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Preventing childhood obesity in China

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Over the last two decades, the rate of increase in childhood obesity in China exceeded the trends seen in many other countries. Over 30 million Chinese children between the ages of 7 to 18 years are overweight or obese. However, research on contributing factors is limited. Existing prevention programs are inadequate in quantity; they also lack rigorous scientific development involving community members and consideration on sustainability. My talk will begin with an overview on the epidemic of childhood obesity in China, highlighting the key research gaps in this country with regard to environmental risk factors and rigorous development and evaluation of prevention programs. The discussion will then focus on my recently published mixed methods study of environmental risk factors of obesity in Chinese children. We will look at how the findings of this study, alongside the findings of a large complementary qualitative study (undertaken in partnership with a Chinese Centre of Diseases Prevention and Control) informed the design and implementation of the feasibility trial (completed in June 2015) of the Chinese primary school children Physical activity and Dietary behavior changes intervention (CHIRPY DRAGON program). The results and implications of the feasibility trial will be presented. The effectiveness and cost effectiveness of the finalized CHIRPY DRAGON program will be evaluated through a randomized controlled trial in the city of Guangzhou, involving 40 primary schools (n=1640). The British Consulate in China and the Mayor of Guangzhou city will launch the program in September 2015. The growth journey of CHIRPY DRAGON demonstrates how scientists can engage with public members, stakeholders and policy makers in every stage of intervention development to tackle the rising epidemic of childhood obesity in a country that has undergone rapid socio-economic and nutritional transitions.

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Placental blood flow

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Neonatal and fetal death is increased if the fetus is male. Physiological mechanisms that may affect this condition are a focus of this study. Evidence is emerging of a sex specific difference in fetal and placental perfusion. This study investigates the effects of dietary intervention at specific time points upon blood flow, placental development and fetal growth trajectory. Increased preconception dietary protein increased uterine artery pulsatility index and reduced TAMV ($p=0.03$). Blood flow volume was affected by sex being increased in those females carrying males ($p=0.05$). Effects upon fetal and placental growth were also sex specific with the male fetoplacental unit significantly affected by the preconception diet ($p>0.05$). Interestingly, preconception diet retarded fetal growth at either the lowest (7% CP) or highest diet (18%CP) with no difference occurring between 10 or 14% CP. Only the 7% post-conception diet however reduced growth ($p=0.009$). Sex specific dietary effects upon fetal organ growth, in particular those associated with immune function, were found and associated with increased antimicrobial use in these male calves. In contrast, the cardiovascular system was more affected in the female fetus and weaner and by the post-conception diet. These results suggest preconception diet influences oocyte and embryo development which may have long term and sex specific effects for the offspring.

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