Future obesity may be predicted at 3.5 years of age

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Researchers can predict which children are most likely to become obese by examining their mothers' behaviour around their birth, according to a recent University of Montreal study published in the *Archives of Pediatric and Adolescent Medicine.* "Although behaviour is extremely hard to change and is also influenced by a complex tangle of influencing factors in the environment, I hope these findings will help improve the social and medical services we offer to mothers and infants," said lead author Laura Pryor, a PhD candidate at the university's Department of Social and Preventive Medicine. The findings come as the province of Quebec, like other societies, grapples with a surge in childhood obesity over the last generation.

Pryor and the study team, led by Sylvana Côté, analyzed data drawn from the Quebec Longitudinal Study of Child Development that ran from 1998 to 2006. Quebec is fortunate in that it is able to offer scientists this kind of data, enabling them to look at how a situation evolves over time. Scientists studying this kind of phenomena in other areas must often rely on cross-sectional studies that are based on data collected at a specific time for a specific purpose. The team focused on 1,957 children whose height and weight measurements had been taken yearly, from the age of five months to eight years old, and recorded in a database. This information enabled the team to look at the development of the children's body mass index (BMI). BMI is calculated as weight in kilograms divided by height in meters squared. The researchers identified three trajectory groups: children with low but stable BMI, children with moderate BMI, and children whose BMI was elevated and

rising, called high-rising BMI.

"We discovered the trajectories of all three groups were similar until the children were about two and a half," Pryor said. "Around that point the BMIs of the high-rising group of children began to take off. By the time these children moved into middle childhood, more than 50 per cent of them were obese according to international criteria." Researchers found two factors that may explain this: the mothers' weight around the time they gave birth and whether the mothers smoked. A child with a mother who was overweight or who smoked during pregnancy was significantly more likely to be in the high-rising group. These two factors were found to be much more important than the other criteria that were studied, such as the child's birth weight.

The risk factors identified here represent increased probabilities of becoming overweight, not direct causes. More research will be required to determine how these early-life factors and others are correlated with childhood obesity. "Our research adds to the growing evidence that the perinatal environment has an important influence on later obesity," Pryor said. "This points to the need for early interventions with at-risk families in order to prevent the development of childhood weight problems and the intergenerational transmission of ill health. I would like to conduct further studies to find out what happens to these kids once they reach adolescence, and I hope that my research will help in the development of strategies to combat this serious public health issue."

Provided by University of Montreal