

Women's birth canals in Kenya, Korea, Kansas not the same: study

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The size and shape of women's birth canals vary depending on what part of the world they live in but most medical textbooks are based on a European body type, scientists said Wednesday, warning of health risks.

Differences in the depth and width of the pelvic canal determine a newborn's route into the world, and forcing births to conform to a single standard can be harmful to mother and child, they reported in the journal *Proceedings of the Royal Society B*.

"An obstetrician's training is based on a model of the pelvis that has been developed from European [women](#)," said lead author Lia Betti, a senior lecturer in evolutionary anthropology at the University of Roehampton in London.

"But the typical pelvic shape and typical childbirth pattern can differ among populations," she told AFP. "An update seems necessary, especially in a multi-ethnic society."

Women from sub-Saharan Africa, for example, tend to have a deeper canal, while—at the other extreme—native American women generally have a wider one, she explained.

European and Asian women fall somewhere in between.

This matters because, during [birth](#), a baby rotates while travelling through the canal, aligning the sides of the head and shoulders to the channel's contours.

"If a woman's birth canal is substantially different from the model described in textbooks, the movement of the baby will also deviate from the expected pattern," Betti said.

She cited examples from the early-to-mid 20th century of "horrendous consequences" when forceps were used to rotate babies during delivery, based on erroneous assumptions about the shape of the pelvis.

X-raying pregnant women—standard practice well into the 1950s to

determine the position of babies—helped provide the database highlighting differences in female anatomy.

Some 300,000 women die during or shortly after childbirth each year, many due to "complications from delivery," according to the World Health Organization.

Far from Africa

One of those "complications" is the fact that humans have a big brain encased in bone.

"Owing to the tight fit, the foetus needs to perform a series of rotations to successfully navigate the mother's birth canal," Betti explained.

The shape of the female pelvis has also been described as an evolutionary compromise between a short, compact body suited for walking on two limbs, and a spacious pelvic canal for big-brained newborns.

But none of this tells us why women in Namibia, Nanjing, and Norway have different internal architectures for giving birth.

There are three possible explanations, none of them mutually exclusive, the authors said.

One is cold weather environments, which may have led to the emergence of wider hips—and, at the same time, a larger inlet to the birth canal—to reduce heat loss by increasing body mass for insulation.

Some studies have suggested that natural selection may have helped to winnow out body types poorly suited to delivery.

The evidence for both of these theories, however, is patchy at best.

The most likely cause of variation, said Betti, has more to do with human migration.

Homo sapiens originated in Africa and dispersed rapidly into new continents 60,000 to 100,000 years ago—in the case of North American more recently.

Each founding population was small, forming what is known as a genetic bottleneck.

The further from Africa, the less genetic diversity the migrant groups had. That means that whichever traits they shared—blond hair and fair skin in Scandinavia, for example—would dominate locally.

Likewise for pelvic shapes and contours, which remain far more diverse in sub-Saharan Africa than elsewhere.

"This is clear evidence that [birth canal](#) variation has been shaped by past population history," Betti said.

"Distance from Africa explains a remarkable 43.5 percent of [canal](#) diversity within human populations."

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