

Humans increasingly robust, studies find

Medicine, nutrition among the reasons

By Gina Kolata
The New York Times

Valentin Keller enlisted in an all-German unit of the Union Army in Hamilton, Ohio, in 1862. He was 26, a small, slender man, 5 feet 4 inches tall, who had just become a naturalized citizen.

He listed his occupation as tailor.

A year later, Keller was honorably discharged, sick and broken. He had a lung ailment and was so crippled from arthritis in his hips that he could barely walk.

He died at age 41 of "dropsy," which probably meant that he had congestive heart failure. His 39-year-old wife, Otilia, died a month before him of what her death certificate said was "exhaustion."

People of Valentin Keller's era, like those before and after them, expected to develop chronic diseases by their 40s or 50s. Keller's descendants had lung problems, heart problems and liver problems. They often died in their 50s or 60s.

Now, though, life has changed. The family's baby boomers are reaching middle age and beyond and are fine.

"I feel good," said Keller's great-great-grandson Craig Keller. At 45, Keller says he has no health problems, nor does his 45-year-old wife, Sandy.

The Keller family illustrates what might prove to be one of the most striking shifts in human existence — a change from small, relatively weak and sickly people to humans who are so big and robust that their ancestors seem almost unrecognizable.

New research from around the world has begun to reveal a picture of humans today that is so different from what it was in the past that scientists say they are startled.

Over the past 100 years, says researcher Robert W. Fogel of the University of Chicago, humans in the industrialized world have undergone "a form of evolution that is unique not only to humankind, but unique among the 7,000 or so generations of humans who have ever inhabited the earth."

The difference does not involve changes in genes, as far as is known, but changes in the human form. It shows up in several ways, from those that are well known and almost taken for granted, like greater heights and longer lives, to ones that are emerging only from comparisons of health records.

Diseases lose steam

The biggest surprise emerging from the new studies is that many chronic ailments like heart disease, lung disease and arthritis are occurring an average of 10 years to 25 years later than they used to.

There is also less disability among older people today, according to a federal study that directly measures it. And that is not just because medical treatments like cataract surgery keep people functioning. Human bodies are simply not breaking down the way they did before.

Even the human mind seems improved. The average IQ has been increasing for decades, and at least one study found that a person's chances of having dementia in old age appeared to have fallen in recent years.

The proposed reasons are as unexpected as the changes themselves. Improved medical

care is only part of the explanation; studies suggest that the effects seem to have been set in motion by events early in life, even in the womb, that show up in middle and old age.

"What happens before the age of 2 has a permanent, lasting effect on your health, and that includes aging," said Dr. David J.P. Barker, a professor of medicine at Oregon Health and Science University in Portland and a professor of epidemiology at the University of Southampton in England.

Each event can touch off others. Less cardiovascular disease, for example, can mean less dementia in old age. The reason is that cardiovascular disease can precipitate mini-strokes, which can cause dementia. Cardiovascular disease is also a suspected risk factor for Alzheimer's disease.

The effects are not just in the United States. Large and careful studies from Finland, Britain, France, Sweden and the Netherlands all confirm that the same things have happened there; they also are beginning to show up in the underdeveloped world.

Even more obvious differences surprise scientists by the extent of the change.

In 1900, 13 percent of people who were 65 could expect to see 85. Now, nearly half of 65-year-olds can expect to live that long.

Better medication

Today's middle-aged people are the first generation to grow up with childhood vaccines and with antibiotics. Early life for them was much better than it was for their parents, whose early life, in turn, was much better than it was for their parents.

And if good health and nutrition early in life are major factors in determining health in

middle and old age, that bodes well for middle-aged people today. Investigators predict that they may live longer and with less pain and misery than any previous generation.

Men living in the Civil War era had an average height of 5-foot-7 and weighed an average of 147 pounds. That translates into a body mass index of 23, well within the range deemed "normal." Today, men average 5-foot-9½ and weigh an average of 191 pounds, giving them an average body mass index of 28.2, overweight and edging toward obesity.

Those changes, along with the improvements in general health and life expectancy in recent years, intrigued Costa. Common chronic diseases — respiratory problems, valvular heart disease, arteriosclerosis, and joint and back problems — have been declining by about 0.7 percent a year since the turn of the 20th century. And when they do occur, they emerge at older ages and are less severe.

The reasons, she and others are finding, seem to have a lot to do with conditions early in life. Poor nutrition in early years is associated with short stature and lifelong ill health, and until recently, food was expensive in the United States and Europe.

Fogel and Costa looked at data on height and body mass index among Union Army veterans who were 65 and older in 1910 and veterans of World War II who were that age in the 1980s. Their data relating size to health led them to a prediction: the World War II veterans should have had 35 percent less chronic disease than the Union Army veterans. That, they said, is exactly what happened.

They also found that diseases early in life left people predisposed to chronic illnesses when they grew older.