

## Helpdesk Research Report: Sex selection – micro-level drivers and enabling / preventive factors

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**Query:** (1) What are the micro-level drivers of sex selection in Asia? How do these differ between countries, states and sub-regions? (Focus primarily on South Asia, China and SE Asia); (2) What are the key contributing factors that enable or prevent sex selection? How do these differ between countries, states and sub-regions?

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### Contents

1. Overview
2. Micro-level drivers of sex selection
3. Enabling and preventive factors in sex selection

#### 1. Overview

Prenatal sex selection results in distorted sex ratios at birth (SRB). In many countries there are currently 110-120 male births per 100 female births (in contrast to the standard biological level of 104-106 male births). Postnatal sex selection also persists in several countries, measured by excess deaths among female infants and young girls (UNFPA, 2012). Sex selection is prevalent not only in China and India, but also in other Asian countries, such as Vietnam and Taiwan (Hudson, 2010-11). Such practices are more common in higher birth orders (second and upward), particularly if the first child is a girl.

#### Drivers of sex selection

Son preference is commonly cited as the primary factor behind sex selection. Pande and Astone (2007) state that in order to understand the origins and persistence of son preference, it is important to look at both (i.) social norms and structures and (ii.) the characteristics of the individual woman and her household.

## Social norms, culture and religion

**Son preference** is commonly associated with the patriarchal societies of many Asian countries. In China and South Korea, son preference is deeply rooted in Confucian belief systems, which involves the organisation of people into clans strictly through the male line. Property inheritance and the performance of ancestor worship is limited to sons. Sons are perceived as permanent members of their family of birth whereas daughters are regarded as temporary members of birth families as it is assumed that they will join their husband's family and take their husband's name. Sons are relied upon for financial support in the case of old age, poor health or disability (Chan et al., 2006; Chun and Das Gupta, 2009). Similarly, in India, daughters are associated with a double loss for parents, due to dowry and cost of marriage and the absorption of married daughters in the husband's family; whereas sons are desired for economic security, performance of last rights, and carrying on the family name (Myers, 2012; Sekher and Hatti, 2010; Rosenblum, 2010; Dewan and Khan, 2009; Gill and Mitra-Kahn, 2009). Similar aspects are cited in the cases of Nepal and Vietnam (Nanda et al., 2012; Subedi, 2011). The UNFPA (2012) notes that such beliefs and practices vary with specific regions or ethnic groups. There are few data-based indicators, however, that allow for comparisons (UNFPA, 2012).

One of the reasons given for variations in the degree of son preference is differing **kinship structures**. Son preference is more evident in areas with exogamous kinship structures (where marriage partners are unrelated through kin and often by place of birth or residence), such as in Northern India. In such contexts, parents of a girl are liable for a dowry and all marriage costs, and a married girl typically becomes a member of her husband's family and is often isolated from natal villages and kin. In contrast, in areas with endogamous kinship structures (where marriage partners are cousins or from within a defined, contiguous geographical area), dowry is not a major transaction and daughters remain physically close to their parents (Gill and Mitra-Kahn, 2009; Pande and Astone, 2007). Different kinship systems are also present in Vietnam. Where kinship systems differ from patrilineal arrangements and married daughters stay close to their natal home and contribute more to their own families, as in the South, the degree of son preference is lower (Guilmoto, 2012).

There is debate about the extent to which **religion** plays a role in son preference. In India, sons are considered to be crucial in Hinduism as they are required in funeral rituals. Girls and women are also given some importance though (Pande and Astone, 2007). A study by Bhalotra and Cochrane (2010) on India finds that substantially more sex selection was conducted post-ultrasound by Hindus than by Muslims, and that Muslims report lower son preference and are much more averse to abortion. Other studies have demonstrated that son preference exists among Sikhs and Muslims (Pande and Astone, 2007). In a study conducted in Bhopal, India, Sikhs were found to have the most gender-biased child. Gill and Mitra-Kahn (2009) argue that due to mixed findings, it is not possible to conclude that adherence to any particular religion is a causative factor.

**Caste** in India may be associated with cultural practices that influence women's roles, and thus son preference. Higher castes have more rigid gender stratification systems and strictly enforced rules of seclusion than lower caste or tribal women, who may engage in outside employment due to economic pressures (Pande and Astone, 2007). In Nepal, however, it was found that men who belong to the disadvantaged caste groups were almost four times more likely to have son preference attitudes than the higher caste groups (Nanda et al., 2012).

Some of the literature emphasises that the underlying cultural norms that generate son preference and sex selection in parts of Asia persist in first-generation **migrant communities** in the West, for

example in the UK and Canada. There is emerging evidence of notable sex imbalances at birth among Asian communities in these countries (Vogel, 2012; Gill and Mitra-Kahn, 2009).

### Household and individual characteristics

Although incentives may stem from the social structures and norms discussed above, decisions to act on a preference for sons occur at the individual and household level (Pande and Astone, 2007). There are various characteristics and trends that contribute to such decisions.

**Fertility decline** has been a driver of sex selection, stemming from either legal limits on family size as in China and Vietnam or from an independent increasing desire for smaller families. Myers (2012) states that as households become increasingly urbanized and educated, they aim to have fewer children. While decreases in fertility may not increase son preference, it tends to increase the likelihood of sex selection (Myers, 2012; UNFPA, 2012).

The role of **socioeconomic status** is widely discussed in the literature on sex selection. Contradictory drivers have been identified. While access to technologies and the desire to limit family size are seen as outcomes of social and economic development, it has also been argued that the influence of son preference should decline with increased welfare and economic development (Sekher and Hatti, 2010).

- **Household wealth:** The vast majority of studies on India find that, contrary to popular opinion, households with higher income levels are more likely to engage in sex detection and sex-selective abortions than lower-income households. Sex ratios at birth are more skewed in the former (Toppo et al., 2012; Osipenko and Szczepura, 2011; Bhalotra and Cochrane, 2010; Dewan and Khan, 2009; Subramanian and Selvaraj, 2009). Increases in wealth are found to be insufficient to change deeply entrenched norms about gender preferences (Pande and Astone, 2007). Households with rising levels of income are more likely to opt for smaller families and to have the resources to access sex detection and abortion services (Bhalotra and Cochrane, 2010; Unnithan-Kumar, 2010; Dewan and Khan, 2009). In contrast, however, a study by Gaudin (2011) finds that higher absolute wealth/standard of living (at the household and macroeconomic levels) in India is strongly associated with lower son preference. Incorporating relative wealth (the household's community-specific wealth score) into the model reinforces the negative relationship between absolute wealth and son preference. In China, Yu (2009) finds that rising income levels and changing social and cultural conditions have changed household attitudes towards sex selection: young, urban couples are increasingly indifferent to the sex of their only child. This attitude has also begun to spread into rural areas.
- **Individual education:** The evidence on the link between women's education and son preference is unclear (Pande and Astone, 2007). Research has found that contrary to popular belief, the education of women in India has not been associated with more balanced sex ratios at birth (Myers, 2012; Dewan and Khan, 2009; Gill and Mitra-Kahn, 2009; Subramanian and Selvaraj, 2009). The same outcome was found in China (Attané, 2009). In some cases in India, women with higher educational status (secondary education and up) were found to be more active in female-selective abortion (Toppo et al, 2012; Bhalotra and Cochrane, 2010). Maternal education may simply empower couples with greater knowledge about and access to sex selection technologies (Toppo et al., 2012; Bhalotra and Cochrane, 2010; Gill and Mitra-Kahn, 2009). Pande and Astone (2007) find contrasting evidence in rural India, where women's education, particularly education beyond primary schooling, weakens son preference. Zhou et al. (2012) find

that in Taiwan, female education has been identified as the most important predictor of gender indifference. With regard to the education of males, Subramanian and Selvaraj (2009) and Attané (2009) find a positive association between the education level of males and sex-selective behaviour in India and China, respectively. However, in Nepal and Vietnam, men with higher levels of education demonstrated lower son preference attitudes (Nanda et al., 2012).

The link between economic development and household socioeconomic status on the one hand and sex selection on the other differs among countries (UNFPA, 2012).

- In India and Vietnam, the link is clearly positive: the SRB is close to a normal level among the poorest households. In such cases, poverty appears to stem the spread of sex selection mediated through high fertility and poor access to modern technology. In contrast, better off and affluent households aim to have fewer children and have greater access to modern technology to achieve reproductive targets (UNFPA, 2012; see also Guilmoto and Ren, 2011).
- In China, the situation is more complex. The most educated and prosperous classes tend to have a smaller SRB than the national average. Thus, while they have low fertility and easy access to technology, they also appear to have less bias against girls. This trend has also been observed in South Korea, where economic advancement and rapid social change has made unequal gender arrangements increasingly obsolete (UNFPA, 2012). These results differ from those in India where the SRB is at its highest in the richest quintile. Such variations reflect difficulties in engaging in cross-country comparisons of socioeconomic quintiles. In the case of India and China, for example, the poor in India are significantly poorer than corresponding segments of China's population (Guilmoto and Ren, 2011).

Thus, socioeconomic status tends to be initially positively related to prenatal sex discrimination, with sex selection emerging with the rise in economic development. Based on the experience of East Asia, however, sex selection then seems to decrease with further economic progress that erodes traditional patriarchal attitudes biased against female births (UNFPA, 2012).

### **Enabling and preventive factors in sex selection**

#### **Technology**

In order to engage in sex selection, parents require access to enabling technology (prenatal diagnosis technology and abortion) that can alter the random, biological distribution of children by sex (UNFPA, 2012). There has been a wide diffusion of prenatal sex selection technologies and services across many Asian countries in recent years, which has contributed to the rise in SRB. The procedures are spreading through various channels, ranging from word-of-mouth to aggressive marketing by suppliers. In some Asian countries, a rise in private health care and the increasing purchasing power of the growing middle classes have been integral to the spread of the new technology. Such services are available not only in large hospitals but also in small health centres, which has increased accessibility in both urban and rural areas (Guilmoto, 2009; see also Gilles and Feldman-Jacobs, 2012; Osipenko and Szczepura, 2011). Studies conducted in India (Myers, 2012); China (Li and Zheng, 2009); Taiwan (Lin and Lui, 2010); and Vietnam (Guilmoto, 2012) all find that the introduction and spread of new sex determination technologies, particularly the more affordable ultrasound, has contributed significantly to sex-selective abortions and increases in biased sex ratios at birth.

## Legislation

Efforts to address the supply side of sex selection have included legal restrictions on the use of technology for sex determination or selection and partnerships with the medical community. Laws may either prohibit or regulate the disclosure of foetal sex, abortion for the purpose of sex selection, advertising related to sex determination or selection services, or the sale and use of ultrasound machines. Many countries, including India, China, South Korea, Nepal and Vietnam, have introduced such forms of restrictive legislation (Gilles and Feldman-Jacobs, 2012; Guilмото, 2009).

The vast majority of literature emphasises that such legislation has not been strictly enforced, which has undermined its effectiveness (Guilмото, 2009). In order for legislation to be effective, compliance by medical professionals is absolutely critical (Subramanian and Selvaraj, 2009). However, medical practitioners and those seeking sex-selective abortions have been able to strategically avoid the law. Enforcement agencies have found it difficult to initiate interventions under the law and there have only been a handful of convictions (Gill and Mitra-Kahn, 2009). Chan et al. (2006) note in the case of China that it has been extremely difficult to ensure compliance due to the vast number of ultrasound machines available and the growing commercialisation of medical technologies and privatisation of health care. Sex-selective abortions are still being carried out in China's hospitals and clinics with impunity (Zhou et al., 2012). Surveys in Nepal and Vietnam also indicate that despite prohibitions against the disclosure of sex during ultrasound tests, state regulations were not followed. The high proportion of disclosure was attributed to strong competition among clinics, strong needs or pressures from clients to discover the sex of the foetus, and very loose enforcement of the regulations on the use of ultrasound tests for sex identification (Nanda et al., 2012).

Much of the literature on sex selection in India finds the Pre-Conception and Pre-Natal Diagnostics Techniques Act of 1994, which bans prenatal sex determination in public and private facilities, to be ineffective: the observed child sex ratio (number of girls per 1000 boys of age below 6 years) has continued to fall even after the passage and implementation of the Act. Nandi and Deolaliker (2011) argue instead that the legislation has had a positive impact on the female-to-male child sex ratio. It estimates that the law has been successful in preventing further imbalances in the ratio.

Guilмото (2009) argues that more effective implementation of existing laws and new legislation could significantly alter the supply of sex selection technologies and services. There are concerns, however, that such legislation could unintentionally undermine women's access to comprehensive medical care (Gilles and Feldman-Jacobs, 2012). In addition, some argue that such legislation is likely to result in the birth of unwanted girl children and increase the risk of postnatal sex discrimination (Gill and Mitra-Kahn, 2009). Moreover, much of the literature argues that legislation on its own will be ineffective in countering sex selection and imbalanced sex ratios and birth. There is consensus that the underlying cultural factors that promote son preference and devalue the status of women must be addressed (Myers, 2012; Lamichhane et al., 2011; Subedi, 2011; Sekher and Hatti, 2010; Chun and Das Gupta, 2009; Gill and Mitra-Kahn, 2009; Chan et al., 2006).

## Social change and economic development

Connected to the discussion of socioeconomic status as a driver at the household and individual level, much of the literature emphasises the importance of social change and economic development at the national level as an important transformative factor in sex selection.

South Korea is frequently cited as a success story. Normalisation in sex ratios at birth in South Korea is attributed to the country's rapid development and modernization, whereby rapid economic development, increased urbanization and social change eroded the societal structures, norms and values that underpinned son preference and gender inequality. Economic development resulted in social changes in family structure, growing employment opportunities for women, and greater retirement savings. This all contributed to a decrease in reliance on the traditional, patriarchal kinship system, increased gender equality, and decreased son preference. The majority of families now live as nuclear families in urban areas. Daughters are now more likely to live near their parents, whereas in agrarian economics they often moved away after marriage while the son remained near the parents. Greater retirement savings means that children have also become less important as a source of economic support in old age. Instead, parents in modern Korean society have begun valuing children more for psychological and relationship benefits, which they seem to find more in daughters (Gilles and Feldman-Jacobs, 2012; Chun and Das Gupta, 2009; Das Gupta et al., 2009; Guilмото, 2009).

Similarly, in Taiwan, massive rural-urban migration is seen as contributing to the decline in son preference as this attitude was often linked to dependence on the rural economy. In addition, migration to urban areas has also provided women with greater employment opportunities and financial independence (Zhou et al., 2012). In China, it has also been found that parents in non-agricultural families tend to rely less on their sons for the welfare of the household or for future old-age support. This may be due to the presence of insurance schemes and also to improved status and economic positions for women (Guilмото and Ren, 2011).

Reminiscent of the pattern displayed in South Korea, it is evident in China now that the sex ratio is lower among the highest-educated segment of the population and the urban population, and a downward trend in the SRB is emerging. Continued socioeconomic progress may further reduce the SRB. Such downward trends are also evident in other parts of Asia, such as in some parts of India, and could eventually result in normalisation (Guilмото and Ren, 2011; Das Gupta et al., 2009; Guilмото, 2009).

## 2. Micro-level drivers of sex selection

### 2.1 Literature on multi-dimensional drivers

**UNFPA. (2012). Sex imbalances at Birth: Current trends, consequences and policy implications. Bangkok: UNFPA Asia and Pacific Regional Office**

<http://www.unfpa.org/webdav/site/global/shared/documents/publications/2012/Sex%20Imbalances%20at%20Birth.%20PDF%20UNFPA%20APRO%20publication%202012.pdf>

This report reviews the latest trends and differentials in sex selection; the progress and setbacks; the causative factors which differ across countries; governmental and community initiatives; and the implications of rising sex ratios at birth (SRB).

Trends and geographic differentials: Prenatal sex selection results in distorted levels of sex ratios at birth, ranging today between 110 and 120 male births per 100 female births in many countries (in contrast to the standard biological level of 104-106). Postnatal sex selection also persists in several countries, measured by excess deaths among female infants and young girls. **Son preference**, the key factor in sex selection, is **usually stronger in rural settings**, primarily due to dependence on

sons in agriculture and the presence of traditional institutions in the countryside. However, people in **urban areas** are usually subject to more stringent birth planning regulations, and have **lower fertility** in addition to greater access to facilities offering reproductive services – a key enabling factor in sex selection. The report highlights evidence demonstrating the spread of high birth masculinity in India and China from more advanced regions to relatively poorer areas.

Causative and enabling/constraining factors: The report discusses the following factors that contribute to the prevalence of sex selection in various countries in Asia and elsewhere.

- **Socioeconomic factors:** the link between national economic development and household socioeconomic status on the one hand and sex selection on the other differs among countries. In India and Vietnam, the link is clearly positive: the SRB is close to a normal level among the poorest households. In such cases, poverty appears to stem the spread of sex selection mediated through high fertility and poor access to modern technology. In contrast, better off and affluent households aim to have fewer children and have greater access to modern technology to achieve reproductive targets. In China, the situation is more complex. The most educated and prosperous classes here tend to have a smaller SRB than the national average. Thus, while they have low fertility and easy access to technology, they also appear to have a lower intensity in the bias against girls. This trend has been observed in South Korea, where economic advancement and rapid social change has made unequal gender arrangements increasingly obsolete. Thus, it appears that **socioeconomic status tends to be initially positively related to prenatal sex discrimination**, with sex selection emerging with the rise in economic development but then based on the experience of East Asia **tailoring off with further economic progress that erodes traditional patriarchal attitudes biased against female births**.

The report identifies the following as the three main pre-conditions for sex selection – all of which have been noted as factors in the discussion on socioeconomic status.

- **Son preference:** the preference for the birth of male children, the **primary factor behind sex selection**, is often associated with distinct benefits for the mother, the parents, the family or the community. These benefits derive from **patrilineal and patrilocal household structures** and include provision of financial support to parents and old age security and strengthening family power within the clans. Male domination does not translate into prenatal sex selection in many areas, though, even where technology is accessible. Practices vary with specific regions or ethnic groups. There are few data-based indicators, however, that allow for such comparisons.
- **Fertility decline:** where son preference exists, local fertility restrictions (e.g. in China) and spontaneous rapid fertility decline exacerbate the potential need for sex selection.
- **Technology:** in order to engage in sex selection, parents require access to enabling technology (prenatal diagnosis technology and abortion) that can alter the random, biological distribution of children by sex. This aspect in turn incorporates many independent conditions, such as cost and accessibility and the legal environment.

Gill, A. and Mitra-Kahn, T. (2009). Explaining daughter devaluation and the issue of missing women in South Asia and the UK. *Current Sociology* 57, 5, 684-703

doi: 10.1177/0011392109337652

<http://csi.sagepub.com/content/57/5/684.short>

'Missing women' refers to the phenomenon whereby women in some countries have a biologically abnormal chance of mortality from conception until their mid-thirties. It is related to son preference and daughter devaluation, which manifests itself in sex-selective abortions and gender-biased allocations of health care and nutrition. This results in skewed child sex ratios. The situation is exacerbated in countries that have a low level of fertility. This article explores the determinants of the missing women phenomenon in **South Asia**, focusing primarily on India. These include:

- **Kinship: son preference and female mortality is more evident in areas with exogamous kinship structures** (where marriage partners are unrelated through kin and often by place of birth or residence) **than in areas with endogamous kinship structures** (where marriage partners are cousins or from within a defined, contiguous geographical area). In Northern India and Mirpuri Pakistan, for example, the exogamous kinship structures means that women have no share in natal or marital property. Married women in these contexts are often isolated and distant from natal village and kin. In contrast, endogamous kinship structures are prevalent in Southern India, where marriages usually take place within villages and daughters remain physically close to their parents. Matrilineal inheritance structures in these contexts contribute to greater decision-making by women within the household.
- **Dowry:** the expected dowry burden is seen to influence decisions on the number of daughters to have and to serve as a rationale for sex selective abortion and female infanticide.
- **Perceived financial contributions of daughters:** restrictions on the economic activities of women and the low rate of female participation in the labour force in South Asia has historically been tied to daughter devaluation. There is also a sense of shame attached to relying on daughters financially. With the rise in economic growth in the region, however, there has been **greater female participation in the labour force** and higher expectations that female children will eventually engage in paid labour. This has in turn **increased the chance of survival for female children**. Efforts still need to be made to counter the undervaluation of women's contribution to the labour force, particularly in rural areas.
- **Education:** it has been argued that education has a significant effect in reducing mortality rates for both sexes. The claim, however, that gender differentials in child mortality fall as the level of women's educational status improves has been contested. In a context of cultural preference for sons, **maternal education may simply provide women with greater knowledge about enabling sex-selection technologies**. Further, the rise in education levels often is insufficient to counteract the overriding preference for sons, as has been found in Bangladesh, and ensuing effects on fertility decisions.
- **Religion:** daughter devaluation has in some cases been attributed to classical Hinduism while gender discrimination in India has been blamed on Islam. There is evidence, however, that the two Indian states with the highest male to female ratios have a very small number of Muslims. As such, it is **not possible to conclude that adherence to any particular religion is a causative factor** of sex-selection and high female mortality rates in parts of South Asia.

**Legislation** aimed at preventing sex-selective abortions, such as legislative prohibitions on dowry, child marriage, violence against women, sex-selective abortion and infanticide have on their own been inadequate in preventing sex-selective abortions. In India, for example, legislation that makes prenatal diagnostic tests legally permissible only for high-risk pregnancies or for the purpose of detecting genetic abnormalities, has been unable to effectively counter sex-selective abortions. **Medical practitioners and those seeking sex-selective abortions have been able to strategically avoid the law.** Enforcement agencies have found it difficult to initiate interventions under the law and there have only been a handful of convictions. In addition, some argue that such legislation will likely

result in the birth of unwanted girl children and increase the risk of postnatal sex discrimination. It is essential that cultural factors that devalue the status of women in South Asia are addressed.

The article also emphasises that daughter devaluation and other underlying cultural norms that generate the phenomenon of missing women in South Asia persists in first-generation **migrant communities** in the UK and must also be addressed. Statistics indicate that almost twice as many abortions were performed on Asian women or British Asian women as on the rest of the population. It remains to be determined, however, whether these figures necessarily indicate sex-selective abortions.

**Pande, R. P., and N. M. Astone. (2007). Explaining son preference in rural India: the independent role of structural versus independent factors. *Population Research and Policy Review* 26, 1, 1–29.**

DOI 10.1007/s11113-006-9017-2

<http://www.ingentaconnect.com/content/klu/popu/2007/00000026/00000001/00009017>

This paper analyzes the determinants of son preference in **rural India**. Relying on data from the National Family Health Survey 1992-1993, it finds that both (i.) social norms and structures and (ii). an individual woman's and her households characteristics are important to analysing son preference.

Social and economic structures: The paper outlines various incentives behind son preference that stem from social and economic structures:

- **Kinship:** This article highlights **kinship structure as a determinant of gender inequality and son preference**, focusing on the example of Northern and Southern India discussed in the article above. In the case of exogamous marriages in Northern India, parents of a girl often have to pay all marriage costs and provide a large dowry. After marriage, the girl typically becomes a member of her husband's family. In the case of endogamous marriages in Southern India, dowry is not a major marriage transaction, and married daughters often remain on hand to provide social and financial help to their parents. There has been debate, however, with some scholars arguing that there has been a blurring of this North-South distinction and others finding that it still holds.
- **Religion:** sons are considered to be crucial in Hinduism as they are required in funeral rituals. Girls and women are also given some importance though. Some studies have demonstrated that son preference exists among other religious groups such as Sikhs and Muslims.
- **Caste:** Caste may also be associated with cultural practices that influence women's roles, and thus son preference. Higher castes have more rigid gender stratification systems and strictly enforced rules of seclusion than lower caste or tribal women, who may engage in outside employment due to economic pressures.
- **Agrarian economies:** regional differences in gender equity and son preference can also be attributed to the organisation of the agrarian economy. In east and south India, women play a key role in the production of the main crop, the paddy; whereas the production of wheat and other dry-agricultural crops in the north and west are based primarily on male labour. The higher demand for **women's agricultural labour** in rice areas is seen by some as promoting women's autonomy and **increasing the perceived value of women**.

Household and individual characteristics: Although incentives may stem from the social structures and norms discussed above, decisions to act on a preference for sons occur at the individual and household level. The paper outlines the following characteristics that influence the decisions made:

- **Household wealth:** the relationship between household wealth and son preference is uncertain. Son preference may be lower among women from poorer households as women in such households may be more of an economic asset and more able to work outside the home than women in wealthier households. However, women from wealthy households may also have weaker son preference as they have alternative sources of support in old age outside of their sons. **This study finds that increases in wealth are insufficient to change deeply entrenched norms about gender preferences.**
- **Household structure:** studies have not directly examined the effect of household structure on gender preferences. There is some expectation, however, that son preference would be higher in traditional extended households than nuclear households as younger women in the former have less autonomy over decision-making than men and older women and more structured roles.
- **Women's employment:** women's engagement with the workforce is seen to increase their economic value in the household. In Bangladesh, it has been argued that this results in weaker son preference due to less need for sons in particular in old age. In addition, women in the workforce can change gender values and contribute to a greater sense of worth in women themselves and of their daughters.
- **Women's education:** the evidence on the link between women's education and son preference is less clear. While a women's education may change her perception of the value of women, it may on its own be insufficient to override strong son preferences. **This study finds evidence that women's education, particularly education beyond primary schooling, weakens son preference.** Women who are educated are likely to be regarded differently by their households and communities and afforded a wider range of roles and opportunities. As such, their own values of daughters and sons may differ from the norm of son preference.

Myers, C. (2012). Sex selective abortion in India. *Global Tides* 6, 3

<http://digitalcommons.pepperdine.edu/globaltides/vol6/iss1/3>

This report explores the prevalence of sex-selective abortion in **India** and its main causes; the availability and misuse of sex-determination technologies and associated legislation and enforcement; and government and non-governmental initiatives and effective solutions. Identified causes include:

- **Son preference and patriarchal societies:** The motivation behind sex-selection stems from son preference, which is associated with the patriarchal nature of Indian society. **Female children are considered to create a burden for parents whereas male children create security.** The burden that female children place on their families is often related to the existence of **dowries**. Women are typically not allowed to inherit property, which also means that her family may lose their property to the family of the husband. As married women are considered part of her husband's family, she is released from obligations to her own parents and thus is not expected to contribute to her parents economically or care for them in their old age. In contrast, a male child is seen to produce future economic security for parents, to enhance a families' reputation and perpetuate the family line.
- **Fertility decline:** national fertility decline in India has increased opportunities for wealth and education. In turn, as households become increasingly urbanized and educated, they aim to have fewer children. While decreases in fertility may not increase son preference, it tends to increase the likelihood of having a sex-selective abortion.

The report notes that **education does not seem to decrease (or increase) the preference of parents to have sons**. However, it may be the case that these classes tend to have fewer children and presumably have increased ability to afford sex-selection technologies.

**Hudson, V. M. (2010-2011). Missing girls of China and India: What is being done? *Cumberland Law Review* 41, 67-78**

<http://heinonline.org/HOL/LandingPage?collection=journals&handle=hein.journals/cumlr41&div=5&id=&page=>

This article explores the sex ratio situation in **China and India**; factors that contribute to an **imbalance in sex ratios**; and policy initiatives in each country. It notes that the effect of 'missing girls', whether directly through sex-selective abortion, or indirectly through neglect and malnourishment is **no longer confined to China and India, but is now also prevalent in other Asian countries, such as Vietnam and Taiwan**.

The factors frequently cited as responsible for imbalanced sex ratios are son preference and patriarchal societies, and access to sex determination technologies. The author argues, however, that these factors are present in many other regions in the world and does not explain why countries in Asia in particular are affected. It points to other aspects particular to Asia, such as legal limits on family size in China and Vietnam and the persistence of dowries in India. Some scholars highlight the importance of other factors that influence son preference. In China, for example, despite legislation that promotes gender equality in inheritance, nearly all land is inherited by sons which promotes son preference. Researchers have also found that areas with high gender wage disparity and high segregation of high-paying and low-paying jobs by sex also have higher imbalances in birth ratios. Addressing these areas as well as improving economic opportunities for women is thus important to improving sex ratios in these countries.

**Guilmoto, C. Z. (2012). Son preference, sex selection, and kinship in Vietnam. *Population and Development Review* 38, 1, 31–54**

DOI: 10.1111/j.1728-4457.2012.00471.x

<http://onlinelibrary.wiley.com/doi/10.1111/j.1728-4457.2012.00471.x/abstract>

Older version available at: [http://www.ceped.org/IMG/pdf/ceped\\_wp22.pdf](http://www.ceped.org/IMG/pdf/ceped_wp22.pdf)

This article examines sex ratio at birth and sex selection in **Vietnam**, focusing on factors behind the recent rise in birth masculinity and prenatal sex selection. The analysis is based on microdata from a sample of the 2009 census. It finds that **differing levels of son preference is the key determinant of geographic variations in the sex ratio at birth**. In addition, kinship patterns and fertility decline also play a role in sex preference. Similar to the case of India, different **kinship systems** in Vietnam allow for comparative analysis. Co-residence of a married daughter with her own family in the south differs from patrilineal arrangements in which daughters play only a transient social and economic role in their family of origin. The study finds that in areas where mixed kinship systems and bilateral marital residences are more common and married daughters contribute more to their own families, there are also lower levels of son preference. **Fertility decline** has increased anxiety about having male children. This study finds that the link between fertility levels and sex-ratio balance remains tentative. Sex-ratio balance tends to be rather low in high-fertility provinces and reaches its highest values in provinces with average fertility levels. New technologies and the private health care sector in Vietnam

are considered important enabling factors in sex selection. Health services now offer affordable prenatal ultrasound services, which have become increasingly common in the country.

**Subedi, D. (2011). Missing girls in Nepal: An emerging challenge. *Health Prospect* 10,34-36**  
<http://www.nepjol.info/index.php/HPROSPECT/article/viewFile/5647/4645>

This article on 'missing girls' in **Nepal** also identifies as the three key causal factors: traditional son preference; a modern desire for smaller families (fertility decline); and the availability of ultrasound scanning and other technologies that identify the sex of a foetus. In Nepal, economic, cultural and religious practices make sons more desirable than daughters. **Giving birth to a son enhances a woman's status within the family**, whereas the lack of a male heir may result in her humiliation, contempt, abuse, and abandonment. In abusive situations, a woman may be forced to undergo sex identification tests and then coerced to abort if the foetus is female. The legalisation of abortion in Nepal and easy availability of pre-natal sex-determination technologies and abortion clinics has increased the risk of sex-selective abortions. Declining fertility levels and the pressure on couples to balance the sex composition of their children may also contribute to further demand for pre-natal sex selection. The article argues that advocacy, sensitisation and awareness-raising programmes are essential in efforts to reduce sex ratio imbalances. **Legislation that target the root causes of son preference**, including policies on inheritance, dowry, financing old age and other personal security issues, education and the determination of surname, are essential.

**Dewan, B. S. and Khan, A. M. (2009). Socio-cultural determinants of female foeticide. *Social Change* 39, 3, 388-405**

doi: 10.1177/004908570903900304

<http://sch.sagepub.com/content/39/3/388.short>

This article explores the preference of son over daughters in much of **South Asia**, which has led to a deficit of women. **Son preference** stems from a range of economic, social and religious reasons that have been well documented. Reasons for **not desiring daughters** include payments of **dowry and cost of marriage**; the **absorption of married daughters in the husband's family**. Reasons for **desiring sons** include management of the **family business**; **old age support**; **performance of last rites**; and **carrying on the family name**. All descent and inheritance are traced through the son, stemming from the patriarchal belief that the family line runs through a male. Preference for boys in India cuts across caste and class lines and results in discrimination against girls even before they are born. Though some regions of India have a history of female infanticide, declining sex ratios are now also attributed to the use of new technologies for sex selection.

The article highlights that higher levels of education in India do not seem to be associated with more balanced child sex ratios. It points to the example of a district in Punjab which has high literacy rates, but also still highly imbalanced child sex ratios. Instead, **social groups who are economically and educationally better off seem to practice sex selection more**. Pre-birth elimination of girls is a manifestation of a long history of gender bias which has been much more evident among upper caste landed households compared to the Scheduled Castes and Tribes. The article argues that it is **prosperity rather than improved access to medical technology that is the driving force behind pressure to have a son**, particularly where the first child is a girl. High and middle economic categories are perceived to be involved in sex detection as well as sex selective abortion more than

the lower economic category. Ultimately, a key finding of this study finds that the role of family planning plays a relatively greater role than the common belief about son preference.

**Toppo, M., Diwakar, A. and, Pal, D.K. (2012). A Study of sex ratio in relation to birth order in Bhopal city. *Healthline* 3, 1, 45-49**

[http://www.iapsmgc.org/index\\_pdf/12.pdf](http://www.iapsmgc.org/index_pdf/12.pdf)

This study on **Bhopal city, India**, aims to study the relationship of sex ratio with birth order; the status of sex ratio with increasing birth order; and to ascertain the contribution of prenatal sex detection in selective abortion as measured by previous birth sex to the observed sex ratio. From interviews of women living in the old Bhopal, the study finds makes the following findings:

- Sex ratios at birth became unfavourable for woman when the birth order is more than one and the previous child is a girl.
- **Sex ratios at birth varied by religion.** Sikhs were found to have the most gender-biased child sex ratio, followed by Jains. Muslims and Christians had relatively favourable ratios.
- Economic prosperity plays a key role in altering the sex-ratio: the **economically better off are more prone to engage in discrimination** against the girl child.
- The **role of education is also dubious**: mothers with higher educational status displayed more gender preferences. Education along with higher per **capita** income has empowered couples to access new technology and to engage in sex selection.

**Unnithan-Kumar, M. (2010). Female selective abortion – beyond ‘culture’: family making and gender inequality in a globalising India. *Culture, Health and Sexuality* 12, 2, 153-166**

DOI: 10.1080/13691050902825290#

<http://sro.sussex.ac.uk/10091/>

Drawing on the accounts of feminists, doctors and lower, middle-class Hindu and Muslim women and their families in **Rajasthan, Northern India**, this paper explores differing perceptions and attitudes to female selective abortion (FSA) in the region. It makes the following observations and findings:

- There is significant regional variation in the male bias in sex ratios at birth in India.
- The risk of female selective abortion increases for girls born second and onward.
- Economic growth and urbanisation is correlated with the practice of female selective abortion. Areas that have experienced the highest levels of agricultural-based economic growth, capitalisation and urbanisation in recent decades have more biased sex ratios than the national average. **Female selective abortion thus emerges as primarily an urban phenomenon, associated with middle- and upper-caste families, rising levels of household income and in contexts with educated women engaged in employment.** It is seen to be driven by the desire by this population demographic for smaller families (**fertility decline**). Thus, the ability to engage in sex selection enables couples to be simultaneously modern’ (with fewer children) and ‘traditional’ (with sons).
- The dramatic growth of FSA is also linked to a significant extent to the increasing availability and accessibility of the ultrasound scan.
- Based on the interviews, it finds that gender inequality and marriage anxieties influence women’s (particularly lower-middle class women’s) engagement with reproductive technologies and sex selection. Decisions to abort female babies are also informed by an understanding of the economic realities of gender discrimination and of their **social obligation as wives to produce sons in patriarchal contexts.**

Nanda, P. et al. (2012). **Study on gender, masculinity and son preference in Nepal and Vietnam**. New Delhi: International Center for Research on Women (ICRW).

<http://www.icrw.org/publications/study-gender-masculinity-and-son-preference-nepal-and-vietnam>

This report provides the results of a study designed to explore men's attitudes in **Nepal and Vietnam** on a wide range of issues related to gender equality, son preference, the levels and types of intimate partner violence and knowledge and attitude towards laws and policies related to women's right. The study confirms existing research that highlights the persistence of high levels of son preference, conservative gender roles and inequitable attitudes in both countries. The study identifies the following as individual, household and societal characteristics that influence son preference attitudes:

- **Education:** in both countries, **men with higher levels of education demonstrated lower son preference** attitudes.
- **Caste:** in Nepal, men who belong to the disadvantaged, non-dalit, terai caste groups were almost four times more likely to have son preference attitudes than the higher caste Brahmin/Chhetri ethnic groups
- **Gender equitable attitudes** (GEM scale): men with more gender equitable attitudes also had lower son preference attitudes in both countries.
- **Patriarchy:** the patriarchal nature of society, traditional customs, and gender roles in Nepal and Vietnam creates a strong influence to have a male child in the family. The reasons for son preference frequently cited in both countries are that parents are typically supported in their old age by their son(s), whereas married girls usually move away from their families, and that sons are required to maintain the family name/line. Girls were considered important for emotional support and sharing the workload (Vietnam) and for religious rituals (Nepal).
- **Access to technology:** the majority of men in Vietnam (64 percent) reported that their wife/partner had gone for an ultrasound test, while the proportion in Nepal was only 17 percent
- **Lack of enforcement of regulation:** Both Nepal and Vietnam have banned the disclosure of sex during ultrasound tests, yet the survey results indicate that these state regulations were not followed. The high proportion of disclosure was attributed to strong competition among clinics, strong needs or pressures from clients to discover the sex of the foetus, and very loose enforcement of the regulations on the use of ultrasound tests for sex identification

## **2.2 Cultural, religious and social norms**

Chan, C.L.W., Blyth, E., and Chan, C.H.Y. (2006). Attitudes to and practices regarding sex selection in China. *Prenatal Diagnosis* 26, 7, 610-613

DOI: 10.1002/pd.1477

<http://onlinelibrary.wiley.com/doi/10.1002/pd.1477/abstract>

This paper explores the problem of **China's** 'missing girls', focusing on the role of the Confucian value system in producing a culture of son preference (and discrimination against daughters). Son preference is deeply rooted in the Daoist and **Confucian belief systems**, which identify **distinct roles for sons and daughters**, and **patrilineal and patrilocal family and kinship systems**. These traditions emphasize the role of sons in religious family rites, which daughters are not permitted to perform, and the different relationships between sons and daughters and their family of birth. Sons are perceived as permanent members of their family of birth whereas daughters are regarded as temporary members of birth families as it is assumed that they will join their husband's family and take their husband's name. Only sons are expected to carry on the family name. Sons are also relied upon

for financial support in the case of old age, poor health or disability, particularly in the absence of state- or insurance- based social security systems. Support from daughters is seen as a last resort and as a source of shame. The paper also notes that in agrarian societies, there is an additional economic factor in the preference for sons. Sons are seen as able to engage in physically demanding work. These entrenched son preference attitudes have resulted in the equating of China's compulsory family planning programme and 'one child policy' with a 'one son policy'.

**Chun, H. and Das Gupta, M. (2009). Gender discrimination in sex selective abortions and its transition in South Korea. *Women's Studies International Forum*, 32, 2, 89–97**

<http://dx.doi.org/10.1016/j.wsif.2009.03.008>

<http://www.sciencedirect.com/science/article/pii/S0277539509000259>

This paper argues that despite rapid economic growth and social change in **South Korea**, gender relations are still influenced by Confucian dogma, which accords women a subordinate status and has contributed to female selective abortion. **Confucianism incorporates concepts of organising people into clans strictly through the male line** and limiting property inheritance and performance of ancestor worship to sons. Korean clans and households are based on patrilineal success, whereby the son preserves the family line and the woman once married is regarded as an outsider by her biological family and by her husband's family until she produces a son. Having a son is traditionally viewed as a woman's 'duty', which helps women to establish and defend their status in the household. Studies have demonstrated that women without sons have suffered from ill-treatment from their husbands and/or in-laws. There is thus tremendous cultural and family pressure for women, including highly-educated professional working women, to engage in various means to produce a son. The **spread of technology for prenatal sex selection, alongside rapid fertility decline** (promoted by government campaigns with the slogan 'fewer children, more prosperity') has resulted in Korea's **imbalance favouring male children** since the mid-1980s. The paper highlights that attitudes have changed over time, and there seems to be some relaxation in the traditional attitude of son preference alongside reduced attention to other traditional beliefs.

**Sekher, T.V. and Hatti, H. (2010). Disappearing daughters and intensification of gender bias: evidence from two village studies in South India. *Sociological Bulletin* 59, 1, 111-133**

[http://www.unfpa.org/gender/docs/sexselection/indiapublishedpapers/UNFPA\\_Publication-39840.pdf](http://www.unfpa.org/gender/docs/sexselection/indiapublishedpapers/UNFPA_Publication-39840.pdf)

This paper explores why female children are still at risk in **India** despite overall improvements in the status of women, progress in education and increasing participation of women in economic and political activities. It argues that the reason for this is that changes in attitudes about desired family size that have led to the rapid **fertility decline** have **not been accompanied by changes in the cultural values and attitudes that continue to favour sons**. In many Indian communities, **daughters continue to be associated with a double loss** in terms of the expenses for her marriage and her leaving the natal family after marriage, whereby the investments made on her upbringing accrue to the new family. In contrast, **sons are viewed as assets economically and culturally**. They can provide for parents in their old age and they alone can perform the funeral rituals of the parents. These attitudes were confirmed in the study presented in this paper involving two villages in Mandya District and the Salem District of Tamil Nadu.

The paper also discusses enabling factors of sex selection. The widespread use of sex-determination tests and abortion facilities has provided parents with the opportunity to achieve desired family size

and desired gender composition. Access to technologies and the desire to limit family size are seen as outcomes of social and economic development. It has also been argued however that the influence of son preference should decline with increase in welfare and economic development. Studies have often found the opposite, whereby son preference persists not only in poorer communities but also in populations where women have engaged in education and employment and achieved considerable social status. The present study of the two villages finds that the desire to limit family size is evident across communities. With the substantial decline in fertility, son preference has translated into intensified manifestation of deliberate discrimination towards daughters and the widespread use of sex-selection techniques.

**Bhalotra, S. R. and Cochrane, T. (2010). Where have all the young girls gone? Identification of sex selection in India. IZA Discussion Paper No. 5381. Bonn: The Institute for the Study of Labor (IZA)**

[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1731185](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1731185)

This paper presents preliminary estimates of the causal effect of facilities for prenatal sex diagnosis on the sex ratio at birth in **India**. It also provides a brief overview of factors in sex selection and **finds that religion is a factor**. It finds that substantially more sex selection was conducted post-ultrasound by wealthy families and relatively educated women (see discussion below) and conditional on wealth and education, by Hindus as compared to Muslims. The paper reports that Muslims report lower son preference and are much more averse to abortion than Hindus. This suggests that Muslims are more likely to rely on continuation of fertility in order to satisfy son preferences rather than sex selective abortion.

**Chhetri, U. D., Ansari, I., Bhandary, S. and Adhikari, N. (2011). Sex preferences among mothers delivering at Patan Hospital. Kathmandu University Medical Journal 9, 4, 229-232**

DOI: <http://dx.doi.org/10.3126/kumj.v9i4.6334>

<http://www.nepjol.info/index.php/KUMJ/article/view/6334>

This article presents the findings of interviews of women who had previous history of abortion and had delivered at Patan Hospital in Nepal in order to determine reasons for the preferences for different sex; to find out whether there is altered sex ratio at birth and to find out whether female feticide are common among women who had abortion. The majority of women (74 percent) did not have a preference for the sex of the child in their first pregnancy. Others preferred either a female or a male child. The reason for son preference was to continue family lineage, to bring honour, old age security, and performance of funeral rites. The reasons for daughter preference were that they understand mother's pain and could help in household work. Prenatal sex selection was found to be 7.5 percent. Given the limited son preference among the women surveyed themselves, **pressure to bear a son came from husbands, mother in laws and father in laws**. This took the form of continuous scolding, threats to marry again, not providing proper meal or dress, violence, and contempt by family members.

### **2.3 Socioeconomic factors**

**Subramanian, S. V. and Selvaraj, S. (2009). Social analysis of sex imbalance in India: before and after the implementation of the Pre-Natal Diagnostic Techniques (PNDT) Act. *Journal of Epidemiology and Community Health* 63, 3, 245-252**

DOI:10.1136/jech.2008.078477

<http://www.jech.bmj.com/content/63/3/245.full.pdf>

This study explores the roles that socioeconomic status (measured through household income, parental education and social caste) and the implementation of legislation that regulates the misuse of technologies for sex selection (Pre-Natal Diagnostic Techniques Act - PNDT) play in distribution of sexes among infants in **India**. Findings include:

- **Income:** there is a **greater concentration of males among households with higher income levels**.
- **Education:** in contrast to prior studies that suggest that households with mothers with higher education have more biased sex ratios in favour of boys, this study **did not find female education to be a factor**. The study also found that there was a positive association between the education of the male head of the household and the odds of having a male child.
- **Caste:** the odds of having a male infant **did not differ between high and low caste groups**.
- **Legislation:** the odds of having a male infant were similar in the pre- and post-PNDT periods.

The study concludes that neither improvements in socioeconomic circumstances or the introduction of policies are likely to normalise the sex imbalance in India in the absence of changes in societal norms and preferences.

**Bhalotra, S. R. and Cochrane, T. (2010). Where have all the young girls gone? Identification of sex selection in India. IZA Discussion Paper No. 5381. Bonn: The Institute for the Study of Labor (IZA)**

[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1731185](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1731185)

This paper, cited above, discusses the role of socioeconomic status on sex ratios and sex selection in **India**. It emphasises findings that **sex selection and the phenomenon of 'missing girls' is increasingly concentrated in relatively prosperous households** and that **educated women (with at least secondary education) are more actively engaging in female selective abortion**. These findings challenge the popular notion that acting on son preference is a marker of economic backwardness and ignorance; that poor households are more likely to prefer sons due to financial pressures; and that improvements in women's education raise investments in child health and survival. Possible explanations for the findings are that high status families have more resources to access ultrasounds and safe abortion facilities. In addition, educated women may be more receptive to new technologies as they have lower search costs or are better placed to assess risks; and may have lower desired fertility.

**Guilmoto, C. Z. and Ren, Q. (2011). Socio-economic differentials in birth masculinity in China. *Development and Change*, 42, 5, 1269–1296.**

DOI: 10.1111/j.1467-7660.2011.01733.x

<http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7660.2011.01733.x/abstract>

This article examines the relationship between socioeconomic status (SES) in **China** and gender preferences as revealed by levels of sex ratio at birth. Previous research in this area has suggested that the sex ratio at birth in China tends to increase (become more imbalanced toward males) with socioeconomic level, a phenomenon also observed in India and Vietnam. Relying on data from 2000 and 2005, this study finds an **inverted-U pattern in the relationship between the sex ratio at birth (SRB) and socioeconomic status**, with a lower sex ratio at birth observed among both the poorest and the richest households. Thus while SRB increases initially with improvements in socioeconomic status, a reverse decline is visible among richer groups. In other words, except for the poorest segments of the population, better socioeconomic status is associated with reduced birth masculinity. These results differ from those in India where the SRB is at its highest in the richest quintile. Such variations reflect difficulties in engaging in cross-country comparisons of socioeconomic quintiles across countries, when as in the case of India and China, the lower SES segments of the former's population are significantly poorer than corresponding segments in the latter.

**The initial rise in the SRB among better-off households** in China with higher education and income levels may be attributed to the greater ability of such households to **access modern sex selection technology** (supply factor). In addition, the rise of smaller families (**fertility decline**) among these higher SES groups exacerbates pressures to give birth to a son and the need to engage in sex selection. Further, son preference (demand factor) may be less prevalent among the poorest families with no assets. Women in such households are considered valuable economically. This may be less the case in the middle of the social hierarchy, especially among landed households in which land rights are usually transmitted along the male line.

**As households become richer** with much improved housing and living standards, alongside better education and better occupation, **they are linked to lower SRB levels**. The reversal in SRB levels among richer groups may partly account for the overall SRB stagnation observed in China in the past decade of rapid economic change. It suggests that further social and economic advances and socioeconomic mobility can contribute to **greater gender equity** and the return to normalcy of the sex ratio at birth. This is indicated by the case of South Korea, whereby a decline in SRB levels has materialised alongside increased prosperity and social modernisation.

The study also finds that **social insurance programmes** (pension, unemployment and medical insurance) play a role in lowering SRB levels. Mothers benefiting from at least one of these programmes demonstrated one of the lowest SRB levels observed in the sample. The study further finds that the importance of a male son may vary by employment sector – in particular between **rural and urban sectors**. Women working in the agricultural sector and peasant households that rely on male labour demonstrated a slightly higher SRB estimate than those of urban workers that enjoy better employment guarantees. In non-agricultural families, parents tend to rely less on their sons for the welfare of the household or for future old-age support. This may be due to the presence of insurance schemes and also due to improved status and economic positions for women. These rural-urban distinctions help to explain why the lower fertility observed in urban areas, due in part to stricter birth planning regulations, do not result in higher levels of prenatal sex selection among first births.

**Attané, I. (2009). The determinants of discrimination against daughters in China: Evidence from a provincial-level analysis. *Population Studies: A Journal of Demography* 63, 1, 87-102**  
<http://dx.doi.org/10.1080/00324720802535023>  
<http://www.tandfonline.com/doi/abs/10.1080/00324720802535023>

This paper analyses the ways in which various socioeconomic and socio-demographic determinants influence the decision to discriminate against daughters in **China**. It looks at both sex-selective abortion (with sex ratio at birth as a proxy) and neglect of girls' health care (with excess infant mortality among females as a proxy).

The study finds that, there is no linear relationship between standard of living (measured by average annual income) and sex-selective behaviours. It does find, however, that extreme poverty appears to be associated with sex-selective behaviour. The study also finds a **positive correlation between average educational level of males at the provincial level and sex-selective behaviour**. Thus, modernization here is actually seen to increase discrimination against daughters. Women's educational level did not seem to be a factor in China. Overall, the study concludes **while sex-selective abortion appears to stem from long-term strategies to optimize family composition, lethal neglect is the immediate result of extreme poverty and other economic constraints**.

**Gaudin, S. (2011). Son preference in Indian families: absolute versus relative wealth effects. *Demography* 48, 1, 343-370**  
DOI: 10.1007/s13524-010-0006-z  
<http://www.jstor.org/stable/41237723>

This article attempts to reconcile economic theoretical predictions that wealthier households will exhibit less gender discrimination and son preference and the arguments made by demographers and sociologists that wealth can exacerbate bias in the **Indian** context. It does this by examining two different notions of wealth: one related to resource constraints (absolute wealth), and the other to notions of local status (relative wealth). Relying on cross-sectional data from the 1998-1999 and 2005-2006 National Family and Health Surveys, it finds that **higher absolute wealth/standard of living (at the household and macroeconomic levels) is strongly associated with lower son preference. Incorporating relative wealth (the household's community-specific wealth score) into the model reinforces** the negative relationship between absolute wealth and son preference (the effect is 20% – 40% stronger). Higher relative wealth is significantly associated with lower son preference, although the effect applies primarily to landed households.

The author argues that incorporating both absolute and relative wealth allows for more informed results and also encourages more effective strategies to counter son preference and gender bias. In addition to the general goal of increasing standards of living, development strategies that decrease the importance of local status (e.g. development of transportation infrastructure and delocalisation of information) can be instrumental in reducing son preference. Such policies could minimise the role of local status-seeking behaviour and reinforce the positive effect of increased standards of living in son-preference reduction.

**Rosenblum, D. (2010). Economic Incentives for Sex-Selective Abortion in India. Halifax: Dalhousie University**

[http://myweb.dal.ca/dn686159/Selective%20Abortion%20Rosenblum%203\\_12\\_12.pdf](http://myweb.dal.ca/dn686159/Selective%20Abortion%20Rosenblum%203_12_12.pdf)

This paper estimates the magnitude of the economic benefits of having a son instead of a daughter in **India**, in order to understand the economic factors behind sex selection in India. It estimates that on average, households with a **first-born boy** have better economic outcomes compared to first-born girl households. There are large gains to per capita income and expenditure, household assets, and a reduction in the probability the household is below the poverty line. The **economic advantages stem from: a reduction in total children born** (as parents are able to engage in lower fertility with a son born early on), which allows for higher expenditures per person and can free up parents' labour; an **adult sons' labour supply** contribution to his parents' household; **lower marriage costs**; and **higher social status** in the community.

In addition to estimating the size of the economic benefits of sex selection, this paper examines **heterogeneity across regions and demographic groups**. In terms of **education**, it finds that the middle education group has the largest incentives for sex selection in terms of per capita income, expenditure, and assets, followed by the low education group. There are no statistically significant economic incentives for sex selection for the high education group. As such, it would be more effective to target those with some primary or secondary education with economic incentives but not those with post-secondary education. There are also differences in sex ratio across **regions**. The richer North tends to have more discrimination against girls, possibly because there are larger economic gains from a son compared to the South. If household demographics are controlled for however, the regional differences are substantially reduced. Thus, it is not necessarily that regions create the incentives for sex selection, rather it is particular demographic groups with strong economic incentives that happen to be more prevalent in these regions. The paper also points out differences in **birth order**. If parents desire at least two children (often the case in India) and there are only strong economic incentives for having one son, then there is no reason to use sex selection at the first parity. These findings help to explain the observation that parents in India do not use sex-selective abortion if they already have one son.

**Yu, Y. (2009). Comment on "Ultrasonography and sex ratios in China". *Asian Economic Policy Review* 4, 1, 140-141**

doi: 10.1111/j.1748-3131.2009.01117.x

<http://onlinelibrary.wiley.com/doi/10.1111/j.1748-3131.2009.01117.x/abstract>

This brief comment article emphasises that following the significant rise in incomes and changing social and cultural conditions in **China** in recent years, households' attitudes towards sex selection and even toward having children have changed significantly. **Young urban couples are increasingly unconcerned about the sex of their only children**. This attitude has also begun to spread into rural areas. Therefore, it is possible that in recent years China's sex ratio at birth may have become less abnormal, and the importance of the ultrasound machine on sex ratio less important. More research is needed to understand these dynamics.

**Osipenko, L. and Szczepura, A. (2011). Non-invasive foetal sexing: medical test or a new tool for sex selection? *Diversity in Health and Care* 8, 1, 37-44**

[http://wrap.warwick.ac.uk/3852/1/WRAP-Szczepura\\_Diversity\\_Paper-Osipenko-Szczepura-FINAL\\_SUBMITTED-22-10-10.pdf](http://wrap.warwick.ac.uk/3852/1/WRAP-Szczepura_Diversity_Paper-Osipenko-Szczepura-FINAL_SUBMITTED-22-10-10.pdf)

[http://www.radcliffehealth.com/journals/J18\\_Diversity\\_in\\_Health\\_and\\_Social\\_Care](http://www.radcliffehealth.com/journals/J18_Diversity_in_Health_and_Social_Care)

This article considers the implications of new non-invasive foetal sexing technology. It looks at evidence of technology development, existing demographic and social changes, corporate responsibility in product marketing, and the role of community engagement and education. It also discusses various factors and characteristics of households and societies engaged in sex selection. These include:

- Sex selection is more common in societies where the lives of women are valued significantly less than those of males.
- While sex selection appears to be practiced across all class and income groups in **India**, there is evidence of **more extensive use among the economically advantaged or educated middle classes** than among lower-income rural populations.
- There a link between **fertility decline** and sex selection practices.
- Sex selection practices are more common in higher birth orders, particularly if other children in the family are girls.

**Arokiasamy, P. and Goli, S. (2012) Explaining the skewed child sex ratio in rural India: Revisiting the landholding-patriarchy hypothesis. *Economic and Political Weekly* 47, 42, 85-94**

[http://www.epw.in/system/files/pdf/2012\\_47/42/Explaining\\_the\\_Skewed\\_Child\\_Sex\\_Ratio\\_in\\_Rural\\_India.pdf](http://www.epw.in/system/files/pdf/2012_47/42/Explaining_the_Skewed_Child_Sex_Ratio_in_Rural_India.pdf)

This paper argues that size of household landholdings is a crucial indicator of female status in **India**. Women in large landholdings do not have much autonomy, socioeconomic freedom or decision-making powers. The paper presents evidence that the **size of household landholding is a key predictor of skewed child sex ratios in rural India** (after controlling for other socioeconomic factors). Specific findings include:

- The likelihood of women having an ultrasound test increases markedly with the size of household landholding.
- The likelihood of having induced abortion also increase with the size of landholding.
- The likelihood of having a higher number of boys than girls among women in the 15-49 age group is much greater among women in the highest landholding category than those with no or small landholding.
- The likelihood of having a second male child greatly increases among women of larger landholding households if the first birth is female among two-children families.
- The likelihood of death of a female child compared to a male child is higher in landholding families.

The paper outlines different categories of land distribution:

- States with skewed distribution in household landholdings (e.g. Gujarat, Punjab and Haryana): the sex ratio is also skewed.
- States where land distribution is more uniform (e.g. Kerala): the child sex ratio is favourable to females.
- States with a history of land rights movements for women, where land-oriented economic activities depend on female labour (e.g. where rice is a principle crop), and where women are

traditionally allowed to participate in decision-making (e.g. Madhya Pradesh, Chhattisgarh and West Bengal): the sex ratio is less skewed.

- States where land-oriented economic activities are largely mechanised, with little importance to female labour (e.g. wheat-cultivating northern and north-western regions): the sex ratio is very skewed in these regions.

Based on these findings, the authors emphasise the need to re-establish gender-based discussions concerning landholdings to formulate suitable strategies to address son preference and reduce gender discrimination.

### 3. Enabling and preventive factors in sex selection

#### 3.1 Literature on multi-dimensional enabling and preventive factors

Guilmoto, C. Z. (2009). The sex ratio transition in Asia. *Population and Development Review* 35, 3, 519–549

<http://onlinelibrary.wiley.com/doi/10.1111/j.1728-4457.2009.00295.x/abstract>

<http://ideas.repec.org/a/bla/popdev/v35y2009i3p519-549.html>

This article provides a comparative review of the recent increase in the sex ratio at birth (SRB) across Asia. It finds that there has been a **wide diffusion of prenatal sex selection technologies and services across many Asian countries in recent years, which has contributed to the rise in SRB**. In Vietnam, for example, sex-selective abortion and the increase in the SRB of the country is closely linked to the introduction of ultrasounds facilities in private clinics. The procedures are spreading through various channels, ranging from word-of-mouth to aggressive marketing by suppliers. In some Asian countries, a rise in private health care and the increasing purchasing power of the growing middle classes have been integral to the spread of the new technology. Such services are available not only in large hospitals but also in small health centres, which has increased accessibility in both urban and rural areas. At the same time, other countries such as Myanmar, North Korea and Afghanistan have very few health centres that offer good-quality-ultrasound facilities.

The supply of services related to sex selection is tempered by the presence of **legislation**, present in several Asian countries, to counter sex-selective abortion of fetuses. Legislation was introduced early on in South Korea, China and India, however they have **not been strictly enforced**. More effective implementation of existing laws and new legislation could significantly alter the supply of sex selection technologies and services.

In addition to effective legislation, the article emphasises that **rapid social change and economic development**, as occurred in South Korea, can diminish demand for sex selection and result in the normalisation of the SRB. The economic and social advancement of women and legislation aimed at promoting gender equality in South Korea contributed to a breakdown of male-oriented social norms and diminishing gender bias. Couples with higher socioeconomic status in South Korea initiated the decline in South Korea. In China, it is also evident that the sex ratio is lower among both the highest-educated segment of the population and the urban population; and that a downward trend in the SRB is emerging. As such, continued socioeconomic progress may further reduce the SRB. Such downward trends are evident in other parts of Asia, such as in some parts of India.

**Gilles, K. and Feldman-Jacobs, C. (2012). When technology and tradition collide: From gender bias to sex selection. Policy brief. Washington, DC: Population Reference Bureau**  
<http://www.prb.org/pdf12/gender-bias-sex-selection.pdf>

This article attributes the dramatic increase in sex ratios at birth to the convergence of three factors: persistent son preference, decreasing ideal family size (fertility decline), and the rapid spread of prenatal sex determination technology. **Ultrasound and related technologies** have become cheaper and more widely accessible to middle-class and even lower-class families in both urban and rural areas. While such technologies can greatly improve the quality of prenatal care, they also increase the risk of use for sex selection. Efforts to address the supply side of sex selection have included **legal restrictions** on the use of technology for sex determination or selection and **partnerships with the medical community**. Laws may either prohibit or regulate the disclosure of fetal sex, abortion for the purpose of sex selection, advertising related to sex determination or selection services, or the sale and use of ultrasound machines. Many countries, including India, China, South Korea, Nepal and Vietnam, have introduced such forms of restrictive legislation. **There is concern that such laws are unlikely to be effective on their own and that they may unintentionally undermine women's access to comprehensive medical care.** Some medical organizations are promoting codes of professional conduct related to the use of technology for sex determination and selection, while recognizing the need to protect women's access to safe, comprehensive care.

The article provides a brief profile of **South Korea**, considered to be a success story in normalising high levels of sex ratio at birth. In the mid-1980s to mid-1990s, the country experienced a rapid rise in the SRB following the widespread introduction of prenatal sex determination technology. The government acted early to combat the supply of ultrasound and related technologies. It introduced restrictions on their use and enforced harsh penalties. For example, eight physicians had their licenses suspended in 1991 for performing illegal sex determination procedures. Most experts attribute the normalisation in SRB not to such restrictions and penalties, however, but to the **transformation of traditional gender roles and attitudes** in the country. Economic development resulted in **social changes** in family structure, growing employment opportunities for women, and greater retirement savings. This all contributed to a decrease in reliance on the traditional, patriarchal kinship system, increased gender equality, and decreased son preference.

**Myers, C. (2012). Sex selective abortion in India. *Global Tides* 6, 3**  
<http://digitalcommons.pepperdine.edu/globaltides/vol6/iss1/3>

This article, cited above, discussed enabling and preventing factors in sex selection in **India**, primarily technology in the case of the former and legislation and attitude change in the case of the latter. **Sex-selection technologies**, such as amniocentesis and ultrasound, have enabled parents to abort foetuses in order to control their family composition. Abortion clinics used to publicly advertise abortions as an investment to avoid later dowry payments. As early as 1976, the Indian government banned the use of ultrasound and amniocentesis for the purpose of sex-determination by making it illegal to reveal the sex of the foetus to the mother and her relatives. Although illegal, ultrasound – which has become the dominant technology due to lower cost – is still widely used for the purposes of sex determination. Various studies have shown that sex-selective abortion tends to coincide with ultrasound use. In addition, one study demonstrates that there was greater use of ultrasound or amniocentesis among women with no sons, particularly in second or higher order births.

**Legislation** in India designed to ban sex-selection (Pre-natal Diagnostic Techniques Act - PNDT) have been poorly enforced and have not been shown to significantly hinder the abuse of sex-selection technologies. High ratios of males to females at birth have motivated the government to engage in stronger efforts to enforce the existing law and to expand the provisions of the PNDT Act in 2003. The Indian Medical Association and the Medical Council of India have also asked doctors to stop providing sex-selection services. The paper stresses that while such enforcement can be beneficial, it is **unlikely on its own to be successful in the absence of initiatives to address underlying cultural issues**. Strict enforcement could in such circumstances result only in driving sex-selection practices deeper underground, causing greater danger for women undergoing abortion. **Initiatives aimed at addressing underlying cultural issues** include the outlawing of dowries, although this legislation has not yet been successful in creating a significant decline in the use of dowries. In addition, the government has gone beyond legislative action to try to change attitudes toward girls and to **improve the overall social and economic status of women**. Financial incentives aimed at reducing sex-selective abortion and increases in the health and educational opportunities of female children could result in daughters being seen as more valuable and a greater benefit to society.

### **3.2 Reproductive technologies**

**Osipenko, L. and Szczepura, A. (2011). Non-invasive foetal sexing : medical test or a new tool for sex selection? *Diversity in Health and Care* 8, 1, 37-44**

[http://wrap.warwick.ac.uk/3852/1/WRAP-Szczepura\\_Diversity\\_Paper-Osipenko-Szczepura-FINAL\\_SUBMITTED-22-10-10.pdf](http://wrap.warwick.ac.uk/3852/1/WRAP-Szczepura_Diversity_Paper-Osipenko-Szczepura-FINAL_SUBMITTED-22-10-10.pdf)

[http://www.radcliffehealth.com/journals/J18\\_Diversity\\_in\\_Health\\_and\\_Social\\_Care](http://www.radcliffehealth.com/journals/J18_Diversity_in_Health_and_Social_Care)

This article, cited above, highlights the role of various new technologies in enabling the implementation of son preference by allowing for prenatal foetal sex determination and selective abortion. Much research indicates that **skewed sex ratios at birth in favour of baby boys has increased dramatically since the relatively inexpensive ultrasound was introduced**. This has been the case in India and China. Legislation has been introduced in both countries to control ultrasound by limiting its antenatal use to licensed clinics, but with limited success.

There is also some evidence of the use of more invasive and expensive procedures such as amniocentesis for sex determination, although this procedure is primarily for genetic testing. There are concerns that the development of new **non-invasive prenatal diagnostic tests (NIPD)** for foetal sexing could be achieved in India and China for lower cost than in the west. Their widespread availability will mean that parents in countries where sex selection is prevalent via ultrasound clinics could order tests online, post blood samples and receive results without their medical practitioner being aware. Women could then ask their physicians, who have no access to test results, for termination on social grounds. The availability of NIPD tests are **also potentially relevant to certain ethnic minority communities in the west**. There is emerging evidence of notable sex imbalances at birth among South Asian communities in the UK and other countries.

**Li, H. and Zheng, H. (2009). Ultrasonography and sex ratios in China. *Asian Economic Policy Review* 4, 1, 121–137**

DOI: 10.1111/j.1748-3131.2009.01115.x

<http://onlinelibrary.wiley.com/doi/10.1111/j.1748-3131.2009.01115.x/abstract>

This paper examines how the availability of B-ultrasound machines affects sex ratio at birth in **China**. Prior to the availability of ultrasound, parents with a son preference who do not have a son within the one-child quota had the option of either paying fertility fines and continuing to have children or abandoning the daughter. Both lead to heavy costs, economic in the former and psychological in the latter. **With the introduction of B-ultrasound machines, parents are able to have a son within the birth quota by aborting female fetuses.** This paper provides evidence of such practices: in rural areas where a second child is allowed, the sex ratio of second-order and higher-order births rises significantly after B-ultrasound machines are introduced (particularly when the first birth is a girl). In urban areas where only one child is allowed, the sex ratio of first-birth order increases after B-ultrasound machines are available, with no significant effect on the sex ratios of higher-order births.

**Lin, M.J. and Liu. J.T. (2010). More missing women, fewer girls dying: The impact of abortion on sex ratios at birth and excess female mortality in Taiwan. New Haven: Yale University**  
[http://aida.econ.yale.edu/~nq3/NANCYS\\_Yale\\_Website/Research\\_files/LinLiuQian\\_201002.pdf](http://aida.econ.yale.edu/~nq3/NANCYS_Yale_Website/Research_files/LinLiuQian_201002.pdf)

Sex-selective abortion requires two technologies: one that reveals the gender of the foetus and another that allows for the foetus to be aborted. This study estimates the effect of legalising abortions given existing sex determination technologies, focusing on the use of ultrasound in **Taiwan**. Ultrasounds are the least expensive and most available method in both developed and developing countries. It was introduced in Taiwan in the early 1980s and is used in standard prenatal care from registered medical doctors. Unlike in China and India today, revealing the sex of the foetus has not been prohibited in Taiwan. The legalisation of abortion in Taiwan in 1985, which can be seen as a decrease in the cost of sex-selective abortion, was followed by a large increase in the number of ultrasound B machines. **The study finds that the legalisation of abortion and access to sex-selective abortion is the most significant contributor to the recent increase in population sex imbalance in Taiwan.** It has increased the male-biased sex imbalance in higher birth-orders of older mothers, who face greater uncertainty in their ability to have more children. It had little effect on sex ratios for parents who could reasonably expect to have more children. The paper also reports that access to abortion has decreased female neo-natal mortality relative to males (by 20 percent), indicating that **up to 10 percent of parents who were engaging in sex selection post-natally substituted to pre-natal sex selection with the legalisation of abortion.** The paper recommends that any policies developed to restrict access to sex-selective abortion should be combined with policies to increase parents' incentives to invest in daughters after they are born.

**Guilmoto, C. Z. et al. (2009). Recent increase in sex ratio at birth in Viet Nam. PLoS ONE 4, 2, e4624**  
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0004624>

This paper presents analysis which demonstrates that alongside many Asian countries, the sex ratio at birth in **Vietnam** has also steadily increased, albeit much later in comparison to other others. The paper identifies son preference, fertility decline and modern selection technology as having played a determining role in the recent rise in SRB. It focuses on the latter two. Rapid fertility decline during the 1990s resulted in a new demographic environment in which proactive sex selection was considered necessary. Alongside this demand for reduced number of children, the arrival of modern prenatal sex selection in Vietnam has enabled families to avoid unwanted female births.

**Sekher, T.V. and Hatti, H. (2010). Disappearing daughters and intensification of gender bias: evidence from two village studies in South India. *Sociological Bulletin* 59, 1, 111-133**

[http://www.unfpa.org/gender/docs/sexselection/indiapublishedpapers/UNFPA\\_Publication-39840.pdf](http://www.unfpa.org/gender/docs/sexselection/indiapublishedpapers/UNFPA_Publication-39840.pdf)

This article, cited above, discusses how new reproductive technologies have provided an easy way for parents in **India** to achieve the growing trend toward smaller families. The government has attempted to counter sex-selective with the Pre-natal Diagnostic Techniques (PNDT) (Regulation and Prevention of Misuse) Act, followed by the Pre-natal Diagnostic Techniques (Prohibition of Sex-selection) Act. Both have failed to prevent couples from seeking sex-determination tests and abortions and medical practitioners from performing them. In the two villages studied in Mandya District and the Salem District of Tamil Nadu, sonography and abortion are easily available and affordable despite the legal regulations. The authors argue that **although technology may enable the elimination of female fetuses, it is the powerlessness of village women in a patriarchal society that is an equally important factor**. Interviews with young women in the study areas reveal that they were often forced to undergo sonography and abortion against their wishes. As such, only far-reaching social changes aimed at increasing female autonomy, female economic power and the value of the girl child are likely to make a significant impact on the demand for sex-selective abortion.

**Vogel, L. (2012). Sex selection migrates to Canada. *Canadian Medical Association Journal* 184, 3, 163-164**

<http://www.ecmaj.ca/content/184/3/E163.full.pdf+html>

This article explores sex ratios for first generation South and East Asian (Indian, Chinese, Korean and Vietnamese) immigrants to Canada. It finds that while the sex ratio for first births is only slightly above the norm, the ratios become increasingly skewed for each subsequent birth where all previous children are female. Enabling factors identified include the affordability and ease of access to both sex determination and abortion services; and Canada's deep-rooted respect for diversity. The advent of home tests to determine sex means that it will be possible to gain this information without visiting a doctor or much other inconvenience.

**Chan, C.L.W., Blyth, E., and Chan, C.H.Y. (2006). Attitudes to and practices regarding sex selection in China. *Prenatal Diagnosis* 26, 7, 610-613**

DOI: 10.1002/pd.1477

<http://onlinelibrary.wiley.com/doi/10.1002/pd.1477/abstract>

This paper, cited above, looks at the technology as an enabling factor in sex selection in **China** and at legislation and initiatives to promote cultural change as preventive factors. Traditionally, families with a son preference often disposed of their unwanted daughters through infanticide, neglect, maltreatment and abandonment. New reproductive technologies, such as sperm-sorting techniques to increase the likelihood of producing a boy; pre-implantation genetic diagnosis to discard female embryos; and ultrasound technology have made it possible to dispose of unwanted girls at much earlier stages. From the 1980s, **sex-selective abortion, facilitated by ultrasound, became the favoured method to ensure the birth of a son**. It is especially prevalent in second and higher-order births, where the firstborn is a girl, resulting in more skewed sex birth ratios at these levels. Worsening SRBs for girls have also been noted in areas where there had been little evidence of infanticide, indicating that sex-selective abortion is considered more acceptable to groups that previously would not have contemplated infanticide. Although the government has legislated against sex-selective abortions, it has been extremely **difficult to ensure compliance due to the vast number of**

## **ultrasound machines available and the growing commercialisation of medical technologies and privatisation of health care in China.**

In addition to legislation to counter the misuse of reproductive technologies, the Chinese government has also introduced a number of explicit economic, educational and social policies and reforms designed to improve the position of Chinese women and girls. For example, it has offered welfare benefits to reward families who have just one daughter. The authors argue, however, that such policies and reforms have been inadequate in countering discrimination against daughters and that they need to go further in order to truly **reduce the privileged positions of sons**. For example, the government could reform land rights that privilege males of the patrilineal clan; create a system of social security, especially for old age; and improve the pension system, especially in rural areas, to reduce parental reliance on sons.

**Dewan, B. S. and Khan, A. M. (2009). Socio-cultural determinants of female foeticide. *Social Change* 39, 3, 388-405**

DOI: 10.1177/004908570903900304

<http://sch.sagepub.com/content/39/3/388.short>

This article, cited above, emphasises the role of technology and prosperity (resulting in ability to implement and afford technology) as key factors in sex selection. Rather than attributing sex selection to the burden of dowry on poor families, **it is prosperity that has allowed for better medical infrastructure, more machines and doctors to perform tests and for higher income families to gain access to sex detection and abortion**. The authors argue that rather than focusing on legal restrictions on the misuse of technology, more emphasis should be given to socially sensitive measures such as strict ban of dowry; more employment opportunities for women and girls; encouragement of girls to perform family rites; rituals and ceremonies; partaking of girls in parental property; and better social status for the girl child.

**Lamichhane, P. et al. (2011). Sex-selective abortion in Nepal: A qualitative study of health workers' perspectives. *Women's Health Issues*, 21, 3, S37-S41**

<http://www.whijournal.com/article/S1049-3867%2811%2900013-2/abstract>

Although sex-selective abortion is expressly prohibited in **Nepal**, alongside the legalisation of abortion, there is evidence that it occurs nonetheless. This paper presents findings from interviews with health care health care providers and administrators providing abortion services at four major hospitals in Nepal, as part of a larger study on legal abortion in the public sector in Nepal. The following are some of the perspectives highlighted:

- Greater availability of abortion and ultrasonography, along with the son preference and patriarchal sociocultural structures and values, were seen as key contributing factors to the problem of sex selection.
- Most providers indicated that women in all communities and castes practiced sex selection. Difficult socioeconomic circumstances, lack of education, and the dowry system were also seen as contributing factors.
- Providers wanted to help women and to perform abortions for legal indications, but found it difficult to differentiate sex-selection cases. Providers were also concerned that given the intense pressure to bear sons, women who are turned away at the hospital may resort to unsafe abortion providers, which could lead to serious abortion complications.

The authors conclude that efforts to ban sex-selection are not sufficient and that providers alone cannot prevent the practice. **Legislation should be combined with policies and social programmes that address the underlying problem of son preference. Changes in attitudes regarding gender discrimination and sociocultural norms are needed along with improvements in women's status.** Programmes implemented in other countries include girl-positive social marketing, financial incentives to parents of daughters, and expanding educational and work opportunities for women. The government in Nepal has made changes to inheritance and other laws intended to improve the social status of women. However, continued political attention to the role of women in society and the cooperation of policy makers, advocates and health workers are needed to promote social change and to reduce the prevalence of sex-selective abortion.

### **3.3 Prohibitive legislation**

**Subramanian, S. V. and Selvaraj, S. (2009). Social analysis of sex imbalance in India: before and after the implementation of the Pre-Natal Diagnostic Techniques (PNDT) Act. *Journal of Epidemiology and Community Health* 63, 3, 245-252**

DOI:10.1136/jech.2008.078477

<http://jech.bmj.com/content/63/3/245.full.pdf>

This article, cited above, analyses the reasons behind the ineffectiveness of the Pre-Natal Diagnostic Techniques (PNDT) Act in **India**, within the larger socioeconomic and cultural context. It outlines the various incentives of both parents and service providers to avoid compliance. For parents, it is primarily the social incentive for producing sons; and for physicians, it is the economic incentive of meeting this demand. The lucrative nature of the business of sex determination followed by sex-selective abortion has resulted in continued service provision. **In order for the PNDT legislation to work, compliance by medical professionals is absolutely critical.**

**Nandi, A. and Deolalikar, A. B. (2011) Does a legal ban on sex-selective abortions improve child sex ratios? Evidence from a policy change in India.**

[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1824420](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1824420)

Sex-selective determination and abortion services have spread in **India** and have become increasingly cheap and accessible. They are available even in remote rural areas that have limited health care facilities due to the common use of portable ultrasound equipment and amniocentesis kits. Much of the literature on sex selection in India finds the Pre-Conception and Pre-Natal Diagnostics Techniques (**PNDT) Act** of 1994, which bans prenatal sex determination in public and private facilities, ineffective as the observed child sex ratio (number of girls per 1000 boys of age below 6 years) has continued to fall even after the passage and implementation of the Act. This ratio depends on both sex ratio at birth and gender-specific mortality rates among children ever born. It captures the potential effect of unwanted girl foetus not aborted due to the PNDT Act but being neglected in the household and vulnerable to infant and child mortality. This paper finds instead, through an analysis of pre-ban and post-ban periods, that the legislation has had a positive impact on the female-to-male child sex ratio. It estimates that the law has been **successful in hindering any further worsening of the gender imbalance**; in its absence, the child sex ratio would have declined by another 13-20 points, or an additional 51,000 female foetuses would have been aborted. The effect of the legislation was stronger in villages that had closer to median child sex ratio distributions prior to the act and weaker in villages that had have stronger son preference or lower initial son-preference as compared to the median village.

### **3.4 Economic development and social change**

**Das Gupta, M., Chung, W. and Shuzhuo, L. (2009). Evidence for an incipient decline in numbers of missing girls in China and India. *Population and Development Review*, 35, 2, 401-416**

DOI: 10.1111/j.1728-4457.2009.00285.x

<http://onlinelibrary.wiley.com/doi/10.1111/j.1728-4457.2009.00285.x/abstract>

This paper explores whether **China and India** are exhibiting similar child sex ratio (males to females under age 5) trends as have materialised in **South Korea**, where the ratio was the highest in Asia but peaked in the mid-1990s and normalized thereafter. This normalisation has been attributed to the country's rapid development and modernization, whereby increased **urbanization and education eroded the societal structures, norms and values that underpinned son preference**. The authors find that the indicates that child sex ratios are also peaking at the national level in China and India and beginning to decline in several sub-national areas toward more normal values, while rising at a slower pace in other areas. It is likely that similar processes as occurred in South Korea are underway in China and India. In addition to the effects of industrialisation and urbanisation, China and India also have strong public policies to counter gender inequalities and to equalize the value of sons and daughters to parents (e.g. media campaigns and financial incentives to parents and daughters). The authors emphasise, however, that more still needs to be done to accelerate the reduction of son preference, especially in China and northwest India, where child sex ratios remain very high.

**Guilmoto, C. Z. and Ren, Q. (2011). Socio-economic differentials in birth masculinity in China. *Development and Change*, 42, 5, 1269–1296.**

DOI: 10.1111/j.1467-7660.2011.01733.x

<http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7660.2011.01733.x/abstract>

This article, cited above, emphasises that the relationship between socioeconomic status and birth masculinity in **China** is not linear. Rather, the very first step out of poverty corresponds to a rapid increase in the proportion of male births. Birth masculinity peaks among groups with lower socioeconomic status, however, and any further increase in social status is then associated with lower sex ratio at birth (SRB) levels, indicating greater gender equity and a less pronounced son preference. The authors divide the process of demographic masculinisation into two stages: during the first stage, when the new sex selection technology was first introduced in Asia, it was appropriated by higher socioeconomic groups. In the second stage, sex selection spread to other social groups due to easier access to technology and to further fertility decline. At the same time however, the SRB may begin the return to normalcy as among the more prosperous social classes who move away from the patriarchal structure typical of the traditional rural economy. This is the pattern that seems to have occurred in **South Korea** and more recently in China. It indicates that **socioeconomic status may emerge as a key variable for interpreting the downturn in SRB levels** recently detected in various Asian countries including China.

**Zhou, C., Wang, X.L., Zhou, X.D., and Hesketh, T. (2012). Son preference and sex-selective abortion in China: informing policy options. *International Journal of Public Health* 57, 3, 459-465**

DOI: 10.1007/s00038-011-0267-3

<http://www.springerlink.com/content/u3141h7867l8n816/>

Although there is growing evidence in **China** that son preference is on the decline, the sex ratio at birth is still the highest in the world at around 120 male births to 100 females. This study explores attitudes towards gender preference among people of reproductive age in rural and urban areas, to determine the reasons why the sex ratio is persistently high, and to inform policy options. The paper discusses the rise in sex ratios at birth in countries in Asia that have undergone rapid social and economic development, such as South Korea, Taiwan and China. This initial rise has been attributed by some to the novelty of easy access to sex-selective abortion. Over time, however, there has been growing evidence of weakening son preference in South Korea, Taiwan and India. This study finds a similar trend in China. While son preference is common among the interviewees' parents, it is weaker among their peers. Sex-selective abortion was also described as less common than before. **These changes in attitudes can be attributed to societal changes, better socioeconomic conditions and improvements in women's education and their general status.** In Taiwan, female education has been identified as the most important predictor of gender indifference. Another study also found that women with higher status were less likely to engage in sex-selective abortion. Massive rural-urban migration is also seen as contributing to the decline in son preference as this attitude was often linked to dependence on the rural economy. In addition, migration to urban areas has also provided women with greater employment opportunities and financial independence.

Despite new attitudes of gender indifference, however, the sex ratio remains very high (stemming from sex-selective abortion as infanticides are now very rare). This is likely due to the persistence of a small minority who still favour sons and are willing to undergo sex-selective abortion (or who face pressure to despite their own personal views of gender indifference). This small minority is sufficient to skew the ratio. The authors recommend that legislation in China prohibiting sex selection is more effectively enforced as was the case in South Korea. Sex-selective abortions are still being carried out in China by medical personnel in hospitals and clinics with impunity. The authors also recommend that the one child policy should be relaxed in some areas in order to reduce the disproportionately high sex ratio in the second order births. Where local policy interventions have been found to be successful in reducing the sex ratio, they should be disseminated widely.

**Chun, H. and Das Gupta, M. (2009). Gender discrimination in sex selective abortions and its transition in South Korea. *Women's Studies International Forum*, 32, 2, 89–97**

<http://dx.doi.org.ezproxyd.bham.ac.uk/10.1016/j.wsif.2009.03.008>

<http://www.sciencedirect.com/science/article/pii/S0277539509000259>

This article, cited above, discusses the social changes that have contributed to changes in the relative value of sons and daughters and consequently to a more balanced sex ratio in **South Korea**. Aspects of modernisation responsible for this phenomenon include the greater education of women and their growing involvement in the labour force. Moreover, the majority of families now live as **nuclear families in urban areas**. As such daughters are now more likely to live near their parents, whereas in agrarian economics they often moved away after marriage while the son remained near their parents. Children in Korean society have also become less important as a source of economic support in old age than in the past. Instead, parents in modern Korean society have begun valuing children more for psychological and relationship benefits, which they seem to find more in daughters.

These changes have come alongside government **legislation** outlawing fetal-screening technologies for sex identification (1987), strengthening of the medical code (1994), and changes in family law that culminated in 2005 with the abolishment of the Hojuje (male headship system), thus removing the

legal basis for patrilineal succession in families. This is aimed at undermining the customary underpinnings of the preference for sons.

All of these factors have contributed to a gradual trend towards a more normal sex ratio at birth in South Korea. The authors emphasise that while strong regulations against sex selection can contribute to countering the imbalance in sex ratios at birth, the most crucial aspect that explains the decline in sex ratios is the change in how society values children and the roles of sons vis-a-vis daughters. The authors note that China and India are lagging behind South Korea in terms of economic and social development, and are likely to experience a time lag in the weakening of gender bias experienced in South Korea.

**Hudson, V. M. (2010-2011). Missing girls of China and India: What is being done? *Cumberland Law Review* 41, 67-78**

<http://heinonline.org/HOL/LandingPage?collection=journals&handle=hein.journals/cuml41&div=5&id=&page=>

This article, cited above, discusses contemporary state policy initiatives in China and India aimed at preventing sex selection. These include:

- **Legislation:** while both countries have legislation banning sex-selective abortion, enforcement has been weak. In India, the first doctor was arrested in 2006 for performing sex-selective abortions but there have been long delays in bringing the case to trial. In China, the National Peoples Congress turned down the opportunity to criminalise the performance of sex-selective abortions by doctors.
- **Monetary incentives:** the 'Care for Girls' programme in China, first piloted in 2003, provides waivers for school fees for families with daughters and gives them preferential access to university slots. In addition, parents of girls may receive a small pension once they reach old age, although this has been critiqued as too small. These rewards have been combined with social campaigns to improve attitudes and preferences toward girls and daughters. Chinese officials have credited this programme with the slow rate of increase in the country's birth sex ratio. India also has a reward scheme, originated in 2007, which targets states with the worst sex ratios at birth. The government pays a modest sum for the birth of a daughter and continues to offer modest sums for particular health and education milestones. The government also provides a subsidy for marriage costs.
- **Rewards for tips and shaming:** an effective policy in China involved the provision of reward money for tips on the location of back-alley and mobile ultrasound 'clinics'. This resulted in the closure of over 2,200 such clinics. In Punjab, India, monetary incentives have been combined with shaming, whereby money was offered to informants to tell local authorities when women had ultrasounds. Knowing that they were being watched seems to have reduced the number of sex-selective abortions as sex ratio at birth did begin to normalise.
- **Changes to kinship patterns:** the Chinese government has piloted programmes designed to promote uxori-local marriage, whereby the groom marries into his bride's family, with inheritance of land through the matriline and children retaining the mother's surname. Reports indicate that birth sex ratios have improved in these pilot areas although have yet to normalise.
- **Extended family education:** the Chinese government has also conducted re-education classes for future grandmothers (mothers-in-law whose daughters-in-law are expecting). The mother-in-law is often the final voice in whether or not a female foetus is aborted or not, or whether

or not an existing grandchild is cared for. Part of the re-education involves indicating that the mother-in-law will be held responsible if there is a sex-selective abortion.

The article also emphasises that **social changes and trends** on their own may dampen son preference overtime. Through a series of interviews, the authors find that while son preference was considered to still be prevalent in some rural areas of China, it was believed that it had declined significantly in urban areas. One of the reasons behind this trend is the high cost housing which is customary for the groom's family to handle. This has resulted in high costs now for the son's side of the family upon marriage. In addition, living in urban areas has increased the ability of daughters to visit and care for their elderly parents, which also increases their value.

**Ebenstein, A. (2011). Estimating a dynamic model of sex selection in China. *Demography* 48, 2, 783-811**

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<http://www.springerlink.com/content/m655531352216431/>

Chinese policymakers are attempting to correct the imbalance in the sex ratio at birth through a nationwide initiative to subsidise parents with daughters (the Care for Girls campaign). This article explores the ideal amount of the subsidy. It finds that a couple's first son is worth 1.42 years of income more than a first daughter, and that the premium is highest among less-educated mothers and households engaged in agriculture. Simulations indicate that a subsidy of one year of income to families without a son would reduce the number of 'missing girls' by 67 percent but would impose an annual cost of 1.8 percent of Chinese GDP. A relaxation of the one child policy to a three child policy, alternatively, would reduce the number of 'missing girls' by 56 percent but increase the fertility rate by 35 percent.

#### Additional information

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