**Being in utero during the Second World War is related to biomarkers of fetal programming**

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**Objectives.** Maternal trauma during pregnancy may lead to a disrupted developmental environment and adverse characteristic later in life for a child (i. e. higher diseases risk). Dermatoglyphic patterns, facial fluctuating asymmetry and 2D:4D digit ratio are proposed as biomarkers of early developmental conditions. We analysed, for a first time, a potential impact of being in utero during the Second World War on three biomarkers of fetal programming.

**Method.** The participants were 344 women and men aged 45-92 (mean=61.9; SD=10.92) from the Mogielica Human Ecology Study Site in rural Poland. Participants’ fingertips were scanned with a biometric reader and analyzed by specialized software. Facial photographs were taken under standardized conditions. The measurements of second and fourth finger length were performed on both hands. Absolute finger ridge count (AFRC, total amount of ridge counts in both hands), Md15 (difference between mean number of ridge counts on thumbs and little fingers between hands), levels of overall and central facial fluctuating asymmetry), and 2D:4D (a ratio of the lengths of second and fourth finger) in both hands were calculated. Analyses of covariance with age and sex as potential covariates (depending on the analysis) were performed.

**Results**. Participants who were in utero during the Second World War had higher degree of overall facial fluctuating asymmetry (p=0.01), higher degree of central facial asymmetry (p=0.04) and higher value of AFRC (p=0.05) on the average, than participants who were in utero before or after the war. No significant differences were observed for Md15 and 2D:4D.

**Conclusions.** Our results indicate that being in utero during a war has a long-term physiological consequences. This adds to the growing body of research suggesting that early-life trauma may impact fetal development and potentially cause health problems later in life.