County where people live may predict some cardiovascular death by race, ethnicity

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The association between race and ethnicity and specific characteristics of some U.S. counties may have a significant impact on death rates related to cardiovascular disease, according to new research published

today in the *Journal of the American Heart Association*, an open access journal of the American Heart Association.

Cardiovascular disease is the leading cause of death in the U.S. across all racial and ethnic groups, and disparities in cardiovascular outcomes for racial and ethnic minority groups have been documented extensively. This study presents a detailed analysis of county-level predictors of cardiovascular death rates among white, Hispanic/Latinx and Black populations.

Using 2017 data from the Centers for Disease Control and Prevention's Wide-ranging Online Data for Epidemiologic Research (CDC WONDER) and the 2017 Robert Wood Johnson County Health Rankings, researchers evaluated variations in cardiovascular disease death rates among racial and ethnic groups and the degree to which county factors accounted for differences in death rates.

The county-level factors, some known as social determinants of health, analyzed:

- demographic factors: population size, percentage rural, percentage female, percentage Black residents, percentage Asian residents and percentage Hispanic/Latinx residents;
- census region: Northeast, Midwest, South or West;
- socioeconomic factors: percentage of residents who have completed some college, who are unemployed, experiencing food insecurity (limited access to fresh, healthy, affordable food) and the median household income;
- traditional cardiovascular risk factors: percentage of residents who were smokers, were physically inactive, who have Type 2 diabetes and percentage with obesity; and
- health care access factors: ratio of primary care providers per 100,000 population and percentage of uninsured adults.

Researchers used regression models to determine the association between each of the county-level factors and cardiovascular age-adjusted death rates for each race/ethnicity. They also assessed the factor that accounted for the greatest variation in death rates.

Among the study's key findings:

- Black adults had the highest average death rate from cardiovascular disease at 320 deaths per 100,000 person-years, compared to Hispanic/Latinx adults with the lowest rate of 168 deaths per 100,000 person-years.
- The highest cardiovascular disease death rates across all racial and ethnic groups were in southern states (Alabama, Arkansas, District of Columbia, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Texas, Tennessee, Virginia and West Virginia).
- Traditional cardiovascular disease risk factors accounted for the greatest variation in cardiovascular disease death rates among white people (35%), while socioeconomic concerns explained much of the variation in the death rate among Black people (26%), and demographics explained the variation among Hispanic/Latinx populations (35%).
- Socioeconomic factors were a close second among white people and Hispanic/Latinx people (32% and 27%, respectively) in explaining the greatest variation in cardiovascular disease deaths.

These results may help develop and implement effective interventions to improve cardiovascular outcomes, said co-lead study author Justin Parizo, M.D., an advanced heart failure and transplant cardiology fellow at Stanford University in Stanford, California.

"Currently, population and community-level health interventions are typically focused on disease and medical risk factors, however, our

analysis suggests that more emphasis may need to be placed on intervention that can improve social determinants of health, particularly for Black people," Parizo said. "As examples, several trials have shown that income supplementation in addition to nutritional counseling can improve diet among populations at risk for cardiovascular disease. Additionally, interventions to improve housing have been shown to increase patient exercise levels and, in the long term, could decrease unhealthy outcomes such as obesity and Type 2 diabetes."

Because the research is observational and retrospective, the findings cannot prove cause and effect. Another limitation of the study is the interpretation of the county-level risk factors, which do not necessarily describe subpopulations within each county. "For example, a 40% obesity rate among Black people in a county represents the entire Black population but does not necessarily hold true for every subgroup of the Black population," Parizo said.

"This study's greatest value is that it informs the understanding of cardiovascular population health and the numerous factors that play a role in cardiovascular health," said co-senior study author Fátima Rodriguez, M.D., M.P.H., assistant professor of cardiovascular medicine and a preventive cardiologist and health disparities researcher at the Stanford Prevention Center at Stanford University School of Medicine. "Not all populations are the same. Nuanced understanding of the unique influences on cardiovascular outcomes is essential to narrow disparities for various population groups."

More information: Bongeka Z. Zuma et al, County-Level Factors Associated With Cardiovascular Mortality by Race/Ethnicity, *Journal of the American Heart Association* (2021). DOI: 10.1161/JAHA.120.018835

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