

Researcher

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Early Childhood Malnutrition and Adult Obesity: Evidence From the Chinese Famine of 1959-1961

Developing countries today face the paradoxical dual burden of malnutrition and obesity. It has been hypothesized that early childhood malnutrition leads to a higher risk of adult obesity, although evidence is mixed. I study the health outcomes and health behaviors of 30-to-45-year-olds who were born during the 1959 to 1961 Chinese Famine. I find that women who were exposed to famine as infants have a higher BMI (0.84 kg/m²) and are more likely to be obese (by 5 percentage points) than women who were not exposed to famine. The effect of famine exposure increases along the BMI distribution. I do not find significant effects on obesity for men. I also find no evidence that the increase in BMI is differentially greater for the famine cohorts who are exposed to a food-rich environment in later life than for the famine cohorts who are not. Using detailed individual-level data on food intake and physical activities, I show that the increase in BMI for famine-exposed women is not due to higher fat intakes nor to more sedentary lifestyles. A biological rather than a behavioral mechanism appears to underlie the association between early childhood malnutrition and adult obesity.

Country where the research will take place

China

How does the research describe the impact of population/reproductive health on poverty reduction and/or economic growth?

My research shows that poor maternal nutrition leads to an increase in children's risk of developing obesity when they become adults. The effects of malnutrition seem to work through a biological rather than a behavioral, cognitive, or income channel, which implies that postnatal lifestyle interventions may not be as effective at reducing obesity as one hopes. Rather, it is important to focus resources on improving maternal nutrition, for the health and productivity of children in the long run.

How will the research address a policy need, and what kind of policy lesson is expected?

With obesity fast becoming an epidemic in developing countries, policymakers are looking into ways to reduce the prevalence and costs of obesity. My research links adult obesity to the early childhood environment, and argues that improving maternal and infant nutrition can help reduce the risk of obesity in the long run. This is particularly important for developing countries, where many adults were born in times of poor maternal nutrition and high rates of infant growth faltering, but are now experiencing higher dietary energy intake and a more sedentary

lifestyle. These adults face the highest risk of becoming obese and having cardiovascular and other chronic diseases. Societal resources should therefore be targeted at improving maternal and infant nutrition, and at monitoring and improving the health of those who were born in times of scarcity but are now facing nutritional excesses.

Methods used

I analyze adult men and women born between 1954 and 1966, which is five years before and after the 1959 to 1961 Chinese Famine. I use the excess mortality rate by province and by year of birth as a measure of famine exposure, and I test whether individuals born during the famine years and in a severely affected region grow up to be more obese. I also use community-level income at the time of survey as a proxy of food availability, and test whether individuals who have been malnourished at birth are even more likely to gain weight if they are exposed to nutritional excesses when they are adults, compared with those who are not exposed to excess food. Finally, I test the mechanisms through which childhood famine exposure may have an impact on adult obesity by studying behavioral and cognitive factors such as dietary intake, smoking and drinking behavior, physical activities, education, diet knowledge, and food preferences.

Data used

I use the China Health and Nutrition Survey (CHNS), which is a panel dataset with seven survey waves between 1989 and

2006. The CHNS covers nine provinces, 54 counties, and 235 communities in China, and provides detailed information on household and individual economic, demographic, and social characteristics. In particular, I make use of the anthropometric measures and information collected on dietary intake, physical activities, and morbidity, as well as individual income and educational attainment. I also use mortality

data and per capita GDP data from China's National Bureau of Statistics.

Research products

Conference presentation at the ASSA meeting, Denver, CO, January 2011.