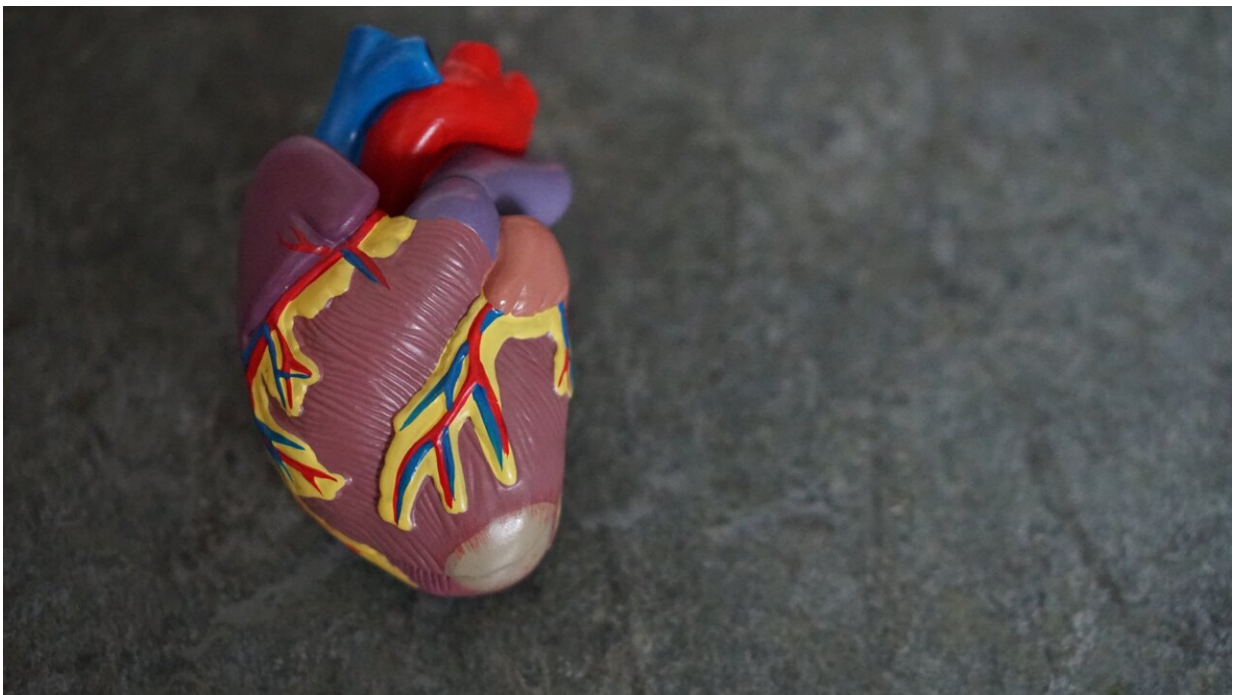


Despite genetic makeup, following heart health guidelines can decrease risk of heart disease

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Following Life's Simple 7 guidelines developed by the American Heart Association (AHA) can significantly lower the risk of coronary heart disease despite a genetic predisposition, according to researchers with The University of Texas Health Science Center at Houston (UTHealth

Houston).

The study was published today in *Circulation*.

Life's Simple 7 identifies seven risk factors people can manage through [lifestyle changes](#) to improve their [heart](#) health. They include eating better, increasing physical activity, managing blood pressure, controlling cholesterol, reducing blood sugar, losing weight, and stopping smoking.

The study looked at how the effect of adhering to these lifestyle guidelines differed for individuals according to their genetic predisposition for [coronary heart disease](#). The genetic predisposition for heart disease was calculated using a genetic risk tool called a [polygenic risk score](#), which effectively summarizes an individual's genetic information into a single score.

"One of the main motivations of this study was to provide insight on the question: 'If I have a high polygenic risk of coronary heart disease, to what extent can I compensate for this through a [healthy lifestyle](#)?' " said Natalie Hasbani, MPH, research assistant and doctoral candidate at UTHealth School of Public Health in Dallas and lead author on the study. "We found that regardless of a person's genetic predisposition, they can lower their chances of developing coronary heart disease by adhering to the AHA's Life's Simple 7 guidelines, but those with the highest polygenic risk stood to gain the most."

Researchers examined data from 8,372 white participants and 2,314 Black participants over the age of 45 and free of coronary heart disease. They looked at the differences in a person's lifetime risk of coronary heart disease and years lived free of coronary heart disease, according to their polygenic risk and adherence to AHA's Life's Simple 7 guidelines.

"Previous studies have shown that polygenic risk predicts coronary heart

disease, and some studies have suggested that high polygenic risk can be offset by maintaining a healthy lifestyle," said Paul de Vries, Ph.D., assistant professor in the Department of Epidemiology, Human Genetics and Environmental sciences at [UTHealth School of Public Health in Houston](#) and senior author on the study. "These studies, however, have mainly examined relative risks, without translating this to measures of absolute risk that are easier to interpret."

According to investigators, the lifetime risk of white participants with high polygenic risk of coronary heart disease was approximately 40% compared to 20% for those with low polygenic risk.

Additionally, researchers found that white participants with high polygenic risk had a lifetime risk as high as 67% when they also had a poor Life's Simple 7 score, but as low as 24% when they had an ideal Life's Simple 7 score.

"These results suggest that people with high polygenic risks can more than compensate for this through lifestyle changes. Another way to look at this is that among white participants with high polygenic risk, those with ideal Life's Simple 7 score lived free of coronary [heart disease](#) for over 20 additional years compared to those with poor Life's Simple 7 score," de Vries said.

In Black participants, experts found similar differences in lifetime risk according to lifestyle, but less pronounced differences according to genetic predisposition. However, they say it is not yet possible to summarize [genetic predisposition](#) among African ancestry individuals as well as they can do so among European ancestry individuals. "This is because sample sizes for genetic associations studies focused on African ancestry individuals are currently lagging far behind sample sizes for studies focused on European ancestry participants. Rectifying this disparity should be a priority of the research community in the years to

come," de Vries said.

"The bottom line is that regardless of anyone's genetic susceptibility, it is very important to have a healthy diet and live a healthy lifestyle," said Hasbani. "There is all of this information out there about what we might develop based on our genetics, but it doesn't determine your fate. You can lower your risk through lifestyle changes that, unlike your genetics, are under your control."

More information: Natalie R. Hasbani et al, American Heart Association's Life's Simple 7: Lifestyle Recommendations, Polygenic Risk, and Lifetime Risk of Coronary Heart Disease, *Circulation* (2022). [DOI: 10.1161/CIRCULATIONAHA.121.053730](https://doi.org/10.1161/CIRCULATIONAHA.121.053730)

Provided by University of Texas Health Science Center at Houston

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