Sex-specific Sibling Rivalry in Child Health: Evidence from over 190,000 Twins (P18-098-19)

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Objectives: This study measured 'sibling rivalry' in child health, testing the degree to which nutritional and other resources were preferentially allocated to male instead of female children. We used twin data to control for maternal health and other circumstances, and used mortality, birthweights, heights, and weights to test whether any differences between twins started in utero or only emerged later in life.

Methods: We extracted all twin births recorded in 245 nationally representative surveys conducted in 73 low- and middle-income countries between 1990 and 2016 for the Demographic and Health Surveys (DHS). We used logistic regression to test for mortality differences ($N = 191{,}782$ twins ever born), and OLS regression to test for differences between twins < 5 yrs in birthweight ($N = 10{,}769$), height-for-age z score ($N = 18{,}124$), and weight-for-height z score ($N = 17{,}600$).

Results: We found a large negative impact on birthweight and survival of having a male co-twin. This effect occurred entirely among boys rather than girls. Males with a twin brother had lower odds of survival (OR = 0.88; 95% CI [0.83, 0.94]) and lower birthweights in grams (coefficient estimate = −0.05; CI [−0.08, −0.02]) compared to males with a twin sister. Results were robust to different model specifications. We found null effects for heights and weights. The estimated 'male twin rivalry' effect on birthweight and mortality was similar in magnitude to having a mother with below-median schooling, or two quintiles lower wealth.

Conclusions: The sex of a child's siblings has a significant impact on their health, which has important implications for intervention and research to reduce gender-based disparities. We found that having a male co-twin reduced birthweight, demonstrating that sibling rivalry begins in utero, and found that it also reduced later-life survival, implying that biological differences in gestational health may be worsened by gender biases. Both results were found among boys but not girls, which is consistent with other evidence of greater sensitivity of male fetuses and infants to their environments. Sibling rivalry among twins is just one aspect of gender bias, revealing how efforts to help both boys and girls fulfill their genetic potential requires attention to both sex-specific biology and gender bias in behavior.

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Supporting Tables, Images and/or Graphs: