

Mom's depression in late pregnancy may impact her baby's immune system

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New research from the CHILD Cohort Study sheds light on the link between a woman's psychological wellbeing during pregnancy and the health of her newborn's immune system.

Published in [Clinical Experimental Allergy](#) and featured on the journal's cover, the research found that children born to mothers who experienced depression in late pregnancy had reduced levels of an important immune antibody called secretory immunoglobulin A (sIgA).

Animal research has previously shown a link between maternal distress before and during pregnancy and an offspring's increased risk for allergies. "To our knowledge, ours is the first human study to show an association between the timing of a mother's depression during pregnancy and a lowered gut immunity in her infant," said senior researcher Dr. Anita Kozyrskyj, an AllerGen investigator and a professor in the Department of Pediatrics at the University of Alberta.

The study found that when mothers experienced depression in the third trimester of pregnancy, or persistently before and after birth, their infants were twice as likely to have low sIgA levels compared to infants whose mothers were not depressed. The sIgA antibody is thought to play a critical role in helping an infant's developing immune system to recognize the difference between harmful and harmless substances in the gut.

"Our findings suggest that there is a 'critical window' when a mom's mental health can have a significant impact on the development of her infant's gut microbiome and immune health," said Dr. Kozyrskyj.

The researchers followed 1,043 newborn babies participating in the CHILD Cohort Study – a national research project that is studying nearly 3,500 Canadian children and their families to understand how allergies, asthma, obesity and other chronic diseases develop in early life.

Mothers completed questionnaires about their level of depressive symptoms and perceived stress during pregnancy and after their babies were born. Mothers and caregivers also provided information about their breastfeeding and infant feeding practices, medication use and home environment. When the infants were three months old, the researchers measured levels of sIgA in their stool.

"Interestingly, we did not find a link between a mom's depression that occurred after birth and her infant's sIgA levels, so the third trimester appears to be particularly important," commented the study's first author Liane Kang, a medical student at the University of Alberta.

Since sIgA is also passed from moms to infants through breastmilk, the researchers wondered if breastfeeding might change the relationship between maternal distress and lower sIgA levels in infants.

However, they found that the association persisted even when breastfeeding status and other factors that can influence a baby's gut microbiome were accounted for. "We also found that the lowest levels of sIgA occurred when infants were between four and eight months of age, which is the time they are starting to produce greater amounts of their own sIgA," added Kang.

These findings build on the team's previous, smaller-scale study of 400 infants from the CHILD cohort that showed a general association between a mother's prenatal and postnatal distress and her child's sIgA levels.

"These new findings are helping us to understand when a mother's distress has the most impact on her infant's sIgA concentrations, which underscores the need for community programs and policies to assist mothers in distress, and highlights the need for family and healthcare professionals to support women during pregnancy and in the months after birth."

About the CHILD Cohort Study:

Launched in 2008 by CIHR and AllerGen NCE, the [CHILD Cohort Study \(CHILD\)](#) is tracking nearly 3,500 Canadian infants and their families to help determine the root causes of chronic diseases such as asthma, allergies and obesity. CHILD spans four provinces, involving over 140 multidisciplinary researchers, students and research staff. [Watch the CHILD Cohort Study videos.](#)

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The Faculty of Medicine & Dentistry at the University of Alberta is a leader in educating and training exceptional practitioners and researchers of the highest international standards. The faculty's mission is to advance health through excellence in teaching, research and patient care. It is home to one of the top 100 ranked medical schools in the world.

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Media Contacts:

Ross Neitz, Communications Associate
Faculty of Medicine & Dentistry, University of Alberta
780-297-8354
rneitz@ualberta.ca

Kim Wright
AllerGen NCE Inc.
905-525-9140 ext. 26641
kimwright@allergen-nce.ca