

Excessive weight gain in early childhood affects teenage heart health

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Excessive weight gain in children under two years can lead to cardiovascular and metabolic risk factors in teenage years including increased cholesterol, being overweight and having fat around the

middle, finds new research from the University of Sydney.

Obesity and cardiovascular risk factors in childhood and adolescence are associated with increased risk of cardiovascular disease in adulthood, the leading cause of death in Australia.

Published today in *The Journal of Paediatrics*, the study tracked the Body Mass Index (BMI) of children from birth to 14 years and found that earlier onset of high BMI (in children under two years) resulted in higher cholesterol levels, higher blood pressure, and more central (unhealthy) fat in adolescence, compared with onset of high BMI in children aged three to five.

Teenage obesity is a major health problem in Australia, but the pathways to and the consequences of obesity in teenagers has not been well studied. This is the first study to look at the consequences of [weight](#) gain at two different stages of early childhood and its impact on developing cardiovascular disease as an adult.

"Our study found that there are two main pathways to obesity as a teenager—[rapid weight gain](#) in the first two years of life (early weight gain) or rapid weight gain between ages two and five years of age (later weight gain)," said senior author University of Sydney's Professor David Celermajer, Scandrett Professor of Cardiology at Sydney Medical School and the Heart Research Institute.

"The data shows that there are consequences of the timing of the onset of excess BMI in early childhood.

"Earlier onset of a rising BMI that persisted through childhood results in greater central fat and higher cholesterol in teenagers, independent of their BMI at 14 years."

Study details:

A group of 410 Australian children were assessed from birth throughout childhood to age 14 years, recording their weight, height, and waist circumference. Of the 410 children, 190 had detailed measurements of cholesterol, blood pressure and central weight recorded at age 14 years.

Three groups were identified in the study: normal BMI, "Early Rising" excess BMI from two years, and "Late Rising" excess BMI from five years.

Lead author Dr. Jennifer Barraclough, cardiologist and Ph.D. student at University of Sydney and the Heart Research Institute said: "The early weight gain group have more centrally placed or unhealthy fat than the later weight gain group. Fat around the middle is a key risk factor for cardiovascular disease in adulthood.

"The early weight gain group also had significantly higher cholesterol levels compared to a group of healthy weight teenagers.

"Our study shows that the earlier the onset of excess fat before five years of age, the more likely the individual is to have fat around the middle by adolescence.

"The study also found that both early and late weight gain groups were more likely to have mothers with overweight or obesity and a high BMI, than healthy weight teenagers."

Co-author Professor Louise Baur, Head of Child & Adolescent Health at the University's Sydney Medical School and The Children's Hospital at Westmead said: "This study has shown that it is important for families and the community to understand the risks of excess weight gain in early life and to ensure [healthy eating](#) and activity are supported from a very

young age.

"These findings may provide an opportunity to identify "high risk" young children and trial interventions at an early age, prior to the development of high cholesterol and centrally placed fat which becomes evident in adolescence and increases the risk of heart disease as an adult."

Professor Baur highlighted the importance of healthy infant feeding.

"Breastfeeding should be supported where possible until at least 12 months, with solids introduced from around 6 months.

"Healthy eating and physical activity for all family members is also an important factor promoting healthy weight gain in the young child. Family doctors and early childhood nurses can also help to monitor weight gain in this critical period of life," she said.

More information: *The Journal of Paediatrics*, [DOI: 10.1016/j.jpeds.2018.12.034](https://doi.org/10.1016/j.jpeds.2018.12.034) , [www.jpeds.com/article/S0022-34 ... \(18\)31808-0/fulltext](http://www.jpeds.com/article/S0022-34(18)31808-0/fulltext)

Provided by University of Sydney

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