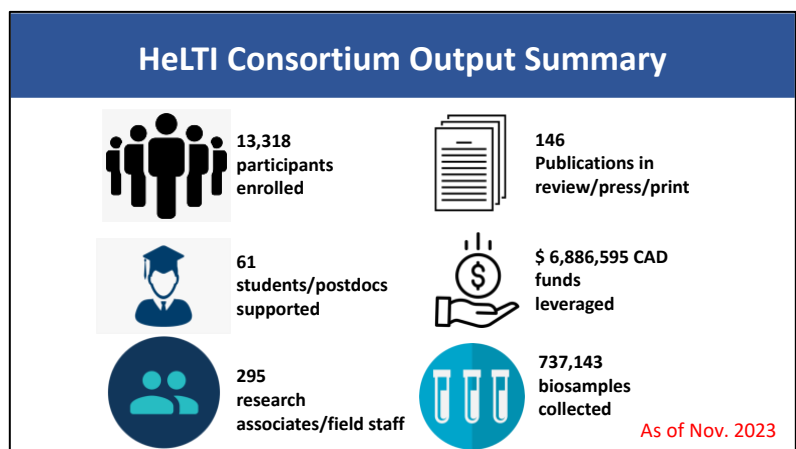


Non-communicable diseases (NCDs) including cardiovascular disease (CVD), obesity, type 2 diabetes and depression are major causes of death and disability globally. NCDs contribute to 41 million deaths each year, have an increasing impact on health, and by 2030 will cost the global economy \$40 trillion<sup>1</sup>. The Healthy Life Trajectories Initiative (HeLTI) is an international consortium formed in 2017 as a ten-year collaboration funded jointly by the Canadian Institutes of Health Research, Department of Biotechnology (India), Medical Research Council (South Africa) and the National Natural Science Foundation (China), and in collaboration with the World Health Organization (WHO) to address the increasing burden of NCDs around the world. The HeLTI approach is based on well-established evidence that environmental factors interact with genes before and during conception, fetal life, infancy and early childhood, and that this modifies the trajectory of an individual's health later in life. HeLTI evaluates the effect of an integrated 4-phase intervention starting preconception, continuing through pregnancy into infancy and early childhood, on reducing childhood adiposity, a known driver of poor health trajectories and NCD risk ([www.HeLTI.org](http://www.HeLTI.org)).

The study populations are drawn from Soweto in South Africa, Mysore in southern India, Shanghai in China and from across Canada. Between 4,500 and 6,000 women at each site are being recruited. Longitudinal multi-sectoral interventions are initiated during the preconception phase and then tailored to respond to the specific needs of the family during pregnancy, infancy and early childhood. Using a randomized trial design, HeLTI tests the efficacy of time sensitive interventions that include promoting healthy pre-pregnancy behaviors, optimizing maternal health and nutrition, preventing maternal depression, enhancing home environment, supporting exclusive breastfeeding, and promoting nurturing parental care. The primary outcome of the four randomized controlled clinical trials is adiposity/overweight and obesity rates in the children at 5 years of age. Other key outcomes in the children at 5 years include cardiometabolic risk factors such as glucose metabolism, blood pressure and infant and child neurodevelopmental outcomes. Recognizing the context and specificities, including the diversity of lifestyle patterns across these populations, the four studies are designed to meet the respective needs of the local population but are prospectively harmonized through the development of common research measurements, data and biospecimen collection protocols to allow comparative evaluation. HeLTI has established an international Data Monitoring Committee, a harmonized Governance Framework as well as data sharing agreements.



The study populations are drawn from Soweto in South Africa, Mysore in southern India, Shanghai in China and from across Canada. Between 4,500 and 6,000 women at each site are being recruited. Longitudinal multi-sectoral interventions are initiated during the preconception phase and then tailored to respond to the specific needs of the family during pregnancy, infancy and early childhood. Using a randomized trial design, HeLTI tests the efficacy of time sensitive interventions that include promoting healthy pre-pregnancy behaviors, optimizing maternal health and nutrition, preventing maternal depression, enhancing home environment, supporting exclusive breastfeeding, and promoting nurturing parental care. The primary outcome of the four randomized controlled clinical trials is adiposity/overweight and obesity rates in the children at 5 years of age. Other key outcomes in the children at 5 years include cardiometabolic risk factors such as glucose metabolism, blood pressure and infant and child neurodevelopmental outcomes. Recognizing the context and specificities, including the diversity of lifestyle patterns across these populations, the four studies are designed to meet the respective needs of the local population but are prospectively harmonized through the development of common research measurements, data and biospecimen collection protocols to allow comparative evaluation. HeLTI has established an international Data Monitoring Committee, a harmonized Governance Framework as well as data sharing agreements.

A comprehensive series of measures to track maternal and child growth and development are also included along with the longitudinal collection of biospecimens to support studies of the science and mechanisms that underlie healthy life course trajectories. In addition, the studies track a host of intermediate and process outcomes, as well as the efficacy and acceptability of the intervention package, compared with standard care.

**HeLTI Principal Investigators:**

**HeLTI Canada**  
Cindy-Lee Dennis  
Catherine Birken

**HeLTI China (SHeLTI)**  
Jianxia Fan  
Jean-Patrice Baillargeon

**HeLTI India (EINSTEIN)**  
Kalyanaraman Kumaran  
Stephen Matthews

**HeLTI South Africa (BUKHALI)**  
Shane Norris  
Stephen Lye