

High mortality rates may explain small body size

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A new study suggests that high mortality rates in small-bodied people, commonly known as pygmies, may be part of the reason for their small stature. The study, by Jay Stock and Andrea Migliano, both of the University of Cambridge, helps unravel the mystery of how small-bodied people got that way.

The article appears in the October issue of *Current Anthropology*.

Adult males in small-bodied populations found in Africa, Asia and Australia are less than four feet, 11 inches (150 centimeters) tall, which is about one foot shorter than the average adult male in the U.S. Why people in these populations are so small remains a mystery, but several hypotheses have been proposed.

Some scientists think that small bodies provide an [evolutionary advantage](#) under certain circumstances. For example, a smaller body needs less food—a good thing in places where food supplies are inconsistent. Small bodies also may provide an advantage in getting around in thickly forested environments.

Recently, however, a new hypothesis has come to the fore suggesting that reproductive consequences of high [mortality](#) rates explain small body size.

If death comes at an early age, then [natural selection](#) would favor those who are able to reproduce at an early age. But early sexual maturity

comes with a cost. When the body matures early, it diverts resources to reproduction that otherwise would have gone to growth. So small body size could be essentially a side effect of early [sexual maturity](#).

Stock's and Migliano's study provides the first long-term evidence for the mortality hypothesis.

The two researchers looked at over 100 years of data on three small-bodied populations from the Andaman Islands in the Bay of Bengal, south of Burma. When the British established colonies on the islands in the 1850s, these indigenous tribes had very different reactions to their new neighbors. Those reactions would have vast implications for the tribes' [mortality rates](#).

Two tribes, the Onge and the Jarawa, resisted relations with the British, and retreated deep into the forest to avoid them. But the largest group of tribes, the Great Andamanese, befriended the British, some even living in homes built and supervised by colonists. In doing so, the tribesmen were unwittingly exposed to infectious diseases for which they had no defenses. As a result, the Great Andamanese experienced a sharp increase in mortality due to influenza, tuberculosis, measles and syphilis. By 1900 their numbers had dwindled to 600, from 6000 just 50 years before. By the 1960s, only 19 individuals remained.

Using historical records compiled by British researchers at the time, Stock and Migliano found that during the peak period of increased mortality, the Great Andamanese got smaller in stature. From 1879 to 1927, the height of the adult males who were measured decreased at a rate of 4.7 centimeters per 100 years.

Meanwhile, the Onge and the Jarawa, who for the most part isolated themselves from colonists and did not have dramatic increases in mortality, saw no drop in stature. The Jarawa, which have had the most

stable mortality rate, remain the tallest of the three tribes today.

The relationships of the tribes with colonists "led to differences in mortality among these tribes, which appears to have been a fundamental determinant of variation in body size," the authors conclude.

This is first time that a link between mortality and body size has been shown using long-term data, the authors say. And it bolsters the idea that the reproductive trade-off associated with a short life could play a role in the evolution of human body size.

Source: University of Chicago ([news](#) : [web](#))

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