Early-life exposure to famine increases risk of dyslipidemia in women, but not men

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Exposure to severe famine as a fetus or as an infant significantly increases the chance of having dyslipidemia in adulthood, according to research published in the open access journal *BMC Public Health*. Dyslipidemia is a risk factor for coronary heart disease and is defined as an abnormal amount of lipid in the blood.

Analysis of the prevalence of dyslipidemia in 2,752 people who were exposed to the Chinese famine between 1959 and 1961 revealed that those who were in utero or an infant during this period are over 50% more likely to have dyslipidemia in adulthood. Taking gender into account, this association remained true for women, but not for men.

Dr Jun Ma, lead author from Peking University Health Science Centre, said: "We found that early-life exposure to the Chinese famine only raises risk of dyslipidemia in women, which is in contrast to studies involving people exposed to the Dutch famine of 1944 and 1945. We speculate that this is due to cultural differences between Europe and China. In China, male children have historically taken precedence over females, and this gender bias may have led to males being more sufficiently nourished during the famine."

Between 1959 and 1961 almost the entire mainland China suffered an extreme food shortage, leading to severe famine that contributed to 30 million premature deaths. People who were born or grew up in this period provide a unique cohort to study the effects of famine on health status in adult life.

The researchers identified 2,752 people from the national China Health and Retirement Longitudinal study who lived in exposed and non-exposed famine regions between 1958 and 1961. Of these people, 797 had been exposed as a fetus, 536 as an infant and 597 at preschool age. The prevalence of dyslipidemia as an adult was 15.7% for the non-exposed group, 23.1% for the fetal exposed group, 22% for the infant exposed group, and 18.6% for the preschool age exposed group. Increases in dyslipidemia prevalence across all the groups were only significant for women.

Dr Ma said: "Severe maternal under-nutrition during pregnancy could play a key role in the observed increase in dyslipidemia risk in later life. Malnutrition in pregnancy has been shown in animal models to alter cholesterol synthesis in the fetus. Malnutrition during pregnancy has also previously been linked to an increased likelihood of consuming a high-fat diet and a lower level of physical activity."

The authors state that their study is limited by selection bias as very unhealthy people from the famine may have died young and not been included in the analysis. However, this would lower the real effect, making the study's findings an underestimate of the association between early-life exposure to famine and dyslipidemia in adulthood. The study is also limited by the fact that no information was available on the study participant's actual energy or nutritional intake during the famine, or the effect of other exposures such as communicable and non-communicable diseases.

More information: Zhenghe Wang et al, Fetal and infant exposure to severe Chinese famine increases the risk of adult dyslipidemia: Results from the China health and retirement longitudinal study, *BMC Public Health* (2017). DOI: 10.1186/s12889-017-4421-6

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