

Genetic make-up has little impact on dental health, new study finds

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A new study has found genetic makeup does not predispose people to tooth decay, however, the research did find that children with overweight mothers are more likely to have cavities.

The paper, published in the latest edition of *Pediatrics*, estimates that one in three Australian children have [tooth decay](#) by the time they start school.

Lead researcher Dr. Mihiri Silva, from the Murdoch Children's Research Institute, said the study looked at the teeth of 173 sets of twins (identical and non-identical) from pregnancy through to six years of age.

"How genetics impacts on [dental health](#) has not often been studied," Dr. Silva said. "This is the first twin study that looks at both genetics and early life risk factors, such as illness and lifestyle.

"We found that [identical twins](#), with identical genomes, have varying degrees of [decay](#). This means that environmental factors, like a lack of fluoride in water, seem to be the prime cause of cavities not [genetic makeup](#)."

However, Dr. Silva said the research did find a link between the mother's [health](#) and lifestyle during pregnancy and the child's future dental health, with obesity in pregnancy a definite marker for increased risk of child tooth decay.

"The relationship between maternal obesity and child tooth decay is complex," Dr. Silva said. "Perhaps the mother's weight has a biological influence on the developing fetus or perhaps the risk of decay rises

because of increased sugar consumption in that household."

One in three of the twins studied (32.2 per cent) had dental decay, and almost one in four (24.1 per cent) had advanced decay.

Dr. Silva said it was important that people don't think of tooth decay as genetic.

"If people think the health of their teeth is down to their genetic make-up, they may not be prepared to make important lifestyle changes," she said.

"Our findings also reinforce how important it is for pediatricians and other health professionals to educate children to start preventive measures early in life, prior to the onset of damage to dental tissues."

Dr. Silva said tooth decay was a serious health problem, because there was a clear link between child [cavities](#) and developing diabetes and cardiovascular disease later in life.

"Tooth decay is also the leading cause of preventable hospital stays for Australian children," Dr. Silva said.

According to 2011 Victorian Department of Health statistics, more than 26 000 Australians under the age of 15 are admitted to hospital to treat [tooth](#) decay every year.

Dr. Katrina Scurrah, from Twins Research Australia and the School of Population and Global Health at the University of Melbourne, said the study illustrated the advantages of studying twins to find out about health conditions and the importance of considering the effects of early life risk factors as well as genes.

But she said it's important to try to replicate these findings in other studies that follow children through to adulthood and to explore other risk factors for dental decay.

This latest study in *Pediatrics* collected data about the twins at 24 and 36-weeks' gestational age, at birth, 18 months and six years of age. This included a dental examination at age six.

Questionnaires about the mother's weight, illnesses, medication use, vitamin D levels, stress, alcohol intake and smoking were collected during pregnancy.

More information: Mihiri J. Silva et al. Genetic and Early-Life Environmental Influences on Dental Caries Risk: A Twin Study, *Pediatrics* (2019). [DOI: 10.1542/peds.2018-3499](https://doi.org/10.1542/peds.2018-3499)

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