

In This Issue

This issue of *Journal of Developmental Origins of Health and Disease* (J DOHaD) contains a special themed issue of the relationship between assisted reproductive treatments (ART) and developmental origins of adult disease. Our guest editors Marc-Andre Sirard and Tom Fleming have compiled six superb themed articles addressing this relationship. The guest editors have provided an editorial reviewing the theme that the periconceptual period has important programming effects, influenced by both paternal and maternal environmental alterations. The topics addressed in the themed issue include the effect of IVF laboratory conditions on embryo phenotype, health outcomes and mechanisms for ART offspring, animal models exploring ART-mediated postnatal phenotype, ART effects on epigenetics, ethical issues associated with the clinical practice of ART and an assessment of the effect of ART within the South Australian birth cohort.

In addition to the themed issue, the August 2017 J DOHaD contains five original research articles and an important review exploring endothelial dysfunction.

Review

Endothelial dysfunction in individuals born after fetal growth restriction: cardiovascular and renal consequences and preventive approaches. Zyzdorczyk *et al.* explore the long-term effects of being born intrauterine growth restricted (IUGR), focusing on alterations in vascular structure and function. The authors provide evidence of altered endothelial function, including nitric oxide, oxidative stress and vascular senescence. Proposals for preventative approaches and postnatal strategies, as well as biomarkers of endothelial function, may aid in reducing long-term effects of endothelial dysfunction and cardiovascular disease in IUGR offspring.

Original Articles

Prenatal fish oil supplementation and early childhood development in the upstate KIDS study. Vollet *et al.* examined the relation between fish oil supplementation (omega-3 fatty acids) before and throughout pregnancy with subsequent child development using the upstate KIDS study. The results suggest that prenatal fish oil supplementation may have neurodevelopmental benefits including problem solving. The authors discuss the literature controversy in regards to *n*-3 polyunsaturated fatty acids (PUFA) supplementation with developmental programming and potential mechanisms.

Neonatal fatty acid profiles are correlated with infant growth measures at 6 months. O'Tierney-Ginn *et al.* and phenotype, placental fatty acid transporters and offspring growth pattern in women with uncomplicated pregnancies. Significant offspring phenotypic changes (skin fold thickness at birth, change in infant BMI) were associated with plasma long-chain PUFA status at birth, and fat deposition in infancy was related to changes in placental lipid handling. The authors conclude that neonatal fatty acid profiles may influence the trajectory of infant growth and both fat and lean mass deposition.

Prenatal maternal stress shapes children's theory of mind: the QF2011 Queensland Flood Study. Simcock *et al.* examined the 2011 Queensland Flood cohort to assess effects of maternal stress. The authors examined theory of mind, which refers to measures of understanding other people's mental states, a finding associated with autism spectrum disorder. The authors demonstrated that higher levels of flood-related maternal subjective stress predicted worse theory of mind at 30 months of age, with a gender-specific affect. The authors discuss the proposed biologic mechanisms by which stress in pregnancy can alter child neurobehavioral development.

Developmental toxicant exposure in a mouse model of Alzheimer's disease induces differential sex-associated microglial activation and increased susceptibility to amyloid accumulation. vonderEmbse *et al.* utilized transgenic mouse models to explore the neurotoxin effects of lead acetate during early postnatal life. Lead induced significant gender-specific effects on microglial activation and amyloid deposits within the hippocampus, suggesting that early life lead exposure may increase susceptibility to later life neurodegeneration.

Birth weight, biological maturation and obesity in adolescents: a mediation analysis. Werneck *et al.* examined the association between birth weight and youth adiposity in Brazilian adolescents age 10–17 years. The authors concluded that birth weight is significantly associated with elevated obesity risk in adolescents, though mediated by biological maturation (age of peak height velocity). Specifically, birth weight was inversely related to age or peak height velocity and positively associated with adiposity in adolescents. These findings emphasize the importance of the pubertal period for the programming of adult obesity.

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