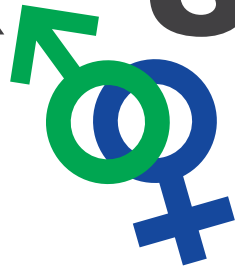




2014

# Synthesis of Research on Gender Biased Sex Selection



**Insights and Learnings**

(2001-2012)



Synthesis of Research on Gender Biased Sex Selection  
Insights and Learnings (2001-2012)

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## Preface

Census 2011 has pointed to a continued decline in child sex ratio in the country with 918 girls per 1000 boys (0-6 years). The decline has taken root not just in urban areas but also in rural and tribal regions; the diffusion taking place from ‘hotspot’ districts to neighbouring areas.

Child sex ratio indicates both pre and post birth discrimination against girls. Research points to son preference and associated social norms as one of the key contributors to the practice of gender biased sex selection (GBSS) and resultant fall in child sex ratio. While causes and consequences have been documented in several pieces of research on the issue, there was a need to connect the dots to effectively guide the policy processes.

With this objective in mind, UNFPA and UNICEF have partnered to conduct a synthesis of available literature on GBSS. The report aims to enhance understanding of determinants, impact and dynamics around the issue of sex selection and in doing so, point to areas of further inquiry and methodological perspectives that can shape strategies to address it.

The report captures research undertaken from 2002-2012 and intends to provide a holistic view of the emerging dynamics on the issue, with the ability to inform as well as influence policy and programmatic efforts.

We would like to acknowledge the technical expertise of Ms. Anuradha Rajan who has compiled this synthesis. Technical inputs from UNICEF and UNFPA teams have further enriched this report.



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## Abbreviations and acronyms

AA	Appropriate Authority
ANC	Antenatal Care
ART's	Assisted Reproductive Technologies
CBS	Cradle Baby Scheme
CCTs	Cash Transfer Schemes
CSR	Child Sex Ratio
DHS	Demographic and Health Surveys
DLHS	District Level Household Survey
FRCH	Foundation for Research in Community Health
GBSS	Gender Biased Sex Selection
GCPS	Girl Child Protection Scheme
ICRW	International Center for Research on Women
IDRC	International Development Research Centre
IVF	In Vitro Fertilisation
MTP	Medically Terminated Pregnancy
NFHS	National Family Health Survey
NHRC	National Human Rights Commission
NIPCCD	National Institute of Public Cooperation and Child Development
PCP	Primary Care Physicians
PCPNDT	Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act 1994
SAA	State Appropriate Authorities
SD	Sex Determination
SRB	Sex Ratio at Birth
SRS	Sample Registration System
SSTP	Sex Selection Technology Providers
UNFPA	United Nations Population Fund
VES	Vital Events Survey

## Executive summary

Gender biased sex selection is a discriminatory practice against girls which is embedded in a complex net of socio-economic and cultural factors. Great attention has been placed on the issue in the recent years, particularly in the Asian countries and in India itself, due to the increasingly skewed child sex ratios. Although the overall sex ratio for the entire population in India has improved, the last two decades have shown a worsening of the Child Sex Ratio (0-6 years old) (CSR) and Sex Ratio at Birth (SRB). Census data have shown a decline of the Child Sex Ratio from 927 in 2001 to 919 in 2011. Sample Registration System (SRS) data disclose an increasingly skewed Sex Ratio at Birth with over 110 boys to 100 girls.

Trends, determinants and consequences of gender biased sex selection have been the focus of a fair amount of research in India and beyond. The purpose of this paper is to review existing research produced in the last decade or so (2001-2012), provide an analysis of main themes and knowledge areas and identify prevalent themes and gaps. It is expected that this review may contribute with directions for future enquiry and research.

The review focused on more than one hundred sources, which included academic pieces (books and journals), some unpublished literature and even a quick overview of select newspaper articles (not referenced in the text).

This review has identified some prevalent knowledge areas with regard to gender biased sex selection that can be grouped under the following heads:

### **Determinants of sex selection:**

There is a sizeable amount of research that has examined determinants of sex selection. Research has categorically established that birth order is a significant determinant for sex selection. Similarly, higher education and income levels are positively correlated with the use of sex selection. However, research has also shown that these determinants are operating in a context where fertility levels across the country are falling, a small family is the desired norm as is the notion of an ideal sex composition of children. In such a situation, educated and affluent sections are resorting to sex determination and gender biased sex selection as a way to plan their families. Women with higher education and from families with higher disposable income have the knowledge and resources to access the required technology. Research evidence suggests that 8 to 10 years of education among women may be a risk factor for sex selection (Rutherford and Roy 2003, Jha et al. 2006 and 2011, Bhatt and Zavier, 2007, Subramaniam and Selvaraj 2009). Studies have also established that the propensity to use pre-natal sex selective techniques tends to rise with socio economic status. A small but significant body of research on the Indian Diaspora has shown a distinct difference in sex ratios at birth among Indian immigrants and the national Sex Ratio at Birth (SRB) of the countries they migrate to. This bulk of literature sheds light on the influence on cultural norms and values in determining sex selection even in settings that do not favour it. These studies are significant because they highlight the role of internalised social norms and values which continue exercising significant control even when laws and the policy environment may be promoting gender equality.



## **Son preference:**

There is a bulk of research on the “demand side” of sex selection. Studies on determinants of gender biased sex selection highlight that these factors act in a milieu where son preference is rampant. The phenomenon of son preference has been widely explored using both quantitative and qualitative methods. Sociological research studies argue that son preference itself emanates from patriarchal, patrilocal and patrilineal<sup>1</sup> practices all of which undermine the value of girls. More specifically, hypergamy<sup>2</sup> prompts payment of high dowry to secure a worthy groom; exogamy<sup>3</sup> and patrilocality translate into daughters having to marry outside the clan and relocating into marital families situated (most often) quite far from the natal home. Parents also cease to have rights over their daughters after marriage and cannot claim any physical or financial support. Patrilineality means that lineage is traced from the male descendants and also becomes a way of organising inheritance of property. These practices give rise to a host of other customs and traditions which subordinate women and their families and contribute to son preference.

## **Availability of sex determination testing:**

The unregulated availability of sex determination testing has been a key factor for its rampant misuse. This is often referred to the ‘supply side’ of the phenomenon. However, this dimension has received less attention in terms of research and has rather been the focus of interventions by activists and programmers. Studies examining supply have largely focussed on the regulation of the Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act – PCPNDT, 2003. They have built the argument that unregulated use of ultrasound facilities has been a major contributing factor for gender biased sex selection, which in turn has led to a skewed child sex ratio in India. Although this has been a very significant contribution in understanding what has led to declining sex ratio at birth the mechanism through which people’s access to such technology is growing has not yet been explored adequately. Similarly, the use of Assisted Reproductive Technologies (ART’s) such as IVF (in vitro fertilisation) and surrogacy to manipulate the sex of the offspring is also not sufficiently understood. ART’s are very poorly regulated in India which means that sex selection occurring through this pathway is also seldom regulated. This dimension of the supply side has not yet been covered adequately by research.

## **Consequences of gender-biased sex selection:**

An emerging area of enquiry concerns the ways in which gender biased sex selection is and can potentially affect women and girls. Studies on the consequences of sex selection point out that the most visible consequence has been the shortage of brides and the creation of a male marriage squeeze (that is eligible grooms outnumber eligible brides). In fact, the marriage squeeze that will be experienced in the decades to come has been the subject of most large scale studies on sex selection. Many researchers have pointed out that men with lower educational status and from poorer socio-economic strata will find it increasingly

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<sup>1</sup> Patrilocality refers to the practice of women moving out of their natal home to where their marital home is located. Patrilineality is the practice of tracing lineage from the male side of the family. It also becomes the basis of organizing inheritance of property.

<sup>2</sup> Hypergamy refers to the practice of marrying ‘upwards’ into a family that is socially and economically better than one’s own.

<sup>3</sup> Exogamy refers to the practice of marrying outside one’s clan or tribe.

difficult to secure brides. They have also theorised that the creation of such a pool of unmarried, socially marginalised men could become a threat to public order and peace as they have little stake in social stability. Other consequences of gender biased sex selection, such as increased violations against women and girls, especially sexual harassment and assault; restrictions on their mobility and the role of sex selection in trafficking of women have been theorised more but have been researched to a much lesser degree.

More recently, small scale studies in India have begun examining whether and how the dynamics of marriage are likely to be influenced by a growing shortage of brides. These studies (Ravinder Kaur, 2013) have shown that shortage of brides is pushing back the demand for dowry and leading to a greater contribution by men towards marriage expenses. These studies raise questions around whether bride shortage will result in normative changes in several practices related to marriage. Causes as well as consequences of sex selection have been largely studied using large quantitative data sets. Studies on determinants for example, rely upon analysis of existing survey data sets generated through Census, National Family Health Survey (NFHS), District Level Household Survey (DLHS), the Sample Registration System, to conclude on influential factors.

The key knowledge gaps with regard to the current understanding of gender biased sex selection are discussed below. It may be noted that in some areas, research is limited but not absent; whereas in some other areas there has been no systematic research inquiry at all. In either case, the themes presented below lend themselves to further research and deeper inquiry:

### **Interaction of correlates:**

While we are aware of the correlates of gender biased sex selection, the pathways through which they interact with social norms and mores, how they shape them and are shaped by them, have not been sufficiently explored. In short, why do families continue to prefer sons in spite of greater education, economic security and a positive policy environment that promotes gender equality; what is the pressure exercised by social expectations, how and in what ways do they dominate factors such as awareness, education, economic security and the broader environment; all these questions have not been adequately studied.

### **Male attitudes to sex selection:**

Large scale studies that examine attitudes of women and (specially) men are very few or absent. Men's attitude to son preference and its relation to gender-biased sex selection is an area for deeper inquiry as men play a very important role in fertility related decision making.

### **Attitudes of health care providers:**

Similarly perceptions of health care professionals and service providers who are duty bound to dissuade demands for sex determination testing, have seldom been studied systematically. This is a very important aspect in understanding the 'supply side'.

### **Rights based approach to sex selection:**

A serious gap in research on gender biased sex selection has been in examining the consequences of the issue from a human rights and capability framework. There is little understanding about how the practice of gender biased sex selection

impacts self-esteem and agency of women and girls and what are its costs to national economies and productivity and what are its intergenerational effects. Much of the research on sequences of gender biased sex selection focuses only on its impact on the marriage market. While the rhetoric has changed to promote women's right to life, the research agenda is yet to engage with such a framework.

### **Micro level qualitative studies:**

There is an absence of methodologically robust, qualitative studies that have focussed on gathering perceptions and insights from community actors on both visible and underlying causes of gender biased sex selection. Studies which examine attitudes and practices adopted by key stakeholders (couples, family elders, the medical community etc.) as well as studies which have explored the context in which gender biased sex selection is practised (status of regulation, value attached to girls, inheritance patterns etc.) would be particularly valuable in teasing out what clusters of factors work together in promoting a bias for boys.

### **Preventive factors:**

Gender biased sex selection is not practised by everyone who has daughters as their first or second born. There is little research to understand the motivation of people who have welcomed the birth of daughters among higher birth orders even when they already have daughters as their first or second born. Such studies are important in identifying individual and community level factors and perceptions, including community norms that impact sex selection.

### **Impact evaluation of programmes to reduce son preference and raise the value of girls:**

Systematic reviews of interventions and programmes that have succeeded in reducing son preference and gender biased sex selection are almost non-existent. India is experimenting with conditional cash transfer schemes (CCT's) to create a favourable environment for women and girls. Research on what would make people value women and girls, how existing schemes and programmes for adolescent girls and women are impacting community perceptions on women and girls would be of significant worth in pointing to entry points in changing attitudes and mind sets. A beginning has been made in this regard through a desk review of incentive based schemes for girls by UNFPA (Sekher 2012). Similarly, a study of the impact of conditional cash transfers (CCT) on the value attached to girls has been initiated in Haryana<sup>4</sup>.

### **A critical analysis of how policies and laws:**

A critical analysis of how policies and laws aimed at restoring gender equality have played a protective and/or preventive role by impacting the value attached to girls and women is also an area for deeper inquiry. Assessing outcomes of policies and legal measures is very challenging. However, such evaluation research studies are critical if we are to better understand what kinds of policies are most effective in subverting gender biased sex selection.

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<sup>4</sup> Evaluating the Power of Conditional Cash Transfers (CCT's) to delay marriage in India ICRW, forthcoming.

## Introduction

Gender biased sex selection is widely prevalent in South and East Asia and rearing its head in many parts of erstwhile Soviet Union and East Europe. In India, since 1991 every subsequent census has shown an alarming decline in the child sex ratio of the country. More disturbingly, child sex ratios have fallen in areas which were hitherto seen as more gender equitable states such as Jharkhand and Chhattisgarh. Drop in the child sex ratio from 945 in 1991 to 927 in 2001 and further to 919 in 2011 (Census 2001 and 2011 respectively), has resulted in a plethora of different research studies to unravel various dimensions of this phenomenon. Son preference, unregulated use of sex determination technology and birth order have been identified as key factors propelling gender biased sex selection.

The Pre Natal Diagnostic Techniques (PNDT) (Regulation and Prevention of Misuse) Act was approved in 1994 and amended in 2003 to become the Pre-Conception and Pre-Natal Diagnostics Techniques (Prohibition of Sex Selection) Act. The Act envisions a series of measures to prohibit determination and disclosure of the sex before conception and birth and to control facilities and services. Enforcement of the legislation has been a challenge. There are some good examples of effective implementation but it is clear that improvement of monitoring mechanisms, greater sensitization and functioning of the structures are required.

State governments and civil society organisations have launched a variety of activities and programmes to build awareness about the legislation and to promote the value for the girl child. However, the impact of these interventions is yet to be assessed systematically. The National Advisory Council and the Sectoral Innovation Council (set up in 2012) have issued a number of recommendations to ensure a convergent multi-faceted strategy, among them: 1) strengthening of legislation, in particular the PCPNDT Act; 2) review of cash transfer schemes for girls and tailoring of schemes for middle-class families; 3) comprehensive communication and advocacy strategy with multiple targets and multiple platforms; 4) review of other laws related to dowry, rape etc.; 5) sensitization of frontline workers to promote behavioural change (NAC, 2012).

Gender biased sex selection has been the subject of a wealth of research. The paper reviews existing research produced in the last decade, provide an analysis of main themes and knowledge areas and identify prevalent themes and gaps. It is expected that this review may contribute with directions for future enquiry and research.

## Purpose and scope of the document

Although there is a plethora of research on gender biased sex selection and its determinants (Miller, 1981, Bardhan 1988, Basu 1989, Dharmalingam 1996, Arnold et al. 1998, Dasgupta et al 2003, Bhatt and Zavier 2003, Jayaraman, Mishra and Arnold 2009 to name a few) there have been few systematic reviews of research on the issue. This document aims at providing an overview of existing knowledge and research on gender biased sex selection and identifies some gap areas in the understanding of the issue. It does not claim to be the most exhaustive review of literature on gender biased sex selection. However, within a limited time frame, it has tried to examine a wide range of literature on the issue and identify areas on which current understanding is focused and areas which require greater inquiry and research.

## Methodology

One hundred research papers, studies and theses on gender biased sex selection and eleven news articles were identified as being relevant to the current review. Library searches and the internet were used extensively to identify appropriate papers, reports of research studies as well as newspaper articles. Websites and blog-posts of several organisations working on gender biased sex selection as well as of individuals expressing their opinions were perused as a part of the review. In addition experts from the field of gender studies and medical ethics were also interviewed to understand gaps in research and knowledge about the issue. Authors of research papers which were unavailable through library and internet searches were also contacted for direct access to their research writings.

The main criteria for the selection of research papers and studies were: a) mainly produced in the last ten years, b) focusing on the situation in India, c) examining different aspects related to causes and consequences of sex selection, d) proposing new conceptual frameworks on gender biased sex selection, and e) including a thorough literature review related to a specific aspect of gender biased sex selection. In some cases, grey literature and newspapers clips of strong relevance or significance were taken into account.

It may be noted that a literature review commissioned by UNFPA in 2009 had analysed 85 articles pertaining to the topic of declining sex ratio, published during the 1990's and beyond, up to 2008. The current literature search has perused some of the relevant papers and studies covered by this review but expanded the scope of the search by including more recent documents, consciously looking for more qualitative, primary data level, community level studies and those which have tried to analyse the intersectionality between correlated factors such as education, income and desired family size.

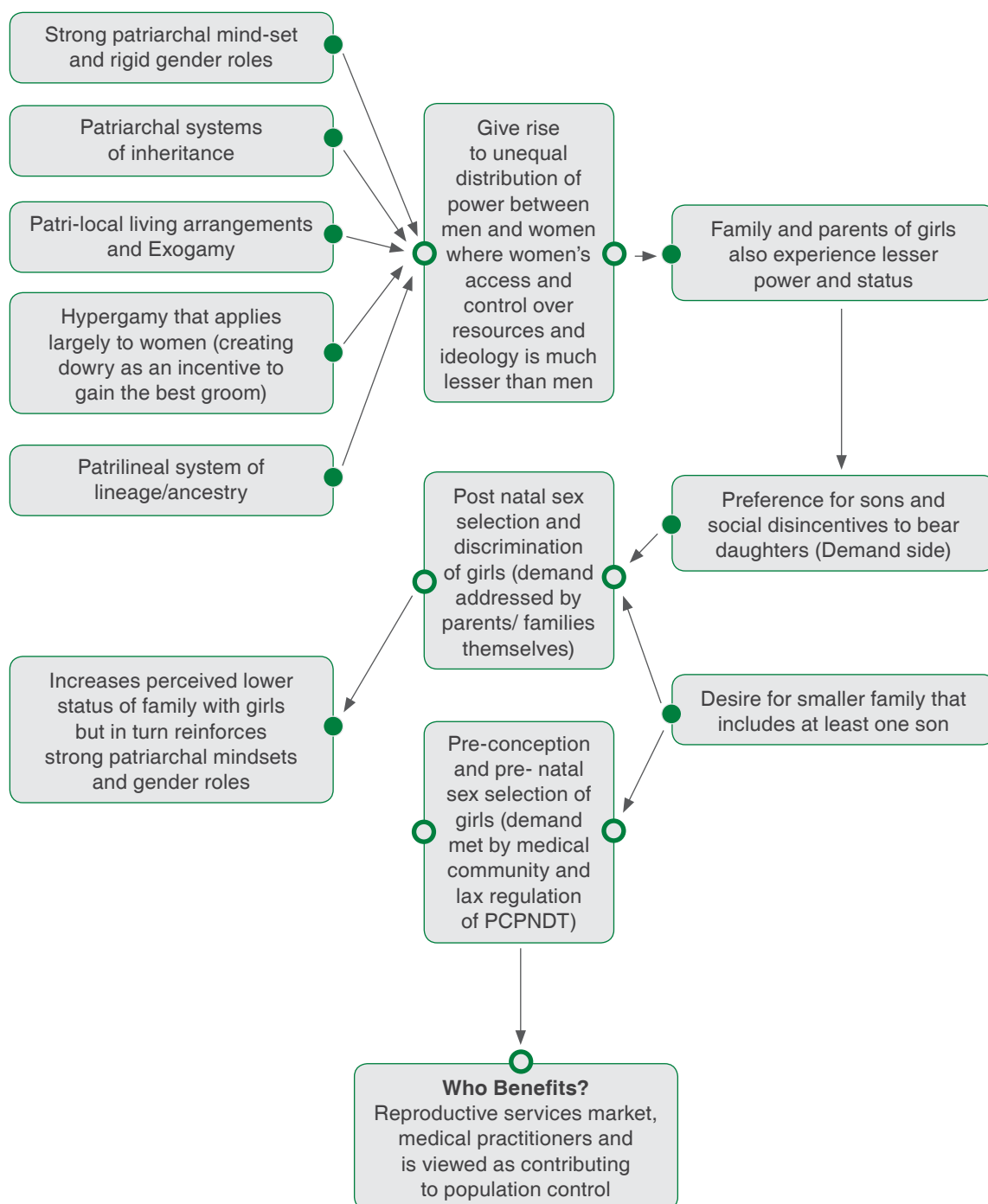
## Conceptual framework

The Desk Review analyses gender biased sex selection through two lenses: a) son preference and the demand for sex selection services and b) the supply and availability of sex selection services which thrive on son preference and patriarchal values and norms.

The conceptual framework adopted by this review draws from the analysis of patriarchy and its practices, on which sociologists and gender scholars have theorised extensively. Gender biased sex selection is the result of strong patriarchal values which manifest themselves through male centric practices and traditions that undermine the human rights of women. These practices perpetuate a mind-set that normalises discrimination against women and girls and promotes the desire for sons. The underlying reasons for preferring sons or ensuring at least one progeny is male lies in patriarchy and its practices – patrilocal living arrangements and a patrilineal system of lineage and inheritance. These practices translate into parents having to forfeit economic and other rights over their daughters, less support from daughters for parents in their old age, parents and not being able to pass on lineage or property to daughters. These patriarchal norms create a situation where the disincentives of having daughters outweigh the incentives. In addition, the practice of hypergamy (marrying into a family of higher status, which typically applies to women in patriarchal societies) adds to the burden to providing a dowry to daughters at the time of their marriage. Clan exogamy (marrying outside a particular biological or cultural group) implies that daughters are not married to blood relatives but unrelated families that are usually physically located also far away. All these circumstances mean that daughters symbolise a lower status for parents. Thus the demand for sons has always been strong in Indian society. In the past, preference for sons typically manifested itself as post natal discrimination of girls in terms of reduced health care, access to nutrition, education and other investments. Couples had children till they had achieved the sex composition they desired. In the last two decades, fertility rates have fallen and a small family is the desired norm. Along with this is the desire for an ideal sex composition of children (where at least one of them is male). These trends have fuelled gender discrimination in a pre-natal stage. Typically this has involved the use of sex determination testing and selection until the ideal family composition is attained.

In this context, apart from son preference, many studies have also linked the trend of increasingly skewed child sex ratios to the availability of sex determination technology. The liberalisation of India's economy since the 1990's has resulted in removal of several tariff barriers so that there were very few hindrances in negotiating agreements between national and global markets for reproductive services, including import and production of machines for sex determination testing. An article in the Wall Street Journal (Wonacott, 2007) noted that by 2006, the annual sales from sales of ultrasound machines by International vendors rose to approximately \$ 77 Million, up by 10% from 2005, when it was \$ 71 million. At the same time, regulatory mechanisms to check misuse of ultrasound technology for sex determination were and continued to be weak. In such a context, unregulated medical practices and the conniving role of the market created a nexus wherein technology could be misused by those wanting to plan their family composition. This is one of the key factors for the masculinisation of the child sex ratio in India. Those who benefit from the use of sex determination technology are the reproductive services market and medical

practitioners. While pre-natal sex selection may reduce the perceived vulnerability of families with more girls it sets up a reinforcing loop where such a form of discrimination actually further undermines status of women and girls. Viewed in another way, a decrease in the number of women and girls in the population does not translate into greater value for them. On the contrary, it devalues women even more as their commoditisation increases. The diagram below captures this conceptual framework explained above by connecting the key concepts central to the issue of gender biased sex selection.



## Key insights from the review of literature

### Structure of the literature review

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The current review has organised the available literature on sex selection into the following sections:

- Theme I: Causes and determinants of gender biased sex selection
- Theme II: Consequences of gender biased sex selection
- Theme III: Dominant methodologies adopted to study gender biased sex selection
- Theme IV: Related areas that require greater research and inquiry

The first three themes has further been divided into what the existing research points to (insights) and gaps as well as areas for further inquiry.

The review ends with a section on conclusions and recommendations.



## Theme 1:

# Causes and determinants of gender biased sex selection

In the last decade and a half there has been substantial research on examining determinants and factors responsible for gender biased sex selection. Key determinants identified by research studies include:

- Birth order;
- Interaction between the desire to limit the family size, variables related to socio-economic status and son preference;
- Son preference and the low value of daughters;
- The availability of and access to unregulated sex determination technologies.

Research insights pertaining to these determinants are discussed below:

## 1.1. Birth order

Analyses of census and NFHS datasets during this period have linked gender biased sex selection to birth order in a substantive way (Rutherford and Roy, 2003, Bhatt 2007 and Arokiasamy 2007, Jha et al. 2006, Abrevaya 2009, Bhanot 2012). These studies have shown that while sex ratios are normal for first births, in second and third birth orders child sex ratio imbalances are most evident if the first born is a girl. The analysis of census data from 2001 to 2011, by Prabhat Jha et al. (2011) highlighted alarming figures. This study showed that gender biased sex selection accounted for four to twelve million girls having gone missing during this period and that the sex ratio of second born girls, when the first child was already a girl fell from 906:1000 to 836:1000. These findings highlighted the shocking magnitude of the phenomenon while also proving that even within large demographic studies, gender biased sex selection has to be examined contextually, with reference to specific factors such as birth order. Subsequent studies such as those by Manchanda et al. (2011); Toppo et al. (2012) highlighted similar findings. Such studies paved the way for the understanding that interrogation of the birth order provides a more nuanced understanding of gender biased sex selection on a large scale.

## 1.2. Interaction between the desire to limit the family size, variables related to socio-economic status and son preference

In his paper “Sex Selective Abortions, Fertility and Birth Spacing” (August 2010), Claus C. Portner notes that while the strongest predictor of uneven sex ratio for a given parity is the sex composition of previous children, the propensity to use gender biased sex selection increases with socio-economic status, especially education. Using three rounds of NFHS data (92-92, 98-99 and 2005-2006), Portner proves that better educated women, that is those with eight or more years of education, in both rural and urban areas use gender biased sex selection and as fertility falls, even on lower birth parities. The study also notes that the proportion of males to females is larger in cities than in rural areas.

Portner's study is consistent with the findings of Rutherford and Roy (2003), Jha et al. (2006), Bhatt and Zavier, (2007), Subramaniam and Selvaraj (2009) and other similar studies. Jha et al. (2011) analysed birth order by sex ratio in 0.25 million births across three rounds of NHFS (1995-2005). Their findings showed that between 3-6 million girls were being lost to sex selection in the 2000's and that declines in child sex ratios were higher in mothers with 10 years or more of education than in mothers with no education and in wealthier households than poorer households.

While fertility studies have consistently shown that high levels of literacy among women leads them to opt for fewer children which in turn may be fuelling sex selection (borne out of son preference and access to technology), emerging research also suggests that there may be other equally significant and relevant factors; and that these work in conjunction with education to fuel as well as hinder sex section. For example, the role of education in relation to other factors has been studied further by Sabharwal (2008) in a paper written for the World Bank. She has observed in the paper that :

*“Although education is a powerful predictor of women’s role and status and agency within the household, it is by no means their only relevant attribute that can potentially influence fertility decision-making within the household. Increasingly, women’s economic participation outside the household and autonomy within the household are being recognized as powerful predictors of fertility outcomes.... Where women’s opportunities outside the home are severely constrained, their rights and responsibilities tend to be concentrated inwards on family and children. In situations of severely restricted autonomy, a woman might look upon having sons as a means of improving her welfare and her relative status within the household. For women with greater autonomy however the incentives for having sons are comparatively lower” (2008:6).*

The same paper concludes that in the short-run one is likely to see increased gender biased sex selection with higher levels of education among women because of better information on where to seek gender biased sex selection and safe abortion services and because of the lower 'psychic cost' (2008:7) related to abortion due to a perceived sense of greater autonomy. However, the author argues that in the long-run, the situation is likely to be different. Higher levels of women's education on the whole would imply increased female autonomy and empowerment thereby substantially decreasing the net benefits of sex selection. Furthermore, with increased emancipation of women, the psychic cost of gender biased sex selection is likely to become very high in the long run. This analysis suggests the need for research on the links between (a) education level, son preference and sex selection and (b) between son preference, sex selection, women's decision making and education. The success achieved by South Korea in arresting gender biased sex selection seems to suggest that education, along with a combination of strong government regulation combined with rapid changes brought about by education and urbanisation have been responsible for the dramatic turnaround in the child sex ratio. A study by Chung and Dasgupta (2007) has pointed out that sex ratios fell rapidly during the period when fertility rates plummeted to just above 1 (mid-1980's

to mid-1990's). The researchers state that rapid reduction in fertility tends to increase the pressure to avoid bearing daughters, which may have led to a masculinisation of the sex ratio. However, this study also highlights that with a growth in women's education levels, their economic advancement associated with employment, rapid urbanisation and the replacement of large, traditional families with nuclear families, the norms around son preference began eroding. The policy environment also supported women's right to equal employment and rights within the family. In another analysis, Guilhoto (2009) has pointed out that the widespread decline in sex ratio at birth in South Korea was the result of 'diffusion' wherein couples with high education and income levels initiated the decline and it spread outwards as they were perceived as trend setters. A more recent study from Taiwan (Lin 2009) has shown that son preference falls significantly with education.

In South Korea (along with increased education among women, employment and rapid urbanisation) strong regulations around the use of technology and policy amendments favouring women have been additional and significant levers in normalising the sex ratio at birth and child sex ratios. Thus, existing research seems to suggest that normalising sex ratios at birth and child sex ratios requires a concurrent alteration in key determinative factors. The importance and need for these factors coming together to reverse masculine sex ratios is further strengthened when we examine studies on sex ratio at birth among immigrant Asian communities.

Research studies on fertility, son preference and gender biased sex selection among Asian immigrants in the West have shown that despite egalitarian policies, a high economic status and access to the possibility of equal opportunities, these communities tend to have skewed child sex ratios in favour of boys. In countries such as the UK and USA, there are few legal barriers to sex determination tests and access to safe abortion services is widespread. In 2007, an Oxford University study (Dubuc and Coleman) found that the child sex ratio among Indian-born mothers in both England and Wales was very close to the ratio in India. It found that the proportion of male to female newborns increased from 103 male births per 100 female births in the 1970s to 114.4 by the end of 2005. The study concluded that "an increase in the sex ratio of births to India-born mothers in England and Wales, especially for higher-order births has been concomitant with the availability of prenatal sex-selective techniques " (2007:396).

Similar findings have been reported by a study of Asian immigrants to Canada (Almond et al. 2009). This study's findings on assimilation of immigrants into the country show that first generation-immigrant families from South and East Asia are much more likely to exhibit son preference in their family size choices than second-generation families. However, the sex composition of children showed little change across generations –both generations ensured the birth of an ideal number of desired sons. This finding seems to suggest that, while cultural assimilation may attenuate son preference to a certain extent, it manifests differently across generations. Second generation-immigrants might be choosing gender-biased sex selection if restricted by the size of the family. These studies highlight the importance of understanding to what extent social norms, patriarchal values and traditions which lead to son preference continue to determine reproductive choices despite egalitarian policies, higher incomes and education levels.

### 1.3. Son preference and the low value of daughters

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The last twenty odd years have generated a great deal of theorisation and research on son preference as a strong underlying cause for sex selection. Research has shown that the key drivers of son preference are the social and economic costs associated with bearing daughters.

Studies that have examined the economic angle of son preference have explored the role of dowry and social norms that prohibit daughters from financially supporting their parents. Social disapproval around parents living with their daughters also acts as a strong disincentive to bear daughters. Although women have equal inheritance rights to parental property under a legal amendment (2005), they defer from seeking their property rights due to fears of creating conflicts and acrimony. Sons are expected to provide security and support during old age whereas daughters leave the parental home after marriage. This norm acts as a deterrent in bequeathing property to daughters. A recent study (Rosenblum, 2013) shows that reforms in laws governing property seem to be contributing to increase in female child mortality. That is, parents tend to reduce the investments in daughters as they become potential claimants in parental property due to legal reforms.

Dasgupta (1987 and 2009) has examined how patrilineal and patrilocal practices undermine the social and economic value of girls. Using examples of communities from China, Korea, Taiwan and Northwest India, she has concluded that “Daughters are effectively lost to their parents when they marry (patrilocality) and marriage offered adult women the only legitimate access to support by a household” (2009:5). Dasgupta builds a strong case for how women in patrilineal systems (which does not allow any exchange between parents and daughters and where the lineage is traced only through the male line) were in effect cast out and were only “the means by which men reproduce themselves” (2009:5). Land and property inheritance in these communities is traced strictly through male lineage and therefore raising daughters is viewed as draining away the family’s resources. Arokiasamy and Goli (2010) have also examined datasets from round 3 of NHFS (2006) to explore the hypothesis that families with larger land holdings are more likely to exhibit masculine child sex ratios. They conclude that “the size of household landholding is a critical predictor of skewed CSR’s in rural India after controlling for other socio-economic factors.” Other studies (Chamarbagwala and Ranger, 2006; Bose A. 2001; Sev’er A 2006; Rustagi P 2006, Kodoth, 2008; J. Joseantony, 2007) have also noted the role of dowry and hefty marriage expenses in making daughters undesirable. Ajinder Walia’s study in Punjab (2005) has shown dowry to be the leading cause cited by respondents for supporting gender biased sex selection. This trend remained the same for districts with low, medium and high child sex ratios.

In another telling study, S. Sudha et al (2007) found that dowry and patrilocal living arrangements were becoming entrenched among the Nayars of Kerala. This research traces the origins of patriarchal resurgence to colonial concerns around maintaining uniformity in laws related to marriage and inheritance. This community was known erstwhile for its matrilineal system of living arrangements, lineage and inheritance. However, when the study was conducted in 2006, many respondents expressed preference to have a son and healthcare providers admitted that sex determination was gaining popularity among all communities, including the Nayars. Some elderly respondents shared that the natal family home was always a source of support for women in the past and that the birth of girls was celebrated. Weddings were simple and dowry system was absent.

An in-depth study of two villages in South India by T.V. Sekher and Neelambar Hatti (2010) has very effectively captured the cascading effect of dowry from higher to lower classes. Many other studies on dowry practices in other parts of India (Rao 1999, Anderson 2003, Karlekar 2004, Oldenburg 2002, Basu 2005, Chowdhury 2010) have recorded the rapid spread of the phenomenon. According to the sociologist M. N. Srinivas, dowry giving was part of the sanskritisation process whereby people from lower castes emulated higher caste groups for status and recognition. However, more recent frameworks (Anderson 2003 and Dasgupta 2007) propose that hypergamy and exogamy are critical factors in a spiralling rise in dowry and lavish marriage expenses. Dasgupta (2009) points out that strict village exogamy coupled with rigid patrilineal inheritance practices marginalise women substantially. Dowry then becomes an additional factor for not wanting daughters. Sekher and Hatti (2010) in their study of two villages in South India found that dowry expenses were among the chief reasons named by people for not wanting daughters. Their research has also highlighted how dowry spread in different strata of society that did not widely practice it earlier. They theorise that the practise of dowry has fuelled son preference whereas the availability of technology in an environment where people desire a small family has translated son preference into gender biased sex selection.

#### **1.4. The availability of and access to sex determination technologies**

The supply of unregulated sex determination testing has been identified as another key determinant by research studies but has received relatively less focus than the other determinants. Existing research on the supply side has also been largely analysed from the point of view of poor implementation of the PCPNDT Act, leading to availability of unregulated sex determination testing.

Amniocentesis as a method to detect foetal anomalies was available in India during the 70's and people from all classes had begun to use it as a way of detecting the sex of the foetus and opt for an abortion if the foetus was female. Yet, in those early years, access to this type of technology was relatively low level compared to the flood that opened up with the availability of ultrasound technology. Some of the early research in the 1990's documented the widespread prevalence of sex selective abortions through community level and hospital based studies (Booth and others, 1994; Gu and Roy, 1995; Khanna, 1997; Sachar and others, 1990 and 1993; Sahi and Sarin, 1996). Dr. Sabu George, a keen activist and researcher commented in the Lancet (2006) that during the period of economic liberalisation between 1988 and 2003, the number of ultrasound machines manufactured in India increased by 33 times- from a mere 1314 machines in 1998-99 to 19,581 during 2000-03. Multinational companies such as General Electric began manufacturing ultrasound equipment in India and lack of proper regulation resulted in the proliferation of ultrasound facilities across the country (George, 2006). This period also coincided with the surfacing of a skewed child sex ratio in favour of boys. Along with this trend, the government's population programme stressed heavily on the small family norm, pushing families to seek ultrasound services to manipulate the sex composition of children.

Research studies such as those by Das Gupta and Bhat, 1997; Arnold et al., 2002; Bhat, 2002; Bhaskar and Gupta, 2007; and Retherford and Roy, 2003 have shown that the increase in sex ratios at birth happened along with the wide spread availability of prenatal

sex determination technologies. These studies built the argument that unregulated use of ultrasound facilities was a major contributing factor for sex selective abortions, which in turn was leading to a skewed child sex ratio in India. A study by Dubuc and Coleman in Wales (2007) found the sex ratio at birth among Indian immigrants in Wales to be highly masculine. These researchers have noted that their findings are in consonance with other studies (e.g. Dyson 1996; Griffiths et al. 2000) reporting that the increase in sex ratios at birth cannot be attributed to under registration of female births alone. The availability of opportunities to use technology for sex selection is a significant factor in skewed sex ratios at birth.

In a study on factors influencing the use of Pre-Natal Diagnostic Techniques, Bhat and Zavier (2007) analysed data from NFHS round II and found that the sex ratio at birth among women who admitted undergoing an ultrasound (as a part of Ante-Natal Check-up's) was 112 compared with 107 among live births to women who did not report the use of PNDT. This study concludes that in a significant percentage of cases, PNDT was misused to abort female fetuses, since if sex-selective abortions were not practiced, the sex ratio at birth would have been close to 105, the average sex ratio at birth. Another very small scale study by Prasad S. (2001) gauged the prevalence of sex determination (SD) tests and impact of the Pre-Natal Diagnostic Techniques Act, 1994 in Varanasi district, Uttar Pradesh. Ten diagnostic centres were randomly chosen for the study. Eight of the ten diagnostic centres were found to conduct sex determination tests. On average, the numbers of tests conducted per day by these diagnostic centres were 15 to 20. Not all diagnostic centres were secretive about these tests. Doctors replied that it was "the pressure from clients" which compelled them to perform sex determination tests. For doctors, the monetary benefits arising from testing and subsequent medical procedures played a key role. This study also shed some light on the clientele of sex determination facilities and on the reasons why women accessed these services. Twenty women who underwent sex determination testing were willing to be interviewed. All of them had a college degree. They were all from middle class families except a few who belonged to very well-to-do families. The average age of patients was 28 years. Most of them were members of high caste Hindu society. The reasons given by most patients for undergoing the sex determination test were: wanting to avoid the problems of dowry, difficulties in finding a suitable and good match for a daughter, because the world was not a safe place for a girl to live in, to have a gender-balanced family (that is, where at least one child would be male). Furthermore, interviewees stated that giving birth to a male child was essential for "moksha" (liberation from the cycle of birth and death), and male child was necessary for "vansha" (continuation of their lineage). The number of couples going in for the test during the second and third pregnancy was found to be quite high. In the case of all the respondents, it was a family decision to undergo the SD test. In some cases, doctors referred the patients to other clinics conducting these tests. The study also highlighted that the administration was not ready to penalize doctors unless it received a complaint.

A study by Nagarajan R and S Mulay (2008) in Maharashtra found a statistically significant correlation between the number of sonography centres and decline in child sex ratio- the higher the number of sonography centres the higher was found to be a decline in the sex ratio. Other studies (Arnold et al. 2002, Bhalotra and Cochrane 2010, Jha et al. 2006 and 2011) also attribute the rise in gender biased sex selection to the introduction of sex selection technology. A study of child sex ratios in Faridabad (Bardia A et al. NMJI, 2004) concludes:

*“The period during which the law (PNDT) was passed and enacted (1994–96) saw a continuation of the practice but in the succeeding year of its implementation (1997) the sex ratio increased. However, this was followed by a decline again, indicating probably weak implementation. In 1999, the Act was zealously implemented and Faridabad became the district with the highest cases registered against medical practitioners under the PNDT Act. That year showed an increase in the sex ratio”. (2004:209)*

Another under studied area related to the supply of sex selection services is the role of Assisted Reproductive Technologies allow for the manipulation of a variety of characteristics in the foetus, including sex (for details see Cussins, J. “Changes for India’s ART Industry?”, Biopolitics, <http://www.biopoliticaltimes.org/article.php?id=6339>, accessed on Jan 13, 2013). However, the ways in which Assisted Reproductive Technologies (ART) maybe contributing to gender-biased sex selection have not been explored or understood adequately. The ART industry in India again suffers from poor regulation and therefore the increasing use of these technologies necessitates a closer examination of its links with sex selection.

Another important element covered in research concerns the mechanisms to regulate sex determination facilities and services. A comprehensive study on the implementation of the PCPNDT Act, supported by the United Nations Population Fund (UNFPA) and the National Human Rights Commission (NHRC) in 2010, found that although implementation structures have been put in place, the identified gap lies in their optimal functioning. Relevant bodies do not meet as mandated (e.g. 50% of the state supervisory boards that responded to the survey shared that meetings of the board were held either once a year or irregularly); the State Appropriate Authorities (SAA) are single member bodies in many states (e.g. Assam, Uttarakhand and Tamil Nadu) although they should be a multi member body representing different stakeholders. Other findings on the implementation gaps include: a) widespread lack of awareness about the specificities of the law even among duty bearers, including among NGO representatives; and b) inadequate monitoring by implementing agencies (e.g. the study found that state Inspection and Monitoring Committee in Delhi and West Bengal were recently formed whereas in Karnataka the Committee existed only on paper. In eight states, these committees had not been formed).

A similar study by the Lawyer's Collective in 2007 looked at the implementation of the PCPNDT and women's perceptions around sex determination in different areas of Delhi. This study brought out several interesting insights regarding the ineffectiveness of enforcement of the Act by ultrasound units and facilities. It highlighted the lack of notification of changes in addresses of ultrasound units, inaccuracy of location provided in the first place and absence of adequate staffing and infrastructure.

Library and web searches for literature on the supply of sex determination testing facilities also yielded several news articles on sting operations mounted to nab doctors flouting the PCPNDT Act. These have been very useful in bringing public attention and pressure to address gender biased sex selection.

### **1.5. Exploring perceptions and attitudes towards son preference and gender-biased sex selection**

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Gender biased sex selection is a very sensitive issue and people are unlikely to share about whether they have resorted to sex determination testing, let alone whether they have sought to terminate the pregnancy based on the sex of the foetus. There are hardly any studies that have explored these issues. The study by Puri et al. (2011) is among the first to investigate and document experiences of sex selection but includes Indian immigrants in the US. The research used a mix of qualitative methods (in-depth interviews and participant interviews in clinics, at home and community events) to analyse and document how women's reproductive choices are affected by their family's desire for a male child. However, such studies are very few.

At best, research studies have explored related themes such as desired ideal family size and sex composition of children. The National Health and Family Survey (a large scale survey covering a representative sample of households in India) for example, asks respondents to indicate the ideal family size they would choose for themselves and what the sex composition of children in such a family would be. It also asks questions around whether female respondents have gone in for an ultrasound for pregnancies that occurred during the last three years. Most researches tend to extrapolate son preference based on responses to these and related questions (Clark 2000, Bankole and Westhoff 1998, Tin-chi Lin and Alicia Adsera 2011).

Most existing attitudinal studies on son preference and sex selection have found high levels of awareness about the availability or possibility of accessing sex determination and selection services but a lower degree of awareness about its illegality (Chavada et al 2011.; Ghose and Sarkar 2009; Siddharam et al, 2011 etc.).

Among the handful of studies (see table below) that have examined societal attitudes to son preference and sex selection, most include pregnant women accessing ante-natal services in government hospitals. Although their sample sizes are small, nevertheless, they show a high preference for male children (anywhere from 22% to 88% of respondents); 11% - 20% of respondents also reported a willingness to go in for sex selection if the tests proved that they were carrying a female foetus.



Author	Year	Location	Sample size	Key results
Vadera et al.	2007	ANC clinic attached to M.P. Shah Medical college, Jamnagar, Gujarat; sample included 70% from urban and 30% from rural areas	195 pregnant women	58.5% expressed son preference. 20% reported they would opt for a gender biased sex selection if the foetus was found to be female.
Puri S. et al.	Study published in 2007; data collected in 2004	Health centre attached to Government Medical College in Chandigarh; catering largely to slum population	373 married women of whom 22.2% were pregnant for the first time and 77.7% had been pregnant before	209 (56%) married women expressed a preference for a male child. 11% were aware of where sex determination tests could be done.
Khatri M. et al.	2012	ANC attached to SP Medical College, Bikaner, Rajasthan	1000 pregnant women	67.8% expressed preference for a male child. 11.4 % women said that they would opt for gender-biased sex selection due to family pressure or because they already had a female child.
Srivastav S. et al.	Published in 2011; data collected in 2010	Rural catchment area of a medical college in Bareilly, Uttar Pradesh	317 rural women	80% were aware of availability of sex determination tests. 88% were of the view that even if the ideal family size is reached with females they would like to try for a son. 32% were willing to go for pre-natal sex determination. 20% accepted that they would prefer to go for selective abortion if a female foetus is conceived.
Walia A. et al.	2005	Two villages randomly selected from Ludhiana, Bhatinda and Ferozepur	240 female heads of households	Overall 44% and 38% of respondents from farming and non-farming communities endorsed sex selective abortion, although there were wide regional variations (58% to 15%).
Kansal et al.	2010	ANC attached to Subharti Hospital and Medical College, Meerut, Uttar Pradesh	203 pregnant women	A majority (66.0%) of respondents did not show any gender preference; 22.2% showed a preference for males and 11.8% showed a preference for females. 84.7% and 89.7%, of the total subjects were aware that prenatal sex determination and gender biased sex selection is illegal, respectively.

### 1.5.1. Male attitudes to son preference:

In a situation where women's autonomy is limited and their decision making power within families is derived from their relationship with other males in a position of authority or power (father, son, brother), examining the role of men in perpetuating son preference and gender biased sex selection is very important and may offer new insights and thereby new intervention points. In this context, the review also found that studies examining men's attitudes towards son preference are very rare and ones that explore their role in sex selection are practically absent. The only survey based study on son preference, covering men, women, family elders and health workers, found by this Review is the one by NIPCCD (2008). In this study, men have reported high levels of awareness about the phenomenon of missing girls (94%). The same study found that 53% of men felt investing in daughters is seen as a "waste" because there are no returns. Fuse (2010) has analysed DHS data from 50 less developed countries (including India) to assess son preference. She has pointed out that in developing countries men have stronger preference for sons, a trend borne out by fertility studies (Mason and Taj, 1987; Caldwell 1981 and Folbre 1983). A UNFPA supported study of male attitudes to son preference in Vietnam (ICRW, 2012 shows that opting to have a son by eliminating female foetuses was defined by many men as "common sense"- a sign of the normalisation of sex selection. In a parallel study conducted in Nepal (ICRW, 2012), one third of the men surveyed were of the view that fathering a son is an indicator of their masculinity; between 68-69 percent of all men surveyed in both countries showed moderate son preference and a third of men showed high son preference. A similar survey supported by UNFPA is underway in India, results of which will be available in the coming months.

### 1.5.2. Attitudes of doctors and other health professionals

According to Dr. Amar Jesani and Dr. Ravi Duggal, experts in the field of medical ethics, research urgently needs to focus on exploring attitudes and responses of the medical fraternity to sex determination testing and the ethics around the use of such technologies (based on personal interviews held on 22/11/2012 and 20/11/2012 respectively).

The current review has been able to locate only few relevant studies about attitudes of medical professionals to sex selection. The first one was conducted in 1986 by Foundation for Research in Medical health (FRCH). This study covered a sample of 50 gynaecologists in the city of Mumbai. 42 of these 50 gynaecologists reported performing amniocentesis tests for sex determination. The other study is a very small scale research of attitudes of medical students towards the use of sex determination tests (Anita, Sharma and Ingle, 2008). Covering a sample size of 100 medical undergraduates at the Maulana Azad Medical College, Delhi, the study found that only 15% and 26% were in favour of stricter punishments for doctors performing illegal MTP's and for conducting illegal ultrasounds. Whereas a much larger number 78% spoke of raising women's status in society and supporting the cause of the girl child using media (68%). Another worldwide study (Wertz et al. 1990) on ethical dilemmas among geneticists from 18 countries including India showed that 60% of all respondents said that the performance of prenatal diagnosis should not be dependent on the use the patient intends to make of this information. Of the 27 geneticists who participated from India, 15 said they would conduct sex determination tests because of parental desire. In a qualitative study in the United States, covering 40 primary care physicians (PCP) and 15 Sex Selection Technology Providers (SSTP), Puri S and Nachtigall R (2010) found

a distinct difference between the attitudes of each group of service providers towards sex determination. Sex-selection technology providers were of the view that gender biased sex selection represented a form of reproductive rights, it was an expression of empowerment as it enabled couples to make conscious decisions about their family size and composition. In contrast to this view, PCPs were of the view that women could not really exercise free choice in a context where family and community pressure to bear a son was very high. They also felt that such technologies were invasive and reinforced gender stereotypes that contributed to discrimination against girls.

Health service providers and the medical profession has a significant role to play in arresting sex selection. Therefore appropriate research studies which surface attitudes of medical practitioners to gender biased sex selection are needed. The results of such studies can be used to sensitise and educate the medical community, policy makers and health workers on the role of the medical community in addressing the issue.

### Key insights

*Existing research studies have identified four key determinants of gender biased sex selection:*

- *Birth order;*
- *Interaction between the desire to limit the family size, variables related to socio-economic status and son preference;*
- *Son preference and the low value of daughters;*
- *The availability of and access to unregulated sex determination technologies.*

*Among the determinants, birth order has been extensively studied and shown to be an important push factor towards accessing sex selection service. The desire to control the family size interacts with other socio-cultural elements, such as education and economic status.*

*The determinants of sex selection operate in a context where son preference is prevalent. Studies on son preference have highlighted practices which undermine the value of daughters within the family. These practices include the giving of dowry to ensure the daughter is married into a better family than one's own (hypergamy), the practice of patrilocality wherein women move 'out' of their parents home after marriage to reside in their marital homes and the girl's parents have to forfeit rights over their daughter; and the practice of patrilineality wherein a family's lineage is traced only through sons and property is traditionally passed on from father to only son(s).*

*Studies on the supply of sex selection services have mostly focused on the regulation of the PCPNDT Act. Until the mid 70's, amniocentesis had been used for sex determination but the wide availability of ultrasound technology, due to economic liberalisation opened up the floodgates. Several studies in the last decade have proved that the free and unchecked use of sex determination testing has led to wide spread use of sex selection. A small study in Faridabad, Haryana (Bardia et al, 2004) found that the years during which the PCPNDT Act was zealously implemented in Faridabad, the child sex ratios were found to be much closer to normal.*

*Studies on the implementation of the Act have found serious lacunae including irregular meeting of committees and poor compliance to regulations. However,*

*in comparison to research studies there are many more newspaper articles and news stories on 'sting operations' which highlight how the law is being flouted.*

*Attitudinal studies examining son preference, acceptance of sex determination testing and use of such services are very few. Similarly, research exploring attitudes of doctors and other health professionals who are duty bearers in preventing the supply of sex selection services, is just as sparse.*

### **Research gaps :**

- *There is a need to focus on research that examines the supply of sex determination testing much more closely, especially from the point of view of understanding attitudes and beliefs of health service providers and other duty bearers.*
- *Similarly societal attitudes to sex determination testing and sex selection need to be studied more closely. Studying male attitudes to son preference and sex selection would be particularly useful as they play a key role in decision making on fertility and family size.*
- *There is little understanding on how determinants such as higher education and better socio-economic status impact son preference leading to sex selection. More specifically, it is not clear how these determinants work together or in isolation and which one plays a stronger role in affecting son preference that culminates in sex selection.*
- *We also do not know enough about whether and how community norms (which privilege sons) are being influenced and reshaped by changes in education levels and socio-economic status. Norms develop and are sustained in a particular social and economic context. South Asia is in a state of enormous transition. Many more women are receiving higher education, a significant number of women are entering the workforce, migration within and among countries is on the rise, rapid urbanisation is taking place, the region is experiencing a boom in information technology and there are many policy initiatives that at least on the face of it, are pro- women. How is this conglomeration of factors impacting son preference leading to sex selection? Are there pockets of change and can they shed light on what are supportive factors that can reverse sex selection?*

## Theme 2:

# Consequences and impact of gender biased sex selection

In a recent review of literature (2013), Ravinder Kaur has pointed out that there has been considerably more academic exploration on the consequences of sex selection in China compared to India. Thematically, one finds that most of the research on consequences of gender biased sex selection in South Asia has focussed on how the sex ratio imbalance will impact marriage, both in terms of prospects for the rapidly growing male population in the region; as well as how sex selection is altering gender negotiations and relations embedded within marriage.

## 2.1. The marriage squeeze resulting from gender biased sex selection - movement of women, trafficking and violence

A large amount of research has focused on the “marriage squeeze” resulting from gender biased sex selection. The term marriage squeeze refers to a situation where the number of eligible brides outnumber eligible grooms (female marriage squeeze) or vice versa (male marriage squeeze). India clearly is likely to suffer from a male marriage squeeze. Fewer women would mean fewer brides in a situation where men significantly outnumber women. Guilimoto (2012) has estimated that by 2050, the number of prospective grooms will exceed unmarried women by 60% in India. He has also pointed out that men from poorer and socio-economically disadvantaged strata maybe impacted more seriously because they would find it harder to attract brides compared to men from affluent sections of society. Hudson and de Boer (2001) were among the first to point out that that excessive numbers of unmarried men could lead to increased public unrest, violence and vandalism as they have practically no stakes in building a stable future society. Hesketh T (2011) points out that:

*“Over the next 20 years in large parts of China and India there will be a 10%–20% excess of young men. These men will be unable to marry, in societies where marriage is regarded as virtually universal, and where social status and acceptance depend, in large part, on being married and creating a new family. When there is a shortage of women in the marriage market, women have the opportunity to “marry up,” inevitably leaving the least desirable men with no marriage prospects. The result is that most of these men who are unable to marry are poor, uneducated peasants. In China these men are referred to as “guang gun,” meaning “bare branches,” signifying their inability to bear fruit” (2011: 1375).*

However, in China another factor that seems to be influencing marriage dynamics is the creation of a class of women who are simply unable to find suitable husbands due to the social value attached to hypergamy (women marrying upwards into a better family). With rapid economic transformation in China and the opening of job opportunities, many more young women are securing higher education and acquiring well paying jobs. The migration of young women into cities due to better job opportunities has also meant a growing cadre of well educated women in high paying jobs, whereas many times sons stay back with the parents as they are expected to take care of them or till their lands. Though number of such women is much smaller than the numbers of unmarried men who are unable to marry simply because there are no women, this trend nevertheless points to the fact that the “one child policy” in China coupled with rapid economic changes and rampant sex selection is affecting marriage dynamics in myriad ways.

In the last decade the exporting of brides from areas of surplus to areas of scarcity has been reported by the media and has also been the subject of research. Ravinder Kaur (2010) has examined the spread of the “Bengali Brides Diaspora”. She notes in a paper by the same title that scarcity of women in the North combined with poverty, family survival strategies and high costs of dowry in Bengal are pushing families to marry their daughters to older and economically unstable men from the North. Newspaper and media reports abound with stories of women being ‘bought’ sometimes procured, for marriage from areas with a surplus of women (see bibliography for list of media reports). Maria Hvistendahl (2011) in her book “Unnatural Selection” has offered scores of examples of women who were trafficked and sold into forced marriages to men from areas where there was a shortage of girls. While a large part of her book focuses on South East Asia, the trends are nevertheless relevant for all Asian countries with low child sex ratios. As an example of the consequences of sex selection, Hvistendahl says that in Taiwan, many men have difficulty finding wives using traditional methods. Some even spend thousands of dollars on “marriage tours” to other Asian countries. The fee includes travel, lodging and the purchase of women there. Hvistendahl says the problem is not limited to Taiwan, but also South Korea, and is growing in China, India, Albania and Azerbaijan as well.

## 2.2. Cross-cultural marriages and changes in marriage practices

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The movement of women for the purpose of marriage raises the issue of implications of cross-cultural marriages and their implications. There is an emerging body of sociological research on the effect of cross regional marriages (Kurkeja and Kumar 2013, Kaur 2010; Larsend and Kaur 2013). Many women in these studies have shared their sense of alienation and isolation at being married into families whose culture and practices are radically different from their natal homes. However, these studies also recognise that casting all women into a victim mode may not be an entirely accurate description of reality. Such cross cultural marriages are many times, a way of mediating excruciating poverty and a resource crunch (Kukreja and Kumar 2013; Chaudhary and Mohan 2011). In fact Chaudhary and Mohan’s study (2011) argues that these marriages are novel relationships mediated by the need for resources (albeit of different kinds by the bride and groom) and do not fit

into any of the existing categories for analysing marriage relationships. Kukreja and Kumar (2013) also point out that over time, cross cultural brides land up 'brokering' marriages for other girls from their natal village to men in their marital village. This then also becomes a way of building a network with women from ones natal area, in one's marital village.

Furthermore, in a recent paper titled "Signs of Change? Sex Ratio Imbalance and Shifting Social Practices in Northern India", Larsen and Kaur (2013) have pointed out that several practices related to marriage seem to be shifting as a result of a shortage of marriageable women. For example, the rules surrounding clan exogamy seem to be more accommodating to allow for marriage with women from far flung areas and families are willing to forgo dowry. In fact many times they bear the entire cost of marriage. The study also notes that in the absence of a son parents are more willing to pass on parental property to their daughters and also live with them in their old age. This is a change from earlier times when the property would pass on to agnatic kin if the couple did not have a son. However, whether these changes would be long term and sustainable remains to be seen.

### **2.3. Impact of gender biased sex selection on human rights of women**

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Research on the consequences of gender biased sex selection has tended to focus largely on its demographic implications, particularly in creating a marriage squeeze (Guilmoto 2012; Kaur 2013; Hesketh 2011; Hvistendahl 2011). However, the impact of gender biased sex selection in terms of loss to human capital and productivity, its effect on the status of women and girls, its links with various forms of gender biased violence and its economic burden on the family and community have seldom been explored systematically.

Nevertheless it would not be misplaced to say that since a bulk of the research on consequences of gender biased sex selection has been located in the field of demography and population studies, consequences of sex selection have also been largely articulated in terms of its effects on the population profile and future demographic patterns. But there is a need to break new ground and develop more liberating research frameworks which assess the consequences of gender biased sex selection from the viewpoint of its impact on human capital and capability. For example, we understand very little about how son preference and gender biased sex selection impacts self esteem and agency of girls and women; or how it affects indicators of well being such as security and capabilities. We also understand very little about what kinds of intergenerational costs occur due to son preference and gender biased sex selection; to what extent national economies stand to lose out if women disappear from the country's population landscape; how this may impact human resources and societal talent pool. Research studies on these aspects can be very valuable for public advocacy.

### **Key insights on consequences of gender biased sex selection:**

- *The marriage squeeze that will result from gender biased sex selection has been extensively studied. It has been theorised and burgeoning research shows that men from poorer socio economic groups are the worst hit by the shortage of brides. They are left out of the marriage market as better educated and employed men are sought out and tend to find brides even among a shrinking pool of women.*
- *Rising forms of violence against women (particularly sexual harassment and trafficking of women) are other effects of sex selection that have been highlighted, although rigorous research on these issues is at a formative stage.*
- *There is also a parallel (although very small) stream of research which connects gender biased sex selection and shortages of marriageable women to an increase in socio-cultural marriages. This body of research also highlights the need to veer away from essentialising all experiences of cross cultural marriages as violative and tantamount to trafficking. There is emerging research to show that in situations of dire poverty and deprivation, marriage becomes a way to negotiate more resources for the survival of the family (see Kukraja and Kumar 2013; Chaudhary and Mohan 2011).*

### **Research gaps :**

- *A bulk of the research on consequences of gender biased sex selection has been stilted because of its focus on demographic implication, especially with regard to marriage. There is a need to develop non- instrumentalist, liberating frameworks to analyse the consequences of sex selection; for example, mental and physical health impact on women and girls; loss of human capital and resources and impact on national productivity.*
- *More research is required to understand how the marriage squeeze linked to gender biased sex selection will impact marriages practices, social hierarchies and dynamics.*



## Theme 3:

# Dominant methodologies adopted to study gender biased sex selection

A literature review commissioned by UNFPA on gender biased sex selection in India (2009) showed that of the 85 published research studies on gender biased sex selection only 19 were based on primary data. The rest included analysis of secondary data sources such as NFHS, census and the SRS. This review notes the need for more in country regional level analysis of the phenomenon. An in-depth qualitative study led by Action Aid and IDRC in 2008 –among the few of its kind on the subject – notes that “at the time of the study (2008) reasonable amount of quantitative data and analyses on the problem of low sex ratios already existed. However, not many qualitative studies have been conducted to understand its determinants” (2008:3). Since gender biased sex selection is affected by a wide range of contextual factors, qualitative methodologies are required to probe and understand the issue in-depth.

Similarly, a great deal of existing research on son preference (that contributes to gender-biased sex selection) has occurred largely within the field of demography and population studies. Most of these studies have extrapolated son preference attitudes and related practices from datasets of large scale fertility surveys, mortality surveys and/or population census to identify son preference as it is reflected in sex composition of children in the family, GBSS practices and health outcome differentials between boys and girls.

Qualitative research methods to examine son preference and gender biased sex selection are few. Studies by Miller 1981, Dasgupta 1987, Croll 2000, Oldenburg 2002, Purewal 2007, Agrawala and Unisa 2007, Actionaid 2008, Sekher and Hatti (2010) are among a handful that have utilised a mix of qualitative research methods, including anthropological methods to explore shifts in community perceptions and family expectations from sons and daughters, the value parents attach to sons and daughters and ways in which son preference is manifested in specific classes and communities. This type of research is very valuable in the promotion of a context specific understanding of the issue and the development of appropriate interventions to address son preference. The research by Agrawal and Unisa (2007) deserves special mention as they have adopted an ecological, life cycle approach to studying women’s experiences of discrimination and deprivation. Their approach was based on the documentation of life histories and narratives from women to locate son preference and gender biased sex selection within a much broader canvas.

In a very recent review of the latest trends and differentials in gender biased sex selection, Christophe Z. Guilmoto (2012) appropriately notes that qualitative studies that explore the dynamics of gender biased sex selection as they occur in specific contexts are urgently required to address the problem.

At an International workshop held in 2011 in Hanoi, various UN agencies and researchers endorsed the same view:

*“There is a need for a new research framework and tool kit for statisticians, including guidelines for how to test it, e.g. through census, birth registration data, surveys, checklists and so on. There is still a great need for qualitative work to understand the reason why the problem exists, especially in vulnerable areas, including emerging in areas such as Eastern Europe. Qualitative information is important, and there is a need for complementing/pulling together research that has been undertaken already, e.g. on gender issues and anthropological information. The larger environmental and structural factors leading to SRB imbalance should be pulled in” (2011:26).*

#### **Key insights on dominant methodologies to study sex selection:**

- *There is a preponderance of quantitative studies on sex selection. Most of them are located within the fields of demography and population studies.*
- *A majority of these studies are based on secondary data sets that are part of field studies on fertility, health outcomes and population census.*

#### **Research gaps :**

- *Community based, qualitative research methods to examine son preference and gender biased sex selection are few. Such methodologies are very valuable in developing a sociological context of the issue and in unravelling underlying factors that fuel sex selection.*

## Theme 4:

# Related areas that require greater research and inquiry

## 4.1. Examples of change and reversal in child sex ratio

There is a need to examine districts and states from India and other countries where the child sex ratio has started normalising or shifting favourably. Recent evidence (Dasgupta, Chung and Shuzhuo, 2009) seems to suggest that child sex ratios are peaking in India and China and a gradual reduction in masculinisation of sex ratios is evident in some districts. This is more difficult to establish in India due to availability of only decennial data. Articles in the media have started documenting these trends but more research is required in the academic world. In a newspaper column published late last year (Indian express, Nov 12th, 2011), the last round of NSS data (2009-2010) appears to be showing a sex ratio at birth of 978, up from 916 in 2004-05. The researchers involved in analysing this trend (Surjit Bhalla and Ravinder Kaur) have proposed that it is the expanding “mature middle class” which is responsible for this change. They purport that as the high income bracket (those earning more than Rs.1,70,000 per year) is increasing, their upward mobility is no longer dependent on bearing more sons. Girls from this class probably have the same educational opportunities as boys. A forthcoming paper by Dr. Ravinder Kaur seeks to elaborate these phenomena.

Taking a cue from South Korea it would appear that the role of similar determinants in the Indian context- namely, higher education and its interaction with rising incomes as well as changes in the social and policy environment need to be studied closely to ascertain whether and how these play a role. These should be studies through longitudinal research which shows how factors interact in time.

## 4.2. Increasing the frequency and consistency of cycles in which data on child mortality and pregnancy are gathered

Census data is collected decennially. NFHS surveys happen every 4-5 years whereas sample sizes covered by NSS and SRS studies may not be large enough or representative. Civil registration of births and rigorous surveys on key mortality and fertility indicators along the lines of NFHS need to be scaled up and conducted more frequently. In analysing research needs in countries where gender biased sex selection has emerged as a serious issue, Guilimoto (2012) has also pointed to the need for ‘analysis of trends through direct and indirect statistical evidence at disaggregated level-surveys, birth registration and census.’ (2012: 75).

### 4.3. Qualitative research on women's experiences of gender biased sex selection

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There is little research on how women experience son preference and gender biased sex selection as linked and separate phenomena. Puri and Nachtigall et al. (2011) have released the findings of a recent qualitative study exploring women's experiences of gender biased sex selection. Semi-structured in-depth interviews were conducted with 65 Indian immigrant women in the US, all of whom had a history of seeking sex selection services. Forty percent (26 of the 65 women interviewed) had terminated pregnancies in the past because the foetus was a female. 51 of the 65 women used ultrasound technology for sex determination. Of them, 27 women were found to be carrying a female foetus. Of these 27, 24 women or 89% chose to seek sex selection services.

The study admits that the sample chosen is not random and includes only those women who are seeking sex selection services. Hence their attitudes cannot be said to reflect the attitudes of the broader Indian immigrant community towards son preference and sex selection. Nevertheless, the study concludes that the results can "inform additional investigations of South Asian and other immigrant women's experiences of reproductive technologies, drawing attention to the complex nature of women's reproductive decision making" (2011:1175). This study also highlights the need to study the community and familial contexts within which women face the pressure to bear at least one son and the process of decision making both at an individual as well as a familial level around the use of technology to regulate fertility. Studies exploring what sex determination testing and selection does to the physical and mental health of women seeking these services is practically absent. The studies by Ganatra et al. (2001) and Agrawal & Unisa (2007) are probably among the few studies to have explored the context of gender biased sex selection from the eyes of women. However, both these studies also examined sex selection within a larger framework of women's fertility.

### 4.4. Evaluation and research on the impact of intervention programmes to reduce gender biased sex selection

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Rigorous impact evaluations of existing intervention programmes to reduce sex selection are absent. However, such studies would be invaluable in understanding what strategies work best in reducing gender biased sex selection and under what conditions. In a recent analysis of sex ratios at birth from the vital events survey (VES) conducted by the state government in Tamil Nadu, (and also corroborated to a large extent by the sample registration surveys) Sharada Srinivasan and Arjun Bedi (2012) have noted a significant improvement in the child sex ratio in the state. The districts which have contributed to this trend are ones which were heavily 'treated' by the government's cradle baby scheme (CBS), the girl child protection scheme (GCPS) as well as legal actions to address implementation of the PCPNDT Act.

The Government of India at the national and state level have instituted Conditional Cash Transfer (CCT) schemes to discourage gender biased sex selection and encourage parents to invest in their daughters. A review of the operational elements of CCT's in different states (Planning Commission and UNFPA, 2012) has shown that while such schemes sent out positive signals to communities about the value of girls, there are several implementation hiccups that need to be ironed out. These include complexity in the operationalization, limited coordination across sectors and little flexibility in terms of the beneficiaries (e.g. migrant populations may be excluded as they do not have birth certificates). Impact evaluations of these schemes would pave the way to assess how effective are such mechanisms to promote behavioural change, reduce son preference and therefore have an impact on curbing gender biased sex selection. The second phase of the Planning Commission and UNFPA study is underway and may provide significant insights.

Impact evaluations need to look beyond the traditional framework of measuring programme and project outcomes. They need to assess whether and how interventions are leading to shifts in the distribution of resources and power within families and communities and in attitudes, practice and norms. In other words, they should use a gender analysis framework to assess outcomes and impact. As discussed earlier, son preference is driven by patriarchal, patri-local and patri-lineal arrangements. Assessing whether and to what extent these are shifting or getting altered would provide very valuable insights into what can end sex selective practises both in the short and long run.

## Conclusions and recommendations

Gender biased sex selection is a form of discrimination and significantly stokes gender inequality. Researching into the issue is complex because of the multiplicity of factors that impinge on it and also because it is a sensitive issue. The increasing access to ultrasound technologies (and now ART's although to a limited extent) in a patriarchal social order, where son preference is a dominant norm, has created fertile grounds for people to access sex determination testing and selection.

The key trends, dominating themes and gaps in current research on sex selection are categorised below:

### The most thoroughly researched issues on gender biased sex selection

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Research on sex selection has covered a lot of ground since the phenomenon emerged as a serious pandemic. The review has shown that a wide range of research has been conducted to explore the magnitude of sex selection and identified key determinants driving the behaviour. There is a plethora of demographic studies that have analysed large fertility datasets (through census and NFHS) to establish that birth order, education and income levels along with the desire to limit family size and sex composition of children, seem to be significantly impacting people's decision to access sex selection services. The phenomenon and reasons for son preference have also been well researched using mainly quantitative methodologies. The availability of sex determination testing and its rampant misuse have been studied fairly thoroughly to understand the supply side of the phenomenon.

The impact of gender biased sex selection on the demographic profile of countries as well its role in creating a 'marriage squeeze' has also been relatively well researched and documented. There is an emerging body of research on how sex selection has changed marriage practices in areas where brides are in short supply and are being imported from far flung areas. This research is exploring changes in marriage relations, the terms on which they are being organised and shifts in payment of dowry.

### Less thoroughly researched issues on gender biased sex selection

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The review has highlighted that overall there is a dearth of qualitative studies that can locate sex selection within the context of women's experiences, family dynamics and community norms. Research methodologies that place women's experiences at the centre of gender biased sex selection and son preference are less developed and used. Similarly, there are few studies that have examined broader community attitudes to sex selection. Perceptions of health service providers have also been explored to a very limited extent and this is required to study the supply side of the issue. Scoping and research need to investigate how the entire industry works, including the manufacturing of machines. The review has shown that alongside large scale quantitative studies, qualitative, community based studies that explore perceptions and contexts in which families choose to opt for sex selection are few. Thus sociological insights into the phenomenon are few.

Ethnographic methods of inquiry are required to develop a more nuanced and graded understanding of the issue, especially in situations where there is a clear paradox between individual behaviour, community norms and the broader social environment. For example, demographic datasets from expatriate or immigrant Indians settled in Western countries which are much more gender equal, show the prevalence of skewed child sex ratios. This seems to suggest that even when policy structures and the broader social environment promote egalitarianism and gender equality, communities and individuals are unable to break out of traditional norms and values. Research to unravel these paradoxes could also potentially answer why educated and high income families from urbanised India are choosing to sex select.

The review has also shown that there is insufficient understanding of the intersectional influence of determinants, that is, how they work in combination and the relative role of one compared to the other in influencing attitudes to son preference and sex selection.

A review of literature on gender biased sex selection undertaken by the Centre for Development Studies (2009) has noted: "It is often argued that with increasing welfare and economic development this cultural feature will lose significance. But recent studies indicate the contrary trend with son preference intensifying along with decline in fertility as well as rising social and economic welfare. Hence this trend calls for further probing of the nexus among economic, social and cultural factors and daughter discrimination (2009: 11)".

### **Areas on which research is practically absent**

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Impact evaluation research that surfaces effective strategies to counter son preference and sex selection is urgently needed. Currently most of the evaluation research of interventions is confined to end of the project assessments which most often do not provide conclusive results and comparable advantages. Sound impact evaluations need to be built into intervention programmes at the design stage itself; these are invaluable in surfacing lessons for replication and scale up. Similarly, countries, states and districts which are displaying a normalisation of child sex ratios or a reversal in the trend of masculinisation need to be studied very closely, especially through longitudinal studies. Research frameworks which examine the consequences of gender biased sex selection from a capabilities and loss of human potential lens are needed to break away from the instrumentalist view of the need for women as wives and mothers. Research of this kind also requires investment of time and resources in developing appropriate methodologies and the use of inter disciplinary approaches. Studies from Taiwan has shown that as younger cohorts of parents, their more liberal views on gender roles and expectations have resulted in more indifference about the sex of their children (Lin, 2009). This finding points to an important area for further inquiry, namely, the attitudes and perceptions of young adults who are future parents, about their desired family size and sex composition of children. Insights from such studies can help set the agenda for future policies and programmes.

## Bibliography

1.	Author(s): Almond, Douglas; Lena Edlund and Kevin Milligan Title: Son Preference and the persistence of culture. Evidence from Asian immigrants to Canada. Source: Working paper, 15391, National Bureau of Economic Research. Cambridge, MA, Year: 2009.
2.	Author (s) : Jha, Prabaht et al. Title: Trends in selective abortion of girls in India: analysis of nationally representative birth histories from 1990 to 2005 and census data from 1991 to 2011 Source: Lancet, Volume 377, June 4, 2011
3.	Author (s): Agrawal, Sutapa and Unisa Sayed Title: Discrimination from Conception to Childhood: A study of Girl Children In rural Haryana, India Source: Watering the Neighbour's Garden: The growing demographic female deficit in Asia, CICERD, Year: 2007
4.	Author (s): Ahmed S and Bould S Title: One able daughter is worth ten illiterate sons: reframing the patriarchal family Source: Journal of Marriage and Family, Vol. 66, No.5, Year: 2004
5.	Author (s): Anderson, Siwan Title: Why Dowry Payments declined with modernization in Europe but are rising in India Source: Journal of Political Economy, Vol. 111, No.2, Year: 2003
6.	Author (s): Arokiasamay P and Goli S Title: Explaining the skewed child sex ratio in rural India: revisiting the landholding patriarchy hypothesis Source: Economic and Political Weekly, Vol XLVII, No42, Year: October, 2012
7.	Author (s): Arokiasamy, Perinayagam Title: Sex ratio at Birth and excess female child mortality in India: Trends, differentials and regional patterns Source: Watering the Neighbours Garden: The growing demographic female deficit in Asia, CICRED, Year: 2007
8.	Author (s): Aysan Sev'er Title: Discarded daughters: The patriarchal grip, Dowry Deaths, sex ratio imbalances and foeticide in India Source: Paper presented at International Sociology Association meeting, Durban, South Africa, Year: 2006
9.	Author (s): Bandopadhyay S., and Singh A.J Title: Gender biased sex selection through traditional drugs in rural North India Source: Indian Journal of Community Medicine, Vol. 32, No.1, 32-34., Year: 2007
10.	Author (s): Bardia, A et al. Title: Declining Sex Ratio: Role of Society, technology and government regulation in Faridabad district, Haryana Source: The National Medical Journal of India, Vol.17, No. 4. , Year: 2004
11.	Author (s): Barot, Sneha Title: A problem-and-solution mismatch: Son preference and Sex-selective Abortion Bans Source: Guttmacher Policy Review, Volume 15, Number 2, Year: Spring 2012
12.	Author (s): Basu A.M Title: On the prospects for endless fertility decline in South Asia. Source: Population Bulletin of the United Nations, No. 48-49, pp.521-36. Year: 2009
13.	Author (s): Bhalotra, Sonia and Cochrane Tom Title: Where have all the young girls gone? Identification of gender biased sex selection in India Source: IZA Discussion Paper, No.5381, Year: December, 2010



14.	Author (s): Bhaskar, V and Gupta, Bishnupriya Title: India's missing girls: biology, customs and economic development Source: Oxford Review of Economic Policy, Vol.23,Number 2 pp. 221-238 Year: 2007
15.	Author (s): Bhat PN Mari and Zavier Francis AJ Title: Factors Influencing the use of Prenatal diagnostic techniques and sex ratio at birth in India Source: Watering the Neighbour's Garden : The growing demographic female deficit in Asia, CICRED Year: 2007
16.	Author (s): Borooah, V and Iyer, S Title: Missing Women and India's Demography Source: School of Economics and Politics, University of Ulster and faculty of Economics and St. Catherine's College, University of Cambridge Year: 2004
17.	Author (s): Chakraborty, Tanika and Sukkoo Kim Title: Kinship Institutions and Sex ratios in India Source: Demography, Vol. 47, No. 4, pp.989-1012 Year: 2010
18.	Author (s): Chamabagwala, Rubina and Ranger, Martin Title: India's missing women: Disentangling Cultural, Political and Economic Variables Source: CAEPR Working Paper Year: 2006-021
19.	Author (s): Chaudhary S. and Mohan T.D. Title: Of marriage and Migration: Bengali and Bihari Brides in a U.P village Source: Indian Journal of Gender Studies, 18(3) Year: October, 2011
20.	Author (s): Chi-Lin T Title: The decline of son preference and gender indifference since 1990 Source: Demographic Research, Vol 20, Article 16 Year: 2009
21.	Author (s): Chun, Heeran Title: SRB transition and the diffusion story. Evidence from South Korea. Source: Communication to International Workshop on Skewed Sex Ratios at Birth: Addressing the Issue and the way Forward, Hanoi. Year: October, 2011
22.	Author (s): Dasgupta, Monica Title: Is there an incipient turnaround in Asia's "Missing Girls" phenomenon? Source: Policy Research Working paper, The World bank, Development Research Group Year: February 2009
23.	Author (s): Dasgupta, Monica Title: Cultural versus Biological Factors in Explaining Asia's "missing women": Response to Oster Source: Population and Development Review 32(2):328-332 Year: June 2006
24.	Author (s): Dasgupta, Monica and Chung, Woojin Title: The decline of son preference in South Korea: The roles of development and public policy. Source: Population and Development Review, Vol. 33, No. 4, 757-783. Year: 2007
25.	Author (s): Dasgupta M Title: Family systems, political systems and Asia's 'missing girls' Source: Policy Research Working paper 5148 Year: 2009

26.	Author (s): Dasgupta M et al. Title: Why is son preference so persistent in East and South Asia? A cross country study of China, India and the republic of Korea Source: Working Paper series, World Bank Year: 2007
27.	Author (s): Dreze, Jean and Shrivastava, Anand Title: Child Sex Ratio and Sex Selection: Old Fallacies in New Bottle Source: Economic and Political Weekly. Vol XLVII,38 Year: September 2012
28.	Author (s): Drèze, Jean and Murthi, Mamta Title: Fertility, education and Development: Further Evidence from India Source: CDE, Delhi School of Economics CHE, Kings's college, Year: 1999
29.	Author (s): Dubuc Sylvia, Coleman, David Title: An increase in the sex ratio of births to India-born mothers in England and Wales: Evidence for sex-selective abortions. Source: Population and Development Review, Vol.33, No.2, pp. 383-400. Year: 2007
30.	Author (s): Eklund Lisa Title: Rethinking son preference Source: Lund University Dissertations in Sociology Year: 2011
31.	Author (s): Everett, Jana Title: Indian Feminists debate the efficacy of policy reforms: The Maharashtra ban on sex-determination tests Source: Social Politics Year: 1998
32.	Author (s): Fernandez, A and Fogli, Allesander Title: Culture: an empirical investigation of Beliefs, work and Fertility Source: National Bureau of economic Research working paper 11268 Year: 2005
33.	Author (s): Fernandez, A and Fogli, Allesander Title: Culture: an empirical investigation of Beliefs, work and Fertility Source: National Bureau of economic Research working paper 11268 Year: 2005
34.	Author (s): Fuse, Kana Title: Variations in attitudinal gender preferences for children across 50 less-developed countries Source: Demographic Research, Vol 23, Article 36 Year: November, 2010
35.	Author (s): Ganatra, Bela Title: Maintaining access to safe abortion and Reducing sex ratio imbalances in Asia Source: Reproductive Health matters, 16 (supplement 31): 90-98 Year: 2008
36.	Author (s): Ganatra, Bela; Hirve, Siddhi; rao V.N. Title: Sex Selective Abortion: Evidence from a community based survey in Western India Source: Asia Pacific Population Journal Year: June 2001
37.	Author (s): George, S and Dahiya, R Title: Female Feticide in Rural Haryana Source: Economic and Political Weekly, 33 (32), pp.2191-2198 Year: 1998
38.	Author (s): George, S Title: Sex Ratio in India. Response to Jha et al. Source: The Lancet Vol. 367 no. 0524:1725 Year: May 2006

39.	Author (s): Guilmoto, C Title: The Sex Ratio Transition in India Source: CEPED, Working paper Year: 2009
40.	Author (s): Guilmoto, C Title: Sex Imbalances at birth: current trends, consequences and policy implications Source: UNFPA Year: 2012
41.	Author (s): Gupta, Swati Title: Womb Decides Against Her: A perspective study on female feticide Source: TISS, MA thesis, unpublished Year: 2009
42.	Author (s): Hesketh T et al. Title: The consequences of son preference and sex selective abortion in China and other Asian countries Source: Canadian Medical Association Journal Year: March, 2011
43.	Author (s): Hu, LuoJia and Schlosser, Analia Title: Prenatal gender biased sex selection and girls well being: evidence from India Source: IZA Discussion paper no. 5562 Year: 2011
44.	Author (S): Hudson V. M and De Boer A Title: Bare Branches and Security in Asia Source: Harvard Asia Pacific Review , 9(1): 18-20 Year: 2007
45.	Author (s): ICRW Title: Final Technical Report, A comparative study of son preference in India and China: Assessing policy Interventions to address Discrimination against Girls, ICRW Source: ICRW Year: 2009
46.	Author (s): J Josantony and CYDA Title: Reflections on the campaign against gender biased sex selectionand exploring ways forward Source: CYDA Year: 2007
47.	Author (s): Jaisingh, Indira et al. Title: From the Abnormal to the Normal Preventing Sex Selective Abortions through the Law Source: Lawyer's Collective (Women's Rights Initiative) Year: 2007
48.	Author (s): Jha, Prabhat et al. Title: Low Male to female sex ratio of children born in India: national survey of 1.1 million households Source: Lancet, Volume 367, Issue 9506, pp 211-218 Year: 2006-2007
49.	Author (s): Jha, Prabhat et al. Title: Trends in selective abortions of girls in India: analysis of nationally representative birth histories from 1990 to 2005 and census data from 1991 to 2011 Source: The Lancet, Vol. 377, Issue 9781, pages1921 – 1928, Year: June, 2011
50.	Author (s): John Mary et al. Title: Planning families, Planning gender: The adverse Child Sex Ratio in Selected Districts of Madhya Pradesh, Rajasthan,Himachal Pradesh, Haryana and Punjab. Source: Action Aid and IDRC Year: 2008

51.	Author (s): Josantony, Josef Title: Reflections on the campaign gainst gender biased sex selectionand exploring ways forward. Source: Study by Centre for Youth development and Activities (CYDA), Study commissioned by UNFPA Year: 2007
52.	Author (s): Kaur, Ravinder Title: Bengali Bridal Diaspora: Marriage as a livelihood strategy Source: Economic and Political Weekly Year: August 31, 2013, Vol. XLVIII No. 35
53.	Author (s): Kaur, Ravinder Title: Mapping the adverse consequences of sex selection and Gender imbalances in India and China Source: Economic and Political Weekly Year: January 30, 2010, Vol. XLV No. 5
54.	Author (s): Khassawneh, Mohammed et al. Title: Attitudes of graduating medical doctors towards using gender biased sex selection techniques in Jordan in 2009 Source: Archives of Gynaecology and Obstetrics, 284:163-168 Year: 2010
55.	Author (s): Khatri M, Acharya R, Sharma G Title: Knowledge, Attitude and Practise related to the Pre-Conception and pre-Natal Diagnostic Technique (PC&PNDT) Act among the ante-natal women in Bikaner Source: Open Access Scientific Reports 1: 121. doi:10.4172/scientificreports.121 1:121 Year: June, 2012
56.	Author (s): Kodoth, P. Title: Producing a rationale for dowry? Source: Asia Research Centre Working paper 16 Year: 2006
57.	Author (s): Kukreja R and Kumar P Title: Tied in a Knot- Cross region marriages in Haryana and Rajasthan:Implications for gender rights and gender relations Source: A study supported by The Royal Norwegian Embassy Year: 2013
58.	Author (s): Kulkarni, Sanjeev; Foundation of Research on Community Health Title: Sex determination reports: A survey report Source: Radical Journal of Health, Vol 1, No 3 Year: December, 1986
59.	Author (s): Larsen M and Kaur R Title: Sings of Change? Sex Ratio Imbalance and Shifting Social Practices in Northern India Source: Economic and Political Weekly, Vol XLVIII No. 35 Year: August 31, 2013
60.	Author (s): Li, Shizhuo Title: Imbalanced Sex ratio at Birth and comprehensive Intervention in China Source: 4 <sup>th</sup> Asia Pacific Conference on Reproductive and Sexual Health Rights; Hyderabad Year: October 29-31, 2007
61.	Author (s): Liisanantti, Anu and Beese, Karin Title: Gendercide: The Missing Women Source: Directorate general for external policies of the Union, Policy department, European Parliament. Year: 2012
62.	Author (s): Lin, Tin-chi and Adsera, Alicia Title: Parental son preference and children's housework: The Indian case Source: Office of Population Research, Princeton University Year: 2011

63.	Author (s): Manhas, Shashi; Dogra, Poonam and Lata Pushap Title: Awareness among Anganwadi workers related to female foeticide in district Kathua, J and K state Source: International Indexed and Referred Research Journal, Vol III Year: April 2012
64.	Author (s): Mason O K and Taj M A Title: Differences between women's and men's reproductive goals in developing countries Source: Population and Development Review 13(4) Year: 1987
65.	Author (s): Mishra, Udaya S; Dilip T.R; George, Annie; Kumar, Anil, V.K. Title: Declining Sex ratio (0-6 years) in India a Review of Literature and Annotated Bibliography Source: Centre for Development Studies, Thiruvananthapuram Year: 2009
66.	Author (s): Nanda, Bijayalaxmi. Title: Gender Violence and legal frameworks in India: the story of sex selection Source: Understanding Social Inequality: Concerns of Human Rights, Gender and Environment, Macmillian Publishers India Year: 2010
67.	Author (s): Nanda, Priya et al. Title: Study on gender, Masculinity and son preference in Nepal and Vietnam Source: International Centre for Research on Women Year: 2012
68.	Author (s): Nandi, Arindam; Deolalikar, Anil. B. Title: Does a ban on sex selective abortions improve child sex ratios? Evidence from a policy change in India Source: Journal of development economics, Available at SSRN: <a href="http://ssrn.com/abstract=1824420">http://ssrn.com/abstract=1824420</a> or <a href="http://dx.doi.org/10.2139/ssrn.1824420">http://dx.doi.org/10.2139/ssrn.1824420</a> Year: January, 2013
69.	Author (s): Naqvi, Farah Title: Images and icons: Harnessing the power of media to promote gender equality and reduce practices of sex selection Source: BBC World Service Trust India Year: 2006
70.	Author (s): Narayana D Title: Intensifying infant mortality inequality in India and a reversal by Policy interventions Source: Journal of Human development, Vol. 9, No. 2 Year: July, 2008
71.	Author (s): Nath, A.; Sharma, Nandini; Ingle, Gopal K. Title: Knowledge and Attitude of Medical Students and Interns with regard to Female Feticide Source: Indian Journal of Community medicine, Vol. 34, Issue 2 Year: April 2009
72.	Author (s): National Advisory Council Title: Recommendations for Improving the Sex Ratios at Work Source: NAC, <a href="http://nac.nic.in/pdf/gsr.pdf">http://nac.nic.in/pdf/gsr.pdf</a> Year: 2012
73.	Author (s): National Advisory Council, Government of India Title: Recommendations for improving the sex ratio at birth Source: National Advisory Council committee meeting report Year: 2012
74.	Author (s): National Institute of Public Cooperation and Child Development Title: Effect of low sex ratio on marriage practices: A study in Punjab Source: NIPCCD Year: 2010

75.	Author (s): National Institute of Public Cooperation and Child Development (NIPCCD) Title: A Socio-cultural Study of the Declining Sex Ration in Haryana and Delhi A report Source: NIPPCD Year: 2008
76.	Author (s): OHCHR, UNFPA, UNICEF, UNWomen and WHO Title: Preventing gender biased Sex Selection, An interagency Statement Source: WHO Year: 2011
77.	Author (s): Park S, Bowen WM, Steinbacher R. Title: Social and Demographic dimensions of gender biased sex selection technologies: review and analysis of the research literature Source: Biodemography and Social Biology, 58:1, 62-74 Year: 2011
78.	Author (s): Patel, Rita Title: The Practise of sex selective abortion in India: May you be the mother of a hundred sons Source: Carolina paper Series- International health, No.7 Year: Fall, 1996
79.	Author (s): Patel, Vibhuti Title: Gender biased sex selection and Missing Girls in India Source: Unpublished paper Year: 2012
80.	Author (s): Perwez, Shahid; Jeffery, Roger and Jeffery, Patricia Title: Declining child sex ratio and sex-selection in India A demographic Epiphany? Source: Economic and Political Weekly; Vol. XLVII No. 33, Year: August 2012
81.	Author (s): Portner, Claus Title: Sex selective abortions, Fertility and Birth Spacing Source: Department of Economics, University of Washington Year: 2010
82.	Author (s): Public Health Foundation of India Title: Implementation of the PCPNDT Act in India, Perspectives and Challenges Source: Consortium of NGO's Year: 2010
83.	Author (s): Purewal, Navtej Title: Son Preference Sex Selection, Gender and Culture in South Asia Source: Berg Publishers, New York Year: 2010
84.	Author (s): Puri, Sunita, Iyey, S and Nachtigall, D Title: "There is such a thing as too many daughters but not too many sons": A qualitative study of son preference and fetal gender biased sex selection among Indian immigrants in the United States Source: Social Science Medicine, 72 (7): 1169-76 Year: April, 2011
85.	Author (s): Puri, S and Nachtigall, RD Title: The ethics of sex selection: a comparison of the attitudes and experiences of primary care physicians and physician providers of clinical gender biased sex selection services Source: Fertility and Sterility, Vol 93, Issue 7, pp. 2107-2114 Year: 2010
86.	Author (s): Puri et al. Title: Gender preference and awareness regarding sex determination among married women in slums on Chandigarh Source: Indian Journal of Community Medicine, Vol.32, pp.60-62. Year: 2007

87.	Author (s): Ra j, A. Title: Sex Selective Abortion in India Source: The Lancet, Vol 378, issue 9798, p.1217-1218 Year: 2011
88.	Author (s): Retherford, D. R and Roy, T.K Title: Factors affecting sex-selective abortion in India and 17 major states Source: National family Health Survey Reports, Number 21 Year: January, 2003
89.	Author (s): Rosenblum, Daniel Title: Unintended consequences of Women's Inheritance Rights on Female Mortality in India Source: Paper submitted to Department of Economics, Dalhousie University, Canada Year: April, 2013
90.	Author (s): Rustagi, P Title: The deprived, discriminated and damned girl child: story of declining sex ratios in India Source: Compendium of papers presented at workshop "The well being of India's population: A compendium of Selected Perspectives" Year: 2006
91.	Author (s): S. Sudha et al. Title: Is son preference emerging among the Nayars of Kerala in South India? Source: Watering the neighbour's garden : The growing demographic female deficit in Asia, CICERD Year: 2007
92.	Author (s): Sabharwal, Shwetlana Title: The Burden of Choice: Mother's education and Pre-natal Gender biased sex selection Source: World Bank Year: September 2008
93.	Author (s): Sekher, T.V for Planning Commission, Government of India in collaboration with UNFPA Title: Special Financial Incentive Schemes for the Girl Child in India: A review of Select schemes Source: Published by UNFPA available on <a href="http://www.unfpa.org/gender/docs/sexselection/UNFPA_Publication-39772.pdf">http://www.unfpa.org/gender/docs/sexselection/UNFPA_Publication-39772.pdf</a> Year: 2012
94.	Author (s): Sekher, T.V and Hatti, Neelambar Title: Disappearing daughters and Intensification of gender bias: Evidence from two villages studies in South India Source: Sociological Bulletin, 59(1) pp.111-133 Year: April 2010
95.	Author (s): Shidhaye, R et al. Title: Study of knowledge and attitude regarding prenatal diagnostic technique act among the pregnant women at a tertiary teaching hospital in Mumbai Source: Journal of Education and health promotion Vol. 1 Year: 2012
96.	Author (s): Singariya, M.R Title: Determinants of declining child sex ratio in Rajasthan Source: Journal of Economic and Sustainable Development , (Paper) ISSN 2222-2855 Vol.3 No.1 Year: 2012
97.	Author (s): Srinivas M.N Title: Some Reflections on Dowry Source: Published by Oxford Univeristy Press for Centre For Women's Development Studies, New Delhi Year: 1984

98.	Author (s): Srinivasan, Sharada and Bedi, S Arjun Title: Tackling Female Infanticide and gender biased sex selection in Tamil Nadu Source: Economic Political Weekly, Vol. XLVII, No.45 Year: 2012
99.	Author (s): Stephan K and Wink C Title: "Missing women" : Revisiting the debate Source: Feminist Economics 9(2-3) Year: 2003
100.	Author (s): Subramanian, S V and Corsi, DJ Title: Can India Achieve a balance of sexes at birth Source: The lancet, vol 377, issue 9781, pp. 1893-1894 Year: 2011
101.	Author (s): Thomas, Dania Title: Abortion Law and the Unregulated Business of Female Sex- Selective Abortion in India Source: Web Journal of current legal issues Year: 2007 (5)
102.	Author (s): Toppo, Manju et al. Title: A study of sex ration in relation to birth order in Bhopal city Source: Health line Volume 3: issue 1 January-June 2012 Year: 2012
103.	Author (s): UNFPA Title: Report of the International Workshop on Skewed Sex ratios at birth: Addressing the issue and the way forward, Hanoi, Vietnam, Source: UNFPA Year: October, 2011
104.	Author (s): UNFPA Title: Report of the International Workshop on Skewed Sex Ratios at Birth: Addressing the issue and the way forward (Hanoi, 2011) Source: <a href="http://www.unfpa.org/public/home/publications/pid/9143">www.unfpa.org/public/home/publications/pid/9143</a> accessed on 15/11/2012 Year: 2011
105.	Author (s): Vadera et al. Title: Study on knowledge, attitude, practices regarding gender preference and female feticide among pregnant women Source: Indian Journal of Community Medicine, Vol.32, 300-301. Year: 2007
106.	Author (s): Waldby, C Title: Literature review and annotated bibliography: Social And ethical aspects of sex selection Source: Human Fertilisation and Emryology Authority, United Kingdom Year: 2003
107.	Author (s): Walia, Ajinder Title: Female Foeticide In Punjab: Exploring the socio-economic and cultural dimensions Source: Idea; Vol.10, No.1, Year: August 2005
108.	Author (s): Wertz DC, Fletcher JC and Mulvihill J J Title: Medical geneticists confront ethical dilemmas: cross-cultural comparisons among 18 nations Source: American Journal of Human Genetics 46(6): 1200-1213 Year: 1990
109.	Author (s): Yadav SS; Badri VS Title: Gender preference and anxiety of pregnant women. Source: Indian Journal of Social Work Year: October, 1999



## News articles gathered from websites

- The Daughter's return A glimmer of hope in the sad tale of sex-selective abortion in India, The Economist December 2011 available on <http://www.economist.com/node/21542208> accessed on 23/11/2012
- Using songs and shame to restore India's gender ratio, Agence France Presse, available on <http://www.arabnews.com/using-songs-and-shame-restore-india%E2%80%99s-gender-ratio> accessed on 13/3/2013
- Cat got your tongue, Unnatural selection: Choosing girls over boys, and the consequences of a world full of men, The Economist, August 2011 available on <http://www.economist.com/node/21525348> accessed on 23/11/2012
- Dil se nahi, Dimag se dekho- Thoughts on Stayameva jayate, Episode I: Shohini Ghosh, Kafila, online magazine, available on <http://kafila.org/2012/05/09/dil-se-nahin-dimaag-se-dekho-thoughts-on-satyamev-jayate-episode-1-shohini-ghosh/> accessed on 24/11/2012
- Changes for India's ART Industry? Posted by Jessica Cussins on biopolitical time, weblog of the Centre for genetics and society <http://www.biopoliticaltimes.org/article.php?id=6339> accessed on 24/11/2012
- Brides purchased, then exploited in Haryana, Punjab by Vrinda Sharma, The Hindu, August 26, 2011 available on <http://www.thehindu.com/news/national/brides-purchased-then-exploited-in-haryana-punjab/article2400857.ece> accessed on 25/11/2012
- In Haryana, get a bride for Rs. 1000 from Bihar by Sukhvir Siwach, TNN, Nov 28th, 2010 available on [http://articles.timesofindia.indiatimes.com/2010-11-28/chandigarh/28235997\\_1\\_haryana-government-girls-andhra-pradesh](http://articles.timesofindia.indiatimes.com/2010-11-28/chandigarh/28235997_1_haryana-government-girls-andhra-pradesh) accessed on 25/11/2012
- Cheaper to buy bride than raise daughter by Kavitta Sharma and Divya Shah, CNN-IBN, March 9th 2008 available on <http://ibnlive.in.com/news/cheaper-to-buy-bride-than-raise-daughter/60766-3.html> accessed on 25/11/2012
- Falling sex ratio reflects in UP, joins Punjab in buying of brides By Tarannum Manjul, Indian Express October 30th, 2007 available on <http://www.indianexpress.com/news/falling-sex-ratio-reflects-in-up-joins-punjab-in-buying-of-brides/234157/> accessed on 24/11/2012
- India's Skewed Sex Ratio puts GE Sales in Spotlight, by Peter Wonacott, Wall Street Journal, India Edition April 18, 2007 (<http://online.wsj.com/article/SB117683530238872926-search.html>) accessed on 24/11/2012
- Column: More Girls being born not less, by Surjit S Bhalla and Ravinder Kaur, Nov 12, 2011, available on <http://www.financialexpress.com/news/column-more-girls-being-born-not-less/874611/0> accessed on 24/11/2012.







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