Journal of Developmental Origins of Health and Disease

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In This Issue

Cite this article: Ross MG. (2021) In This Issue. *Journal of Developmental Origins of Health and Disease* **12**: 537–538. doi: 10.1017/S2040174421000386

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In This Issue

August 2021

This issue of Journal of Developmental Origins of Health and Disease includes 1 review article and 15 original manuscripts. We highlight the Editor's Choice manuscript of Plummer and co-authors in which the authors demonstrate significant long-term maternal and offspring risks of hypertensive disorders of pregnancy.

Review Articles

Cardiovascular risk factors in those born preterm – systematic review and meta-analysis. Andraweera and colleagues examined cardiovascular risk factors among offspring born preterm or term. Preterm birth was associated with increased systolic and diastolic blood pressure from early adolescence until adulthood. The authors suggest that offspring born preterm may benefit from routine blood pressure monitoring and targeted interventions when appropriate.

Original Articles

***Editor's Choice*: Hypertensive disorders of pregnancy and later cardiovascular disease risk in mothers and children**. Plummer and co-authors performed a follow-up study of the Adelaide SCOPE pregnancy cohort. The results demonstrate that gestational hypertension is associated with increased cardiovascular risk in women 8–10 years after the first pregnancy, and preeclampsia is associated with increased offspring risk at 8–10 years of age. These findings illustrate differences in the transgenerational effects of an offspring vasculature between gestational hypertension and preeclampsia.

Measured weight in early pregnancy as a valid method for estimating prepregnancy weight. Inskip et al. examined women from the South Hampton Women's Survey to compare proxy measures of maternal weight. The authors recommend estimating prepregnancy weight by subtraction of 0.88 kg from early pregnancy weight and caution of potential inaccuracies in using recalled prepregnancy weight.

Does fetal leptin and adiponectin influence children's lung function and risk of wheeze? Ip et al. used data from the HOME study to investigate associations of cord blood and adipocytokine concentrations with children's respiratory function. Higher cord serum adiponectin concentrations were associated with higher %FEV1 in girls, but not in boys, whereas higher leptin was associated with a lower risk of wheeze in girls, but not boys. The authors suggest that fetal adipocytokines may impact lung development and function during early childhood.

The epigenetic role of breast-feeding in mammary differentiation. Santiano et al. evaluated a possible mechanism by which maternal lactation could modify the susceptibility to mammary carcinogenesis, in rat models. The authors demonstrate that increased consumption of maternal milk during the postnatal stage generates epigenetic and morphological changes associated with differentiation in the mammary gland of offspring. These findings suggest that increased consumption of breast milk during postnatal life may stimulate breast tissue to differentiate.

Prenatal hypoxia increases blood pressure in male rat offspring and affects their response to artificial light at night. Sutovska et al. examined the effects of prenatal hypoxia (embryo day 20) on circadian rhythms of blood pressure and heart rate in adult offspring. The authors demonstrate that hypoxia increases offspring blood pressure and alters the circadian variability of heart rate and blood pressure when exposed to artificial light at night.

Extended light period in the maternal circadian cycle impairs the reproductive system of the rat male offspring. Ogo and co-authors exposed pregnant rats to normal light–dark versus extended light–light periods and examine male offspring at postnatal day 90. The constant light photoperiod was associated with a decrease in male testosterone levels, epididymal weight, and sperm count. These findings demonstrate that exposure to constant light during gestation may impair the reproductive system of adult male offspring.

Metabolic and behavioral effects in offspring exposed to maternal sucrose consumption: a systematic review and meta-analysis of data from rodent models. Morahan and co-authors performed a review of the effect of maternal sucrose consumption on the offspring of rodents. The results demonstrate an increased risk of offspring obesity and glucose intolerance. Although the isolated effects of maternal sucrose are of lesser magnitude than combined maternal high-sugar and high-fat diets, the authors emphasize the continued recommendations to reduce sucrose intake prior to and during pregnancy.

Prenatal diethylstilbestrol exposure and risk of diabetes, gallbladder disease, pancreatic disorders, and malignancies. Troisi et al. utilized the United States National Cancer Institute DES combined cohort study database to examine the association between DES and metabolic and

https://doi.org/10.1017/S2040174421000386 Published online by Cambridge University Press

malignancy. In women, but not in men, DES exposure was associated with an increased risk of pancreatic cancer and pancreatitis.

Assisted reproductive technology and long-term ophthalmic morbidity of the offspring. Tsumi and co-authors determined if children born following ART were at an increased risk for long-term ophthalmic complications. The results demonstrate that offspring born to women who underwent fertility treatment had a higher hospitalization rate involving ophthalmic morbidity suggesting that ART is an independent risk factor for long-term ophthalmic complications.

Impact of smoking in fetal gender on preterm delivery. Gunther et al. utilized the German perinatal survey to examine the relation between smoking behavior, fetal gender, and preterm delivery. Very heavy smoking had a marked impact on preterm birth. Smoking and male gender were both significant risk factors for preterm delivery. The authors emphasize the importance of reducing or ceasing cigarette smoking during pregnancy.

Self-reported physical health status of donor sperm-conceived adults. Adams and colleagues performed an online health survey of donor sperm and spontaneously conceived adults. Donor sperm-conceived adults reported elevated frequencies of health conditions including type 1 diabetes, thyroid disease, bronchitis, and allergies. The authors suggest that the results are consistent with the increased incidents of birth defects associated with donor sperm treatment.

Is small placenta a risk for low birth weight in Konkan? Patil et al. test the hypothesis that low placental weight was associated with low birth weight in the Konkan region of India. Mothers with placentas in the lowest placental weight tertile had an increased likelihood of a low birth weight baby, a stunted baby, or a baby with a small head circumference. The authors emphasize the need to improve the nutritional status of women in this region to address the environmental influences on early growth and development.

Maternal resistance to diet-induced obesity partially protects newborn in postweaning male mice offspring from metabolic disturbances. Simino and colleagues examined whether the prevention of an obese phenotype when exposed to the maternal high-fat diet would protect offspring from metabolic disturbances. High-fat diet-fed females were classified into obesity resistant or obesity prone. Offspring from obesity-prone females had a higher caloric intake, fasting glucose, and serum triglycerides when compared to offspring from obesity-resistant females. These data indicate that maternal resistance to diet-induced obesity partially protects offspring from early metabolic disturbances.

Neonatal zingerone protects against the development of high-fructose diet-induced metabolic syndrome in adult Sprague Dawley rats. Muhammad and colleagues examined the effect of zingerone, a bioactive ketone, found in ginger, on the development of fructose-induced metabolic derangements in 4-day-old rat pups. High-fructose diets significantly increase the body mass of females with associated lipid alterations. Zingerone prevented the fructose-induced increase in body mass and hypercholesterolemia. The authors suggest that zingerone may be used in the neonatal phase as prophylactic management of the high-fructose diet-induced metabolic syndrome.

Sincerely,

Michael G. Ross, MD, MPH
Editor-in-Chief

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