

# 'Fairer sex' myth debunked—girls have a better response to stress than boys

October 26 2016

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A study carried out by researchers from the University of Granada (UGR) in collaboration with San Cecilio Clinic Hospital (Granada) has scientifically proven that neonate girls present a greater antioxidant defense and less oxidative stress on their cell membranes than boys, in addition to higher antioxidant enzymatic activity. In other words, girls have a better response to stress than boys.

Moreover, mothers that give birth to girls present a greater antioxidant defense and less damage to the main biomolecules compared to mothers that have given birth to boys, in addition to a lower inflammatory process during labor, a fact also observed in neonate girls with lower levels of pro-inflammatory interleukins. That is to say: giving birth to a girl is less aggressive for the mother than giving birth to a boy.

Until now, there were no scientific texts about this subject, given that all studies assessed oxidative stress and inflammation in adults. Therefore, this is the first study that assess the stress suffered by the mother and the neonate child during the perinatal stage, shedding some light on how neonate children confront oxidative aggressions in their postnatal lives.

This multidisciplinary work, published in the renowned journal *Pediatric Research* (Nature Publishing Group), has proved that neonate girls and their mothers deal with labor-related stress better than boys and their mothers, and unveils a clear association between the neonate's gender, the oxidative process, and inflammatory signaling.

As Julio José Herrera and Javier Díaz Castro, researchers from the department of Physiology at the UGR and main authors of this work, explain, "our findings open a new, exciting field of research centered on the neonate's sex as a risk factor for several functional alterations, with a great impact on their life expectancy and the development of future pathologies."

The researchers carried out the study with a sample of 56 healthy, pregnant women. 27 of them gave birth to boys whilst 29 of them gave birth to girls, all of them at San Cecilio Clinic Hospital in Granada.

After labor, the researchers took blood samples from the vein and artery in the umbilical cord and from the neonate, which were later processed for the analysis of oxidative stress and the assessment of the inflammatory signaling.

## **Higher resistance to oxidative stress in girls**

The results show that girls deal with oxidative stress and inflammation better than boys, given that girls possess more developed enzymatic systems when they are born, thus reducing the damage caused to the cells and improving cell metabolism. Therefore, the neonate's gender is presented as a factor that not only determines the process of labor, but also affects the development of future pathologies.

The research has been led by the University of Granada in collaboration with San Cecilio Clinic Hospital and it highlights, for the first time, the influence of the neonate's gender over [oxidative stress](#) and the inflammatory process.

"Therefore, the newborn baby's gender determines not only how the mother deals with the labor process, but also the way neonates confront the hyperoxic environment which the extrauterine world is, which shows

that the neonate's sex is a decisive factor related to several functional alterations with a great post-labor impact for the mother, and for the baby for the rest of their life," the authors explain.

**More information:** Javier Diaz-Castro et al. Gender specific differences in oxidative stress and inflammatory signaling in healthy term neonates and their mothers, *Pediatric Research* (2016). [DOI: 10.1038/pr.2016.112](https://doi.org/10.1038/pr.2016.112)

Provided by University of Granada

Citation: 'Fairer sex' myth debunked—girls have a better response to stress than boys (2016, October 26) retrieved 2 May 2024 from <https://medicalxpress.com/news/2016-10-fairer-sex-myth-debunkedgirls-response.html>

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