

## What babies eat – before and just after birth – can impact them for life, says new book

September 21 2017, by Ellen Goldbaum

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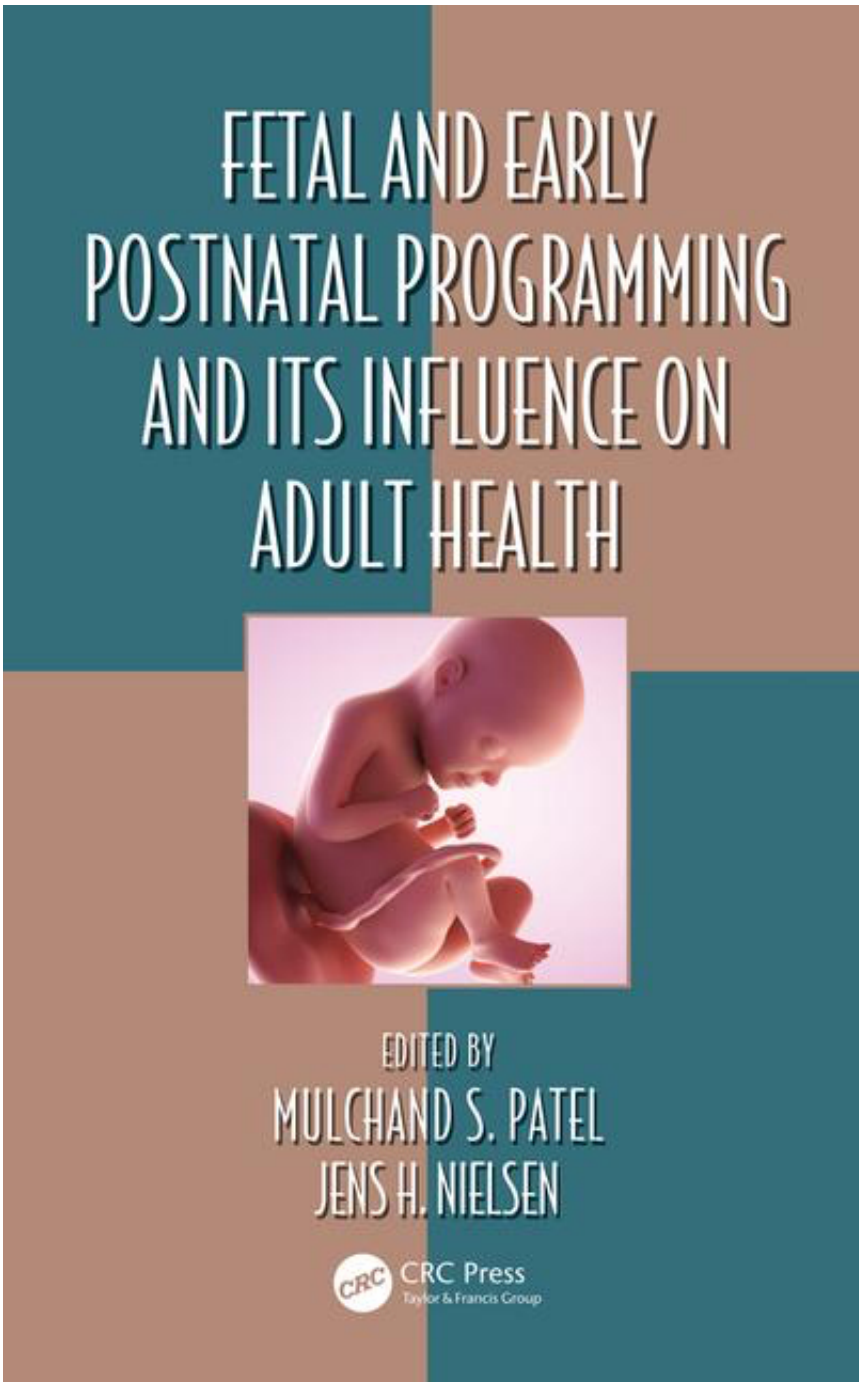
Credit: University at Buffalo

Despite efforts to promote healthy eating, the global obesity epidemic continues. Now a new book co-edited by a University at Buffalo researcher discusses how the path to obesity may start before birth or during infancy and how an individual's metabolism can be permanently reprogrammed by overfeeding early in life. The book discusses just how early interventions may need to be implemented in order to significantly reduce obesity.

"Fetal and Early Postnatal Programming and its Influence on Adult Health" (CRC Press, 2017), co-edited by Mulchand Patel, PhD, SUNY Distinguished Professor in the Department of Biochemistry at the University at Buffalo and Professor Jens Høiriis Nielsen of the University of Copenhagen, explores in detail the many fetal and immediate postnatal nutritional influences on adult health. It was written primarily for physicians, [health care providers](#), dietitians, public health practitioners and basic scientists.

Patel and his UB colleagues have been studying animal models of [obesity](#) for decades with a special focus on how metabolism in an individual is influenced by the diet of the immediate postnatal period. In a chapter in the new book, Patel and his co-authors at UB—Suzanne Laychock, PhD, professor of pharmacology and toxicology, Todd Rideout, PhD, associate professor of exercise and nutrition sciences, and Saleh Mahmood, PhD, research scientist in the Department of Biochemistry—discuss how this can occur.

"Our animal studies have shown that overfeeding, or the increased intake of carbohydrate-derived calories during the immediate postnatal period, can reprogram an individual's metabolism, creating negative health outcomes later in life," said Patel. "Our findings presented in this chapter also show that biochemical processes responsible for this metabolic malprogramming during the suckling period in the rat cannot be reversed by moderate calorie restriction in the postweaning period."



Patel noted that some current feeding practices in humans, such as providing children with milk formula without restriction (possible

overfeeding), and introduction of solid foods typically high in carbohydrates (usually cereals and fruits), may also lead to such metabolic malprogramming.

According to Patel, there is evidence that fetal and early postnatal altered nutritional experience can have long-lasting effects, even resulting in epigenetic (affecting changes in DNA) modifications that will affect not just the individual as he or she matures, but future generations as well.

"The beneficial effects of breast-feeding on reducing childhood obesity, as well as the impact of early nutritional intervention on the gut microbiome, are increasingly being recognized," said Patel. While breast-feeding enhances the health of individuals as they mature, altered aspects of fetal and early postnatal nutritional experience have more negative consequences.

"It is now well documented that altered nutritional experience during the fetal period (due to maternal malnutrition, obesity and diabetes) can have a long-lasting impact on metabolic capacities of the offspring, predisposing to the development of adult-onset obesity, Type 2 diabetes and metabolic syndrome in adult life," Patel said.

The book reviews how maternal obesity and maternal malnutrition can contribute to developmental programming in the offspring. It also discusses how the health of the mother in general can impact the offspring and outlines possible therapies for improving maternal [health](#) and that of the offspring.

Provided by University at Buffalo

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