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Factors influencing the sex ratio at birth in India: a new analysis based on births occurring between 2005 and 2016¹

There has been a paucity of research examining factors influencing the sex ratio at birth (SRB) in India, and no recent study has utilized micro-data from representative household surveys that contain the breadth of household and maternal factors needed to explain patterns in SRB. India has undergone tremendous socio-economic, demographic, and structural transitions in the past decade, and access to modern technology used to detect the sex of the fetus has also increased considerably in this same period. There is a need for more up to date analysis of this topic, with analysis of the role of birth order, an important factor which has not been considered in prior studies.

OBJECTIVE: This research brief examines the factors influencing the sex ratio at birth in India using births occurring between 2005 and 2016, stratified by birth order.

METHODS: The results presented in this research brief are based on 553,461 births occurring between 2005 and 2016 in households interviewed as part of India's 2015-16 National Family Health Survey (NFHS-4). The SRBs are presented as male births per 100 female births. 95% confidence intervals (Cis) are also presented along with the estimated SRBs.

Multivariable logistic regressions stratified by birth order are used to examine associations with probability of a male birth at the national level. Multivariable binary logistic regression results are adjusted for selected socio-economic and demographic, residence related, kinship structure related, and use of ultrasound technology related factors.

The SRB estimates are adjusted for the complex survey design and weights used in NFHS-4.

KEY FINDINGS: The SRB was above the normal range

- ✓ in India as a whole
- ✓ at birth order 1, and generally increased with birth order
- ✓ in the absence of a living male sibling (and significantly different from the SRB in the presence of a living male sibling)
- ✓ among couples desiring more sons than daughters (and significantly different from couples desiring equal numbers or more daughters)
- ✓ in communities in which average community-level fertility is ≤ 2.8 children per woman, and generally increased with decreases in average community-level fertility
- ✓ in households owning land
- ✓ in the North, Central, West, and South geographic regions of India

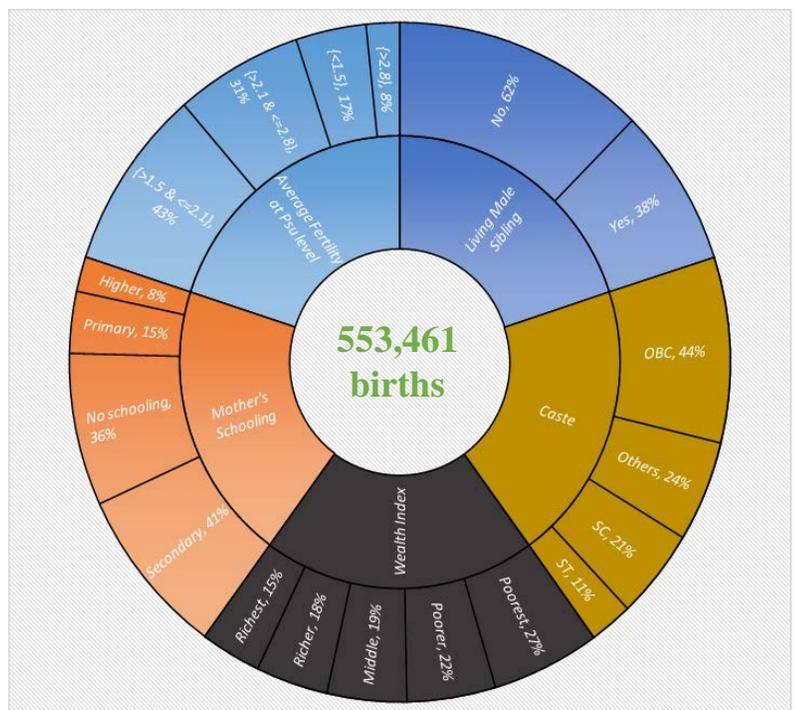


Figure 1: Percent distribution of births occurring between 2005 and 2016

¹This brief summarizes findings from the following research paper: Singh, A., Kumar, K., Yadav, A., James, K. S., McDougal, L., Atmavilas, Y. & Raj, A. (2021). Factors influencing the sex ratio at birth in India: a new analysis based on births occurring between 2005 and 2016 *Studies in Family Planning*. DOI: 10.1111/sifp.12147

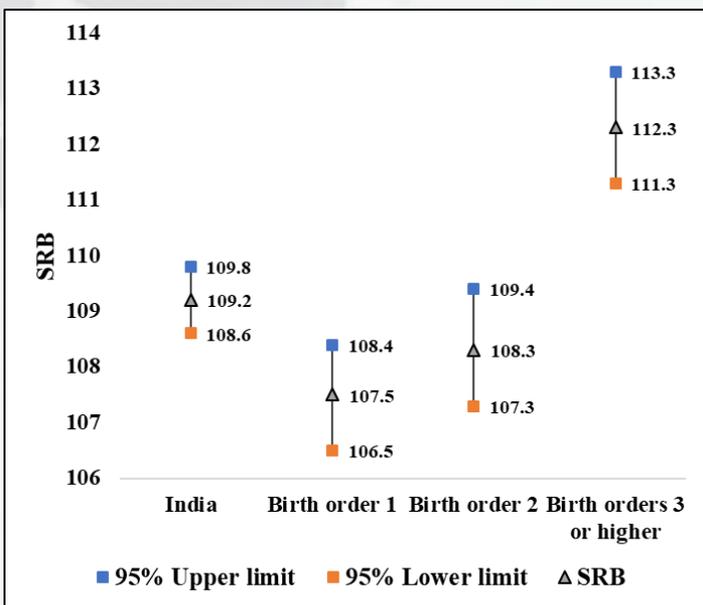


Figure 2: SRB by birth order, India, 2005-2016

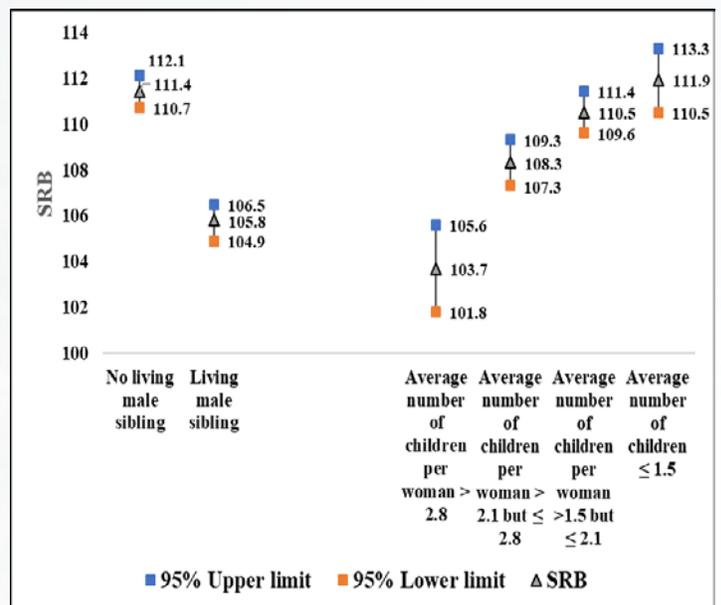


Figure 3: SRB by surviving male sibling and psu fertility, India, 2005-2016

Adjusted for socio-demographic covariates, first births had a higher probability of being male

- ✓ in households in the middle and richest wealth quintiles
- ✓ in mothers desiring more sons than daughters
- ✓ in lower-fertility communities

Most SRB correlates were visible at birth orders 3 or higher. The probability of a male birth was positively associated with

- ✓ the absence of a living male sibling
- ✓ mothers who desired more sons than daughters
- ✓ decreases in average community-level fertility
- ✓ improvements in mother's schooling and household wealth
- ✓ landholding size more than 10 acres

CONCLUSIONS: There is an urgent need for regular monitoring of the SRB in India as

- ✓ the SRB at birth order 1 is above the normal upper limit for the country as a whole and across national regions, and increases with higher birth order
- ✓ fertility decline may further distort the SRB in favor of males
- ✓ sex selection is spreading to areas not previously known for sex selection, such as south India

There is also a clear need for focused initiatives, such as Beti Bachao Beti Padhao, for improving the value of girl child in India.

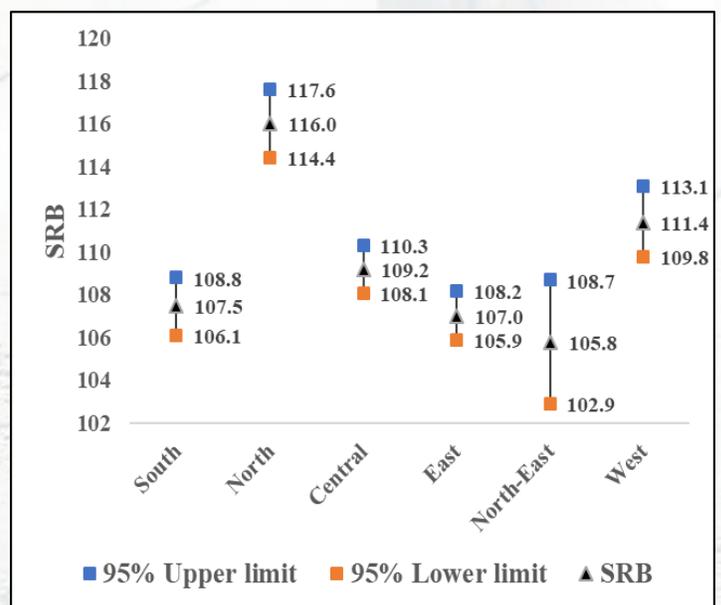


Figure 4: SRB by geographic region, India, 2005-2016

Suggested Citation: Singh, A., Kumar, K., Yadav, A., James, K. S., McDougal, L., Atmavilas, Y. & Raj, A. (2021). Factors influencing the sex ratio at birth in India: a new analysis based on births occurring between 2005 and 2016 Research Brief No.7. Mumbai & San Diego: GENDER Project, International Institute for Population Sciences and Center for Gender Equity and Health University of California.



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For more information, please visit geh.ucsd.edu
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