

Late motherhood boosts family lifespan

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University of Utah demographer Ken R. Smith led a new study confirming that women who have their last baby after age 45 live longer than women who have their last baby at younger ages, and also showing that their brothers live longer too. That suggests the same genes promote both prolonged fertility in women and longevity in both sexes. Credit: Jason Smith, University of Utah

Women who have babies naturally in their 40s or 50s tend to live longer than other women. Now, a new study shows their brothers also live longer, but the brothers' wives do not, suggesting the same genes prolong lifespan and female fertility, and may be more important than social and environmental factors.

"If [women](#) in your family give birth at older ages, you may well have a chance of living longer than you would otherwise," says the study's lead author, demographer Ken R. Smith, a professor of family and consumer studies at the University of Utah. "If you have a female relative who had children after age 45, then there may be some genetic benefit in your

family that will enhance your longevity."

For descendants of the Utah and Quebec pioneers studied, "you may be able to look at the ages when your female [ancestors](#) gave birth - rather than just their longevity - in estimating how long you may live," says Smith, whose study will be published online May 4 and in the June 10 print issue of the *Journal of Gerontology: Biological Sciences*.

The researchers examined high-quality genealogical records from the Utah Population Database at the University of Utah with its records of 1.6 million Utah Mormon pioneers and their descendants. They also used the University of Montreal's Program on Demographic History Research, which has records on 400,000 people who lived in heavily Catholic Quebec between 1608 and 1850.

Specifically, the study involved the records of 11,604 Utah men who were born between 1800 and 1869 and who had at least one sister who lived at least to age 50; and the records of 6,206 Quebec men who lived between 1670 and 1750, and had at least one sister who lived to 50 or older. The key findings:

- Women who had "late fertility" - a birth at age 45 or older - were 14 percent to 17 percent less likely to die during any year after age 50 than women who did not deliver a child after age 40. That confirmed earlier studies. But those studies did not determine if the women gave birth later and lived longer because of [genes](#) or because of social and environmental factors such as good nutrition or healthy living.
- Brothers who had at least three sisters, including at least one sister who gave birth at age 45 or later, were 20 percent to 22 percent less likely to die during any year after age 50 than

brothers who had no "late fertile" sisters. That indicates what earlier studies did not, namely, the same genes may influence the lifespan of both sexes and women's ability to give birth at older ages.

- The brothers' wives didn't have longer lives, suggesting any environmental or social factors that influence lifespan had only a weak influence, and that genes may explain why brothers lived longer when they had a sister who gave birth in her 40s.

The study didn't address how much longevity is due to genetics, but Smith says scientists believe genes account for up to 25 percent of differences in longevity.

Smith conducted the study with two other University of Utah researchers: Richard Cawthon, a research associate professor of human genetics, and demographer Geraldine Mineau, a research professor and director of population sciences at the university's Huntsman Cancer Institute, where Smith also is an investigator. Other coauthors were demographer Alain Gagnon and sociologist Ryan Mazan of the University of Western Ontario, and demographer Bertrand Desjardins, of the University of Montreal.

Good Genes Versus a Good Environment

Smith says that during the last decade, "there have been several studies that show a number of species, including humans, are able to reproduce late without medical intervention - and those females live longer." Other studies found that late menopause also is associated with women having prolonged fertility and longevity.

"There is a genetic component to longevity, especially for living to very old ages," Smith says. "The new thing here is what most evolutionary

biologists long have argued: that survival and reproduction are intrinsically linked to one another. So the novel finding in this paper is discovering this link in humans before modern contraception."

But he says the link between late motherhood and longevity "could be something that is not inherited. It could be good nutrition or really good living, suggesting that if you are a healthier mom you live longer."

That is why the researchers looked at the lifespan of the brothers of women who had babies late, and of those brothers' wives. The wives are not blood relatives, so genetic factors shared by sisters and brothers wouldn't be the same in the brothers' wives.

Smith says the study focused on the longevity of brothers rather than sisters of late-fertile women because "men's own reproductive history doesn't get in the way of assessing the role of their female relatives' fertility."

The study focused on the two pioneer groups not only because of the quality of the data but because of the absence of modern birth control and an unfavorable attitude toward natural family planning methods by Mormons and Catholics. Also, a link between late fertility and lifespan is easier to observe in large families with more sisters.

Since all of those studied are now dead, the researchers could look at the full length of their fertile periods and lives. "Not many data sets could do this," Smith says.

The researchers controlled for various factors that could skew the results. For example, they excluded any individuals who did not live to at least 50 because a husband's death at a younger age would influence his wife's child-bearing.

Late Babies Linked to Longer Life for Moms and Blood Uncles

- The study confirmed earlier research showing that women who have babies late tend to live longer.

Compared with women who had their last baby before age 41, Utah pioneer women who had their last baby at age 41 to 44 were 6 percent less likely to die during any given year past age 50, and Utah pioneer women who had their final birth at age 45 or older were 14 percent less likely to die during any given year after age 50.

In other words, imagine woman A had her last baby at age 35, woman B had her last baby at 42 and woman C had her last baby at 46. Then at age 52 - or any other age past 50 - woman B would be 6 percent less likely to die than woman A, and woman C would be 14 percent less likely to die than woman A.

In Quebec, slightly different age groups were analyzed. Compared with younger mothers, women who had their last child between ages 42 and 44½ were 6 percent less likely to die during any given year past age 50, and women who had their last child at age 44½ or older were 17 percent less likely to die during any given year past age 50.

- By looking at the brothers of women who had children late, the study suggests the same age-slowing genes may be responsible for both prolonged fertility in women and longer lifespan in both sexes. The effects of late fertility were strongest for brothers with at least three sisters because the larger the number of sisters, the more likely it is at least one will give birth in middle age.

So in the Utah group, brothers with three or more sisters - at least one of

whom gave birth at age 45 or older - were 20 percent less likely to die during any given year after age 50 than men without late-fertile sisters.

In Quebec, brothers with three or more sisters - at least one of whom gave birth at age 44½ or older - were almost 23 percent less likely to die during any single year after [age](#) 50 than men without sisters who gave birth late.

- It is possible social and environmental reasons - good water, good nutrition, a healthy environment - could explain why the brothers and their late-birthing sisters had longer lives. So the researchers also examined the [longevity](#) of the brothers' wives.

They found no increase in lifespan, indicating that heredity - far more than [environmental factors](#) - played a role in the prolonged fertility and longer lives of the women, and the longer lives of their brothers.

Smith says the new findings do not conflict with one of his earlier studies finding that having larger families reduced parents' lifespan. Both findings can operate together.

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

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