Journal of Population and Social Studies, Volume 27 Number 2, April 2019: 106-123
DOI: 10.25133/JPSSv27n2.007

Increasing Acceptance of Daughters in India: Trends, Regional Differentials and Determinants

Rangasamy Nagarajan[1] and Harihar Sahoo[2*]

Abstract

Using data from National Family Health Surveys I, II, III and IV, the present study explores the emerging trends and determinants of having daughters only in India. Results reveal there is an increasing trend in daughter preference in southern states, while the prevalence of daughter-only families is lower in northern, central and western states. The binary logit regression analysis reveals younger age of women, educational level, urban residence, wealth index of the household and southern region have a significant positive effect on daughter acceptance in India. The study found despite an increasing desire for smaller families, there is still a perceived necessity of sons for inheritance, carrying on the family name, economic support during old age and performing religious rites. At the same time, there are indications that some couples are accepting permanent methods of family planning without having a son. Therefore, it is important for the Government of India to focus on effective strategies to reduce its son preference and accelerate the acceptance of daughters.

Keywords

Acceptance of daughters; daughter-only families; son preference; India

Background

In South Asian countries, the basic unit of society is the patrilineal family. In addition, there are broader kinship groupings. Patriarchal structures (patriarchal authority, patrilineal descent and inheritance and patrilocal residence) which require a son in the family has led to many forms of gender discrimination and gender inequality at familial and societal levels. India, with a largely patriarchal kinship pattern, is known for its son preference and its discriminatory social practices against women (Miller, 1981; Das Gupta, 1987). Numerous studies have found Indian couples have a strong son preference over daughters. It is common, prevalent and deep-rooted in history. Studies have highlighted the economic (assistance in production, wage earning and old-age security), social (kinship, descent system, status and strength) and religious (to perform funeral rites and ancestral worship) values of sons to Indians.

Specifically, couples continue their childbearing after achieving their desired family size only to have a son. Edmeades et al. (2012) found that women with two sons are 90% less likely to report wanting another pregnancy relative to those with two daughters which suggests there is a substantial gap in the wanting of additional pregnancy based on the sex composition of

[1] Professor, Department of Development Studies, International Institute for Population Sciences, Mumbai, India.
[2] Assistant Professor, Department of Development Studies, International Institute for Population Sciences, Mumbai, India.
* Harihar Sahoo, corresponding author. Email: hariharsahoo@gmail.com

living children. A greater preference for the son severely compromises the health and survival of daughters in the family (Cowan, 1990). The consequences of son preferences are multifold for girls and women. Some of them are: increased female infant and child mortality, poor health outcomes of girls relative to boys and sex selective abortions.

Developments in India, particularly after the introduction of economic reforms in 1991, resulted in some progress in women's education, health and employment opportunities. These developments in turn, resulted in reduced fertility, improved maternal health and increased life expectancy. Though these achievements are not uniform across regions and socio-economic categories, there is no doubt developmental process has benefited Indian women. However, there is also an increasing masculinization of sex ratios at birth in many parts of India. While survival of women and children has improved in recent years owing to expansion of primary health care, easy availability and accessibility of new medical technologies (e.g., ultrasound imaging) have led to new discriminatory practices against females. The earlier practices of neglect and female infanticide have been replaced by gender-biased sex selection (Guilmoto, 2007). Amartya Sen's "missing women" (Sen, 1990) has now translated into the phenomenon of "missing daughters" (Kabeer, Lopita & Simeen, 2013). Child Sex Ratio/CSR (number of girls per 1,000 boys in the age group 0-6 years) in India is lower than the global biological sex ratio at birth (950 or more girls per 1,000 boys). Based on the Indian Census, the CSR declined sharply from 945 girls per 1,000 boys in 1991 to 927 in 2001 and to 918 in 2011 (India, Registrar General 2013). It is estimated the number of missing girls is between 570 to 600 thousand girls per annum during the decade 2001-2011 (Kulkarni, 2007; Jha et al., 2011). This abnormal demographic and socio-cultural phenomenon has become a cause for serious concern for the state and central government.

The reasons for a sharp decline in CSR in the country have been extensively studied (Agnihotri, 2000; Bhat 2002a & 2002b; Guilmoto, 2007). Continuing son preference, declining fertility and easy availability of sex selection techniques are considered to be the key determinants for gender-biased sex selection (Guilmoto, 2012). While the widespread availability of new sex selection techniques is often blamed for skewed sex ratios during the last two decades, substantive evidence indicates the central role played by deep-rooted patriarchal norms and values, specifically the culture of son preference (Dyson & Moore, 1983; Das, 1987; Bhat & Zavier, 2007; Guilmoto, 2012). Studies have also shown the practice of sex selection is more prevalent among the urban, educated and upper caste, and the rich, mainly because of their access to technology (Guilmoto, 2012; Jha et al., 2011; IIPS, 2007; Bhat & Zavier, 2007; Agnihotri, 2000; Arokiasamy & Goli, 2012). According to Jha et al. (2011, p. 6) "… recent increases in literacy and Indian per-person income might have thus contributed to increased selective abortion of girls". It is clear that India's development is working against the girl child in India. The son preference is also observed to be greater in northern, western and central regions of India while relatively lower in southern India (Bhat & Zavier, 2007; Mutharayappa, Choe, Arnold & Ro, 1997). Despite the trend and desire for smaller families, Indians are plagued by their perceived necessity of sons for inheritance, carrying on the lineage of the family, economic support during old age and religious rites.

Parents view their daughters as contributing to very little to the household income in addition to being a dowry burden (marriage gifts for the groom). Therefore, girls are considered to be an economic burden because of this as well as high expenses involved in their wedding. When a daughter reaches adolescence, chastity becomes a concern, which is considered crucial for her marriage and to protect the honor of the family. Parents also feel uncomfortable if a suitable groom is not found as early as possible. After marriage, a girl usually lives with her husband's family and her connection with the natal family is reduced. Hence, daughters are considered having lower economic value compared with sons. In short, deep rooted

patriarchal norms, culture of son preference and less economic value of girls lead to a neglect of the girl child in addition to avoidance of having a female baby.

Rationale for the study

The critical question "Is aversion towards daughters still continuing or is it reducing?" requires an in-depth study in order to obtain a better understanding of the trend in acceptance of daughters and reduced preference for sons. The 2011 Census points to an improvement in preference for girls in some regions of the country, particularly in all the districts of Punjab and Haryana (the region where gender-biased sex selection is prominent) and some districts in Maharashtra and Tamil Nadu, indirectly indicating a reduction in the aversion towards daughters. This improving trend in CSR indirectly indicates a gradual weakening of son preference and increasing acceptance of daughters. The UNFPA (India) estimate shows the number of girls missing at birth per annum due to the practice of gender-biased sex selection has reduced from 583,000 during 2001-2006 to 329,000 during 2007-12 (UNFPA, 2015).

The Government of India has introduced several legal measures, policies and programs targeted towards improving well-being of girls and women. These are expected to promote gender equality, reduce the trend towards son preference and increase the acceptance of daughters. Therefore, it is necessary to understand why couples stop childbearing after having only daughters, as well as their characteristics. This will provide insights into the shifting norms in relation to daughter preference. A preliminary analysis of different rounds of India's National Family Health Survey (NHFS) indicates some couples accept permanent methods of family planning without sons. Understanding the characteristics of these couples who are stopping their childbearing with only daughters will help to focus policies and programs to increase that trend. Hence, this paper attempts to understand the trends, differentials and determinants of daughter-only couples in India.

Data and Methods

Data for this study were drawn from the four rounds of National Family Health Survey (NFHS), a nationally representative survey which offers a wealth of information on India's demographic, health and social indicators. More specifically, these surveys provide information on fertility, contraception and reproductive health among others. In the first round of NFHS I (1992-93), interviews were conducted with a nationally representative sample of 88,562 households and 89,777 ever married women aged 13–49 years across India. The NFHS II (1998-99) covered a representative sample of 91,196 households and interviewed 89,199 ever-married women aged 15–49 years while NFHS III (2005-06) collected information from a nationally representative sample of 109,041 households and 124,385 women aged 15–49 years. The NFHS IV (2015-16) covered a larger representative sample of 601,509 households and 699,686 women aged 15-49 years. The NFHS IV sample size also allowed for district level (administrative units below the state) estimates.

The surveys provide information about children ever born by sex for all ever-married women in the sample and thus, providing insights into the extent of "daughter-only" families in selected states. In India, childbearing and fertility generally happens within marriage. Women who are never married or who are divorced or widowed or separated are not exposed to childbearing. Therefore, the analysis has been restricted to currently married women so that

complications due to marriage dissolution are avoided. According to census of India 2011, 73.8% of women in the age group 15-49 are currently married. Therefore, the study restricts the analysis to currently married women aged 15-49 years with only daughter/s who are either sterilized or their husbands are sterilized. Further, women and their husbands with a specified number of daughter/s (no son ever born) who are not sterilized, but do not want any more children are considered as "daughter-only" families. Women who have experienced any male child loss but currently have only daughter/s are considered as families having children of both sexes.

In order to find out how the "daughter-only" families vary across characteristics, a set of background features has been considered, namely current age of women, place of residence, educational level, caste, religion, wealth index and region. The age group of women is divided into seven categories: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44 and 45-49. The place of residence is categorized as rural and urban. Educational level of women has been divided into four categories, namely no education, primary, secondary and higher. Religion is grouped into seven categories, namely Hindu, Muslim, Christian, Sikh, Buddhist/Neo-Buddhist, Jain, and Others. Caste is divided into four categories, namely, Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs) and Others. The Wealth Index is categorized as poorest, poor, middle, richer, and richest. India is divided into six geographical regions, namely north, south, east, west, central and north-east. The Northern region includes Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan and Uttaranchal while Central India includes three states: Chhattisgarh, Madhya Pradesh and Uttar Pradesh. The Eastern region comprises four states (Bihar, Jharkhand, Odisha and West Bengal) while the North-eastern region includes eight states i.e., Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. The Western region covers Dadra and Nagar Haveli, Daman and Diu, Goa, Gujarat and Maharashtra. The Southern states include (Andaman and Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu and Telangana. The bivariate and multivariate (binary logistic regression) analyses were used to find out the factors responsible for determining the "daughter-only" families.

Results

Our analysis from NFHS I, II, III and IV shows that there is an increase in the use of permanent methods of family planning among couples with only daughters (Figure 1 and Table 1). For example, among couples with only two daughters, those who accepted sterilization has more than doubled from 16% in NFHS I to 33.6% in NFHS IV. Similarly, among couples with only three daughters, the percentage increased from 20% in NFHS I to 34% in NFHS IV. This trend indicates couples increasingly accept daughters and stop childbearing with daughters alone. Any reduction in daughter aversion clearly reflects changing/weakening patriarchal norms. Table 1 shows strong son preference in all four rounds of NFHS. For example, within each child in NFHS IV, percentage of couples sterilized increases with the number of sons due to their strong preference for the latter. Many women prefer not to sterilize and to continue childbearing until they have at least one son. For example, only 33.6% of women with two daughters and no sons use sterilization, compared with 60% of women with two sons and no daughter.

Table 1: Percentage of currently married couples who adopted sterilization by sex composition of living children based on NFHS I, II, III, and IV findings.

Sex composition of living children	NFHS I		NFHS II		NFHS III		NFHS IV	
	Percent	n	Percent	n	Percent	n	Percent	n
No children	0.7	10,452	0.6	9,481	0.5	9,113	0.5	52,244
1 child	4.2	13,688	4.8	13,587	6.1	15,333	7.7	97,364
1 son	4.8	7,281	5.2	7,346	7.4	8,216	9.2	53,152
1 daughter	3.6	6,407	4.4	6,241	4.5	7,117	5.8	40,112
2 children	30.6	18,075	41.4	20,594	48.0	25,197	49.1	172,363
2 sons	40.9	5,405	52.7	6,369	58.1	7,591	59.9	51,198
1 son and 1 daughter	30.1	9,336	40.6	10,813	47.4	13,565	49.4	97,457
2 daughters	15.9	3,334	23.1	3,412	30.8	4,041	33.6	24,188
3 children	50.6	17,356	57.5	18,137	60.6	18,433	54.8	98,927
3 sons	59.3	2,336	66.3	2,420	66.9	2,325	60.9	11,149
2 sons and 1 daughter	60.9	7,777	66.4	8,226	69.0	8,099	60.7	44,479
1 son and 2 daughters	41.0	5,831	49.1	6,139	53.2	6,632	50.5	38,293
3 daughters	19.7	1,412	26.5	1,352	33.6	1,377	33.7	7,309
4+ children	45.5	24,714	47.7	23,057	47.1	19,737	43.7	78,726
2+ sons	47.5	19,529	49.3	17,777	48.4	14,815	44.8	57,840
1 son	40.4	4,417	44.2	4,548	45.6	4,171	43.8	20,423
All daughters	26.5	768	30.0	732	26.6	751	24.5	3227
Total	**30.7**	**84,285**	**36.0**	**84,856**	**38.3**	**87,813**	**36.2**	**499,626**

Source: Computed from individual data files of NFHS I, II, III and IV.

Figure 1: Percentage of currently married couples who adopted sterilization by number of living daughters based on NFHS I-IV findings

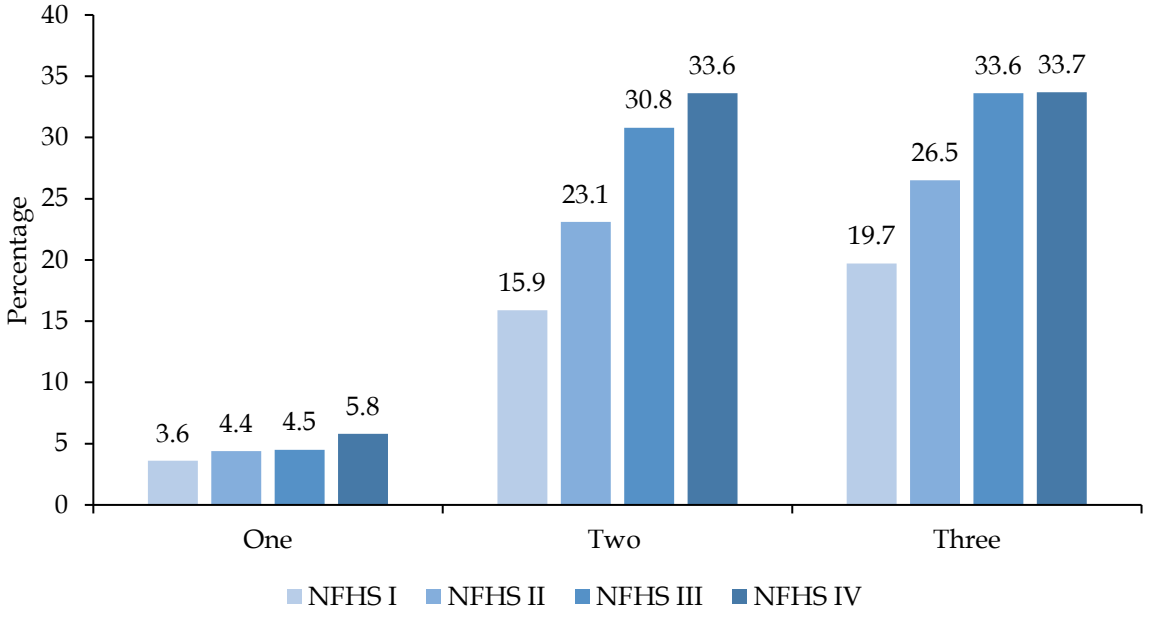


Table 2: Percentage of currently married women who have either sterilized or do not want to have any more children with sex composition of living children based on NFHS I, II, III, IV findings.

Sex composition of the family	NFHS I		NFHS II		NFHS III		NFHS IV	
	Percent	n	Percent	n	Percent	n	Percent	n
No children	3.0	10,452	2.8	9,481	4.5	9,113	5.8	52,244
1 child	19.2	13,688	25.6	13,587	34.9	15,333	34.7	97,364
1 son	21.3	7,281	28.5	7,346	40.2	8,216	39.8	53,152
1 daughter	16.8	6,407	22.2	6,241	28.5	7,117	28.2	40,112
2 children	61.8	18,075	73.2	20,594	84.3	25,197	84.8	172,363
2 sons	70.9	5,405	82.4	6,369	89.7	7,591	88.9	51,198
1 son and 1 daughter	65.6	9,336	76.0	10,813	88.0	13,565	87.9	97,457
2 daughters	37.2	3,334	47.5	3,412	62.1	4,041	64.7	24,188
3 children	78.0	17,356	85.0	18,137	91.0	18,433	88.7	98,927
3 Sons	81.9	2,336	89.3	2,420	93.1	2,325	90.4	11,149
2 sons and 1 daughter	87.6	7,777	92.6	8,226	95.6	8,099	91.7	44,479
1 Son and 2 Daughters	72.9	5,831	80.6	6,139	89.9	6,632	89.4	38,293
3 daughters	41.6	1,412	50.9	1,352	65.2	1,377	66.0	7,309
Total	**56.8**	**84,285**	**63.6**	**84,856**	**70.4**	**87,813**	**68.2**	**499,626**

Source: Computed from individual data files of NFHS I, II, III and IV.

Table 2 shows the percentage of currently married couples who have either sterilized or do not want to have any more children with sex composition of living children across the four NFHS survey rounds. Among the couples with only two daughters, the percentage of couples who either accepted sterilization or who did not want any more children has increased from 37% in NFHS I to 67% in NFHS IV. Similarly, among couples with only three daughters, the percentage increased from 42% in NFHS I to 66% in NFHS IV. A strong son preference is found in all four rounds of NFHS (see Table 2). For instance, 65% of women with two daughters and no son use sterilization, compared with 89% of women with two sons and no daughter in NFHS IV. Though the acceptance of sterilization has increased between NFHS I and NFHS IV, the gap in terms of its use between the couples who have sons and couples who have only daughters still persists indicating continuance of son preference. At the same time, couples with only daughters also increasingly adopt permanent methods of family planning indicating reduction in both son preference and aversion towards daughters.

Daughter-only families

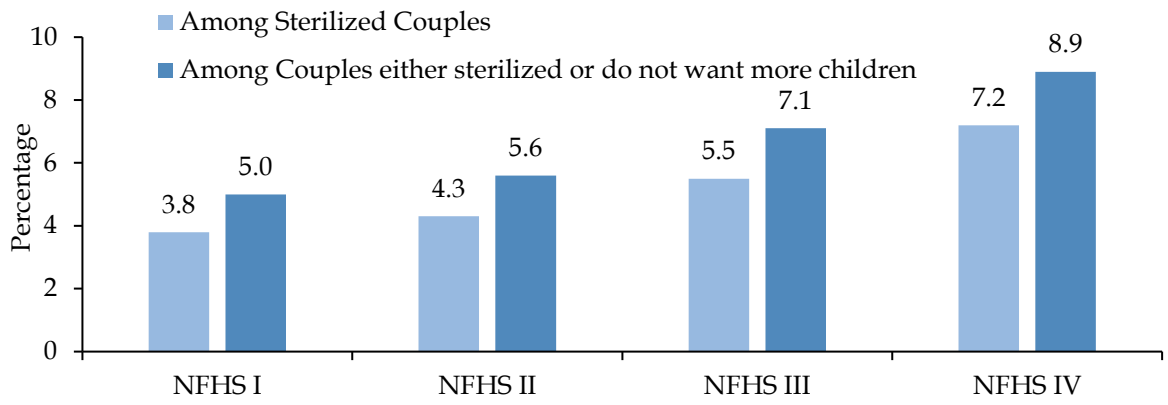
Table 3 shows (a) percentage of currently married women who have sterilized and (b) percentage of currently married women who have either sterilized or do not want to have any more children by sex composition of their families in four rounds of NFHS. The findings indicate the daughter-only families (i.e., percentage of daughter-only families among currently married women who have either sterilized or do not want any more children) have increased from 5% during 1992-93 to 9% during 2015-16 (Figure 2). If we consider only sterilized couples, it has increased from 3.8% in NFHS I to 7.2% in NFHS IV.

Table 3: Percentage of currently married non-pregnant women with sex composition of children based on NFHS I, II, III, and IV findings.

Sex composition of families	NFHS I	NFHS II	NFHS III	NFHS IV
Among sterilized couples				
No child	0.1	0.1	0.0	0.1
Son only	13.9	16.1	17.9	22.3
Daughter only	3.8	4.3	5.5	7.2
Children with both sexes	82.0	79.3	76.4	70.3
n	30,343	26,051	33,632	180,865
Among couples either sterilized or do not want any more children				
No child	0.4	0.2	0.2	0.6
Son only	13.6	15.8	17.9	22.4
Daughter only	5.0	5.6	7.1	8.9
Children with both sexes	80.9	78.3	74.6	68.0
n	46,470	51,454	59,411	317,214

Note: The women who have experienced any male child loss but currently have only daughter/s and women who have female child loss but currently have only son/s are considered as having children of both sexes.
Source: Computed from individual data files of NFHS I, II, III and IV.

Figure 2: Percentage of daughter/s only families among currently married non-pregnant women who have either sterilized or do not want any more children based on NFHS I-IV findings.



Daughter-only families across the states

Table 5 shows percentage of daughter-only families among currently married non-pregnant women who have either sterilized or do not want any more children (by states). As per the NFHS data, the percentages of daughter-only families have increased in many states. However, there is a visible regional pattern here. In southern states (Kerala, Tamil Nadu, Puducherry, Karnataka, Andhra Pradesh and Telangana), the percentage of daughter-only families is higher (above 10% in NFHS III and IV) compared with north, central, and western states (Uttar Pradesh, Madhya Pradesh, Rajasthan, Punjab, Haryana, and Bihar), where the patriarchal norms are deep-rooted (Dyson & Moore, 1983) - less than 5% in NFHS IV (see Map 1 and Table 4). Figure 3 shows the percentage of daughter-only families in NFHS IV across the states in descending order which reveals a big regional variation in daughter-only

families. States with higher proportion of daughter only families (i.e., above the national average of 8.9%) are located in south, eastern and northeastern regions.

Table 4: Percentage of currently married non-pregnant women who have either sterilized or do not want any more children by sex composition based on findings of NFHS IV.

States	No Child	Son only	Daughter only	Both sexes	n
North					
Chandigarh	0.3	23.2	9.3	67.1	274
Delhi	0.5	24.2	6.9	68.4	5,054
Haryana	0.4	27.8	2.6	69.3	7,564
Himachal Pradesh	0.3	27.7	7.6	64.4	2,037
Jammu And Kashmir	0.3	17.8	6.2	75.7	2,416
Punjab	0.3	28.7	4.2	66.8	7,365
Rajasthan	0.3	21.8	2.9	75.0	17,105
Uttarakhand	0.3	21.0	4.5	74.3	2,551
Central					
Chhattisgarh	0.4	18.5	6.2	74.9	7,182
Madhya Pradesh	0.5	21.1	4.5	73.9	20,584
Uttar Pradesh	0.4	16.1	3.4	80.2	42,357
East					
Bihar	0.9	15.5	2.9	80.7	22,192
Jharkhand	0.4	18.6	4.6	76.4	7,563
Odisha	0.5	24.3	10.1	65.2	11,159
West Bengal	0.6	26.8	16.1	56.5	28,537
Northeast					
Arunachal Pradesh	2.2	16.6	6.6	74.6	194
Assam	0.5	20.6	11.1	67.8	6,977
Manipur	0.5	18.6	7.9	73.2	359
Meghalaya	0.5	10.6	9.6	79.4	312
Mizoram	0.6	12.8	7.8	78.8	127
Nagaland	0.4	13.5	8.7	77.4	232
Sikkim	0.3	26.3	16.1	57.4	121
Tripura	0.4	30.0	20.3	49.3	1,054
West					
Dadra And Nagar Haveli	0.4	25.9	8.8	64.8	70
Daman And Diu	1.3	21.3	6.2	71.2	34
Goa	0.5	30.2	17.6	51.7	318
Gujarat	1.0	25.7	6.5	66.8	15,410
Maharashtra	0.4	24.4	8.9	66.2	32,544
South					
Andaman & Nicobar Islands	0.1	26.9	16.8	56.2	107
Andhra Pradesh	0.4	23.6	15.7	60.3	16,475
Karnataka	1.4	25.8	12.9	59.9	15,270
Kerala	0.4	27.0	20.2	52.5	8,318
Lakshadweep	0.0	16.2	13.0	70.8	8
Puducherry	0.4	23.2	19.8	56.6	365
Tamil Nadu	1.1	25.5	17.1	56.3	24,565
Telangana	0.5	22.0	13.8	63.8	10,398
India	0.6	22.4	8.9	68.0	317,214

Note: Women who have experienced any male child loss but currently have only daughter/s and women who have experienced female child loss but currently have only son/s are considered as having children of both sexes.

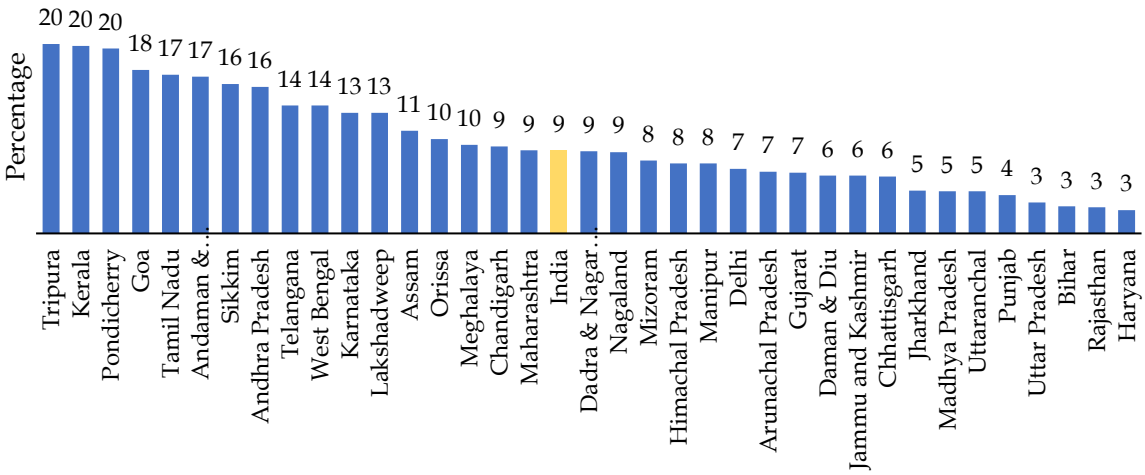
Source: Computed from individual data files of NFHS IV.

Table 5: Percentage of daughter-only families among currently married non-pregnant women who have either sterilized or do not want any more children by states.

States	NFHS I		NFHS II		NFHS III		NFHS IV	
	%	n	%	n	%	n	%	n
North								
Chandigarh	NA	NA	NA	NA	NA	NA	9.3	274
Delhi	5.6	2,132	5.5	1,676	7.5	1,721	6.9	5,054
Haryana	1.0	1,660	1.5	1,955	2.6	1,551	2.6	7,564
Himachal Pradesh	2.2	1,973	3.7	2,189	5.4	1,801	7.6	2,037
Jammu and Kashmir	2.3	1,674	2.8	1,743	3.9	1,437	6.2	2,416
Punjab	2.0	1,952	2.0	1,977	2.9	1,989	4.2	7,365
Rajasthan	1.2	2,475	1.3	3,619	2.1	1,957	2.9	17,105
Uttarakhand	NA	NA	NA	NA	3.6	1,478	4.5	2,551
Central								
Chhattisgarh	NA	NA	NA	NA	4.7	1,792	6.2	7,182
Madhya Pradesh	3.3	2,885	2.0	3,822	2.6	3,421	4.5	20,584
Uttar Pradesh	2.3	4,752	1.9	4,563	2.4	5,600	3.4	42,357
East								
Bihar	2.5	2,288	2.4	3,141	2.0	1,710	2.9	22,192
Jharkhand	NA	NA	NA	NA	NA	1,296	4.6	7,563
Odisha	4.6	2,229	4.7	2,509	7.2	2,238	10.1	11,159
West Bengal	7.8	2,390	10.0	2,942	12.7	3,559	16.1	28,537
Northeast								
Arunachal Pradesh	4.6	261	4.6	441	4.6	682	6.6	194
Assam	2.9	1,617	5.9	1,840	10.0	1,729	11.1	6,977
Manipur	1.3	466	1.6	623	4.9	1,535	7.9	359
Meghalaya	8.2	257	6.3	275	8.9	472	9.6	312
Mizoram	6.1	489	5.5	511	5.0	586	7.8	127
Nagaland	8.2	414	3.2	335	6.5	1,400	8.7	232
Sikkim	NA	NA	9.9	761	14.0	1,003	16.1	121
Tripura	6.1	658	12.6	692	16.3	943	20.3	1,054
West								
Dadra & Nagar Haveli	NA	NA	NA	NA	NA	NA	8.8	70
Daman & Diu	NA	NA	NA	NA	NA	NA	6.2	34
Goa	8.0	1,785	12.3	676	13.9	1,254	17.6	318
Gujarat	2.8	2,154	3.3	2,264	3.4	1,961	6.5	15,410
Maharashtra	4.6	2,436	3.9	3,364	6.7	4,626	8.9	32,544
South								
Andaman & Nicobar Islands	NA	NA	NA	NA	NA	NA	16.8	107
Andhra Pradesh	8.5	2,202	9.0	2,411	12.7	3,659	15.7	16,475
Karnataka	5.7	2,420	8.7	2,564	11.5	3,105	12.9	15,270
Kerala	14.0	2,586	16.2	1,774	21.9	1,755	20.2	8,318
Lakshadweep	NA	NA	NA	NA	NA	NA	13.0	8
Puducherry	NA	NA	NA	NA	NA	NA	19.8	365
Tamil Nadu	10.3	2,315	12.1	2,787	14.5	3,151	17.1	24,565
Telangana	NA	NA	NA	NA	NA	NA	13.8	10,398
India	5.0	46,470	5.6	51,454	7.2	59,411	8.9	317,214

Note: NA: Not Available; @, +, #, $: clubbed with Madhya Pradesh, Bihar, Uttar Pradesh and Andhra Pradesh respectively; If the women currently have only daughters but have experienced son/s death, they are considered as families of both sexes. If the women currently have only sons but have experienced daughter/s death, they are considered as families of both sexes.

Figure 3: Percentage of daughter/s only families among currently married who have either sterilized or do not any want more children by states, NFHS IV



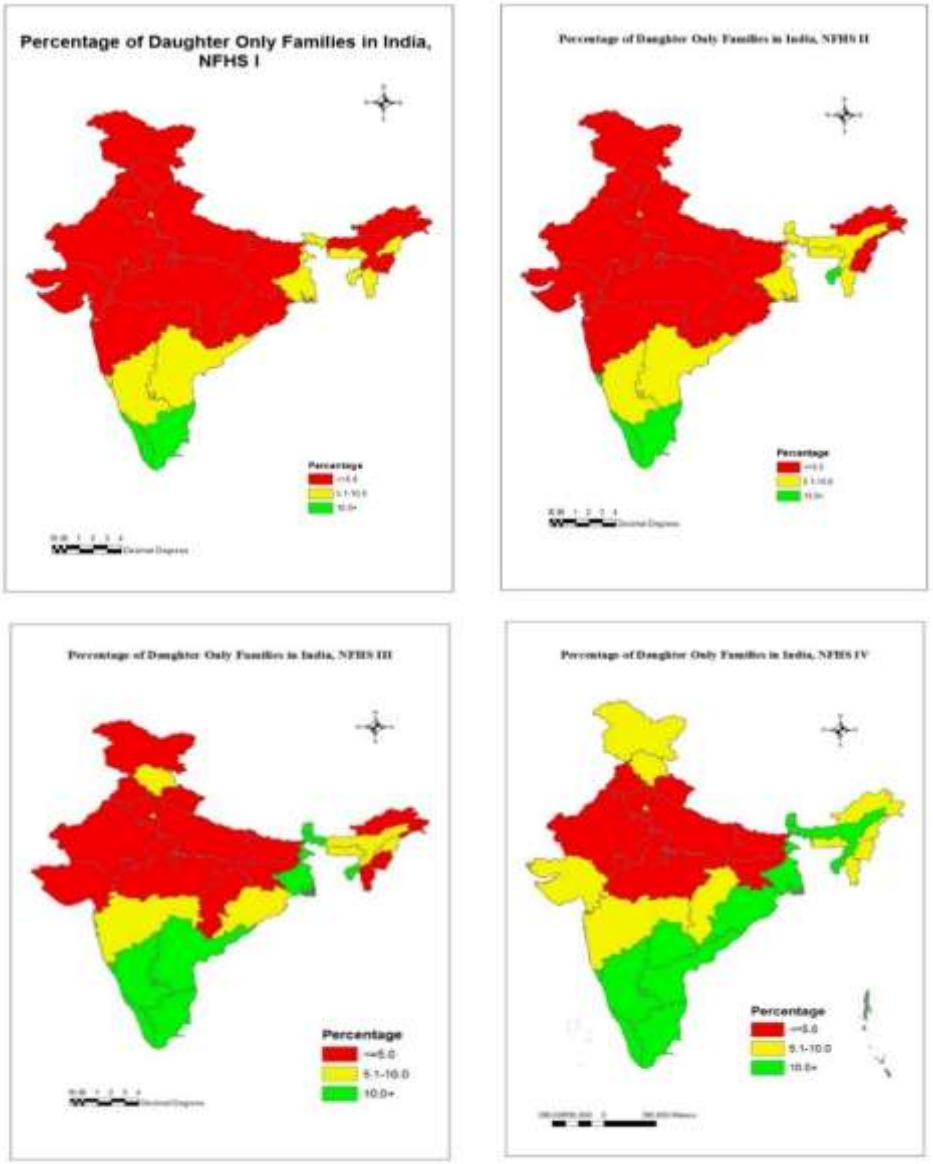
In the southern states, total fertility rate (TFR) has already reached below replacement level. In normal circumstances, if TFR is 2 and there is no gender bias in sex selection, about 50% of the couples are expected to have children of both sexes, about 25% are expected to have only male child, and the rest only female child. None of the below replacement level states has reached the level of 25% of only female child indicating continuing gender bias even in low fertility states. However, many of the low fertility states have a higher proportion of daughter-only families compared with higher fertility states (above replacement level fertility). The proportion of daughter-only families in many of the bigger states (Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Punjab, Haryana, Uttarakhand and Jharkhand) are dismally low, five or less than five percent, indicating the continuance of strong son preference.

District-wise variations in daughter-only families

As the NFHS IV sample was designed to allow district-level estimates, we have calculated the proportion of daughter-only families at the district-level for all 640 districts of India (complete table not shown here). The state-level estimates confirm the district-level variation in daughter-only families. The proportion of daughter-only families is higher (above 10%) in most of the districts of Southern India. The low prevalence (less than 5%) of daughter-only families in central, northern and western parts of the country confirm the north-south divide in gender norms (Map 2). Table 6 shows the top and bottom 20 districts in terms of proportion of daughter-only families. Among the top 20 districts (>20% daughter-only families), 17 are from the southern states (Tamil Nadu 7, Kerala 6, Puducherry 2 and Karnataka 2) and one each from Tiripura, West Bengal and Jammu & Kashmir. The top 20 districts have either biological normal proportion of daughter-only families or close to it.

The bottom 20 districts (1.2% or less) mainly in northern and western regions of India, points to strong daughter aversion. The prevalence of daughter-only families is zero in 11 districts, namely Tawang (Arunachal Pradesh), Upper Siang (Arunachal Pradesh), Kurung Kumey (Arunachal Pradesh), Dibang Valley (Arunachal Pradesh), Anjaw (Arunachal Pradesh), Longleng (Nagaland), Mamit (Mizoram), Serchhip (Mizoram), Saiha (Mizoram), Diu (Daman and Diu), Nicobars (Andaman and Nicobar Islands).

Map 1: Percentage of daughter-only families among currently married non-pregnant women who have either sterilized or do not want any more children by states based on NFHS I, II, III and IV findings.



Map 2: Percentage of daughter-only families among currently married non-pregnant women who have either sterilized or do not want any more children by districts, NFHS IV

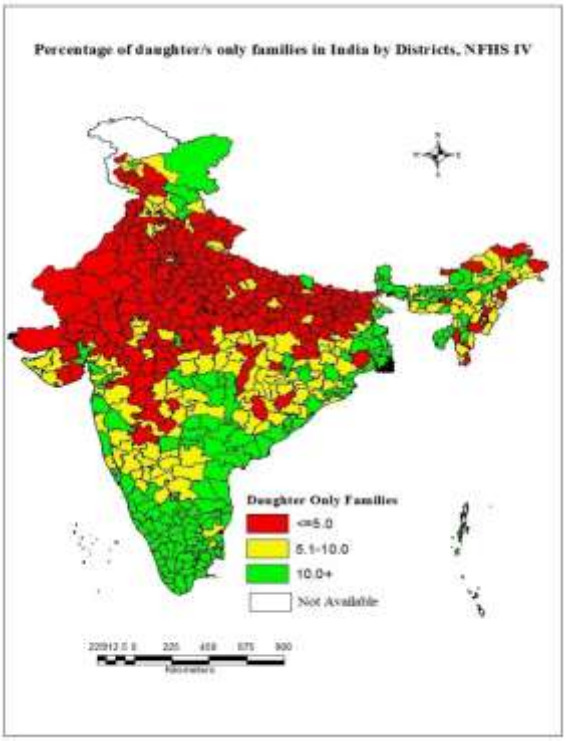


Table 6: Percentage of daughter-only families among currently married non-pregnant women who have either sterilized or do not want to have any more children in the top and bottom 20 districts, NFHS IV

Top 20 districts			Bottom 20 districts		
District	**State**	**%**	**District**	**State**	**%**
Alappuzha	Kerala	27.4	Alirajpur	Madhya Pradesh	1.2
Mahe	Puducherry	27.3	Dhaulpur	Rajasthan	1.1
Thiruvananthapuram	Kerala	26.5	Shivpuri	Madhya Pradesh	1.1
Pathanamthitta	Kerala	24.7	Shrawasti	Uttar Pradesh	1.0
Kanniyakumari	Tamil Nadu	24.5	Khagaria	Bihar	1.0
Chennai	Tamil Nadu	24.2	Siddharth Nagar	Uttar Pradesh	0.9
Udupi	Karnataka	23.8	Sitamarhi	Bihar	0.9
West Tripura	Tripura	23.6	Tonk	Rajasthan	0.8
Virudhunagar	Tamil Nadu	23.3	Jind	Haryana	0.7
Thrissur	Kerala	22.9	Anjaw	Arunachal Pradesh	0.0
Kottayam	Kerala	22.3	Dibang Valley	Arunachal Pradesh	0.0
Haora	West Bengal	22.1	Diu	Daman and Diu	0.0
Chikmagalur	Karnataka	22.1	Kurung Kumey	Arunachal Pradesh	0.0
The Nilgiris	Tamil Nadu	21.9	Longleng	Nagaland	0.0
Karaikal	Puducherry	21.8	Mamit	Mizoram	0.0
Kollam	Kerala	21.4	Nicobars	Andaman and Nicobar Islands	0.0
Sivaganga	Tamil Nadu	21.3	Saiha	Mizoram	0.0
Leh	Jammu & Kashmir	21.1	Serchhip	Mizoram	0.0
Thoothukkudi	Tamil Nadu	21.1	Tawang	Arunachal Pradesh	0.0
Coimbatore	Tamil Nadu	20.9	Upper Siang	Arunachal Pradesh	0.0

Differentials in daughter-only families

Differentials in daughter-only families among currently married couples who have either sterilized or do not want any more children by background characteristics are shown in Table 7. The bivariate analysis of data reveals the proportion of daughter-only families is higher among younger women, women having higher levels of education, and those from upper caste households (i.e., Others), households residing in urban areas, households in richest wealth index and households residing in southern regions of the country. Higher percentage of daughter-only families among the younger, educated, urban, wealthier and southern families indicates changing gender norms and declining patriarchal values among them. Earlier studies have indicated sex ratio at birth among the educated, urban and wealthier households was skewed compared with their less educated, rural and less wealthier counterparts. The NFHS III and IV results also indicated that, though a proportion of educated, urban and wealthier families may practice gender-biased sex selection, many families stop with only daughters. The NFHS III and IV results also indicated there is a greater acceptance of daughters among the educated, urban and wealthier households.

Table 7: Percentage of daughter/s only families among currently married non-pregnant women who have either sterilized or do not want to have any more children by background characteristics, NFHS I, II, III and IV

Background characteristics	NFHS I	NFHS II	NFHS III	NFHS IV
Age group				
15-19	12.8	11.8	22.4	19.5
20-24	7.8	8.3	10.5	13.5
25-29	6.6	6.5	8.0	10.1
30-34	4.8	5.9	7.1	8.8
35-39	4.2	5.0	6.4	8.9
40-44	4.3	4.4	6.3	7.6
45-49	3.1	3.9	5.3	7.2
Education				
No education	2.9	3.0	3.8	4.9
Primary	4.9	5.6	6.7	7.4
Secondary	8.9	8.6	10.8	11.4
Higher	19.2	14.5	19.0	18.0
Caste				
Scheduled caste	3.0	4.4	6.2	8.1
Scheduled tribe	3.8	3.6	4.4	6.7
OBC	NA	5.9	6.5	8.5
Others	5.4	6.3	9.1	10.7
Residence				
Urban	7.9	8.3	10.6	12.2
Rural	3.8	4.5	5.5	7.2
Religion				
Hindu	5.1	5.8	7.3	9.0
Muslim	4.0	4.3	5.5	7.4
Christian	9.5	9.5	15.8	15.9
Sikh	2.1	1.5	3.3	4.3
Buddhist/neo-Buddhist	NA	4.2	6.3	9.1
Jain	NA	3.9	14.7	13.4
Other	6.9	5.0	7.7	7.2
Wealth Index				
Poorest	2.3	3.8	3.7	4.7
Poorer	3.3	3.6	5.1	6.9
Middle	4.3	4.9	6.4	8.8
Richer	4.5	5.7	7.7	11.3
Richest	9.0	9.1	11.8	11.8

Background characteristics	NFHS I	NFHS II	NFHS III	NFHS IV
Region				
North	1.9	2.2	3.2	4.0
South	9.3	10.8	13.9	15.8
East	5.2	6.3	7.6	9.6
West	4.0	3.8	5.7	8.2
Central	2.7	2.0	2.7	3.9
North-East	3.5	6.4	10.2	11.8
Total	5.0	5.6	7.2	8.9

Note: If women currently have only daughters but have experienced son/s death, they are considered as families of both sexes. If women currently have only sons but have experienced daughter/s death, they are considered as families of both sexes.

Determinants of daughter-only families

The binary logistic regression results showing variations in daughter-only families by background variables are shown in Table 8. The dependent variable 'daughter-only families' has been categorized into two i.e., 1=yes, 0=no. It is evident that, controlling the effect of other variables, the acceptance of daughter-only families is likely to be lower with the increasing age of women, and the results are statistically significant. It means the younger cohorts of women are increasingly accepting daughters compared with their older counterparts.

Table 8: Logistic regression results (odds ratio) showing the variation in daughter-only families by background characteristics, NFHS I, II, III and IV

Background characteristics	NFHS I	NFHS II	NFHS III	NFHS IV
Age group				
15-19 (Ref.)				
20-24	0.412***	0.481***	0.399***	0.593***
25-29	0.320***	0.357***	0.263***	0.408***
30-34	0.215***	0.324***	0.217***	0.344***
35-39	0.212***	0.262***	0.198***	0.330***
40-44	0.219***	0.244***	0.187***	0.293***
45-49	0.180***	0.217***	0.148***	0.287***
Education				
No education (Ref.)				
Primary	1.307***	1.307***	1.351***	1.211***
Secondary	2.192***	1.851***	1.865***	1.654***
Higher	5.664***	3.511***	3.472***	2.758***
Caste				
SC (Ref.)				
ST	1.595***	1.033	0.745***	1.098***
OBC	NA	1.058	0.920	0.930***
Others	1.371***	1.357***	1.181***	1.199***
Residence				
Urban (Ref.)				
Rural	0.824***	0.748***	0.765***	0.753***
Religion				
Hindu (Ref.)				
Muslim	0.724***	0.711***	0.671***	0.825***
Christian	1.362***	0.947	1.051	0.802***
Sikh	0.858	0.448***	0.664***	0.886**
Other	1.124	0.845	1.076	1.197***
Wealth Index				
Poorest (Ref.)				

Background characteristics	NFHS I	NFHS II	NFHS III	NFHS IV
Poorer	1.222*	0.822**	1.065	1.106***
Middle	1.264**	0.953	1.116	1.180***
Richer	1.199*	0.924	1.239***	1.316***
Richest	1.550***	1.281**	1.517***	1.287***
Region				
North (Ref.)				
South	4.337***	5.019***	4.402***	4.196***
East	2.429***	3.065***	2.798***	2.099***
West	1.843***	1.704***	1.904***	1.701***
Central	1.232**	0.836*	1.027	1.094***
North East	1.914***	3.012***	2.886***	2.744***
Constant	0.040	0.055	0.118	0.085
n	46,470	51,454	59,411	317,214

*Note: (Ref.): Reference Category; ***, **, *: <1%, 5% and 10% level of significance*

There is a strong effect of educational level on the daughter-only families across the survey periods. The odds of having daughter-only families increase in tandem with their level of education. Controlling the effect of other variables, the prevalence of daughter-only families is found to be 3.5 times (NFHS II & III) and 2.8 times (NFHS IV) higher among women belonging to higher educational level compared with their counterparts in 'no-education' category. There is a positive and statistically significant effect of educational level on daughter-only families.

Caste indicates a social status in the Indian context. The SCs and STs belong to lower social order, OBCs occupy a middle order and "Others" (upper castes) occupy a higher social order. The prevalence of daughter-only families across the survey periods is observed to be 1.2 to 1.4 four times higher among the upper castes (Others) compared with the SCs. Differentials in daughter-only families by religious groups show that compared with Hindus, Muslims and Sikhs are less likely to have daughter-only families. The Sikhs hail from Punjab where gender-biased sex selection is higher.

The acceptance of daughter-only families is higher in urban areas across the four survey periods and it is statistically significant. Compared with women residing in urban areas, rural women are about 25% less likely to have daughter-only families in NFHS II, III and IV. The likelihood of daughter-only families increases significantly in tandem with the increase in wealth index. Compared with women from the poorest households, the odds of having daughter-only families for the richest households increase from 1.3 to 1.6 times across the four survey periods.

Compared with the northern region, the odds of having daughter-only families increase 4 to 5 times in the southern region across the survey periods. Southern region has the highest proportion of daughter-only families in the country. Similarly, the odds for east and northeastern regions increase 2 to 3 times compared with the northern region. The odds of daughter-only families for western and central regions lies in between southern, eastern and northeastern regions. There is a variation in gender norms based on the region even after controlling for other background characteristics, such as age, education, residence, caste and wealth.

Discussion and Conclusion

In sum, strong preference for sons in India means couples continue childbearing till they get a son. The decline in fertility has intensified the preference for sons and couples have started resorting to gender-biased sex selection to achieve this. This has resulted in skewed sex ratios at birth in many regions of the country due to female feticide. Government of India has responded with initiatives to create a gender equitable society through legislations, special schemes and programs. This study has attempted to understand the extent of acceptance of daughters using large scale survey data sets, namely the four rounds of NHFS.

As per the latest round of NFHS IV (2015-16), the percentage of daughter-only families among currently married women who have either sterilized or do not want any more children is about nine percent - an increase from five percent in NFHS I (1992-93). The percentage of daughter-only families varies substantially across the regions whereby it is higher in the southern region compared with central, northern and western regions. The characteristics of couples who have stopped childbearing after having only daughters provide further insights into the phenomenon of reduction in daughter-aversion.

The bivariate analysis of data by background characteristics shows the proportion of daughter-only families is higher among women who are younger, having higher levels of education, from upper caste, richer households, and residing in urban areas. The binary logit regression analysis further confirms the following: younger age of women, higher educational attainment of women, residence in urban areas, higher wealth index of the household and southern, eastern and north-eastern regions has significant positive effects on the acceptance of daughters. This study indicates a trend in reduction in daughter aversion among younger, educated, urban, and richer couples and this is expected to grow among other social and economic categories of the population in the near future. The gradual increase in acceptance of daughters reveals weakening of rigid patriarchal norms, namely son preference, in the country. The results reveal over a period of time, there is an increasing trend in daughter acceptance in southern states compared with the northern, central and western states indicating the north-south divide in gender norms.

The findings of this study also point to importance of education among younger women which is helping to challenge gender stereotypes and discrimination. Expanding educational opportunities for girls provide them with skills and shape their attitudes towards decision making in matters of reproduction in a culture steeped in patriarchy. Higher percentage of younger women stopping childbearing after having only daughters indicate gender laws and girl child/women specific schemes and programs have produced desired results, albeit slowly, with regional variations. Advocacy campaigns to promote the value of girl child appears to have had impacts on younger women indicating that such efforts should be sustained throughout the country.

Government of India has taken measures to reduce societal aversion towards daughters. Equal rights to parental property for boys and girls, protection of women from domestic violence, prevention of sexual harassment of women at workplace, dowry prohibition, regulation of pre-natal sex selection, prohibition of child marriage, and protection of children from sexual offences are some of the legal measures to protect the girl child and women from discrimination and exploitation. In addition, several schemes and programs have been initiated by central and state governments during the last two decades to achieve this, such as: (a) advocacy campaigns; (b) conditional cash transfer schemes; (c) scholarships linked to schooling of girls; (d) financial incentives linked to immunization, birth of girl child, acceptance of a permanent method of family planning after having one/two girl children and

marriage after attaining legal age; and (e) pension benefits and food security to elderly parents. This study indicates a positive, albeit gradual, shift towards accepting daughters. It appears the initiatives of the central and state government have started showing some results in acceptance of daughters in recent times.

Limitation

In the present study, apart from the sterilization, women who do not want any more children have been considered. The limitation of this study is that, the desire to stop childbearing among women/couples who have no son may change.

Acknowledgements

The paper was presented in Population Association of America Annual meeting held at Denver, USA during 26-28 April 2018 and 4th Asian Population Association Conference at Shanghai, China during 11-14 July 2018. The research was supported by the research grant from International Institute for Population Sciences, Mumbai.

References

Agnihotri, S.B. (2000). *Sex ratio patterns in the Indian population: A fresh exploration*, New Delhi: Sage Publications.

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

Bhat, P.N. Mari, & Zavier A.J.F. (2007). Factors influencing the use of prenatal diagnostic technique and the sex ratio at birth in India, *Economic and Political Weekly, 42*(24), 2292-2303.

Bhat, P.N. Mari (2002a). On the trail of missing Indian females I: Search for clues, *Economic and Political Weekly, 37*(51), 5105-5118.

Bhat, P.N. Mari (2002b). On the trail of missing Indian females II: Illusion and reality, *Economic and Political Weekly, 37*(52), 5244-5263.

Cowan, B. (1990). Let her die. *Indian Maternal and Child Health, 1*(4), 127-128.

Das, G.M. (1987). Selective discrimination against female children in rural Punjab, India. *Population and Development Review*, *13*(1), 77–100.

Dyson, T., & Moore M. (1983). On kinship structure, female autonomy and demographic behaviour in India. *Population and Development Review*, *9*(1), 35–60.

Edmeades, J., Pande, R., Macquarrie, K., Falle, T., & Malhotra, A. (2012). Two sons and a daughter: Sex composition and women's reproductive behaviour in Madhya Pradesh, India. *Journal of Biosocial Science*, *44*(6), 749-764.

Guilmoto, C.Z. (2012). *Sex ratio imbalances at birth: Current trends, consequences and policy implications*. UNFPA Asia Pacific Regional Office, Bangkok.

Guilmoto, C.J. (2007). *Characteristics of sex-ratio imbalance in India and future scenarios*. New Delhi: United Nations Population Fund.

India, Registrar General (2013). *Primary census abstract, India, states and UTs, series 1, census of India 2011*. New Delhi: Registrar General.

Jha, P., Maya A.K., Kumar R., Ram F., Ram U., Lukasz, A., … Banthia, J.K. (2011). Trends in sex selective abortions of girls in India: Analysis of nationally representative birth histories from 1990 to 2005 and census data from 1991 to 2011, *Lancet,* 377, 1921-1928.

Kulkarni, P.M. (2007), *Estimation of missing girls at birth and juvenile ages in India*. New Delhi: United Nations Population Fund.

Kabeer, N., Huq, L., & Mahmud, S. (2013). Diverging stories of "missing women" in South Asia: Is son preference weakening in Bangladesh? *Feminist Economics*, 1-26.

Miller, B.D. (1981). *The endangered sex: Neglect of female children in rural North India*. Ithaca: Cornell University Press.

Mutharayappa, R., Choe, M.K., Arnold, F., & Roy, T.K. (1997). Is son preference slowing down India's transition to low fertility? *NFHS Bulletin, No. 4.* Mumbai: International Institute for Population Sciences and East-West Center Program on Population.

Sen, A. (1990). More than 100 million women are missing, *The New York Review of Books, December 20*, 61-66.

United Nations Population Fund (UNFPA) (2015). *How many girls are missing at birth in India? Trends in sex ratio at birth.* (2001-12). New Delhi: UNFPA.