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In this issue

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In This Issue

This issue of the *Journal of Developmental Origins of Health and Disease* contains a themed issue resulting from the unique cooperation between New Zealand and Japan in promoting DOHaD research and education. We have four original manuscripts resulting from this meeting, as detailed by Drs. Kawai and Hata in the editorial. In addition, Drs. Itoh and Kanayama provide an editorial outlining the collaboration between New Zealand and Japan, which may serve as a model for other international cooperative research ventures. In addition to themed issue papers, we have additional manuscripts incorporating both reviews and original research.

Review Article

Is birth weight associated with blood pressure among African children and adolescents? A systemic review. Lule *et al.* examine the inverse relation between birth weight and later blood pressure in low-income countries, with the premise that low birth weight etiologies are different from that in high-income countries. In studies from African countries, the authors note that not all studies adequately controlled for confounding effects of gender or age. The relationship between birth weight and blood pressure was inconsistent and varied with the age of participants. These findings suggest that a larger well-controlled study is needed to assess the relationship between birth weight and later blood pressure in low-income countries.

Original Articles

Eccentric placentae have reduced surface area and are associated with lower birth weight in babies small for gestational age. Ravikumar *et al.* assessed the association of placental cord eccentricity with birth weight and placental weight. The eccentricity index was negatively correlated with placental surface area and breadth and was associated with birth weight in a small for gestational age subgroup. These findings provide further evidence that placental size, shape and cord insertion may impact on fetal growth.

A new model for fetal programming: maternal Ramadan-type fasting programs nephrogenesis. Mohany *et al.* utilized a rat model to examine the effect of restricted food intake for 16-h each day, simulating Ramadan-type fasting. The fasting group had reduced maternal body weight, food intake and plasma glucose levels, as well as lower pup weights. Among offspring, maternal fasting reduced nephron number by nearly one-third, though with a compensatory increase in mean glomerular volume. These findings indicate that gestational fasting delays nephrogenesis and reduces nephron number in offspring kidneys.

Differential methylation of insulin-like growth factor 2 in offspring of physically active pregnant women. Marshall *et al.* recruited patients from the Archive for Research on Child Health study to assess physical activity measures during pregnancy. Newborn blood was obtained at birth and methylation levels assessed. The authors found few differences between offspring of high active and low active groups, with the exception of higher DNA methylation in the IGF2 promotor among offspring of a low active group. These findings suggest a potential impact of maternal physical activity on newborn IGF2 expression.

Anogenital distance in newborn daughters of women with polycystic ovary syndrome indicates fetal testosterone exposure. Barrett *et al.* examined 300 mother/daughter dyads demonstrating that anogenital distance was longer in daughters of women with a PCOS diagnosis. These findings suggest that these daughters may experience elevated testosterone exposure as a result of maternal PCOS. This may serve as a marker of a possible risk for PCOS among daughters as well as other potential adverse effects of *in utero* testosterone exposure.

Intrauterine growth restriction combined with a maternal high-fat diet increased adiposity and serum corticosterone levels in adult rat offspring. Zinkhan *et al.* hypothesized that surgical induced IUGR combined with maternal high-fat diet would increase adiposity and glucocorticoids. Using a rat model, the authors demonstrated that IUGR combined with a high-fat diet throughout life increased adiposity, glucocorticoids and triglycerides, in a sex-specific manner. These findings suggest that increased systemic glucocorticoids may be an important factor for the programming of offspring adiposity.

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Meconium proteins as a source of biomarkers for the assessment of the intrauterine environment of the fetus. Lisowska-Myjak *et al.* performed a proteomic analysis of meconium proteins from 10 healthy full-term neonates. Nearly a thousand proteins were identified with functions including immunoglobulin fragments, enzymatic activity, neutrophil-derived and intestine-specific proteins. The authors postulate that further examination and study of meconium proteins may provide an assessment of the intrauterine environment.

Changes in renal hemodynamics of undernourished fetuses appear earlier than IUGR evidences. Barbero *et al.* utilized a sheep model of intrauterine growth restriction to examine fetal renal damage. Utilizing noninvasive Doppler ultrasonography, the authors demonstrated reduced blood supply to the fetal kidneys of underfed ewes and decreased kidney size of underfed twins. These results suggest that assessment of renal hemodynamics may be a useful clinical diagnostic tool for identifying early stages of IUGR.

Maternal verbally aggressive behavior in early infancy is associated with blood pressure at age 5–6. Smarius *et al.* contribute further to our understanding as to early life stress effects on offspring bio-behavior. Utilizing the Amsterdam born children cohort the authors demonstrated that maternal verbally aggressive behavior in infancy was associated with higher systolic blood pressure, though not diastolic blood pressure or heart rate at age 5–6. Maternal behavior may be an important early life stressor, with a negative impact on offspring blood pressure regulation.

Offspring birth weight and cardiovascular mortality among parents: the role of cardiovascular risk factors. Shaikh *et al.* studied the role of parental cardiovascular disease risk factors in association with offspring birth weight and offspring CVD mortality using the medical birth registry, Norway. The authors demonstrated a stronger association in mothers as compared with fathers, with an inverse association between offspring birth weight and CVD mortality among the parents. These findings suggest that parental cardiovascular risk factors impact on offspring birth weight, potentially via shared environmental factors.

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