LAY ABSTRACT

TITLE: Methods for Mediation Analysis with High-Dimensional DNA Methylation Data: Possible Choices and Comparisons

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The researchers in this study tested ways we can use statistics to better test the link between outside factors, DNA changes, and our health.

Genes are made up of DNA and carry information for our traits, which we inherit from our parents and can be passed on to our children. DNA methylation is an important and normal way our body can turn genes “on” or “off” to change what traits show up or how our body works. When DNA methylation is not working well, we can develop health issues. Outside factors, such as stress from social and economic situations, our diet, and pollution, can change normal DNA methylation and harm our health.

Researchers want to test if outside factors lead to changes in DNA methylation and cause health issues. It is very hard to test this because many places in a gene can have DNA methylation at the same time. So, in this study, researchers compared statistical methods to see which statistics may be better to use in future studies. The researchers compared 12 ways to do these statistical tests and gave instructions on how to pick and use the best one for future studies.