



Dr Sharad Paul  
MD

Sharad P. Paul MD is a surgeon, family physician, academic, skincare expert, evolutionary biologist and social entrepreneur, as well as an adjunct professor at Auckland University of Technology. Born in England with a childhood in India, he is a global citizen who lives Down Under.



# The future of genetics

When I studied people living in the blue zones of the health world – ageless places where many folk live significantly longer lives than people in other parts of the world – I was interested in why so many of these were located on islands: the Greek island of Ikaria, Okinawa in Japan, and Sardinia in Italy. What made islands different? Does the isolation reduce infection rates, or is the secluded geography a mere coincidence?

Perhaps islands merely possess an allure and tempt us to escape to them because even though water is everywhere, nowhere else is our encirclement so obvious. One may as well be floating on the sea of time – a place where memories and family stories remain unspoiled. A few years ago, I read the story of Stamatis Moraitis, a Greek war veteran from the island of Ikaria who came to America for medical treatment toward the end of the Second World War. Moraitis eventually moved to Florida and lived the American dream – condo, children, and a Chevy. In 1976, during the bicentennial year of America's founding, Moraitis went to see a doctor, as he had begun to feel short of breath and struggled to climb stairs. After investigations and a multitude of medical opinions, he was given the diagnosis terminal lung cancer.

Essentially, he was told to go home to die, as his illness was expected to prove fatal within a year.

Moraitis felt that it was perhaps wise to go back to the Greek island of Ikaria, where his ancestors were buried in oak-laden cemeteries overlooking the green-blue waters of the Aegean Sea. Ikaria is an island of roughly 100 square miles and approximately 100 people per square

mile. People there live the simple life – eat minimal meat, nap a lot, stay up late, and eat lots of olives and vegetables. And their social connections are very strong – communities gather in the evenings to philosophise, play dominoes, and dance. Dance. At night, well past bedtimes in the West, people move dining tables to the corner of the room, link their arms, and dance to traditional Greek music.

...he ended up living much longer than predicted...

Moraitis's story received much attention in America and ended up the subject of a documentary because he ended up living much longer than predicted – not a year longer, or a decade longer, but he even made a trip back to America twenty-five years after he first moved to Ikaria purely to figure out why he had lived so long. When Dan Buettner of the New York Times interviewed Moraitis in 2012, he couldn't help asking Moraitis what his doctors had made of his surviving lung cancer, especially since as many as nine physicians had given him less than a year to live. Moraitis responded that he didn't have the answers, as his doctors were all dead by the time he had returned to America.

Humans cannot differentiate artificial sweeteners like hummingbirds...

Recently the topic of calorie-restriction came up when I was asked to comment on Britain's sugar tax, that followed Mexico in initiating such a sugar tax. Personally I am generally in favour of education more than taxation – and taxation when applied unscientifically can yield some unexpected results – for example many milk-containing drinks have very high sugar content, but escape higher rates of tax. Humans cannot differentiate artificial sweeteners like hummingbirds can i.e. while we may detect they are artificial, we still think they taste sweet; hummingbirds think artificial sweeteners are poisonous. However, even artificial sweeteners tend to stimulate metabolic effects like sugar does, and there is now increasing evidence that they can also lead to diabetes.

...our disease risk is influenced by the childhood diet of our grandparents...

Recently studies were done comparing the calorie-restricted Okinawa diets and American diets. Not only does a calorie-restricted diet lead to greater longevity, it also reduces the risk of virtually every kind of cancer. Obesity is now second only to smoking as the leading cause of cancer and if trends persist will become No.1 in the future. In the blue zones we discussed earlier, people do not eat until they are full – they tend to work on an 80% principle: eat until 80% full; eat 80% plant and fish based diet. I was most interested in the Överkalix Cohort Study. This study was conducted among residents of an isolated community in the far north east of Sweden. Data was collected from three groups of people born

in 1890, 1905 and 1920 who were followed up all the way until their deaths (or until 1995). The results were fascinating. The study revealed that our disease risk is influenced by the childhood diet of our grandparents (before the growth spurt that happens in teenage years). So, if your grandfather or grandmother overate and over-indulged in food, then your risk of heart disease and diabetes is higher. Conversely, if food was not readily available during your father's childhood, then your risk of dying from a heart attack is lower. So, this is another reason we need to watch our

diets, not just to lose weight or look better, but for the sake of our future generations as well.

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