

Diet and exercise programs alone won't tackle childhood obesity, says study

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Focusing on immediate fixes such as diet and exercise programs alone won't curb the tide of childhood obesity, according to a new study that for the first time maps the complex pathways that lead to obesity in

childhood.

Coordinated by the University of Sydney's Charles Perkins Centre the study finds children whose parents did not complete high school and who live with social disadvantage, were more likely to be affected by overweight or obesity in mid-adolescence. High school completion is a strong indicator of socio-[economic status](#).

These factors were 'on ramps' which flow down to influence the [body mass index](#) (BMI) of parents, in turn providing immediate lifestyle impacts (diet, [sedentary time](#)) on a child's risk of developing obesity.

Pediatrician Professor Louise Baur of the University of Sydney said the research explains why most current public health policies to prevent [childhood obesity](#) have had limited success.

"We tend to ignore the root causes of [childhood](#) obesity which include social disadvantage, and of course, this is not something parents or children choose for themselves," said Professor Baur, co-author from the University's Charles Perkins Centre.

"While [healthy eating](#) and activity interventions are important, the solutions lie not just in the domain of health departments. We need to see many government departments working together to consider how to make structural changes to reduce social inequality if we want to change Australia's current trajectory."

Other interesting findings from the research include how different drivers of obesity play out at different life stages, particularly the influence of free time activity after the age of eight.

There are also different influences on how free time is spent and influenced for boys versus girls. For boys, more electronic gaming leads

to less active free time. For girls, better sleep quality leads to longer sleep time and more active free time.

Obesity in children

Childhood obesity occurs when a child is significantly overweight for their age and height. It can lead to a higher risk of cardiovascular disease, insulin resistance, psychological effects and even premature death.

In Australia, 1 in 4 [school-aged children](#) and adolescents are affected by overweight or obesity, with 1 in 12 affected by obesity. It is more common in those living in regional and [remote areas](#), those from lower socioeconomic areas, those from one-parent families and those with a disability.

How was the study conducted?

The study, published in *BMC Medicine* today, drew on data from "Growing up in Australia: The Longitudinal Study of Australian Children," a nationally representative sample of over 10,000 Australian Children.

The team of leading scientists and clinicians—bringing together the fields of data science, biology, pediatrics and public health—spent close to two years using state-of-the-art statistical modeling (Bayesian network modeling) and informed analysis to untangle a complex web of on-ramps and causal factors, many of which interplay.

Senior author Professor Sally Cripps of the University of Technology Sydney said the knowledge gained from this study is vital for policy makers moving forward and could not have been achieved without this

diverse skill-set.

"This is a truly multidisciplinary piece of research. Data alone is never enough to uncover the complex set of interacting factors which lead to childhood obesity. But by combining the skills of mathematicians and computer scientists with obesity and nutritional experts we have been able to predict and model what has never been clearly articulated before—showing the complex interplay between multiple upstream, downstream and causal factors, and how these play out over time for children and families," said Cripps, Director of Technology at the Human Technology Institute.

Lead author and statistician Wanchuang Zhu, also of the University of Technology Sydney and an affiliate of the Charles Perkins Centre said, "To our knowledge this is first time anyone has used the advanced statistical network modeling to analyze the complex factors that lead to childhood [obesity](#). It provides us with a much more complete picture."

More information: Louise Baur et al, Bayesian network modelling to identify on-ramps to childhood obesity, *BMC Medicine* (2023). [DOI: 10.1186/s12916-023-02789-8](#)

Provided by University of Sydney

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