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## In this issue

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This issue of the Journal of Developmental Origins of Health and Disease contains 11 original articles and one brief report. The editorial of Sharp and colleagues emphasizes the imbalance of DOHaD research focus on pregnancy and fetal exposures. The authors emphasize the value and potential impact of paternal as well as postnatal factors, which may have both direct effects as well as mitigating effects on maternal or pregnancy exposure. The authors recommend strategies by which DOHaD research can more broadly investigate the diversity of developmental programming. Notably, two of the original articles in this current J DOHaD issue examine paternal DOHaD influence, perhaps suggesting that researchers are heeding the advice of the editorial.

## Original articles

**Association between extrauterine growth restriction and changes of intestinal flora in Chinese preterm infants.** Zhang et al examined extrauterine growth restricted (EUGR) and non-EUGR preterm infants for intestinal flora. There were significant differences in the total abundance of bacteria species and alterations in the relative abundance of nine specific species. These findings may be attributed to different feeding, use of antibiotics, or additional factors. Further research is necessary to determine whether these differences directly affect the postnatal growth of preterm infants.

**Maternal pre-pregnancy weight and twins' temperament.** Tore and associates utilized a twin cohort study to examine the association of pre-pregnancy BMI and child's temperament from 0-18 months of age. There was no clear evidence of an effect of maternal pre-pregnancy BMI on twins' temperament, suggesting that additional intrauterine or postnatal factors may be predictive.

**Birth weight and adolescent blood pressure measured at age 12-years in the Gateshead Millennium Study.** Mann et al examined early life predictors of adolescent blood pressure in a cohort of individuals born 1999-2000 in Northern England. After adjustment for contemporaneous BMI, there was an inverse association of birth weight on systolic blood pressure, though this effect was smaller than contemporaneous body measures. These findings emphasize the importance of lifestyle factors that influence body mass or size during early life.

**Paternal contributions to large-for-gestational-age term babies: Findings from a Multicenter Prospective Cohort Study.** Derraik and coauthors examined paternal factors which influence infants being born large for gestational age. In multivariate models, increasing paternal birth weight and height were independently associated with an increased risk of an LGA infant. However, maternal BMI had a far greater influence on LGA than did paternal factors.

**Size for gestational age at birth according to offspring sex and gestational weight gain in underweight women.** Kasuga and coauthors assess the effect of offspring sex on the relationship between maternal pre-pregnancy BMI, gestational weight gain, and size at birth in underweight mothers. SGA incidence in the underweight group was significantly greater than the normal weight group in females, but not male neonates. In women with male neonates, inadequate gestational weight gain was associated with increased SGA. These findings emphasize the importance of both pre-pregnancy underweight, maternal BMI, and weight gain during pregnancy for the development of SGA.

**Paternal height has an impact on birth weight of their offspring in a Japanese population: The Japan Environment and Children's Study.** Takagi and colleagues examined the relationship between paternal height and BMI on birth weight in Japanese offspring. Multivariate analysis showed that the higher the paternal height the higher the odds of LGA and the lower the odds of SGA in both male and female infants. These findings suggest that the impact of paternal height on infant birth weight may be explained by genetic factors, while the sex dependent effect of paternal BMI on infant birth weight may be due to epigenetic effects.

**Cesarean delivery, immune function, and inflammation in early life among Ecuadorian infants and young children.** Thomson assessed delivery type and measures of immune and inflammation function from mother-child pairs participating in the Encuesta Nacional de Salud y Nutricion study. Compared to infants born vaginally, those born by cesarean were less likely to have elevated CRP and more likely to have illness symptoms and elevated basophils. These results suggest that perinatal exposures and delivery type may alter immune development and function, and potentially the response to infection throughout infancy in early childhood.

**Excess early postnatal weight gain and blood pressure in healthy young children.** Jansen and coauthors investigated the association between postnatal weight gain and blood pressure in five-year-old children. Particularly among children in the lowest birth weight decile, high excess weight gain was associated with higher systolic blood pressure values. These findings suggest that excess childhood weight gain in the first three months of age may impact on early childhood systolic blood pressure.

**The role of offspring's birth weight on the association between pre-pregnancy obesity and offspring's childhood anthropometrics: A Mediation Analysis.** Adane et al examined whether offspring birth weight is a mediator in the association between pre-pregnancy BMI and offspring childhood anthropometrics. Their findings suggest that most of the effect of pre-pregnancy obesity on childhood weight-related anthropometric outcomes appear to be via direct effect and not mediated through offspring's birth weight. The authors conclude that childhood obesity prevention strategies should target pre-pregnancy maternal obesity as well as select postnatal factors.

**Androgenic and estrogenic indices in human newborns and infants: The MIREC-ID study.** Nguyen and coauthors examined physical indices thought to reflect prenatal exposures to androgens and estrogens. Using a diversity of minimally invasive physical indices (e.g., vaginal maturation index, areola pigmentation, scrotal pigmentation) may provide an index of prenatal exposure to sex hormones.

**Intergenerational response of steroidogenesis-related genes to maternal malnutrition.** Harrath et al determined whether rat maternal food restriction alters expression of steroidogenesis-related genes in offspring ovaries of F1 and F2 generations. The authors found that F1 female offspring of food restricted dams evidenced premature ovarian aging. The authors speculate that maternal food restriction may induce intergenerational ovarian changes as an adaptive response to ensure reproductive success before death.

### Brief report

**Causal role of Group B streptococcus-induced chorioamnionitis in intrauterine growth retardation, microglial depletion and cerebral palsy-like impairments.** Allard and colleagues exposed dams to inactivated GBS bacteria serotypes. Marked differences were noted in the response to common GBS serotypes. A decreased density of microglial cells was detected in the corpus callosum of GBS III exposed males, but not females. These findings suggest a causal link between pathogen induced chorioamnionitis and IUGR, sex-specific neuromotor impairments, and microglial anatomy.

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