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## Early life factors and their relevance to intima-media thickness of the common carotid artery in early adulthood

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### Abstract

**Introduction:** Early life factors may predispose an offspring to cardiovascular risk factors in later life. It is plausible a range of exposures in early life may be involved in this predisposition, which may extend to “healthy” populations in Western populations.

We examined the association between a number of early life factors with the carotid intima-media thickness (IMT), a surrogate marker of atherosclerosis, in early adulthood of a healthy German population.

**Methods:** We studied term participants (n = 265) of the DONALD Study, with a bilateral sonographic measurement of the IMT in young adulthood (18–40 years) and data on early life factors (maternal and paternal age at child birth, birth weight (including appropriateness of birth weight- for gestational age), gestational weight gain and full breastfeeding (breastfeeding > 17weeks). Sonographic IMT measurements were performed on the left and right common carotid artery using a minimum of 4 measurements. Mean IMT values were obtained averaging the measurements from both sides, an overall average obtained from 8 and 16 measurement of both sides was used for this analysis. Information on gestation and birth were abstracted from the “Mutterpass”, maternal and paternal age at birth were inquired at study entry and breastfeeding information was assessed prospectively. Prospective association between early life factors and IMT were analyzed using multivariable linear regression models, considering age at IMT measurement, physician taking the measurement, in addition: birth year, first born status, maternal and paternal educational status, maternal overweight, presence of smokers in the household tested for potential confounding.

**Results:** Mean adult IMT was 0.56mm ± 0.03, range: 0.41mm-0.78 mm. Maternal age at child birth was of prospective relevance for IMT in young adulthood, however, this association was sex specific: Increased maternal age at child birth was independently associated with an increased IMT among female offspring during young adulthood ( $\beta$  0.029, SE 0.009) mm/decade, P = 0.003) only, this was not mediated by adult waist circumference. None of the remaining early life factors showed relevance for adult IMT levels among males and females in early adulthood.

**Conclusion:** This study suggests that advanced maternal age at child birth is of prospective relevance for IMT levels in younger adulthood in a healthy Western population. This association appears to be sex specific, with maternal age at child birth positively associated with IMT in females in early adulthood only.

### Conflict of Interest

“There is no conflict of interest”