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Using polygenic scores to study G x E interactions with early conditions: an application to obesity and T2D

Webinar

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The US obesity epidemic emerged in the late 1970s and affected every population group. Genetic predisposition to obesity can be manifested more strongly if it is combined with obesogenic environments. This may be amplified among individuals who experience adverse early conditions that promote dysregulation of metabolism and adipose tissue growth and storage. There is mounting evidence that the mechanisms that produce this response are rooted in preconception, embryonic and fetal environments and their interaction with post birth maternal effects. Because obesity is strongly related with metabolic syndrome and chronic conditions such as T2D, CVD and cognitive decline, early life conditions and later exposures to obesogenic conditions are two key dimensions of human's environment that could exert strong influence on the health status and mortality of birth cohorts. Thus, the simultaneous occurrence of, one hand, drastic changes in diet, lifestyle, and built environment to which most of the world populations experience since the 1950s, mismatches between ancestral and modern conditions, on the other, may operate to increase the penetrance of genetic variants promoting obesity. Using data from the Health and Retirement Study in the U.S., this study tests how early life conditions and cohort membership interact with individuals' genetic propensity to affect BMI in old ages. In addition to test for the existence of gene-environment interaction, we seek to assess and quantify its impact on the increase of BMI across cohorts.

