

Determinants of early life trajectories in children in low and middle-income countries: opportunities for collaboration

(Gerard) Bryan Gonzales

Wageningen University

Growth faltering, undernutrition and micronutrient deficiencies in children in low- and middle-income countries remain as massive public health problems. Furthermore, there is also a rapid increase in the prevalence of obesity in the same population. This is called the double burden of malnutrition, where both ends of the metabolic spectrum co-exist in populations. Understanding the metabolic changes and exposures that occur in the first 2 years of life may help determine novel opportunities for intervention to prevent long-term negative effects of childhood malnutrition. The metabolome and exposome provide a deep understanding of physiological events that influence growth in the early life. However, the majority of studies focus on cross-sectional associations; data from longitudinal studies is needed to help understand the timing and direction of associations. Following the metabolome and exposome over time in a single individual/sample enhances resolution since inter-individual/sample sources of variability are controlled. However, longitudinal omics data remains challenging, and is currently limited to assessing the progression of features over time, ranking the most dynamic features, and not exploring potential causality or associations among the different features over time.

In this talk, I will explain the main problems of malnutrition in children in low and middle-income countries, and present research opportunities for potential collaboration. I will focus on on-going longitudinal studies, where measuring the metabolome and exposome at multiple time points can be used to infer potential causal pathways to growth and health outcomes. I will describe the cohorts and biological samples we use, and the data analysis tools we employ, in order to determine common areas of interest and potential avenues for collaboration.