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## The etiology of nutrition and cardio-metabolic phenotypes in a South Asian population

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### **ABSTRACT:**

Low- and middle-income countries (LMICs) globally have undergone rapid urbanisation, and changes in demography and health behaviours. In Sri Lanka, cardio-vascular disease and diabetes are now leading causes of mortality. High prevalence estimates of their risk factors, including hypertension, dysglycaemia and obesity have also been observed. Nutrition and diet are key modifiable risk factors for both cardio-vascular disease and diabetes as well as their risk factors. Although typically thought of as environmental risk factors, dietary choice and nutrition have been shown to be genetically influenced and that genes associated with these behaviours correlate with metabolic risk indicators. We used Structural Equation Model fitting to investigate the etiology of nutrition and cardio-metabolic phenotypes in COTASS, a population-based twin and singleton sample in Colombo, Sri Lanka. Participants completed the Food Frequency Questionnaire (N=3934) which assessed frequency of intake of 14 food groups including 'meat', 'vegetables' and 'desert/sweet snacks'. Anthropometric (N=3675) and cardio-metabolic (N=3477) data was also collected including blood pressure, weight, cholesterol, fasting plasma glucose and triglycerides. Frequency of food intake was largely environmental, both shared and non-shared, in origin. Modest genetic influences were observed for certain food groups, for example 'meat' and 'fruit'. Cardio-metabolic phenotypes showed moderate genetic influences. Shared environmental influences were also observed for a number of phenotypes including BMI, blood pressure and triglycerides. Shared environmental effects were shown to be more important for both nutrition and cardio-metabolic phenotypes than previous research in Western high income populations. This emphasizes the importance of research conducted in diverse populations.

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