

Abstract: Are certain racial groups really at greater risk of type 2 diabetes? A mediation analysis of income inequality and diabetes incidence in the United States.

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Introduction: Type 2 diabetes (T2D) has long been seen a lifestyle disease related to modifiable risk factors like diet, exercise and body weight. The American Diabetes Association lists a number of non-modifiable risk factors for T2D including certain racial backgrounds – namely African, Asian, Mexican and Native American. As these groups are generally more prevalent in lower socio-economic strata and limited income can constrain healthy lifestyle choices, a causal mediation analysis was pertinent for disentangling racially mediated effects from income effects.

Methods: Our sample included 16,672 adults aged 30-70 years in the 2017 National Health Interview Survey. We excluded adults with type 1 diabetes (n=184), pancreatic cancer (n=6), no medical visit in the past 5 years (n=875), and those who identified as mixed race or had no race information (n=96). We used the Stata package, mediate, to determine how much of the odds of a T2D diagnosis in the past 5 years by racial-risk group was mediated through poverty ratios. A sensitivity analysis was included.

Results: The median poverty ratio for the high-risk group was 2.5 (interquartile range: 1.2 – 4.7), while for the low risk group it was 4.1 (interquartile range: 2.3 – 6.6). Controlling for covariates, the mediation analysis estimated that 13.7% (95% CI: 6.2%-81.5%) of the relationship between high-risk racial backgrounds and T2D was mediated through lower average poverty ratios.

Discussion: Part of the assumed non-modifiable T2D risk of certain racial groups seems to be channeled through modifiable income inequality, with potential scope for social or public health interventions. Some of the covariates included could be seen as both confounders and mediators on the causal pathways between race – poverty ratios – T2D, leaving the proportion mediated up to some debate. Despite this limitation, roughly one seventh of the high-risk racial background-T2D relationship appeared to be income related rather than racially related.

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