

How healthy lifestyle behaviours can improve cholesterol profiles

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Combining healthy lifestyle interventions reduces heart disease through beneficial effects on different lipoproteins and associated cholesterol, according to a study published February 9 in *eLife*.

Having a healthy lifestyle has long been associated with a [lower risk](#) of developing heart disease. The new study provides more detailed information on how healthy lifestyles improve cholesterol, and suggests that combining cholesterol-lowering medications and lifestyle interventions may yield the greatest benefits to heart health.

Cholesterol-lowering medications such as statins help reduce heart risks by lowering levels of low-density lipoprotein (LDL) cholesterol, the so-called 'bad' cholesterol. Healthy lifestyle interventions, including exercising regularly, having a [healthy diet](#), lowering alcohol consumption and maintaining a healthy weight, have also been shown to lower LDL as well as increase 'healthy' high-density lipoprotein (HDL) cholesterol.

"Until now, no studies have compared the lipid-lowering effects of cholesterol-lowering medications and healthy lifestyle interventions side by side," says lead author Jiahui Si, Postdoctoral Research Fellow in the Department of Epidemiology at Harvard T.H. Chan School of Public Health, Boston, Massachusetts, US.

To address this gap, Si and colleagues used a technique called targeted [nuclear magnetic resonance spectroscopy](#) to measure 61 different lipid markers in [blood samples](#) from 4,681 participants in the China Kadoorie Biobank, including cases of stroke, coronary heart disease and healthy individuals. They studied lipid markers in the blood of participants who had multiple healthy lifestyle habits and compared them to those of participants with less healthy habits. They found 50 lipid markers associated with a healthy lifestyle.

When the team looked at a subset of 927 individuals who had [coronary heart disease](#) in the next 10 years and 1,513 healthy individuals, they found 35 lipid markers that showed statistically significant mediation effects in the pathway from healthy lifestyles to the reduction of heart disease. Together, the combined [beneficial effects](#) of the lipid changes associated with healthy lifestyle practices were linked to a 14% reduced risk of heart disease. Specifically, very-low-density lipoprotein (VLDL) and HDL levels in the blood were linked to the heart-protecting benefits of healthy lifestyles.

"Using a genetic scoring technique, we could compare the effect of cholesterol-lowering drugs with that of [lifestyle](#) side by side in the study participants," says co-senior author Liming Liang, Associate Professor of Statistical Genetics in the Department of Epidemiology at Harvard T.H. Chan School of Public Health. "Our analysis confirmed that cholesterol-lowering drugs would have the expected effect in lowering LDL cholesterol, but this is much weaker compared to the effect of healthy

behaviors on VLDL cholesterol which also increases the risk of [heart disease](#)."

Overall, they found that taking cholesterol-lowering medications and engaging in multiple [healthy lifestyles](#) would likely help individuals to achieve the greatest heart-protecting benefits because of the complementary effects of the drugs and healthy behaviors.

"Lifestyle interventions and lipid-lowering medications may affect different components of the lipid profile, suggesting they are not redundant strategies but could be combined for improved benefits," concludes co-senior author Jun Lv, Professor at the Department of Epidemiology & Biostatistics at the School of Public Health, Peking University Health Science Center, Beijing, China.

More information: Jiahui Si et al, Improved lipidomic profile mediates the effects of adherence to healthy lifestyles on coronary heart disease, *eLife* (2021). [DOI: 10.7554/eLife.60999](https://doi.org/10.7554/eLife.60999)

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