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In This Issue

This issue of the *Journal of Developmental Origins of Health and Disease* meets our goal of presenting a diversity of articles, including an editorial, a brief report, a fast-track publication resulting from an abstract presented at the International DOHaD Meeting, two studies related to human populations and three manuscripts related to animal models. The Editorial from Dr Sommer relates the inception and development of DOHaD to a somewhat parallel course of vitamin A deficiency hypotheses and public health interventions. The Editorial staff wishes to encourage the publication of fast-track articles, resulting from research presented at the Annual Meeting. We will continue to intermix fast-track publications with standard articles during the 2012 publication year.

Brief Report

Impact of porcine maternal aerobic exercise training during pregnancy on endothelial cell function of offspring at birth. Newcomer *et al.* examined the effects of maternal exercise training during pregnancy on endothelial function at birth. Using a swine model, pregnant gilts were randomized into exercised-trained and sedentary groups. Female offspring from exercised-trained gilts had significantly greater endothelium-dependent relaxation responses than those from sedentary gilts, suggesting a programming of endothelium-dependent vasorelaxation.

Fast-Track Article

Fat mass and obesity-associated obesity-risk genotype is associated with lower foetal growth: an effect that is reversed in the offspring of smoking mothers. Marsh and colleagues used both Australian and Dutch Caucasian populations to examine the association of the fat mass and obesity-associated (FTO) gene variant rs9939609 with maternal and fetal outcomes. The authors demonstrated that this FTO homozygote was associated with symmetrical intrauterine growth restriction, although the effect was reversed in mothers who smoke during pregnancy. These findings suggest that genetic variance associated with both maternal weight gain and foetal growth has the potential to predict fetal growth and to explain, in part, the DOHaD findings.

Original Articles

Early diet quality in a longitudinal study of Australian children: associations with nutrition and body mass index later in childhood and adolescence. Meyerkort and co-authors used the Raine study, a longitudinal survey of Australian children up to the age of 17 years, to investigate whether early childhood dietary quality influences nutrition and BMI in adolescents. The results indicated that breastfeeding was associated with dietary quality at 1–3 years of age, and dietary elements at 14 years of age were related to earlier dietary quality. It is important to note that the findings suggest that birth weight and early growth are more important determinants of adolescent BMI than is early diet and nutrition.

Child's homocysteine concentration at 2 years is influenced by pregnancy vitamin B12 and folate status. Lubree *et al.* examined plasma vitamin B12 and folate concentration in urban and rural women from India in relation to child homocysteine concentrations. Higher levels of vitamin B12 in children were predicted by pregnancy vitamin B12 plasma levels and current cow's milk consumption and were inversely affected if breastfeeding was stopped before 2 years of age. The authors suggest that supplementation of women of childbearing age with vitamin B12 during pregnancy and lactation may improve the homocysteine status of children.

Stage of perinatal development regulates skeletal muscle mitochondrial biogenesis and myogenic regulatory factor genes with little impact of growth restriction or cross-fostering. Laker and colleagues examined the effects of uteroplacental insufficiency in rat pups on skeletal muscle development and adult muscle mitochondrial biogenesis, and further examined the effects of postnatal nutrition. Uterine vessel ligation resulted in altered MyoD mRNA in females and IGF-1 RNA in males, although there was minimal effect of cross-fostering. As offspring were followed up only up to postnatal day 35, the authors hypothesized that programmed reductions in adult mitochondrial biogenesis markers likely develop after weaning.

Periconceptional undernutrition suppresses cortisol response to arginine vasopressin and corticotropin-releasing hormone challenge in adult sheep offspring. Oliver and co-authors examined the effects of perinatal undernutrition on hypothalamic–pituitary–adrenal axis function from juvenile to adult life. Using undernourished pregnant ewes, the authors demonstrated that periconceptual undernutrition suppressed offspring plasma cortisol levels, but not ACTH (adrenocorticotropic hormone) responses to AVP + CRH (arginine vasopressin + corticotropin-releasing hormone). These findings indicate that maternal undernutrition may have prolonged effects on adrenal function in the offspring.

Growth restriction alters adult spatial memory and sensorimotor gating in a sex-specific manner. Lauritz *et al.* examined the effects of growth restriction induced by bilateral uterine vessel ligation and litter size modulation on adult spatial memory and behavioral measures. Although growth restriction did not impair motor function at 6 months of age, both restricted and reduced litters demonstrated enhanced motor performance. These results suggest that critical growth periods both before and after birth can modify motor function, memory and behavior in a sex-specific manner.

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