

# Stress hormones in breast milk linked to c-section and support for mum

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Auckland mum Marcelli Coronet feeds baby Martina Coronet De Mattos.  
Credit: University of Auckland

New research from the Liggins Institute sheds light on what affects stress hormone levels in breast milk.

Breast milk is recognised for its nutritional and immunity-boosting powers, but it also contains other less well-understood factors - including [stress hormones](#).

As well as a major regulator of the body's stress response, the stress hormone cortisol is an important influencer of mood and growth. Cortisol also directs energy towards making fat, not muscle, making it even more vital in early growth and development.

Researchers at the Liggins Institute analysed breast milk samples from 650 mothers when their babies were three to four months of age (12-16 weeks). The findings revealed levels of cortisol, and the related hormone cortisone, are higher in the milk of mothers who delivered their babies by caesarean section, or who have no partner at home.

"These findings reinforce that there are real emotional and biological challenges that face mothers who have undergone a c-section delivery or who don't necessarily have the full support to cope fully with a new baby," says researcher Shikha Pundir, a final year PhD student at the Institute.

It's still unclear exactly how stress hormones in [breast milk](#) affect babies' growth and development, she says.

"We know that these stress hormones are not 'bad' in themselves. There is evidence a certain amount is needed to stimulate healthy development. Exactly how much hasn't yet been defined."

Evidence from animal studies suggests that higher cortisol in mothers' milk affects babies' temperament. Studies in rodents showed that stress

during motherhood emboldened offspring. But primate studies showed that higher [cortisol](#) in milk made monkey babies more irritable and nervous, with a similar effect observed in the few human studies done so far.

"Our study shows that maternal biological and social environment can significantly modify milk composition," says Mrs Pundir.

"But more research is required to know if there are any long-term effects of these second-hand hormones on infant physiology."

Professor Cameron-Smith, who leads this project, says these findings underline the importance of providing support to all mothers.

"Having a new baby and breastfeeding are often difficult and stressful times," he says. "If there isn't effective intervention then this research shows that the mother may be transmitting to her baby some of this stress, which could potentially have a long-term adverse impact on the baby's health. We need to be supporting all mothers."

This research also hinted at the complexity of stress hormones in milk.

Factors that were not linked to stress hormone levels included a mother's age, BMI, weight gain during pregnancy, gestational diabetes, educational level, and number of other children.

Mrs Pundir will talk about her findings at an event in Auckland celebrating the Liggins Institute's 15th anniversary on Wednesday night, August 10.

She also has a second study underway to investigate whether milk stress hormone levels fluctuate or remain stable over a 24-hour period.

Provided by University of Auckland

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