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Fertility Decline and Son Preference in India

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Abstract

The kinship norms that imbibe patriarchy and widespread gender inequality have led to a strong son preference in India. Using data from the National Family Health Survey (NFHS), this paper examines the evolution of son preference with respect to the increasing preference for smaller families and its impact on the fertility intentions of women in India. Results indicate that the modernising influence of education, urbanisation and routine exposure to media and the desire for smaller families are associated with a decline in reported son preference of women. The influence of the sex composition of existing children on intentions for future fertility has subdued over time. Moreover, we find an emerging preference for a gender balance in children's sex composition. Despite these changes, son preference attitudes persist as the intention to have more children continues to vary with the sex composition of the existing children. An increase in the desire for smaller families may not eliminate son preference in India, and even though there is an emerging desire for a gender balance, there is no indifference yet to children's sex composition. The findings of the paper underscore the importance of legislative reforms such as inheritance rights and reservations to empower women economically and politically, thereby reducing their dependence on male kins and, consequently their preference for sons.

Keywords

Fertility, Gender balance, India, Son preference

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Introduction

Parents' favouritism for male offspring or son preference is the hallmark of patriarchal societies. Countries in south, central and east Asia are known for their strong son preference. Although the countries exhibiting son preference vary along the nature of gender norms, in general, the kinship norms that imbibe patriarchy significantly contribute to the persistence of son preference (e.g., Das Gupta & Bhat, 1997; Bongaarts, 2001, 2013; Attané & Guilmoto, 2007). In India, the deeply ingrained belief about sons carrying the family's legacy forward and being a source of income and old age support, whereas daughters causing the outflow of family's wealth in the form of dowry are primarily the reasons for parents' favouritism toward sons. Further, the filial duties and rituals that could only be performed by a son make it impossible for parents to not desire male offspring. The strong desire for sons has translated into a sex ratio that is largely skewed in favour of men. For over a century, the Census data has shown that India has more men than women. In 2011, there were 940 women for every 1000 men, and the child sex ratio was at 918. According to the United Nations Population Fund (UNFPA), son preference is the reason behind 63 million women statistically missing from the country's population.

Over the past decades, fertility has continuously declined in India. The desire for smaller families makes it difficult for parents to have the desired sex composition of children. Parents with a strong preference for male offspring may dispense with the unwanted daughters through sex-selective abortion, sex-selective neglect or, in extreme cases, sex-selective infanticide. Thus, low fertility coupled with a high preference for sons intensifies the discrimination against girls (Das Gupta & Bhat, 1997). Clark (2000) showed a pronounced and predictable family-level effect of son preference on the sex composition of children ever born. Moreover, with lower expected mortality, parents need fewer births to invest more in children (Pörtner, 2022). Parents may also want to maximise returns to the investment made. Consequently, these parents would prefer sons over daughters if the returns to investment in schooling and health care are relatively more pronounced for sons. Thus, both from a social and economic standpoint, parents may value bearing sons more than daughters. Strong preference for male offspring, low fertility and access to sex selection methods will keep the sex ratio skewed towards males (Bongaarts, 2013). The above discussion bespeaks the importance of examining the trends in son preference and the associated factors as fertility[4] continues to decline in India.

There is some evidence in the literature on the declining trends in son preference as fertility approaches the replacement level in India (Bongaarts, 2013; Robitaille, 2013). However, Jayachandran (2017) suggests the persistence of son preference at any fertility level in India. In South Korea, where SRB has normalised following a period of skewness towards the male sex, son preference still remains (Yoo et al., 2017). This paper examines how son preference has evolved with the increasing preference for smaller families over a period of two decades using data from the National Family Health Survey (NFHS). Following

[4] According to NFHS (2019-2021) the total fertility rate (TFR) for India is 2.0, which is slightly below the replacement level fertility (TFR=2.1).

Bhat and Zavier (2003) and Robitaille (2013), this paper uses the proportions of sons in the ideal family size of each woman as a measure of son preference[5]. Additionally, this paper examines whether son preference influences women's fertility intentions in a low fertility context. We extended the research on son preference in India in two ways. First, we examined the changes in son preference over a broader time frame by including all five rounds of the NFHS data. Second, since the reported son preference might differ from the actual son preference, we examined the sex-composition-specific fertility intentions of women. The sex composition of existing children serves as a proxy for the actual son preference and the use of sex selection (Pörtner, 2022). We find that, despite the decrease in fertility rates, women continue to express a preference for sons and intentions for higher parity births are conditional upon the sex composition of existing children. The findings also suggest an emerging preference for gender balance in children's sex composition.

Data and methods

This paper uses the National Family Health Survey (NFHS) data. The NFHS is a large-scale, multi-round survey conducted in India among a nationally representative sample of households. The survey collects information on a vast range of topics, including population, health and nutrition status, with a special focus on women and young children. Since 1992, five rounds of NFHS were conducted in the years 1992-1993, 1998-1999, 2005-2006, 2015-2016, and 2019-2021. In NFHS-1, information was collected on 89,777 ever-married women aged 13-49, NFHS-2 collected information on 90,303 ever-married women aged 15-49, NFHS-3 collected information on 124,385 ever-married women aged 15-49, NFHS-4 collected information on 699,686 women aged 15-49, and NFHS-5 sampled 724,115 women aged 15-49. NFHS is conducted using a uniform sample design that is representative of the national, state/union territory, and district levels (only NFHS-4 and NFHS-5). A detailed explanation of the sampling design is available in the NFHS India Report (International Institute for Population Sciences (IIPS) and ICF, 2021).

The state boundaries in India have changed over time. The bifurcated states may differ from the parent state in ways that would affect regression results; however, to ensure comparability across different rounds of data, we could not use the newest state and territory definitions. The results are presented by aggregating observations to their original state groupings (and dropping observations for the union territories that were not included in the first three rounds of the NFHS). This paper use data on currently married women from five waves of NFHS. Furthermore, for analysis of women's fertility intention the sample was restricted to currently married women with two living children at the time of survey.

Dependent Variables

Our outcome variables are married women's reported son preference and fertility intentions. NFHS collect data on women's ideal or desired number of children[6] as well as the preferred number of

[5] For the remainder of the paper, son preference refers to the reported or stated son preference of women.

[6] Married women who had children were asked that if they could go back to the time when they did not have any children and could choose exactly the number of children to have in their whole life, how many would that be? And how many of them would they want to be sons, daughters or the sex would not matter?

sons and daughters. Reported son preference is a continuous variable measured as the proportion of sons in the ideal family size i.e., ideal number of sons/ideal number of children. A child whose sex did not matter to the mother was counted as 0.5 son and 0.5 daughter. To measure women's fertility intention, NFHS ask women whether they want more children. The responses are - want more, want (unsure timing), want no more, women/husband declared infecund and women/husband sterilised. Using this information, we created a binary variable with women's desire for more children coded as "1" and "0" otherwise. Those women who were no longer capable of bearing children because they or their husbands were infecund or sterilised were not included. Also, pregnant women were excluded from the analysis of fertility intentions.

Key Independent Variables

For our first analysis, the key variables were those linked to modernisation and urbanisation – women's and husband's education, women's work status, exposure to media, women's autonomy, and the location and structure of the household. Since women's desire for big families may inflate their reported son preference simply because they can accommodate more sons while still having few daughters, we include the ideal number of children in our model. Similarly, reported son preference may also vary with odd and even desired family sizes, with son preference accentuating with the odd ideal family size. To account for this variation, we include odd ideal children in the model. Also, the actual family size and composition may influence women's reported son preference, and to account for this rationalisation bias, we also include the proportion of sons among women's living children. Lastly, the desire for more sons or daughters may stem from past losses, for example, women who have lost one or more sons may report a higher number of sons in their ideal family composition. Therefore, we include in the model the number of sons and daughters who have died.

For examining fertility intentions, our key independent variable is the sex composition of existing children. Along with this, we included modernisation and urbanisation variables mentioned above. We also included women's ideal family size in the model to account for the fact that women with large ideal family sizes are more likely to intend to have more children.

Covariates

For both analyses, we include variables capturing women's socioeconomic characteristics, that is, caste, religion and household wealth. We also include state dummies to control for any unobserved spatial heterogeneity.

Empirical Specification

To examine the changes in son preference vis-a-vis increasing preference for smaller family size, we specify two models:

$$Y_i = \beta + \gamma X_i + \varepsilon_i \qquad (1)$$

$$\ln\left(\frac{P_i}{1-P_i}\right) = \beta + \gamma X_i + \varepsilon_i \qquad (2)$$

Where β and γ are the estimated parameter coefficients and ε_i is the error term. X_i is vector of covariates. Model (1) estimates *reported son preference* using the ordinary least square method, whereas Model (2) estimates *fertility intentions* using the binary logistic regression method.

Results

Descriptive Statistics

In India, several demographic outcomes are patterned by region. In Table 1, we present the stated son preference among currently married women of reproductive age. Although there is a decline in son preference across states over the 20 years span between NFHS-2 (1998-99) and NFHS-5 (2019-21), states such as Punjab, Haryana, Uttar Pradesh, Rajasthan, Bihar and Madhya Pradesh continue to exhibit high son preference. Also, the states with the highest preference for sons at the beginning of the study time period are also the ones with the steepest decline.

Table 1 Stated son preference of currently married women aged 15-49 years, NFHS

	Son preference of currently married women				
State	1992-93	1998-99	2005-06	2015-16	2019-21
Andhra Pradesh	0.56	0.54	0.52	0.52	0.52
Arunachal Pradesh	0.57	0.58	0.56	0.56	0.55
Assam	0.58	0.57	0.56	0.54	0.53
Bihar	0.61	0.59	0.58	0.58	0.56
Goa	0.54	0.53	0.52	0.51	0.51
Gujarat	0.60	0.58	0.57	0.54	0.54
Haryana	0.60	0.59	0.56	0.54	0.53
Himachal Pradesh	0.59	0.56	0.54	0.51	0.52
Jammu and Kashmir	0.60	0.57	0.56	0.54	0.54
Karnataka	0.55	0.53	0.52	0.52	0.52
Kerala	0.53	0.52	0.51	0.51	0.51
Madhya Pradesh	0.60	0.58	0.57	0.54	0.54
Maharashtra	0.58	0.56	0.53	0.52	0.51
Manipur	0.57	0.56	0.55	0.54	0.53
Meghalaya	0.48	0.51	0.50	0.50	0.49
Mizoram	0.52	0.51	0.51	0.52	0.52
Nagaland	0.53	0.55	0.52	0.52	0.51
Delhi	0.56	0.54	0.53	0.52	0.52
Odisha	0.60	0.58	0.56	0.54	0.54
Punjab	0.60	0.57	0.56	0.54	0.53
Rajasthan	0.63	0.60	0.58	0.54	0.54
Sikkim		0.55	0.54	0.51	0.51
Tamil Nadu	0.52	0.52	0.51	0.54	0.51
Tripura	0.56	0.56	0.55	0.53	0.51
Uttar Pradesh	0.61	0.61	0.57	0.57	0.55
West Bengal	0.56	0.54	0.54	0.53	0.53
Religion					
Hindu	0.59	0.57	0.55	0.54	0.53
Muslim	0.58	0.57	0.56	0.54	0.54
Christian	0.53	0.54	0.51	0.52	0.51
Sikh	0.60	0.58	0.56	0.54	0.53
Other	0.57	0.55	0.54	0.50	0.53
Caste					
SC	0.59	0.58	0.56	0.54	0.54
ST	0.59	0.57	0.56	0.54	0.53
OBC	0.58	0.57	0.55	0.55	0.53
Other		0.56	0.54	0.53	0.53
Wealth Index					
Poorest	0.60	0.59	0.57	0.57	0.55
Poorer	0.60	0.58	0.56	0.55	0.54
Middle	0.59	0.57	0.55	0.54	0.53
Richer	0.58	0.56	0.54	0.54	0.53
Richest	0.55	0.54	0.53	0.52	0.52
Total	0.58	0.57	0.55	0.54	0.53

Source: Calculated using data from the National Family Health Survey (various rounds). Probability weights have been used.

It is striking to see a spike in reported son preference in states that previously witnessed a decline in son preference (up till 2015-16), such as Karnataka, Jammu & Kashmir, Gujarat, Himachal Pradesh and Sikkim. Mizoram is the only exception indicating an uptrend in the son preference over time

Son preference also varies along the religion and caste lines, with women belonging to the Christian religion and general caste expressing the lowest son preference. Moreover, for all the time periods (from 1998-99 to 2019-21), son preference is the strongest among women with the lowest level of wealth and declines successively both across levels of wealth and over time.

In Table 2, we present the percent distribution of currently married women wanting additional children with respect to their existing composition of children. For all time periods, the desire for additional children is higher among women with no son than among women with at least one son. Over the past three decades, there is a slight decrease in this proportion, demonstrating a decline in the desire for additional children among women with no sons.

Table 2 Percent of currently married women (aged 15 – 49 years) with intention to have additional children by birth parity and sex composition, India, NFHS

Year	Fertility intention	No child	1 child			2 children				3 or more children
		All	1 daughter	1 Son	All	2 daughters	1 daughter, 1 son	2 sons	All	All
1992-93	Wants more children	89.4	79.6	74.2	76.7	57.0	25.3	21.0	29.6	8.6
	Wants no more	3.4	12.1	16.0	14.2	21.5	36.6	30.4	32.0	33.8
	Sterilized/declared infecund	7.2	8.3	9.8	9.1	21.5	38.1	48.6	38.3	57.6
1998-99	Wants more children	89.3	76.2	69.0	72.3	47.5	18.2	13.5	21.3	7.2
	Wants no more	3.6	15.2	21.3	18.5	22.5	35.4	29.1	31.4	33.9
	Sterilized/declared infecund	7.1	8.6	9.6	9.2	30.0	46.5	57.4	47.3	58.9
2005-06	Wants more children	91.0	70.4	57.4	63.3	33.1	9.1	7.6	12.3	4.5
	Wants no more	3.1	20.8	30.4	26.1	29.9	38.9	29.8	34.7	36.7
	Sterilized/declared infecund	5.9	8.8	12.2	10.7	37.0	52.1	62.6	53.0	58.9
2015-16	Wants more children	83.4	65.0	53.9	58.7	25.0	5.1	4.7	8.0	3.3
	Wants no more	6.7	23.3	32.0	28.2	32.0	39.0	33.4	36.2	38.6
	Sterilized/declared infecund	9.9	11.7	14.1	13.1	43.0	55.9	61.9	55.7	58.1
2019-21	Wants more children	83.7	64.8	52.2	57.6	27.4	4.6	4.4	7.7	3.1
	Wants no more	6.8	24.4	34.3	30.1	33.9	41.5	33.5	38.1	39.3
	Sterilized/declared infecund	9.6	10.8	13.5	12.3	38.7	53.9	62.5	54.3	57.6

Source: Calculated using data from the National Family Health Survey (various rounds). Probability weights have been used.

Table 3 Summary statistics (means/proportions), NFHS, 1998-2019

	Son preference	Fertility intention
Sex composition		
Two daughters		19.8
One son, one daughter		55.1
Two sons		25.1
Place of residence		
Urban	31.2	37.4
Rural	68.8	62.6
Agricultural Land		
No	54.0	56.3
Yes	46.0	43.7
Religion		
Hindu	82.2	79.4
Muslim	12.4	13.8
Christian	2.3	2.4
Sikh	1.7	2.9
Others	1.4	1.5
Caste		
SC	19.5	17.5
ST	9.0	8.0
OBC	40.4	36.5
Other	31.1	38.0
Women's education		
Illiterate	39.9	25.9
1-7years	22.8	22.0
8-11years	23.1	29.8
12 or more	14.3	22.3
Husband's education		
Illiterate	22.3	14.7
1-7years	24.5	20.4
8-11years	31.8	34.4
12 or more	21.4	30.5
Frequent media exposure		
No	36.4	32.0
Yes	63.6	68.0
Work status		
Not working	68.9	76.0
Working for cash	22.8	18.2
Other worker	8.4	5.8
Wealth		
Poorest	18.1	15.7
Poorer	19.5	16.9
Middle	20.2	17.4
Richer	20.7	20.5
Richest	21.4	29.6
Decision-making health		
Other decide	32.6	29.8
Solely/jointly	67.4	70.2
Justifies domestic violence		
No	57.6	63.5
Yes	42.4	36.5
Household structure		
Nuclear	48.6	46.1
Joint	51.4	53.9
Ideal number of children		
<=2		78.3
>2		21.7
Age	32.4	30.6
Ideal number of children	2.4	
Odd ideal no. of children	0.3	
Proportion of alive sons	0.5	
No. of sons dead	0.1	
No. of daughters dead	0.1	
N (unweighted)	300628	47054

Note: Probability weights have been used.

Further, Table 2 also shows a concomitant increase in the share of women wanting no more children or sterilised, suggesting a decline in the desired family size over time. The important observation here is that married women having no son at any parity express a greater desire for another child than those with other sex composition of children. Table 3 describes the selected sample.

Son Preference

In Table 4, we present regression results for the factors influencing son preference among currently married women of reproductive age. As mentioned above, son preference is measured using the proportion of boys in the ideal family size. Urbanisation factors such as women's education, occupation, earning status, exposure to media and place of residence have a significant effect on son preference. Relative to women from urban areas, the proportion of sons in the ideal family size increases by 0.2 percent for women belonging to rural areas. Relative to illiterate women, the son preference for women with 1-7 years of education reduces by 0.6% and that for women with 12 or more years of education reduces by 1.4%. Husband's education also has a significant negative impact on women's son preference though the magnitude of the effect is small. Women's frequent exposure to media, i.e., newspaper, television, radio and cinema, has a significant negative impact on son preference, with the proportion of boys in the ideal family size coming down by 0.5 percent as against those married women with no or infrequent media exposure. Women engaged in non-earning work report 0.6% higher son preference than their non-working counterparts.

Women's status is known to negatively influence the preference for sons and is reflected through their autonomy. Among married women, for those with a say in decisions seeking healthcare, the proportion of sons in the ideal family size decreases by 0.5%. Similarly, those who do not justify domestic violence have lower son preference than their counterparts. The factors such as women's age and the sex composition of living children also influence women's autonomy (Bhat & Xavier, 2003). Results indicate a 0.1% increase in the proportion of sons in the ideal family size with a one year increase in women's age. The desired family size also has a significant positive effect on the stated son preference of women. An increase of 1 child in the ideal family size increases the son preference by 0.1 percent. Interestingly, the death of a son increases the reported son preference among married women by 0.5%, whereas the death of a daughter does not have any effect. We also observe a temporal decline in son preference over the years, with women in 2019-21 reporting 2% lower son preference than those in 1998-99.

Women belonging to households owning agricultural land report higher son preference. The household structure has a significant negative effect on women's son preference. Living in a nuclear setup results in a 0.1 percent decrease in the proportion of sons in the ideal family size. Household wealth also has a significant negative effect on women's son preference, with son preference declining successively with the increase in the level of wealth. All other factors held constant, Sikh women report 0.5% higher son preference relative to Hindu women.

Muslim women do not significantly differ from Hindu women in their reported preference, while Christian women and those belonging to other religion have 0.4% and 0.6%, respectively, lower preference for male children. Relative to forward caste women, only ST women exhibit a lower preference for male offspring.

Table 4 OLS estimates for the determinants of son preference among currently married women (15-49 years, NFHS (1998-2019)

Variables	Coefficient	
Rural (urban=0)	0.0025***	(0.0009)
Land (no=0)	0.0035***	(0.0007)
Religion (reference: Hindu)		
Muslim	-0.0006	(0.0011)
Christian	-0.0043*	(0.0023)
Sikh	0.0048**	(0.0024)
Other	-0.0063**	(0.0031)
Caste (reference: other)		
SC	0.0005	(0.0011)
ST	-0.0044***	(0.0013)
OBC	0.0001	(0.0009)
Women's education (reference: illiterate)		
1-7 years	-0.0056***	(0.0009)
8-11 years	-0.0101***	(0.0010)
12 or more years	-0.0141***	(0.0015)
Husband's education (reference: illiterate)		
1-7 years	-0.0020**	(0.0009)
8-11 years	-0.0014	(0.0009)
12 or more years	-0.0022**	(0.0013)
Media (no=0)	-0.0048***	(0.0007)
Age	-0.0015***	(0.0003)
Age sq.	0.0000***	(0.0000)
Work status (reference: not working)		
Working for cash	-0.0009	(0.0009)
Other workers	0.0062***	(0.0011)
Wealth quintile (reference: poorest)		
Poorer	-0.0023**	(0.0009)
Middle	-0.0025**	(0.0010)
Richer	-0.0035***	(0.0012)
Richest	-0.0088***	(0.0016)
Ideal children	-0.0052***	(0.0016)
Ideal children sq.	0.0006***	(0.0002)
Odd ideal children	0.0957***	(0.0011)
Decision-making health (others decide=0)	-0.0052***	(0.0007)
Justifies domestic violence (no=0)	0.0044***	(0.0007)
Nuclear household (joint=0)	-0.0011***	(0.0007)
SR alive	0.0549***	(0.0011)
Sons dead	0.0047***	(0.0006)
Daughters dead	0.0000	(0.0007)
Year (reference: 1998-99)		
2005-06	-0.0120***	(0.0008)
2015-16	-0.0135***	(0.0010)
2019-21	-0.0200***	(0.0010)
Constant	0.5627***	(0.0057)
R-squared	0.1690	
Number of observations	300628	

Note: Standard errors, in parenthesis, are adjusted for clusters at the primary sampling unit level. Sampling weights are used. ***, **, * denote significance at p<0.01, p<0.05 and p<0.1 respectively. State-fixed effects are included.

Fertility intentions

Considering the modal preference for the ideal family size in India is two children, Table 5 presents the results of binary logistic regression estimating differences in the desire for an additional child among currently married women with two living children. Also, the average total fertility rate (TFR) for India, according to NFHS-5 (2019-21) data is 2.0. Restricting our sample to married women of reproductive age with two living children allows us to examine the degree of son preference at the current TFR of 2.0 children. Table 5 presents both coefficients and marginal effects for ease of interpretation.

To distinguish the effect of the sex composition of children from the effect of small desired family size we have controlled for desired family size in our model. In column 1, the coefficient for having two daughters is positive and statistically significant, indicating that women with two daughters have 13 times (exp (2.54) = 12.7) higher odds of wanting another child than women with two sons in 1998-99, the reference year. The sex composition-year interaction terms represent variations in this effect over time. All the interaction term coefficients are negative, suggesting that the difference in fertility intentions between women with two sons and two daughters and women with two sons and one child of either sex declined over time. The total effect of having one child of either sex on women's desire for an additional child in 2019-21 is negative and significant (0.13-0.45 = -0.32, $p<0.01$).

Figure 1 presents the conditional marginal effects of having two daughters and one child of either sex on the intention to have another child when other variables are held at means. Compared to having two sons, having one son and one daughter shows only a 1 % increase in the probability of wanting a third child in 1998-99. The difference in the desire for additional children between women with one son, one daughter, and two sons remains positive but statistically insignificant till 2015-16. However, in 2019-21, the probability of wanting another child for women with one son and one daughter decreased by 2% ($p<0.05$) as compared to women with two sons. This is strong evidence for an emerging preference for mixed-sex children, as women with no daughters are more likely to want a third child than women with one son and one daughter. As expected, for each survey year, the probability of wanting another child is higher for women with two daughters than for women with two sons. However, it is surprising that the difference in the probability of wanting another child increases by 2% in 2019-2021 (36%, $p<0.01$) after a declining trend till 2015-16 (45% in 1998-999, 37% in 2004-05 and 34% in 2015-16, all values significant at $p<0.01$). This suggests the persistence of son preference even at lower levels of fertility. The main effect coefficients for survey years are all negative and statistically significant ($p<0.01$). However, relative to 1998-99, there is no specific pattern in the decline in the probability of wanting a third child among women with two sons.

Table 5 Logistic regression estimates for fertility intention of currently married women (15-49 years) with two living children, NFHS (1998-2019)

Variables	(1)Coefficient		(2)Marginal Effect	
Sex composition (reference: two sons)				
Two daughters	2.54***	(0.1200)	0.376***	(0.0117)
One son, one daughter	0.13	(0.0944)	-0.006*	(0.0035)
Year (reference: 1998-99)				
2005-06	-0.33***	(0.1263)	-0.043***	(0.0061)
2015-16	-0.51***	(0.1382)	-0.064***	(0.0064)
2019-21	-0.25*	(0.1348)	-0.053***	(0.0068)
Sex composition*year				
Two dau*2005-06	-0.10	(0.1720)		
Two dau*2015-16	-0.07	(0.1830)		
Two dau*2019-21	-0.21	(0.1745)		
One son, one dau*2005-06	-0.12	(0.1475)		
One son, one dau*2015-16	-0.29*	(0.1588)		
One son, one dau*2019-21	-0.45***	(0.1520)		
Rural (urban=0)	0.13**	(0.0645)	0.011**	(0.0054)
Land (no=0)	0.08	(0.0505)	0.007	(0.0044)
Religion (reference: Hindu)				
Muslim	0.34***	(0.0719)	0.033***	(0.0075)
Christian	-0.09	(0.1650)	-0.007	(0.0128)
Sikh	-0.03	(0.1470)	-0.003	(0.0119)
Other	-0.11	(0.1970)	-0.009	(0.0149)
Caste (reference: other)				
SC	0.21***	(0.0710)	0.017***	(0.0062)
ST	0.22**	(0.0855)	0.019**	(0.0076)
OBC	0.17***	(0.0585)	0.014***	(0.0049)
Women's education (reference: illiterate)				
1-7 years	-0.22***	(0.0653)	-0.021***	(0.0064)
8-11 years	-0.38***	(0.0706)	-0.035***	(0.0067)
12 or more years	-0.42***	(0.0937)	-0.038***	(0.0083)
Husband's education (reference: illiterate)				
1-7 years	-0.04	(0.0735)	-0.004	(0.0064)
8-11 years	-0.01	(0.0740)	-0.001	(0.0065)
12 or more years	-0.06	(0.0906)	-0.005	(0.0078)
Media (no=0)	-0.02	(0.0571)	-0.002	(0.0049)
Age	0.18***	(0.0335)	0.015***	(0.0027)
Age sq.	-0.01***	(0.0006)	0.000***	(0.0000)
Work status (reference: not working)				
Working for cash	-0.05	(0.0645)	-0.004	(0.0054)
Other workers	0.00	(0.0877)	0.000	(0.0076)
Wealth quintile (reference: poorest)				
Poorer	-0.15**	(0.0766)	-0.015*	(0.0077)
Middle	-0.11	(0.0838)	-0.011	(0.0085)
Richer	-0.31***	(0.0943)	-0.028***	(0.0091)
Richest	-0.42***	(0.1159)	-0.037***	(0.0105)
Decision-making health (others decide=0)	-0.10*	(0.0499)	-0.009*	(0.0044)
Justifies domestic violence (no=0)	-0.06	(0.0469)	-0.005	(0.0040)
Nuclear household (joint=0)	-0.04	(0.0479)	-0.003	(0.0041)
Ideal children				
Less than or equal to two	-3.48***	(0.0580)	-0.569***	(0.0107)
Constant	0.78	(0.4928)		
P-value: 2005-06 + 2005-06*two daughters = 0	0.00			
P-value: 2005-06 + 2015-16*two daughters = 0	0.00			
P-value: 2005-06 + 2019-21*two daughters = 0	0.00			
P-value: 2005-06 + 2005-06*one son, one dau = 0	0.93			
P-value: 2005-06 + 2015-16*one son, one dau = 0	0.23			
P-value: 2005-06 + 2019-21*one son, one dau = 0	0.01			
Number of observations	47054		47054	

Note: Standard errors, in parenthesis, are adjusted for clusters at the primary sampling unit level. Sampling weights are used. ***, **, * denote significance at p<0.01, p<0.05 and p<0.1 respectively. State-fixed effects are included.

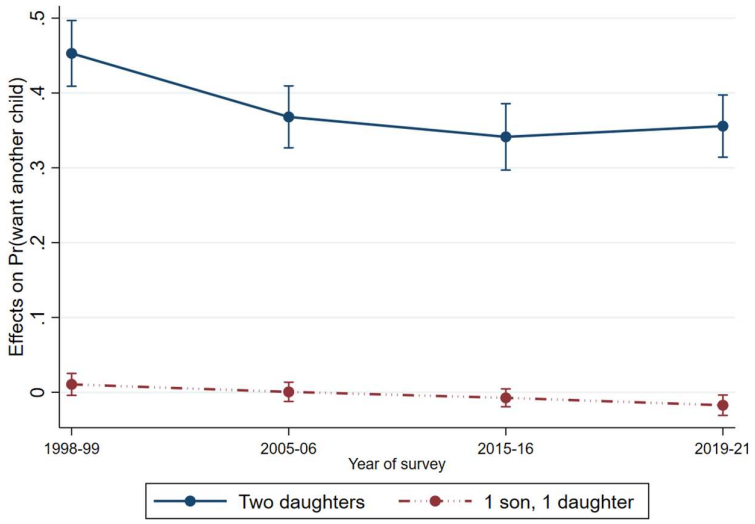

Figure 1 Conditional marginal effects of having two daughters and one child of either sex on fertility intentions with 95% CI and other covariates held at means. The reference is women with two sons

Column 2 of Table 5 details the influence of women's characteristics on their fertility intentions. Women with two children in rural areas have a 1% higher probability of wanting a third child than their urban counterparts. The greater the years of education a woman has, the lower the probability of her wanting another child. The effect of the husband's education, though negative, is insignificant. All other variables held constant, women's exposure to media has an insignificant negative effect on fertility intentions.

There is ample evidence in the literature on the role of women's autonomy in reducing fertility. Women making sole or joint decisions in seeking healthcare have a 9% lower probability of wanting another child compared to their counterparts. An increase of one year in women's age reduces their intention for a third child by 1.5%. Other variables held constant, Muslim women with two children have 3.3% higher probability of wanting another child than Hindu women. Moreover, the probability of wanting a third child is higher for SC/ST women by 2% and for OBC women by 1% as compared to other women. Economic status is also significantly associated with the fertility intentions of women. Women belonging to the top two wealth quintiles have 3-4% lower probability of wanting additional children than the poorest women.

Discussion

TFR has declined in India over the years, falling from 3.4 children per woman in 1992 to 2.0 children per woman in 2019 (NFHS data). Previous literature documents that a decline in TFR is accompanied by a decline in son preference (Chung & Das Gupta, 2007; Filmer et al., 2008). Using two individual-level measures of son preference – reported son preference and fertility intentions, we examined the effect of changing fertility on the preference for sons in India. Since retrospectively reported fertility preference is viewed with scepticism, we also analysed the relationship between the intention to have another child and the sex composition of existing children. We found substantial evidence of declining son preference in India.

Women are less likely to report son preference when directly asked about their desired number of sons. We found that the preference for sons decreases with the modernising influence of education, urbanisation, and routine exposure to the media. We also found that the preference for sons declines with the rise in wealth and greater autonomy of women. Further, the desire for smaller families accelerates the decline in reported son preference. The finding is robust to controlling for the actual proportion of sons among women's living children.

Moreover, the association of the sex of existing children with intentions for future fertility subdued over time. At each parity, women with any composition of children expressed a lower desire for future birth over time (Table 2). Despite these changes, son preference attitudes persist(Sharif & Das, 2024). The sex composition of the existing children continues to influence intentions to have more children. Our results indicate that the sex composition of existing children at parity two has a strong effect on the desire for another child. At parity two, women who have two girls are more likely than those who have two sons to desire another child. The stronger desire for more children expressed by women with two daughters, in comparison to those with two sons, is consistent over the observed time period (1998-2021). Thus, despite a decline in reported son preference, future fertility intentions are still driven by women's son preference.

Interestingly, we found evidence of an emerging preference for mixed-sex children. The difference in fertility intentions between women with two sons and those with one son and one daughter became significant in 2019-21. The estimates in Table 5 and Figure 1 indicate an emerging preference for gender balance in children among married women in India. In 2019-21, women who have two children of the same sex have a strong desire for another child as compared to women with mixed-sex children.

What explains this emerging preference for gender balance in children? Modernisation and urbanisation are frequently cited as the main drivers of such change. In our analysis, women with more years of education, greater autonomy and frequent exposure to media report lower son preference as well as lower desire for additional children. A plausible explanation is that access to education and information improves women's perception of the economic opportunities available to women and, consequently, the economic potential of their daughters. However, this paper finds women's engagement in paid work to be insignificantly (albeit negatively) associated with their son's preference and future fertility intentions. Literature suggests that joint families exacerbate women's son preference as the birth of a son may improve the daughter-in-law's status within the household. We also find a lower preference for sons among women from nuclear households. However, in the analysis controlling for the sex composition of the children, we did not find any significant difference in women's fertility intentions between nuclear and non-nuclear families.

Our analysis has some limitations. First, we have used cross-sectional data for our analysis. As a result, our findings are based on association rather than causation. Second, we use women's intention to have another child, rather than actual behaviour, as the measure of preference. Despite the

fact that fertility intentions and behaviour are closely associated, the extent to which intentions are translated into behaviour varies across diverse contexts (Bongaarts, 2013; Asadullah, 2021). Additionally, intentions pertaining to son preference might have a higher likelihood of execution than intentions that are not gender specific. These limitations notwithstanding, our findings provide insights into changes in son preference vis-à-vis an increasing preference for smaller family sizes.

Conclusion

It is evident that preferential attitudes favouring sons over daughters still exist among Indian women despite the decline in reported son preference. These attitudes can have important demographic consequences as under a son-preferred fertility-stopping behaviour, girls will likely end up in relatively larger families, which means access to fewer resources (Repetto, 1972; Clark, 2000; Basu and De Jong, 2010; Barcellos et al., 2014), and are more likely to be aborted if sex selection is available. Persisting favouritism for sons in a low fertility context may also manifest in forms of gender-based differential investment in education, healthcare and time allocation. In sum, the increase in desire for smaller families may not eliminate son preference in India, and even though there is an emerging desire for a gender balance, there is no indifference yet to children's sex composition. Thus, there is a need for policies and programmes that target parents' valuation of sons versus daughters. For instance, income protection in old-age and sickness will reduce parents' dependence on sons for material support (Kumar & Sinha, 2020). In particular, the legislative reforms such as inheritance rights and reservations that empower women economically and politically will reduce women's dependence on male kin and, consequently, their preference for sons.

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Conflict of Interest: Nil

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