The native Tsimane tribe has lived for centuries, perhaps even millennia, totally isolated in their Amazon rain forest habitat. Without physical contact, they would have been protected from the bacteria and viruses that colonize people elsewhere in the world. That was certainly the case with the American Indians on first contact with European explorers. Exposure to European diseases soon decimated native Americans during the 16th through 19th centuries.

If Chlamydia bacteria are an important cause of atherosclerosis, it would not be surprising to find that this remote Indian population is free of that disease.

The relative lack of coronary artery disease and atherosclerotic plaque in the Tsimane people may well be another piece of evidence for the *Chlamydia* theory of atherosclerosis.

The lowest rates of heart disease ever measured: The Amazon Tsimiane Tribe.

By **Peter Whoriskey** **March 17 at 12:44 PM**

A Tsimane father and son hunt fish in a river. (Michael Gurven)

The Tsimane people dwell in thatched huts in a remote corner of Bolivian jungle, and at dinner, the main meal sometimes consists of monkey. Capuchins or howlers. Other days, a hog-nosed coon, or with some luck and a grueling all-day hunt, a man might take a peccary, a kind of wild pig. Some find piranha or catfish in local rivers. For sides, the Tsimane may gather wild fruits and nuts, or harvest small farm plots, where they grow rice, plantains and corn.

Maybe, some will think, all *that's* their diet secret. [Perhaps there is another reason, unrelated to diet andlifestyle.]

According to a study published Friday in the Lancet, a peer-reviewed British medical journal, the Tsimane have the lowest rates of heart disease ever

measured, and in the United States and parts of Europe where heart disease is the leading cause of death, the news is expected to arouse widespread curiosity and a question: How do they do it?

The Tsimane “have the lowest reported levels of coronary artery disease of any population recorded to date,” according to the paper written by a team of doctors and anthropologists.

The scientists estimated heart disease during examinations of 705 Tsimane, each of whom traveled about two days by boat and road to get to a clinic. There, they underwent sophisticated X-ray scans of their coronary arteries to determine the amount of calcium plaque, a measure of heart disease. On this basis, the Tsimane measured much healthier than any other people studied,

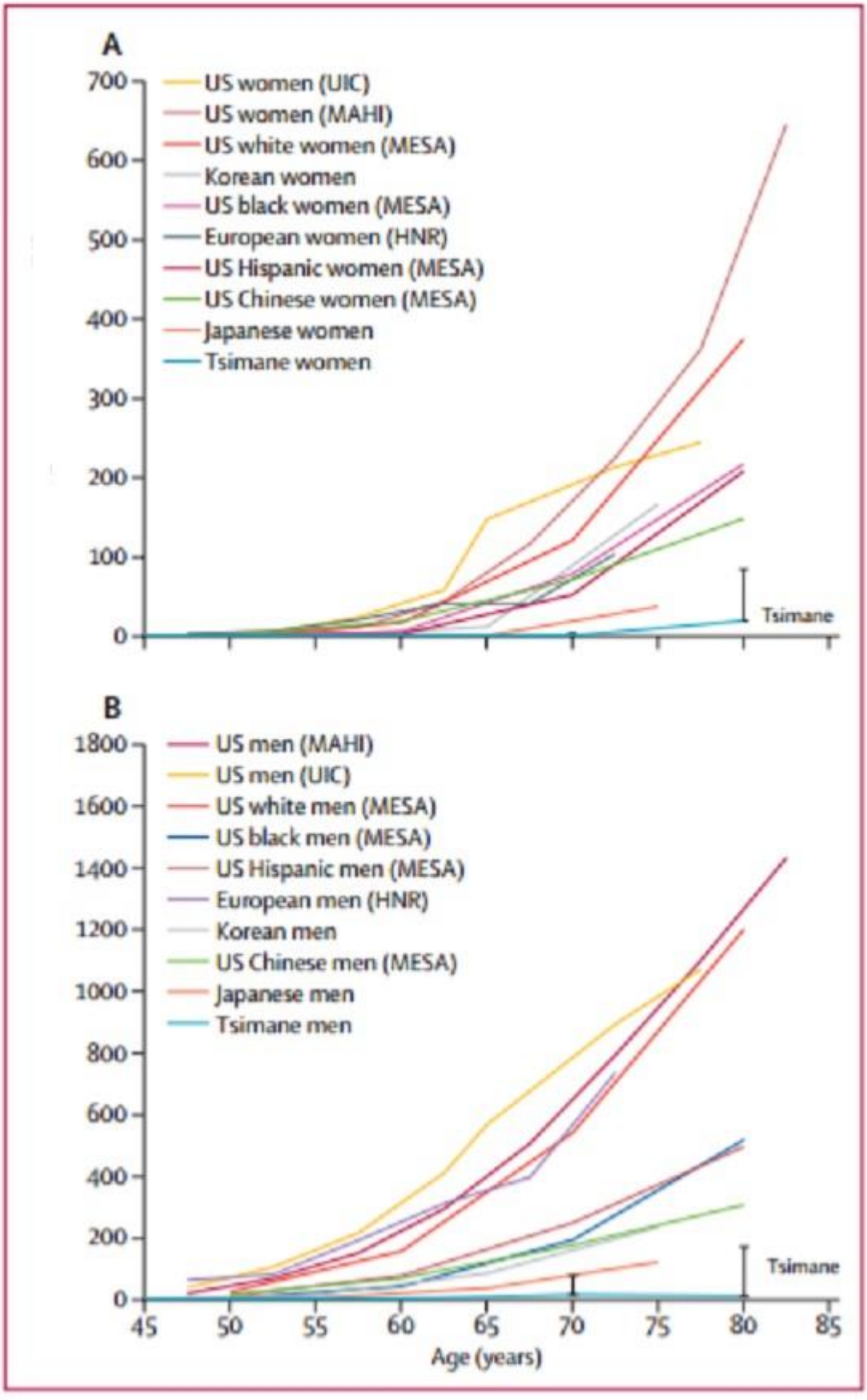
including groups from the United States, Europe, Korea and Japan, according to researchers.

“If you think of the calcium plaque as a reasonable measure of arterial age, their arteries are 28 to 30 years younger than ours,” said Randall Thompson, one of the authors and a cardiologist at St. Luke’s Mid America Heart Institute in Kansas City. “Obviously the Tsimane are achieving something that we are not.”

Previous studies of remote groups have raised doubts about modern lifestyles. For example, a 1984 analysis found that members of the Luo tribe in Kenya who migrated to Nairobi had higher blood pressures than those who remained in the villages. Another, from the ‘60s, found that the Masai of East Africa had remarkably low levels of blood cholesterol, despite a diet dominated by meat and milk. The Inuit of Greenland also reportedly had low levels of blood cholesterol. And electrocardiograms of !Kung Bushmen led researchers to say their study “confirmed the impression ... that hypertension and ischaemic heart disease, two of the most important heart ailments in Western Society, do not occur in the Bushman.”

The studies of the Tsimane began in 1999 when Michael Gurven, a University of California at Santa Barbara anthropologist, first visited, and a few years later, with colleagues, formed a project to study Tsimane lives and health. What distinguishes the Tsimane research is that rather than measure loose predictors of heart risk as the previous research had done, the scientists used computer-enhanced X-ray scans, known as CT, or computed tomography, to gauge how much plaque was clogging the arteries around the heart.

These calcium scores “are the best predictors of heart disease,” said Matthew Budoff, a UCLA cardiologist and expert in coronary calcium. “It’s a direct measure of atherosclerosis. It’s literally measuring the disease in the artery.”


A
700
600
500
400
300
200
100
0
US women (UIC)
US women (MAHI)
US white women (MESA)
Korean women
US black women (MESA)
European women (HNR)
US Hispanic women (MESA)
US Chinese women (MESA)
Japanese women
Tsimane women
Tsimane
B
1800
1600
1400
1200
1000
800
600
400
200
0
US men (MAHI)
US men (UIC)
US white men (MESA)
US black men (MESA)
US Hispanic men (MESA)
European men (HNR)
Korean men
US Chinese men (MESA)
Japanese men
Tsimane men
Tsimane
45
50
55
60
65
70
75
80
85
Age (years)

This chart compares levels of plaque in coronary arteries in the women and men of various cultures. The Tsimane are lowest. The lines reflect the 75th percentile in each group. Source: The Lancet

The prevalence of heart disease in the United States has inspired a galaxy of research efforts and by most accounts, the causes are manifold: smoking, diabetes, obesity, diet, stress and a lack of exercise are commonly blamed.

For example, a recent analysis of studies of 55,685 people published in the New England Journal of Medicine reported that among people genetically at a higher risk of heart disease, those who had a "favorable lifestyle" — that is, were not obese, did not smoke, exercised at least once a week and ate a sound diet — were about half as likely to experience heart disease.

The relative importance of each of those lifestyle factors is often a matter of fierce debate, however, and the differences over what constitutes a healthy diet is fraught with scientific disagreement and uncertainty. In recent decades, indeed, efforts to quantify a healthy level of dietary salt have metastasized into an epic feud.

"There's a consistency of data throughout the world that people who have low cholesterol, keep active, don't smoke, avoid obesity and maintain their blood pressure live a longer life," said Dennis Bier, a professor at Baylor College of Medicine and editor of the American Journal of Clinical Nutrition.

But he warned that figuring out how these factors contribute to health is difficult to know.

"People in these other societies often provide us clues to these health questions, but determining the reasons for their unique metabolism is frequently not so easy to do," Bier said.

The researchers likewise acknowledged that the causes of Tsimane health are difficult to distinguish from one another: "Numerous potential explanations

exist, and might relate to coronary artery disease risk factors, subsistence lifestyle, genetics” and other factors.