

As people live longer and reproduce less, natural selection keeps up

April 25 2013



This shows four generations of women and girls from a single family in Gambia.
Credit: *Current Biology*, Courtiol et al.

In many places around the world, people are living longer and are having fewer children. But that's not all. A study of people living in rural Gambia, published in the Cell Press journal *Current Biology* on April 25, shows that this modern-day "demographic transition" may lead women to be taller and slimmer, too.

"This is a reminder that declines in mortality rates do not necessarily mean that evolution stops, but that it changes," says Ian Rickard of Durham University in the United Kingdom.

Rickard and Alexandre Courtiol of the Leibniz Institute for Zoo and Wildlife Research in Germany show that changes in mortality and [fertility rates](#) in Gambia, likely related to improvements in medical care since a clinic opened there in 1974, have changed the way that natural selection acts on body size.

For their studies, Rickard, Courtiol, and their colleagues used data collected over a 55-year period (1956) by the UK Medical Research Council on thousands of women from two rural villages in the West Kiang district of Gambia. Over the time period in question, those communities experienced significant [demographic shifts](#)—from high mortality and fertility rates to rapidly declining ones. The researchers also had thorough data on the height and weight of the women.

Their analysis shows that the demographic transition influenced directional selection on women's height and [body mass index](#) (BMI). Selection initially favored short women with high BMI values but shifted over time to favor tall women with low BMI values.

The researchers say it's not entirely clear why selection has shifted from shorter and stouter women to taller and thinner ones. It's partly because selection began acting less on mortality and more on fertility over time. But other environmental changes were shown to play an important role, too.

"Although we cannot tell directly, it may be due to health care improvements changing which women were more or less likely to reproduce," Courtiol says.

The findings in Gambia may have relevance around the globe. "Our results are important because the majority of human populations have either recently undergone, or are currently undergoing, a demographic transition from high to low fertility and [mortality rates](#)," the researchers write. "Thus the temporal dynamics of the evolutionary processes revealed here may reflect the shifts in evolutionary pressures being experienced by human societies generally."

And how we humans respond to these pressures might tell us something about how we'll continue to evolve in this ever-changing world we live in.

More information: *Current Biology*, Courtiol et al.: "The demographic transition influences variance in fitness and selection on height and BMI in rural Gambia." [dx.doi.org/10.1016/j.cub.2013.04.006](https://doi.org/10.1016/j.cub.2013.04.006)

Provided by Cell Press

Citation: As people live longer and reproduce less, natural selection keeps up (2013, April 25) retrieved 6 May 2024 from <https://medicalxpress.com/news/2013-04-people-longer-natural.html>

| |
|--|
| <p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p> |
|--|