Project Details	
Project Code	MRCPHS24Ba Halligan
Title	Examining pathways from childhood trauma exposure to cardiometabolic disease risk: a population health study based on the 2004 Pelotas Birth Cohort
Research Theme	Population Health Sciences
Summary	Childhood trauma is a risk factor for cardiometabolic disease (CMD), a leading global cause of premature death. This project will examine poor mental health as a potential pathway from trauma to CMD risk, using longitudinal data from the Pelotas 2004, Brazil-based cohort study. Brazil has high rates of childhood trauma, and high and increasing rates of CMDs. Understanding trauma-CMD pathways in such contexts can support effective prevention and intervention efforts.
Description	Childhood trauma is a key social determinant of non-communicable diseases in adulthood - most notably, cardiometabolic outcomes, including obesity, hypertension, cardiovascular disease and type 2 diabetes mellitus. This potential biological embedding of trauma has major implications for societal health, as cardiometabolic diseases (CMDs) are a leading global cause of mortality and disability. Poor mental health has been identified as a potentially important intervening variable in this association, but the largely cross-sectional, adult evidence severely limits insight into the sequential emergence of mental and physical health sequelae of child trauma. The project will address this evidence gap by examining longitudinal pathways from trauma to CMD risk in the 2004 Pelotas Birth Cohort, based in Brazil. Brazil has high rates of childhood trauma, cardiovascular disease is the leading cause of mortality, and the prevalence of obesity and type 2 diabetes each are increasing dramatically, along with unhealthy diets and inactivity. Determining both the strength of trauma-CMD risk associations and the most important intervening mechanisms in such contexts is critical to developing effective intervention strategies. Objectives 1: To examine the role of mental health problems in mediating associations between childhood trauma exposure and cardiometabolic HRBs (unhealthy diet, physical inactivity, poor sleep and substance use), potentially including: a) differentiation between internalising and externalising symptoms; and b) estimation of the extent to which reducing mental health problems could mitigate any effects of trauma on HRBs at a population level. 2: To gain a more in depth understanding of changes in mental health problems and HRBs across childhood and adolescence in relation to childhood trauma, including: a) determining whether childhood trauma is associated with a more rapid increase in mental health problems/HRBs; and b) characterising potential mutual influences across development in the emergence of trauma-related mental health problems and HRBs. 3: To extend pathways identified from childhood trauma exposure to HRBs to examine cardiometabolic health indicators (e.g., adiposity, blood pressure) at age 18 years as the outcome. Approach The project will capitalise on longitudinal measures of trauma exposure, mental health, HRBs and cardiometabolic health indices available in the 2004 Pelotas Birth Cohort (approx. 4000 participants), which includes repeated perinatal and early childhood assessments, and follow-ups at 6 years, 11 years, 15 years, and 18 years.

Rates of childhood trauma are high in this middle-income-country cohort (34% by 11 years). The project will focus on the emergence of key cardiometabolic HRBs, namely poor diet, physical inactivity, sleep problems, and substance (ab)use, each measured repeatedly since age 11. Mental health, physical health and trauma exposure are also measured repeatedly from age 4 to 18 years. In completing this work the student will develop a set of translatable skills relevant for understanding health and behaviour that can be applied to a range of health, mental health and data-related careers, including an in depth understanding of psychology, population health and epidemiology, advanced longitudinal data analysis skills, and use of key statistical analysis programmes (Stata, R). They will ideally spend time in Brazil in order to further their project. Student Ownership The proposed project provides a broad framework which can be tailored to student interests, for example, by focusing on specific mental health domains or HRBs. In addition, the Pelotas 2004 Birth Cohort includes exceptionally rich and diverse longitudinal measures, collected since birth. It therefore provides many opportunities for a student to develop research questions beyond those specified, for example, by including other psychological or biological mediators.

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