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Nutrition and Developmental Origins of Kidney Disease

Abstract: The number of obese women within the reproductive age group is unfortunately increasing. As a consequence, increased chronic disease has been reported in both mothers and offspring. It is well known that the body mass index (BMI) of a child is closely linked to maternal BMI and thereafter their own BMI in adulthood. Mounting evidence suggests that offspring from obese mothers are prone to obesity, hyperglycaemia, dyslipidaemia, diabetes, hypertension and Chronic kidney disease (CKD). We have developed rodent models of maternal obesity in which, similar to humans, offspring develop impaired glucose metabolism and dyslipidaemia as early as at weaning, which are sustained into adulthood. We have additionally found that offspring of obese mothers have increased albuminuria and renal pathological features of CKD in young adulthood. Our data demonstarted that an unbalanced maternal diet in pregnancy is associated with epigenetic changes in offspring. Using an animal model of maternal obesity, we assessed the methylation profile of genes involved in kidney disease early in life and at adulthood when CKD like pathology occurs suggesting the importance of intrauterine epigenetic modifications in the development of CKD.

Keywords: Maternal programing, disease origin, obesity, Kidney disease