her research focused on the effects on pregnancy and offspring outcomes of a diet high in fat and sugar, and compared the results to a cohort fed a diet high in nutrients and low in sugar and saturated fats.

How does a cafeteria-style diet affect pregnancy?

"It's not always possible for women to control their body weight, but they do have control over what and how they eat, so this study aimed to show how a western 'cafeteria-style' diet can impact the eventual health of the child," Dr. Camm said.

"Our study focused not only on pregnancy but the pre-conception period, as this a sensitive period of development and can also have a significant impact on offspring health."

"It's important to note that pre-conception health is important for fathers as well as mothers, because an altered diet can also affect sperm quality."

"Overall, our findings demonstrate that a diet high in fats and sugar—which is very common in western and eastern societies—alters the growth, adiposity (percentage of body fat), and behavior of offspring, but interestingly, there are [sex-specific differences](#) in the effects we found."

Girls and boys affected differently by maternal diet

After weaning there were differences in the growth rate and total body

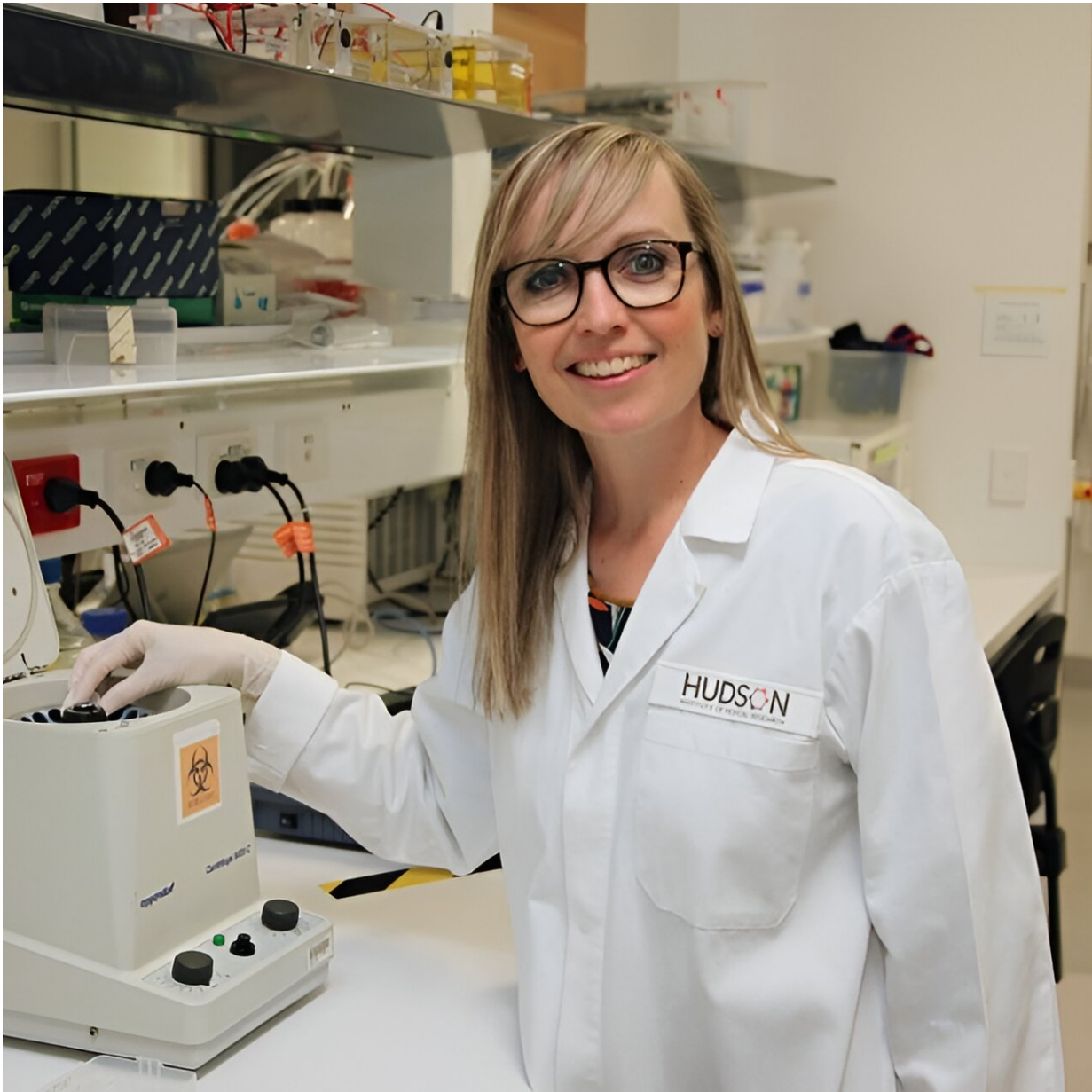
fat content of male but not [female offspring](#) who were exposed to the altered maternal diet.

"There are sex-specific differences in the way males and females respond to an altered maternal diet," Dr. Camm said.

"Although the females gained more weight, at the end of the study at four months of age, the males actually had more adipose tissue (fat deposits) than the females."

The researchers also found behavioral differences in the offspring who were exposed to the altered [maternal diet](#) that continued as they grew, including more risk-taking behaviors.

"This finding is in contrast to previous studies that reported more anxiety-related behaviors in offspring whose mothers were exposed to an altered diet during the pre-conception period and/or pregnancy, but the difference is that those studies tended to use diets just high in fats, rather than both fats and sugars, which is more indicative of the diets modern western and eastern populations consume."



Dr Emily Camm. Credit: Hudson Institute of Medical Research

Next steps

Dr. Camm and her team at Hudson Institute are now also studying human pregnancies—examining the placentas of women who have a

high BMI, or who have experienced a pregnancy complication.

"We're trying to understand how the mum and the baby are affected in various pregnancy complications. We can get a lot of that information from the mum's blood, the placenta and the cord blood at the time of delivery," she said.

"The end goal is to work out ways in which we can intervene and help mothers have a safe pregnancy, and babies the best start to life."

BMI and pregnancy facts

Women who are above a healthy weight in pregnancy have a higher risk of complications. To help reduce these risks, the Body Mass Index (BMI), which is a ratio of weight to height (kg/m^2), is measured at the first antenatal appointment.

The incidence of a BMI of greater than 30 is increasing rapidly worldwide in both developed and developing countries, largely as a result of dietary changes (World Health Organization).

While BMI does not necessarily reflect body fat distribution or describe the same degree of fat deposition in different individuals, at a population level it is a practical and useful measure to identify obesity (AIHW).

Research shows that women want to be fully informed about the risks of high BMI in pregnancy and how to minimize them, to have the best outcomes for their pregnancy and their child.

Dr. Emily Camm's research aims to provide data about these associations.

Maternal body mass index (BMI) and pregnancy

Women who are above a healthy weight have an increased risk of complications, including gestational diabetes, preeclampsia and blood clots. They are also more likely to require a cesarean section and have longer hospital stays after delivery.

Antepartum care

Antepartum care refers to the medical care provided to [pregnant women](#) before childbirth. For women with a high BMI, this care is especially important as it can help identify and manage any potential complications.

Women are advised to have more frequent prenatal visits and additional testing, such as glucose tolerance tests, to monitor for gestational diabetes. It is also important for these women to work closely with their health care provider to optimize weight gain in pregnancy and any other health conditions.

Lifestyle interventions

A healthy diet and regular exercise are crucial for all pregnant women. A balanced diet that includes plenty of fruits, vegetables, whole grains, and lean proteins can help manage weight gain during pregnancy and provide essential nutrients for both the mother and the baby.

It is also important to limit intake of processed and high-fat foods, exercise to manage [weight gain](#) and promote overall health during pregnancy—consult with a health care provider before starting any exercise routine during [pregnancy](#).

More information: Emily J. Mort et al, Sex-Specific Effects of a Maternal Obesogenic Diet High in Fat and Sugar on Offspring Adiposity, Growth, and Behavior, *Nutrients* (2023). [DOI: 10.3390/nu15214594](https://doi.org/10.3390/nu15214594)

Provided by Hudson Institute of Medical Research

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