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By Stephen Dale

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A simmering controversy has been brought back to the boil by a new study estimating that 10 million girls have gone “missing” from India’s population since 1985 because of the practice of selectively aborting female fetuses.

Dr Prabhat Jha, co-author of the study and director of the Centre for Global Health Research at St Michael’s Hospital and the University of Toronto, Canada, says the new calculation shows the need for a range of social policies to overcome a long-standing cultural preference for male children and to reverse a potentially disastrous future imbalance in the male/female ratio of India’s population.

“It’s going to take some innovations to support women who want to have children, to encourage them to feel that it’s acceptable to just have female children,” says Dr Jha, whose research into premature mortality is partly funded by Canada’s Global Health Research Initiative (GHRI), a cooperative venture of the International Development Research Centre (IDRC), the Canadian International Development Agency, Health Canada, and the Canadian Institutes of Health Research. “One option is to give cash payments to families where there are one or two female children in a household and no male children. Such innovations are being started now in small settings in different places.”

Long-term concern

The startling imbalance between male and female birth rates has been acknowledged in India for some time, with the use of ultrasound technology (used to alert parents as to whether a fetus is male or female) being implicated as a primary cause. IDRC is involved in this issue not only through its support for Dr Jha’s work, but also through the collaboration of IDRC’s Women’s
Rights and Citizenship program with ActionAid India, an Indian nongovernmental organization. Working in five states, researchers are attempting to understand the formal and informal social, cultural, economic, and political processes that motivate the bias against having female children.

This work also includes the participation of leading universities and women’s organizations. The adverse female sex ratio is also an ongoing concern for the Indian government. In 1994, India made it illegal to abort a fetus based on sex. Doctors who communicate to parents that a fetus is female so as to enable them to terminate the pregnancy are subject to fines, imprisonment, and suspension of their medical licences.

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The new study, however, indicates that these laws are being circumvented or not enforced. The research team, headed by Dr Jha and co-principal investigator Dr Rajesh Kumar, a professor at the Post-Graduate Institute of Medical Education and Research in Chandigarh, India, examined data from India’s Special Fertility and Mortality Survey that studied births occurring during 1997. The team’s analysis of data from the massive study (involving 1.1 million Indian households) indicated that, three years after the use of ultrasound for sex selection was outlawed, India nonetheless experienced a shortfall of half a million female births. This revelation attracted the attention of news media around the world.

Reporting on their findings in the medical journal *The Lancet* in January 2006, the researchers say the cultural pressure to have at least one son is most strongly indicated by declining female birth rates in families where previous children have been girls. For example, the sex ratio for a second birth when the first child had been female was 759 females per 1 males. The ratio fell even more dramatically — to 719 females per 1 male births — in the case of third births when the previous children were female.

These figures contrast with male/female ratios that were roughly equal in Indian families where boys had previously been born. They also differ from the norm in most countries around the world where the female population marginally outnumbers that of males. Many different factors (for example, hormonal changes, exposure to Hepatitis B, even the father’s occupation) have been proposed as explanations. But Dr Jha says those factors could not account for such a huge gap, leaving the misuse of medical technology as the only credible explanation. Extrapolating the average of the 1997 figure to cover the period from 1985 to 2005 when ultrasound became available, Dr Jha and his colleagues calculate a cumulative deficit of 10 million females over those two decades.

**Broader health agenda**

For Dr Jha, tackling the mystery of low female birth rates is one part of an ambitious research agenda that aims to use India’s largescale health surveys to probe how cultural attitudes and other social and demographic factors influence child and maternal health in general. Funded by GHRI, Dr Jha had been studying “immunization-related outcomes” with a view to illuminating “the broader context of what’s going on with child survival and documenting the causes of the 2 million annual child deaths in India.” It has been suggested, for instance, that high child mortality may be partly due to the fact that parents who prefer male offspring neglect to immunize female children. This interest in the role of male preference in
overall health outcomes led Dr Jha to explore the gap in male/female birth ratios that had been identified in earlier interpretations of census data.

Fortuitously, this constellation of issues has become easier to study since India’s Home Ministry initiated a campaign to collect health data across a broad section of the population. For example, the 1997 fertility survey (compiled in 1998) is part of the “One Million Deaths Study” — the largest household health survey in the world — that monitored 6.3 million people in 1 million households between 1998 and 2003. In a second phase that will run between 2004 and 2014, it is involving 7.6 million people in 1.3 million households.

Data is collected from those households “by a cast of thousands [of enumerators] who go out to do face-to-face interviews with the head of the households and then update the information every six months,” explains Dr Jha. When family members die, “verbal autopsies” are conducted to determine the cause of death. This exercise “generates very powerful statistics about how people live and how people die and how the two are related,” he says.

**Vital demographic data**

Even so, investing in health data collection remains something “like building a fire station: nobody wants to pay for it, although everybody benefits from it,” says Dr. Jha. The researcher would like to see that change. He believes that India’s approach to gathering health information should become a model for other countries and international funding agencies.

“Kudos to the Indian government for having this system in place and for making the information accessible,” he says. “I think this has implications for where the international community should put its money. The idea is that you want independent, long-term mortality and morbidity statistics to be generated — and you want to separate the user [of the data] from the producer. In any country — in Canada for instance — would you ever trust doctors to evaluate their own results?”

Dr Jha and his team aim to use India’s broad-based, regionally representative health statistics to pinpoint what child health issues most urgently need to be addressed. India’s child mortality rates vary widely by region, and correlating household factors with mortality should make it possible to determine what conditions contribute most to child deaths. Mortality in the neonatal period — the first month of life — warrants especially detailed study, since these deaths account for between 40 and 50 % of child mortality.

Dr Jha reports that he and his colleagues’ early research indicates that access to immunization may be key to lowering mortality rates. “Our preliminary work suggests that about half of the deaths that currently occur among children who are not immunized could be avoided.”

**The class paradox**

Sometimes, analyzing the health data provides unexpected results. In the case of the missing females study, for example, one of the more striking conclusions is that selective abortion of female fetuses is practiced more in families where the mothers are better educated. Among women with a Grade 10 education or higher, the sex ratio for second and third births was 683 females per 1 000 males, compared to a ratio of 869 female per 1 000 male births among mothers who were illiterate. There were no differences by religion.
“Normally, in most health matters, the poor are worse off, but here we actually have something where the rich are worse off,” he remarks. “This certainly needs more research, but I think it’s likely related to greater access to ultrasound services for the rich. I think there is a stronger cultural preference for the rich to maintain their family name by having male children.”

This bias against girls has existed for some time and has been manifested in different ways. For example, in a companion article in *The Lancet*, Shriresh Seth of the Breach Candy Hospital in Mumbai noted that the preference for sons has led in the past to the practice of female infanticide. Some commentators also believe that population policies in parts of India have encouraged the current practice of sex-selective abortion. Dr Mohan Rao of Jawaharlal Nehru University in New Delhi, for instance, believes that in states where coercive measures (such as denial of social benefits or employment opportunities) are used to support a two-child-per-family policy, parents feel additional pressure to abort female fetuses if they hold to the preference of having at least one son.[1]

**Profound social shifts**

Although predicting the longer-term outcomes of India’s male/female population imbalance is risky and imprecise, Dr Jha notes that the first part of the post-ultrasound cohort has already reached adulthood and some profound social shifts have started to be reported. Anecdotal evidence has it, for instance, that in villages in some parts of the country there are large numbers of men with no women to marry. In other places the practice of polyandry (females taking multiple husbands) has become common. Dr Jha sees some ominous potential public health consequences from the decline in the number of females, although it is impossible to know in advance what they will be.

Reversing India’s currently skewed demographic picture and avoiding the associated problems will require a multipart effort, the researcher believes. First, he says the use of ultrasound technology should be better monitored and the existing laws better enforced. Then, educational campaigns can be targeted to educated, upper middle-class families — that is, aimed at families with one or two daughters who may feel pressure to produce a son. Incentives, such as cash payments for people who have only daughters, are another potential avenue for overcoming the preference for sons. The impact of that preference on the demographic shape of India is statistically quantifiable and the long term social consequences loom ever larger. Dr Jha is convinced that “since the differences are so large in absolute numbers, the impacts are likely to be profound.”

**Update:** Recent reports from India indicate a new political resolve against using ultrasound for sex-selective abortions. A doctor and his assistant from the northern state of Haryana were convicted and jailed for two years when it was discovered their clinic was offering illegal sex-determination tests. The convictions are the first in India under the law, introduced in 1994. Stephen Dale is a writer with IDRC’s Communications Division.
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