Estimating the causal effect of maternal asthma on offspring birthweight using mendelian randomisation

Research Project Overview

Project title:	**Estimating the Causal Effect of Maternal Asthma on Offspring Birthweight Using Mendelian randomization**
Project duration:	4 Weeks
Description:	Maternal asthma during pregnancy is associated with a host of adverse perinatal outcomes for offspring including increased risk of offspring mortality, pre-term birth and low birth weight. However, it is unclear whether these observational correlations reflect an underlying causal relationship or are merely a consequence of latent confounding. This project involves using an epidemiological technique called Mendelian randomization to investigate a potential causal relationship between maternal asthmatic status during pregnancy and offspring birth weight. Mendelian randomization uses genetic variants as instrumental variables to estimate the unconfounded causal effect of environmental exposures on medically related outcomes of interest. The approach can be thought of as similar to nature's randomized controlled trial, relying on Mendel's Laws of Segregation and Independent Assortment to ensure that the genetic variants that proxy the exposures of interest are randomized with respect to potential confounding variables. The successful student will perform Mendelian randomization analyses on pre-collected genome-wide association data from 500,000 individuals from the UK Biobank study who have self-reported their own and their offspring's birth weight.

Expected outcomes and deliverables:	The scholar will be expected to run Mendelian randomization analyses examining the relationship between maternal asthmatic status and offspring birth weight. They will assist in writing a scientific publication utilizing the results. Scholars will gain skills in Mendelian randomization and R programming.
Suitable for:	This project is open to UQ students with a background in mathematics, statistics, genetics and/or epidemiology.
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