

# SEX-SELECTIVE ABORTION AND INDIA'S DECLINING FEMALE SEX RATIO

The decline in India's population sex-ratio during the twentieth century has been the subject of much discussion in recent years. Sex-selective abortion of the female fetus following a prenatal diagnostic test is widely believed to be the major contributor to this phenomenon. This fact sheet explores factors that are known to influence the sex ratio of a population. It argues that the way forward would be through addressing the root-causes of sex-determination, namely gender discrimination manifested through son-preference and daughter-neglect.

### Box 1. Understanding sex ratios

According to conventional definition, *Sex ratio* = (Number of males/Number of females)\*100. However, in India, we usually define sex ratio as (Number of females/Number of males)\*1000 in any given population, at a specific point in time.

*Population sex ratio* is the ratio of females per 1000 males in the entire population.

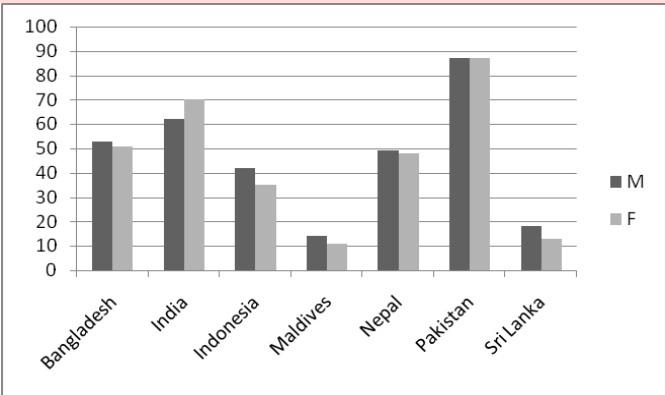
The *child sex ratio* is the ratio of females per 1000 males in the 0-6 age group.

*Sex ratio at birth* is the ratio of female live births per 1000 male live births. The fact that more boys are born than girls has been known at least since the 17th century (1). A sex ratio at birth that lies between 934 and 952 females per 1000 male births is considered to be within the normal range, based on observation over several decades for many countries (2). The sex ratio at birth is the most relevant indicator for examining the magnitude of sex-selective abortions

### 1. How do we interpret the further decline in India's child sex ratio between 2001 and 2011?

The census of 2011 has brought much disquiet because the child sex ratio (0-6 years) declined yet again, from 927 girls per 1000 boys in 2001 to 914 girls per 1000 boys in 2011. This decline has been interpreted as the direct result of more sex selective abortions of the female fetuses taking place. However, it is important to note that in India, unlike most countries of the world, more girls than boys have been dying during childhood (Figure 1 and Table 1), and this contributes to a decline in the child sex ratio.

Figure 1. Underfive mortality rate by sex: Selected Asian countries, 2009



Source: World Health Statistics 2011

**Table 1. Under-five mortality rate by sex, Indian states -2009**

	<i><b>Total</b></i>			<i><b>Rural</b></i>			<i><b>Urban</b></i>		
	T	M	F	T	M	F	T	M	F
India	64	60	69	71	66	76	41	39	44
Andhra Pradesh	52	51	54	58	56	59	39	36	41
Assam	87	83	91	92	87	97	43	44	42
Bihar	70	66	74	71	67	76	49	48	50
Chhattisgarh	67	59	74	69	61	76	54	48	61
Delhi	37	36	38	42	45	39	36	34	38
Gujarat	61	59	64	71	71	72	42	37	48
Haryana	60	55	65	64	58	70	50	46	55
Himachal Pradesh	51	48	55	52	48	57	36	39	34
Jammu & Kashmir	50	46	54	52	49	55	39	34	45
Jharkhand	62	55	70	66	59	74	38	34	43
Karnataka	50	48	51	55	53	56	39	37	42
Kerala	14	12	16	14	12	17	13	12	13
Madhya Pradesh	89	86	92	95	92	99	58	58	58
Maharashtra	36	32	40	43	40	46	26	20	31
Orissa	84	83	85	88	88	89	52	49	55
Punjab	46	42	50	53	47	60	33	34	33
Rajasthan	74	66	84	82	73	91	46	37	55
Tamil Nadu	33	31	34	35	33	38	28	27	30
Uttar Pradesh	85	78	93	89	81	98	63	63	63
West Bengal	40	39	41	42	42	43	30	28	32

Source: Registrar General of India, Sample Registration System

As Table 1 shows, underfive mortality is higher for girls than for boys in every state of India including states such as Kerala. Also, the gender gap in mortality is found not only in rural but also in urban areas in a majority of the states. The higher the gender gap in underfive mortality, the more adverse the sex ratio will become for girls.

**2. India's sex ratio at birth (SRB) has been increasing since 2001**

Following 2001, India's Sample Registration System has been publishing sex ratio at birth in some of the more populous Indian states. Between 2001-03 and 2006-08, there have been substantial improvements in the sex ratio at birth in a large number of states, especially states such as Punjab, Haryana and Rajasthan which have had very low sex ratios at birth for several decades. On the other hand, the southern states of Andhra Pradesh, Karnataka and Tamil Nadu have registered declines in the sex ratio at birth (Table 2).



Table 2. Sex ratio at birth in India and larger states

	Sex ratio at birth (SRB)	
	2006-08	2001-03
India	904	883
Andhra Pradesh	917	932
Assam	933	904
Bihar@	914	861
Chhattisgarh	975	964x
Delhi	877	835x
Gujarat	898	862
Haryana	847	807
Himachal Pradesh	938	803
Jammu & Kashmir	862	816
Jharkhand	922	865x
Karnataka	935	943
Kerala	964	892
Madhya Pradesh	919	922#
Maharashtra	884	887
Orissa	937	934
Punjab	836	776
Rajasthan	870	855
Tamil Nadu	936	953
Uttar Pradesh	877	853*
West Bengal	941	937

Source: Registrar General of India, Sample Registration System, as quoted in (3).  
@Bihar and Jharkhand combined. x period is 2002-04. # Madhya Pradesh and Chattisgarh combined.  
\* Uttar Pradesh and Uttarakhand combined.

The increasing trend of SRB in the majority of Indian states points suggests that excess female mortality in childhood may have contributed significantly to the declining child sex ratio witnessed in the 2011 census.

3. A “lower than normal” female sex ratio at birth (SRB) is not always the result of sex-selective abortion of the female fetus

Although the SRB has been increasing in most Indian states, they remain well below the “normal” SRB. Is not the gap between the “normal” and current SRB the direct result of sex-selective abortion of the female fetus?

The answer is, “no”. There are many factors that can cause a decline in sex ratio at birth of which sex selective abortion of the female fetus is only one.

The SRB is not a universal constant and may change without deliberate human intervention

Studies indicate that it would be incorrect to assume that the SRB is a universal constant; and to then interpret all deviations from this as the result of deliberate human intervention. For example, sex ratios fluctuate widely when the sample size is small (Box 2).



Many countries in the West: Canada, Denmark, England and Wales, Finland, Germany, Greece, Japan, Netherlands, Sweden, Norway, Hungary, Poland, Romania, Portugal have registered significant increases in the proportion of female to male births since the mid half of the twentieth century. On the other hand, slight decreases in the number of female births per 1000 male births since the 1960s was observed for Australia, France, Italy, Ireland, Spain and New Zealand, while in the USA for births during 1969-1995, the proportion of male to female births increased in the black population but declined for the white population (4). None of these changes were the result of sex-selective abortion of either the male or the female fetus.

***Box 2. SRB calculated for a small sample fluctuates considerably***

Sex ratio at birth needs to be examined for a sufficiently large sample of births. Fluctuations in SRB are observed for countries with a very small population size or when a small number of births ( $< 10^6$ ) are being examined. This implies that examining sex ratios at birth at the village or district level over a small period of time may give misleading results.

Several other hypotheses have been put forward and examined to explain the reasons for decline in the male sex ratio at birth. These include psychological stress in the mother especially in the first trimester of pregnancy (5-7); exposure to occupational and reproductive hazards by men (8), economic collapse (9); and conflicts or war (10).

***In India, under-enumeration of female births has been an important factor***

In India, the female to male ratio at birth has shown a decrease much before the advent of modern technologies of sex-determination. The SRB decreased from 934.6 females per 1000 males during 1901-10 to 909 females per 1000 males in 1940-46 in all the major provinces of British India except Bombay and Assam (11). This was because of deterioration in the completeness of vital registration data in British India.

***Increase in male births is an important factor contributing to the decrease in female sex ratio at birth***

India's demographic transition has given rise to a number of changes all of which have the effect of increasing the number of male births.

***Declining still birth and miscarriage rates***

Biologically more male fetal losses are likely through miscarriage or stillbirth. Advances in health care which bring about a decline of these rates will contribute to a slight increase in the proportion of male births. This is corroborated by data from NFHS-1 and NFHS-2. These show that the sex ratio at birth has a higher proportion of males for women who have had trained attendance at delivery (12).

***Limiting family size***

Evidence from many studies based on large data sets shows that biologically there are more males than females among first-births. The proportion of male births declines with each subsequent birth (13-14).





This means that when couples limit their family size and therefore fewer children of higher order are born, the proportion of male births will increase.

### **Family formation strategies**

In societies with a high preference for sons, the adoption of a small family norm often leads to couples stopping child-bearing as soon as they beget one or two a male children. Because there are relatively more male first and second births, the proportion of male births in the population may increase to some extent as a result of this.

### **Shorter birth intervals**

Biologically, shorter birth intervals are associated with a higher proportion on male births (15). When couples decide to start childbearing soon after marriage, and have children in quick succession and then adopt a permanent method of contraception, this is likely to have an influence on the proportion of male births in the population.

### **Timing of conception**

Many studies report that males are more frequently conceived at the beginning and at the end of the menstrual cycle (16-17). In other words, if couples practise “natural” family planning and avoid intercourse during the most fertile period of the menstrual cycle – the middle of the menstrual cycle, the probability of a male child being conceived increases. Although this is refuted by some studies (18), further analysis using pooled data from several studies showed that conceptions on the most fertile days had an overall SRB of 1020 females to 1000 males as compared to an SRB of 934.6 for conception on other days (19).

## **4. Sex-selective abortion of the female fetus-magnitude of the problem**

How big is the problem of sex-selective abortion of the female fetus, after ascertaining the sex of the fetus using an ultra-sound scan?

### ***Ultra-sound scanning does not directly influence sex-selective abortion***

To begin with, it is important to acknowledge that the mere use of ultra-sound scan during pregnancy may bear no relationship to the desire for sex-determination or abortion. Pregnant women in many urban centers go through ultra-sound scans to ascertain the normal progress of pregnancy, as part of routine antenatal care.

A study that analyzed data from the National Family Health Survey-2 (NFHS-2) confirms that those who used ultra-sound scanning during pregnancy did not generally misuse it for sex determination and abortion if the fetus was female (12).

Adjusting for under-reporting, an estimated 14% of births were subjected to ultra-sound scanning. Comparing the sex ratio at birth of those who reported ultra-sound scanning with those who said that they did not have a scan during pregnancy, it was estimated that no more than 17% of all female fetuses may have been aborted among those who had an ultra-sound scanning (12). *Overall, this means that no more than 3% of all pregnancies end in a sex-selective abortion of the female fetus.*

NFHS-3 data for 2004-05 also shows that the proportion of women terminating a pregnancy bear no relation to the number of previous sons. In other words, women who already have two or more children seem to be terminating their next pregnancy for reasons of not wanting another child, irrespective of sex (20).

### ***The magnitude of sex-selective abortion is lower than currently perceived***

One study covering 133,738 births that occurred in 1997 (21) found 899 females to 1000 males. Five lakh female births per year, or 10 million girls in all were estimated to be “missing” during the 15 year period 1986-2001. Accordingly, 10 million sex-selective abortions were estimated to have taken place during the same period.

There were many problems with the data used for this study, as subsequently pointed out (22).

More robust estimates show that the true incidence of sex-selective abortion during 1986-2001 was less than half of what the 1997 study claimed, at about 2.5 lakh per year on average (22,23). Even this was stated to be a maximum possible figure, given the numerous other factors affecting the proportion of male births.

## **5. Sex-determination needs to be prevented, but not through restricting access to safe abortion**

While the numbers of sex-selective abortions are much fewer than currently perceived, as recently as 2001, their numbers may have been as high as 2.5 lakhs per year. Sex -selective abortion of the female fetus is a manifestation of extreme gender discrimination, and needs to be prevented. But restricting access to abortion services may not be the answer.

The focus on identifying every potential sex-selective abortion seeker has led to a situation of mistrust of abortion seekers. Health care providers and facilities are often reluctant to provide abortion services on the suspicion that the abortion may be for sex-selection. Restricting access to abortion services, no matter how justified the underlying intention, amounts to gender discrimination. It denies women access to a service that only women need. History tells us that when access to abortion services is restricted, the proportion of unsafe abortions increases. This results in considerable avoidable mortality and morbidity. Women from low-income groups and socially marginalized sections are the most affected.

## **6. The way forward is to address gender-discrimination and prevent sex-determination**

This fact sheet examined the extent to which sex-selective abortion may be contributing to the declining sex-ratio in the 0-6 age group in India. More girls than boys die under age five. This is a major contributor to the lower than normal female sex ratio in the 0-6 age group. If we consider the sex ratio at birth, under-enumeration of female births; increase in proportion of male births, and sex-selective abortion are all reasons why a much lower proportion of female than male children are born in India. Only a small proportion of pregnancies – less than 3%- may be ending in a sex-selective abortion of the female fetus.

Gender-discrimination is at the root of female-excess mortality in childhood as well as sex-selective



The way forward is to take a two-pronged approach – work towards preventing sex-determination through the misuse of preconception and prenatal diagnostic techniques; and challenge all forms of gender discrimination, and especially son preference and daughter neglect.

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