

Hunter-gatherers and horticulturalist lifestyle linked to lower blood pressure increases

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Hunter-gatherers and forager-horticulturalists who live off the land and grow what they need to survive have lower age-related increases in blood pressure and less risks of atherosclerosis, according to two new studies in the American Heart Association journal *Hypertension*.

High [blood pressure](#) and atherosclerosis — a disease in which arteries stiffen and fill with plaque — increase with age in the United States and other countries, raising risks for heart attack, stroke, kidney disease and death. Age-related increases in blood pressure have been observed in almost every population, except among hunters-gatherers, farmers and pastoralists.

"Surprisingly, heart disease and stroke aren't necessarily inevitable with age," said Michael Gurven, Ph.D., study author and anthropology professor and chairman of the University of California-Santa Barbara's Integrative Anthropological Sciences Unit.

Gurven's team followed 2,296 indigenous adults in 82 Tsimane villages, an area in the tropical lowlands of Bolivia's Amazon basin. Tsimane are lowland forager-horticulturalists (pop. ~11,000) subsisting on plantains, rice, corn, manioc, fish and hunted game.

"The Tsimane living conditions are similar to those of our ancestors, with greater exposure to pathogens, active lifestyle, high fertility and

traditional diet. Studying chronic diseases in these populations can be very insightful," Gurven said.

Researchers found:

- Per decade, Tsimane women had a systolic blood pressure increase of 2.86 millimeter of mercury (mm Hg) and a diastolic blood pressure increase of 0.95 mm Hg.
- Per decade, Tsimane men had a systolic blood pressure increase of 0.91 mm Hg and a diastolic blood pressure decrease of 0.02 mm Hg.
- About 3 percent of Tsimane adults have high blood pressure, compared to 33.5 percent of U.S. adults.

Among Americans over age 40, systolic pressure increases by about 7 mm Hg per decade.

Around the world, 52 other societies have blood pressure two to eight times higher than the Tsimane. Americans' blood pressures are two to four times higher.

"Our classic risk factors such as [high blood pressure](#) are not universal," Gurven said. "Nor does all modernization automatically lead to poorer health, contrary to popular beliefs. While overall blood pressure was somewhat higher with more exposure to modernization, there was no evidence of a greater increase in blood pressure with age."

Between July 2002 and December 2010, researchers measured participants' blood pressure one to eight times during multiple physical exams in the Tsimane villages.

Degree of modernization was based on village distance to the nearest

town, smoking status, Spanish fluency and education level.

Gurven also noted that prior research done in 2009 published in PLoS ONE showed no evidence of subclinical atherosclerosis in Tsimane adults.

In a smaller study, researchers compared the risks of atherosclerosis in traditional Pygmies — subsistence hunters-gatherers living in the equatorial forests of Cameroon — to two neighboring groups: semi-urbanized Pygmies and farmers known as the Bantou.

The researchers gauged atherosclerosis risks based on the elasticity of the participants' arteries, using two markers: pulse wave velocity, a direct measure of arterial stiffening; and aortic augmentation index, an indirect measure of atherosclerosis.

- Atherosclerosis risks were about 20 percent lower among traditional Pygmies than that of the other two groups.
- Pulse wave velocity for traditional Pygmies was 5.8 meters/second, 6.82 meters/second for contemporary Pygmies and 6.93 meters/second for Bantou farmers.
- The augmentation index for the three groups weren't different, but the traditional Pygmies' shorter height suggests their atherosclerosis risks are lower than the others.

"Our study shows that the effect of aging on atherosclerosis is blunted by a traditional lifestyle," said Daniel Lemogoum, M.D., M.P.H., study lead author and cardiologist at the [Hypertension](#) Clinic at Hôpital Erasme of the Université Libre de Bruxelles in Brussels, Belgium.

In clinical exams, the Belgium researchers measured 62 adults' blood pressure, heart rate, weight, height, body mass index, pulse wave velocity

and augmentation index. They calculated effects of factors including blood pressure and age.

"By focusing our attention on people with very different lifestyles from our own, we might better be able to understand that maintaining heart health is possible even as we age," Lemogoum said.

Lifestyle factors specific to hunters-gatherers might explain the minimal increases in blood pressure in the Tsimane and low [atherosclerosis](#) risks in the traditional Pygmies, the study authors said. The factors include: high physical activity, low stress levels and potentially protective diets high in fruits, vegetables and potassium and low in calories, salt and alcohol.

Provided by American Heart Association

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