

Babies born during famine have lower cognition in midlife

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Credit: University of Michigan

Hunger and malnutrition in infancy may lead to poor cognitive performance in midlife, according to a new study.

Researchers at University of Michigan, Michigan State University and Columbia University have found that child survivors of China's 1959-61 famine that killed millions appear to be haunted by their past, as their cognitive performances go downhill in their early 50s.

Published in the *International Journal of Epidemiology*, the study is among the first to investigate the long-term cognitive consequences of early life exposure to famine in a non-Western context.

"Many people believe that one's cognitive ability will [decline](#) with increasing age. But for people who were conceived and born between 1959 and 1961 in China, the decline rate is more rapid than normal," said Hongwei Xu, the lead author of the study and research assistant professor at U-M's Institute for Social Research.

Drawing on data from China's nationally

representative longitudinal survey of middle-aged and older adults in 2011, Xu and colleagues used validated assessments of cognitive functions, including attention, time orientation and episodic memory, as part of their tests with 2,446 rural Chinese who were born between 1958 and 1963.

Participants were also asked to redraw a picture of two overlapped pentagons shown to them, in a way to assess their visuospatial skills.

In addition, researchers analyzed data from a follow-up survey in 2013 to see changes in cognition between 2011 and 2013.

The study found that the group born in 1959, who had malnutrition in utero and in the first two years of life, scored higher in the baseline study than the reference group born in 1963—a year without famine.

"The surviving 1959 cohort may consist of the fittest of the fittest," Hongwei Xu said. "Despite having a higher general cognition at the baseline due to mortality selection, they experienced a sharper decline over a two-year follow-up."

According to the study, those born in 1961, the last year of the famine, had significantly lower cognitive scores than those born after the famine. And no significant negative famine effects were found in people born in 1962 who were mildly affected by famine during the prenatal period and no exposure to famine after birth.

After controlling for the education factor, researchers still found negative impacts on middle-aged adults born in China's three years of famine period.

Accelerated midlife cognitive decline could increase the risk of dementia or Alzheimer's diseases down the road. Xu is concerned that these groups may be at an elevated risk of these diseases in years to

come.

"China's population aging is accelerating," he said. "But not enough attention from both the government and the public have been paid to cognitive decline in middle-aged adults and seniors. People tend to treat all types of [cognitive decline](#) as part of a normal aging process. But our study showed that these groups are very vulnerable due to hunger or malnutrition in utero and infancy."

More information: Hongwei Xu et al. Early life exposure to China's 1959–61 famine and midlife cognition, *International Journal of Epidemiology* (2017). DOI: [10.1093/ije/dyx222](https://doi.org/10.1093/ije/dyx222)

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