What's the Longest Humans Can Live? 115 Years, New Study Says

Carl Zimmer • OCT. 5, 2016

Jeanne Calment passed away in 1997 in France at the age of 122. Pascal Parrot/Sygma, via Getty Images

On Aug. 4, 1997, Jeanne Calment passed away in a nursing home in France. The Reaper comes for us all, of course, but he was in no hurry for Mrs. Calment. She died at age 122, setting a record for human longevity.

Jan Vijg doubts we will see the likes of her again. True, people have been living to greater ages over the past few decades. But now, he says, we have reached the upper limit of human longevity.

"It seems highly likely we have reached our ceiling," said Dr. Vijg, an expert on aging at the Albert Einstein College of Medicine. "From now on, this is it. Humans will never get older than 115."

Dr. Vijg and his graduate students Xiao Dong and Brandon Milholland published the evidence for this pessimistic prediction on Wednesday in the journal Nature. It's the latest volley in a long-running debate among scientists about whether there's a natural barrier to the human life span.

Leading figures in the debate greeted the new study with strong — and opposing — reactions.

"It all tells a very compelling story that there's some sort of limit," said S. Jay Olshansky, a professor of public health at the University of Illinois at Chicago, who has made a similar argument for over 25 years.

James W. Vaupel, the director of the Max-Planck Odense Center on the Biodemography of Aging, has long rejected the suggestion that humans are approaching a life span limit. He called the new study a travesty.

"It is disheartening how many times the same mistake can be made in science and published in respectable journals," he said.

Dr. Vaupel bases his optimism on the trends in survival since 1900.

A child born in the United States in 1900 had an average life expectancy just short of 50 years. An American child born today can expect to live on average to age 79. Japan's average life expectancy at birth has risen the most of any country so far, to 83 years.

But when Dr. Vijg and his students looked closely at the data on survival and mortality, they saw something different.

The scientists charted how many people of varying ages were alive in a given year. Then they compared the figures from year to year, in order to calculate how fast the population grew at each age.

The fastest-growing portion of society has been old people, Dr. Vijg found. In France in the 1920s, for example, the fastest-growing group of women was the 85-year-olds.

As average life expectancy lengthened, this peak shifted as well. By the

1990s, the fastest-growing group of Frenchwomen was the 102-year-olds. If that trend had continued, the fastest-growing group today might well be the 110-year-olds.

Instead, the increases slowed down and appear to have stopped. When Dr. Vijg and his students looked at data from 40 countries, they found the same overall trend.

The shift toward growth in ever-older populations started slowing in the 1980s; about a decade ago, it stalled. This might have occurred, Dr. Vijg and his colleagues said, because humans finally have hit an upper limit to their longevity.

To further test this possibility, the researchers analyzed the International Database on Longevity, assembled by Dr. Vaupel and his colleagues. It contains detailed reports on 534 people who have lived to extremely old age.

Dr. Vijg and his colleagues combed through the data, noting the year that each person in the database died, and charted the greatest age that someone had reached in each year since the 1960s.

In 1968, the oldest age attained was 111. By the 1990s, that figure had increased to around 115. But then this trend stopped, too. With rare exceptions like Mrs. Calment, no one has lived beyond 115 years.

The stall is evident not just among the longest-lived. “When you look at the second-oldest person — and the third and the fourth and the fifth — the trend is always the same,” Dr. Vijg said.

On the researchers’ graph, Mrs. Calment is “clearly an outlier,” Dr. Vijg said. He and his students also calculated how likely it would be for someone to live much past her, given current trends. The verdict: practically nil.

“You’d need 10,000 worlds like ours to have the chance that there would be one human who would become 125 years,” Dr. Vijg said.

Given the data, the scientists predict the future will look a lot like the present. “We expect that the oldest person alive will be around 115 years for the foreseeable future,” said Mr. Milholland, who worked with Dr. Vijg on the study.

Scientists have long debated whether there’s a limit to life span — not just for humans, but for any species. Only now, thanks to the long increase in average life expectancy, are people living long enough to hit the ceiling, Dr. Vijg said.

But Dr. Vaupel points out that in some countries, such as Japan, the cohort enjoying the fastest growth is continuing to shift older. As for the world records for life span, Dr. Vaupel argued that Dr. Vijg had failed to use the most powerful statistical methods available to analyze the data.

On the other hand, Leonard P. Guarente, a professor of biology at M.I.T., praised the new study, saying it confirms an intuition he has developed over decades of research on aging.

“This paper is a good dose of medicine, if you’ll pardon the expression, for those who would say there is no limit to human life span,” Dr. Guarente said.

Starting in the late 19th century, average life expectancy started to rise because fewer children were dying. In recent decades, adults have also enjoyed better health.

Some of those improvements have come from quitting smoking and having better diets. Antibiotics and drugs for chronic disorders like heart disease have also helped. But all of the improvements of modern life, Dr. Guarente and others argue, have not turned back the underlying biological process of aging.

Based on his own experimental research, Dr. Vijg describes aging as the accumulation of damage to DNA and other molecules. Our bodies can slow the process by repairing some of this damage. But in the end it’s too much to fix.

“At some point everything goes wrong, and you collapse,” Dr. Vijg said.

The best hope for our species is not to extend our life spans, Dr. Vijg argues, but to lengthen our years of healthy living — with healthy habits and perhaps drugs that can repair some of the cellular damage that comes with time.

“There’s a good chance to improve health span — that’s the most important thing,” Dr. Vijg said.