Son preference and sterilization use among young married women in two slums in Bengaluru city, India

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Abstract

This paper explores the ways in which women's sterilisation decisions are influenced by the combination of a preference for male children and a desire for smaller family size among young married women in two urban slums in Bengaluru, India. While both son preference and an emphasis on sterilisation are well-known demographic characteristics of most south-Asian countries, relatively little research has been conducted that links the two. We take advantage of a longitudinal survey of 416 unsterilised married women aged 16–25 to explore how having sons and the number of children influence a woman's sterilisation decision. Discrete-time event-history techniques are used to estimate two models: the first examines the effect of having sons and number of children separately, and the second examines them in combination in the form of an interaction. The results suggest sterilization is motivated by son preference mainly at lower parities (three or fewer children) and by concerns about family size at higher parities. Understanding how sterilisation and other reproductive behaviours are influenced by the interaction of family size and sex preferences will help policymakers and programmers to meet the needs of women while continuing to address discriminatory behaviour against females.

Keywords

Sterilisation; India; son preference; fertility; Bengaluru

A significant body of research has shown that women's reproductive behaviour is strongly influenced by their normative environment. In India, a strong preference for sons is one such norm. Son preference interacts with family size and a desired ratio of sons to daughters to influence what is considered to be an 'ideal' family which, in turn, plays an important role in shaping reproductive behaviours (Clark 2000, Pande 2003, Retherford and Roy 2003). Women's reproductive choices in India over the last four decades or more have also been shaped by India's family planning policy, implemented in the early 1950s. In particular, the family planning program's historical focus on female sterilisation[1] as a form of birth control.

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[1]In the context of this paper 'sterilisation' refers exclusively to female sterilisation.

This paper addresses how the son preference norm and family planning policy together influence decisions about family size, composition and planning among urban, low-income women in Bengaluru, India. Specifically, we analyse the extent to which having sons plays a role in whether women get sterilised, compared to other factors that could influence this decision, such as education and the number of children. We also examine how the effect of son preference on the decision to stop childbearing interacts with an emerging preference for smaller families.

Our analysis differs from other studies in two key ways. First, we focus on young married women. Research has found that older women are more likely to be sterilised, and that to impact fertility, it would be important for younger women to use spacing methods (Donaldson 2002). Second, unlike many prior studies, we employ a prospective study design to examine this relationship, using data from the same women at three points in time. We are therefore able to ensure that the sterilisation decision is modelled based on women's characteristics (including number of surviving sons) *prior* to the sterilisation decision, rather than relying on cross-sectional data that may reflect women's circumstances after the decision has been made.

Background

Women today have far greater say over whether, when, and how many children they want than at virtually any other point in recorded history. At the same time, safe and affordable reproductive health and family planning services continue to elude large numbers of women. In part, this is because service providers and policymakers have failed to understand the services women want, when they need them, and why. In particular, programmers and policymakers have rarely paid attention to the influence that strong preferences for children of a given gender, or a specific ratio of daughters to sons, may have on women's reproductive preferences and actions.

These issues and the resulting implications for reproductive health programmes are particularly pertinent in India. First, women's and couples' notions of an 'ideal' family throughout much of the country continue to be shaped by a strong and persistent preference for sons (Pande and Astone 2007). Second, Indian women continue to face significant barriers to acting on and achieving their reproductive goals. Third, fertility in India has fallen rapidly over the past three decades, particularly in urban areas. The implications of this for women's reproductive behaviours in a normative context that continues to favour male children are unclear, though research suggests that this may have the effect of intensifying sex selective behaviours as couples try to marry the preference for a male child with those for a smaller family.

Young married women's decisions about when and whether to use any contraception, including sterilisation, are also subject to multiple societal constraints that may be exacerbated by son preference. Gender and social norms in much of India often limit the reproductive choices young women can make, such that they are pressured into manipulating their reproductive behaviour to achieve the family size and sex composition deemed desirable by influential elders in the family, often with little choice in the matter (Barua and Kurz 2001, Barua et al. 2004). Thus, young women may be 'allowed' to choose sterilisation only once they have the requisite number of sons. To understand the dynamics of contraceptive use in India, particularly for female sterilisation as a stopping method, it is therefore important to understand the importance of both son preference in Indian society and the situation of sterilisation as a key family planning tool of the Indian government.

Family planning and female sterilisation in India

In 1952 India became the first developing country to initiate an official family planning programme. In 1966–1967, to meet demographic goals, the Indian government introduced targets for numbers of contraceptive acceptors. Through the mid-1970s, health workers in primary health centres at the district and state levels were assigned targets to fulfil for sterilisation and other contraceptive methods for both women and men, though the government focused on sterilisation by offering incentives to potential users and providers of this method. After a disastrous and coercive vasectomy programme in the mid-1970s, the government all but jettisoned any attempt to publicise male sterilisation in its family planning programme, leaving female sterilisation as the primary focus of the programme (Khan and Prasad 1985).

As a result of all these decisions, in India people have often equated the term family planning with female sterilisation, and female sterilisation has been the most popular among all available methods (Khan and Prasad 1985). In 1996, partly in response to criticisms of its sterilisation programme, the Indian government reversed its policy of sterilisation targets and introduced a target-free approach. Grassroots health workers were charged with offering family planning services to couples interested both in spacing their children and in limiting family size (Visaria et al. 1999). Subsequently, the Reproductive and Child Health (RCH) programme, launched in 1997, abolished all contraceptive targets, including those for sterilisation, and phased out incentive payments to both providers and acceptors of family planning methods (Visaria et al. 1999). Finally, India's National Population Policy (NPP), adopted in 2000, declared population stabilisation a key strategic objective to be attained, among other ways, by providing universal access to information, counselling, fertility regulation and contraceptive services (Thind 2005).

Despite these changes, the use of temporary contraception remains relatively low and female sterilisation remains by far the most common form of contraception in the country. Data from the third National Family Health Survey (NFHS-3), conducted in 2005–06, showed that sterilisation accounted for 77% of total modern contraceptive use in India (IIPS and Macro International 2007).

Son preference in India

A large body of literature from across the developing world, including South Asia, documents that women are likely to use contraception to plan not only the timing and number of children, but that their decision about when and what type of contraception to use is also highly influenced by their preferences for the sex of any future children and the sex composition of their overall family (Das Gupta and Bhat 1997, Clark 2000, Bairagi 2001, Leone et al. 2003, Jha et al. 2006, Jayaraman et al. 2008).

In India, the family composition preference that is most persistent is the preference for at least one son. A large body of research has documented the persistence of this preference in India (Mishra et al. 2004), its determinants (Pande and Astone 2007), and its fertility and mortality consequences (Das Gupta 1987, Clark 2000, Pande 2003).

Son preference in India arises from the perceived economic, social and religious utility of sons compared to daughters. Parents of girls are typically socially bound to find suitable husbands for their daughters at an early age, often pay all marriage costs, and provide a dowry. Social norms dictate that parents cannot expect much emotional or economic support from married daughters, who typically move into and become part of their husband's household. On the other hand, parents expect sons to provide financial and emotional care and regard them as a 'social security' for old age; inheritance laws largely favour sons; sons perform important religious roles, ensure the continuation of the family lineage, and may be

desired in order to increase a family's capacity to defend itself or to exercise power (Dyson and Moore 1983, Kishor 1995, Pande and Astone 2007).

At the same time, research shows that coexisting with son preference is a desire for some balance in the sex composition of children (Scrimshaw 1978, Pande 2003, Retherford and Roy 2003). In much of India, the preferred family sex and size composition is two sons and one daughter, where the daughter is seen to provide important religious, social or emotional value (Dharmalingam 1996, Mutharayappa et al. 1997b, Retherford and Roy 2003). However, while families may want one daughter, very few want more than one, while most families definitely want at least one son (IIPS and Macro International 2007, Pande and Astone 2007).

Son preference and the use of sterilisation as a 'stopping' method

Studies in several countries, including in India, have found that families without sons are less likely to use temporary contraception than are families with sons (Hussain et al. 2000, Yount et al. 2000, Leone et al. 2003, Jayaraman et al. 2008). Most of these studies, however, focus exclusively on the effect of son preference and/or sex composition on the use of temporary methods of contraception, largely ignoring sterilisation, a permanent method use.

Sterilisation behaviour is also influenced by son preference. Leone (2003) found that in Nepal, where, as in India, sterilisation is the predominant form of contraception, the proportion that had stopped childbearing was much higher among women whose last child was a boy than among women whose last child was a girl. In Malaysia, having one or more sons was found to 'induce parents to adopt more effective or permanent methods of birth control' (Pong 1994). Hussain (2000) found in Pakistan that both son preference and parity had an influence such that women stopped childbearing when they had either at least one son or three daughters.

Vlassof (1990), in comparing the fertility and family planning intentions of rural Indian women in 1975 with actual outcomes in 1987, found that women largely stopped childbearing when they reached or closely approximated their ideal number of sons. Sterilisation was used virtually to the exclusion of other methods, independent of education level or modernisation, with sons acting as the key determinant of contraceptive practice. Recent research in India finds that this pattern has persisted, and the likelihood of using sterilisation is strongly positively associated with an increase in the number of sons at all parities (Thind 2005, Edmeades et al. 2008, Jayaraman et al. 2008).

Given these findings, it is hardly surprising that sterilisation has not been effective in India as a form of population control or to limit family size. The family planning programme, dominated as it was by sterilisation, was used mainly by those who had completed their family size. Thus, accepters tended to be older and at relatively high parities, lessening the effect of the programme on total fertility rates and suggesting that a focus on younger women with fewer children would be more effective (Donaldson 2002). Yet, there has been relatively little analysis of younger women's contraceptive preferences and choices, despite the recent shift in India's family planning programme away from sterilisation. Are young married women still choosing sterilisation or are they choosing temporary contraceptive methods? For those who choose sterilisation, when do they choose to end childbearing? Does this happen when they reach a certain family size, or is this decision still heavily influenced by the desire to have at least one son? Our paper examines these questions in the context of an urban, low-income area in southern India. We are able to provide detailed analysis to answer these questions because of our longitudinal design, which allows us to focus on the factors influencing a woman's sterilisation decision *after* she has had a specific childbearing experience.

Study setting

The setting of this study is Bengaluru (formerly known as Bangalore), the capital of Karnataka, which is a state in southern India. Nearly 53% of the urban population of Karnataka state is of reproductive age (15–49). Sixty percent of women and 75% of men aged 15–49 years are literate. Marriage is nearly universal and 97% of women aged 15–49 have ever been married. Most marriages are arranged, and the dowry system prevails, and more than half of women aged 20–24 are married before age 18. A majority (62.2%) of urban women say they want at least one son (IIPS and Macro International 2007).

Karnataka is one of a few Indian states with replacement level fertility. As in the rest of India, the most prominent method of birth control in Karnataka is female sterilisation, with relatively low levels of use of temporary methods. Data from the NFHS-3 show that about half of all married women of reproductive age in Karnataka are sterilised (57.4%), with a median age of sterilisation of 24 years. Knowledge of sterilisation is almost universal in Karnataka, but a majority of women also know about the oral contraceptive pill (69%) and IUD (68%) while almost half know about condoms (48%) (IIPS and Macro International 2007). Thus, lack of knowledge is unlikely to be the cause of the high use of sterilisation and the near-exclusion of any other contraceptive method. The specific geographic focus of our study is two low-income communities in Bengaluru classified as 'slums' by the Bengaluru municipal corporation. Both communities were originally established in the mid-twentieth century, and are now home to almost one-fifth of Bengaluru's population.

Data

Our data are drawn from the baseline, midline and end line surveys conducted as part of a longitudinal observational study on gender, power and reproductive health from 2002 to 2008 in southern India. The overall objective of the larger study was to characterise the nature of gender-based power among married women and their husbands in Bengaluru, India and its associations with susceptibility for STIs and HIV. Following an initial phase of formative research (2002–2004), the baseline survey was conducted from mid-2005 through early 2006; the midline and end line surveys were conducted 12 and 24 months after the baseline, respectively.

Following a number of community meetings designed to introduce the project to the broader community, trained outreach workers conducted a door-by-door recruitment campaign where the study was described to women and interested women were screened for eligbility. Eligibility criteria included being a married female between 16 and 25 years of age, fluency in one of the local languages (Tamil or Kannada), and anticipating residence in the community for the duration of the 2-year study. Eligible women were invited to the local primary health centre to undergo the informed consent process. Informed consent, enrolment and all data collection activities took place in a private space at the health centre to ensure privacy and confidentiality. Informed consent, enrolment and all data collection activities took place in a private space at the health centre to ensure privacy and confidentiality. Guardian consent was obtained from women under 18 years of age. The study protocol was approved by the human subjects' protection committees of the University of California, San Francisco, RTI International, and the Indian Institute of Management, Bengaluru.

Enrolled women participated in face-to-face interviews conducted by trained interviewers in private rooms in the health centres. The baseline survey collected information on socio-demographics, household and relationship characteristics, economic activity and assets, sources of social support, and reasons for and responses to marital conflict. Participants then received sexual health education and optional clinical examination and lab testing. The midline and end line surveys collected further information from survey participants about

behaviours and circumstances expected to change over time, such as contraceptive use, birth history, and a series of questions about women's decision-making in multiple spheres of their lives. Information was collected from a convenience sample of 737 women in the baseline, with 646 contributing data at the midline point, and 538 at the end line[ii]. The baseline descriptive statistics for the women included in the analytical sample are shown in Table 1.

Methodology

We take advantage of the longitudinal structure of the data to include both time-varying and time-invariant variables to analyse the determinants of sterilisation. These data are well-suited to the use of event-history techniques, which allow for the inclusion of both time-varying and time-invariant variables (Allison 1995). This study uses these techniques, based on a sample of 416 women who at baseline were not sterilised, had at least one child, and were not missing information on any of the variables of interest[iii]. These women contributed 716 periods to the analyses, with each woman contributing a maximum of two time periods (the time between baseline and midline, and between midline and end line) and a minimum of one period (in the case of women sterilised between baseline and midline) to the analyses. The unit of analysis is each of these individual periods. Women contribute periods to the dataset until they are either right-censored (either by reaching the end line without being sterilised, or dropping out of the study) or until they are recorded as being sterilised.

We use discrete-time event history analysis techniques to explore the determinants of sterilisation decisions. The selection of the discrete-time method is appropriate for this study, as the data were collected on a yearly basis and thus the exact timing of events is unknown. The dependent variable is a dichotomous variable indicating whether sterilisation took place in a given period, which is defined as being between baseline and midline and/or between midline and end line. The independent variables (described in detail below), include both information specific to each period (time-varying) and time-invariant variables measured in the baseline survey. We estimate a complementary log-log model, where the model is first specified for continuous-time data from which a model for grouped-time is derived (Allison 1995). This specification is appropriate given that the discrete structure of the data generates a number of 'ties' in the timing of events, and given the reasonably low incidence of sterilisation in this population (58 women were sterilised between baseline and end line and 42 between midline and end line, with the remainder being right-censored). The regression equation for this model is:

$$\log[-\log(1 - P_{it})] = \alpha_t + \beta_1 x_{it1} + \ldots + \beta_k x_{itk} \text{ (Allison 1995, 216)}$$

where P_{it} is the conditional probability of a woman being sterilised at time t. β refers to the vector of coefficients representing the independent variables (x_{it}). The term α_t refers to the baseline hazard, which is non-parametric and has no specific form. All models are corrected for clustering at the woman level using the Huber/White/Sandwich robust estimate of variance.

The time-invariant independent variables (measured at baseline) included in the model are: a dummy variable indicating whether a woman had any secondary education, a dummy

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[ii]To examine the potential effect of sample attrition on the analyses in this paper, we conducted statistical tests to examine whether women who dropped out of the study were different from those who did not. The only variable for which the difference was statistically significant was whether the husband had an SSLC/10+ years of education, with women moderately more likely to drop out if their husband was highly educated.

[iii]128 women were childless at baseline, 188 were already sterilised, and 5 had either missing values or other data inconsistencies.

variable indicating whether her husband had his Secondary School Leaving Certificate (SSLC) or 10+ years of schooling, a measure of relative household wealth (based on household ownership of assets, and split into quartiles), and the community from which the sample was drawn. The time-varying variables are: age, a dummy variable indicating whether a woman had discussed the ideal number of children with her husband, a dummy variable indicating whether she had discussed contraception with her husband, two measures of whether she had felt pressure for more children from her husband and in-laws, a dummy variable indicating whether a woman had sons at the beginning of the interval, the total number of children she had at the beginning of the interval, and whether she had ever used temporary modern contraception.

Of particular interest to this study are the number of children and number of sons women have at the beginning of the interval. These together measure whether women have achieved their ideal sex composition of children, which is a key point of interest in this paper. As discussed above, we expect that, while both the number of children and having sons matter for a woman's sterilisation decision, the effect of having sons will be contingent on the number of children a woman has, and vice versa. To test this hypothesis, we model their interactive relationship using an interaction term[iv]. To aid in the interpretation of this term, we use the results of the interactive model to estimate the simulated predicted probability of sterilisation for women with and without sons for different numbers of children[v], and present these graphically.

Findings

At baseline (Table 1), women in our sample were on average just over 22 years of age and just fewer than 60% had some secondary education. Twenty-two percent of husbands had a SSLC or 10+ years of education. Roughly one-third of the women had ever used temporary, modern methods of contraception at the time of the baseline. Sample women had an average of 1.7 children at baseline, and over one-third of women reported facing some pressure to have another child, either by their husbands (43%) or their in-laws (31%).

Roughly one quarter (24%) of women who were not sterilised at baseline were sterilised between the baseline and the end line. Among those sterilised before the baseline, 43% were sterilised following the birth of their second child, and a further 42.5% following the birth of their third (Figure 1). The sex composition of children influences sterilisation at baseline. At each parity, women were more likely to have been sterilised if they had at least one son than if they had no sons (Figure 2). One boy and one girl seems to be the ideal combination, with 28% of those sterilised at baseline doing so at that combination.

The results of the multivariate analyses of the determinants of sterilisation behaviour are shown in Table 2. While there are a number of interesting results, we focus our discussion on the effects of having sons and the total number of children, in keeping with the substantive focus of this paper. The interaction between family size and having sons demonstrates clearly that the point at which family size becomes an important consideration for sterilisation depends on whether or not the woman has a son, as well as how many children she has. The predicted probability for women with only one daughter and no sons at the beginning of a period is extremely low, suggesting that women with this family size and composition essentially do not get sterilised. At parities lower than three, the predicted probability of sterilisation is higher for women with at least one son than for those with only

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[iv]In order to reduce multicollinearity, both of these variables were centred around their means in the model, including the interaction term.

[v]The predicted probability of being sterilised was calculated separately for each combination of having sons (Yes, No), and the number of children (ranging between one and five). The remaining variables are held at their means throughout the simulation.

daughters. At parity one, having one son and no daughters at the start of the period increases the predicted probability of being sterilised from 1 to 6%. Having two children increases the predicted probability of sterilisation to 4% among those women with no sons, but among those with sons the predicted probability rises to 10%. However, among women who have three children at the start of a period, the predicted probability of being sterilised is roughly the same for women with or without sons (24% and 23% respectively). At four children, women with only daughters are much more likely to be sterilised than those with at least one son[vi].

This pattern suggests that after two children, the desire to have a small family is at least as strong as that to have a son, and, after three children, family size is a stronger motivation to stop childbearing than is the presence of a son. While this effect of family size at higher parities is not unexpected given the relatively low fertility levels in Karnataka, this provides clear evidence that son preference is particularly important at the parities at which women have not reached their ideal total family size. This dynamic echoes recent analysis in Bangladesh by Khan and Khanum (2000) who find that the number of sons is a significant determinant of contraceptive use at lower but not at higher parities.

The use of temporary contraception is also a significant factor but in a negative direction. Women who use temporary contraception at the start of a period have a one-third lower hazard of being sterilised than women who do not use temporary contraception (OR=0.36, p<0.000). This makes intuitive sense in that women are unlikely to use temporary contraception *and* plan to be sterilised within a short time period. This interpretation is consistent with other research that finds that couples intending to use sterilisation often do not bother using temporary methods to space their children (Zavier and Padmadas 2000).

Finally, household wealth is significantly related to the hazard of sterilisation though only at higher levels of wealth. Women from the wealthiest two quartiles of households have significantly higher hazards of sterilisation. No other variables in our final model are statistically significant. However, while generally their effect is statistically insignificant, the direction and size of coefficients for variables measuring the pressure for an additional child from a husband or in-laws is consistent with other literature (cited above) that shows that young married women's contraceptive decision-making may be influenced by such pressure.

Discussion and Conclusions

We use longitudinal data collected from young, low-income urban women in Bengaluru city, Karnataka, in southern India to examine the dynamics of sterilisation choice in the face of fertility decline, an expansion of the aims of the family planning programme, and persistent son preference. Our data have certain limitations that need to be noted. First, all data were self-reported, which may result in some response biases. For instance, self-reports may reflect not just women's contraceptive behaviour or decision-making but also the respondents' expectations about what is socially desirable. Second, since these are young women, they may be reluctant to talk about reproductive health since it is typically frowned upon for this group--even once married--to discuss their reproductive lives (Barua and Kurz 2001, Krishnan 2005). Our study took several measures to reduce such hesitancy among participating women. All interviewers were young women from the same or similar communities as those where the research was conducted, and were trained extensively in qualitative and quantitative methods. Community residents became familiar with study staff over a two-year period of community rapport building and qualitative data collection that

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[vi]It is not possible to compare the two groups of women beyond parity 4 as there is only one case in the data, a woman who had at least one son.

preceded the quantitative survey (Krishnan, 2005). The quantitative interviews began with less sensitive questions regarding participants' household and socio-demographic background to put participants at ease before asking sensitive questions regarding respondents' reproductive health and decisions. Third, the study did not collect data that would allow for the investigation of sex selective abortion practices or preferences within the community. Fourth, collecting more information on the exact timing of sterilisation or if the birth was via caesarean section, which in this context is more closely tied to post-delivery sterilisation, would have allowed for more nuanced statistical approaches than that used in this paper. Furthermore, the one-year gap between measurement points means that women could potentially become pregnant, give birth and get sterilised in the intervening period, an issue more exact measures would also resolve. Fifth, the study did not directly collect data on women's future fertility desires, which can be expected to correlated with sterilisation, relying instead on proxy measures such as number of children, whether the woman already has sons, and whether she discussed contraception with her husband.

Finally, we faced challenges while recruiting women, and approximately 44% of eligible women consented to enrol in this longitudinal study. Lack of interest and time were primary reasons for eligible women declining to participate. Essentially, the low consent rate reflects the challenges of recruiting young married women for participation in a longitudinal observational study. In particular, our focus on sensitive topics such as marriage, power dynamics, and sexual agency pose an additional challenge, especially in a context such as our study area where women have limited decision-making power and discussing sexual behaviour is frowned upon. Gathering socio-demographic data from non-enrolees proved difficult, and as a result, our ability to assess the generalisability of these results to all young married women in Bengaluru's slum communities is limited.

Despite these data limitations, our results provide several interesting pointers for future research and family planning policy in India. We find that the dynamic of the relationship between son preference and sterilisation among young urban women in low-fertility areas of India more nuanced than is often portrayed, such that, in our sample, son preference *and* the desire for a small family both significantly influence women's decision to stop childbearing. In other words, women who have not reached their ideal family size delay stopping childbearing till they can either get a son or until they have as many or more children than they want and family size concerns outweigh desire for a male child. That son preference has less influence than total family size at higher parity levels in our urban, low-fertility sample is interesting in that it differs from the situation in Indian states with higher fertility, where son preference has a persistently high effect at most parities.

Some authors have posited that couples' desire to have smaller families, when coexistent with persistent son preference, could create higher pressure on families to selectively abort female foetuses or otherwise eliminate unwanted daughters (Das Gupta and Bhat 1997, Bhat and Zavier 2003). Others argue that son preference may slow fertility declines (Mutharayappa et al. 1997a). This suggests a number of avenues for further research, particularly regarding the combined effects of replacement level fertility and some son preference. In Karnataka specifically, an analysis using all three rounds of the NFHS could show whether son preference had a stronger effect on the decision to sterilise and continued to influence this decision at higher parities in the past when fertility levels were higher. An examination of sex ratios at birth over time could shed light on whether and when parents resorted to sex-selective abortion to reconcile replacement levels of fertility with having at least one son. This research would provide policy-makers and programmers with important insights to the factors motivating sex-discriminatory practices, such as sex-selective abortion, and possibly suggest avenues through which these behaviours could be prevented.

Finally, the fact that almost one-quarter of the young women in our sample are sterilised by the age of 25 suggests that for many of them the preferred family building strategy seems to be one of having the number of sons or maximum desired number of children and then stopping, rather than spacing. To this extent, it would appear that the family planning programme has not succeeded in improving spacing as a family planning strategy among young urban women such as in our study area. From the standpoint of young women's reproductive health, this is a critically important issue that must be addressed.

Acknowledgments

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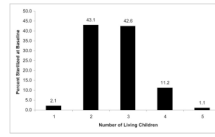
Figure 1.
Distribution of number of living children for women sterilized at baseline: young married women in Bengaluru with at least one child (N=188)
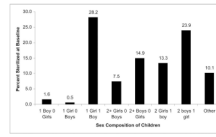
Figure 2.
Distribution of sex composition of living children for women sterilized at baseline: young married women in Bengaluru with at least one child (N=188)
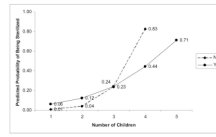
Figure 3.
Simulated Predicted Probabilities of Sterilization at Different Combinations of Having Sons
and Number of Children: young married women in Bengaluru with at least one child
(N=716)

Table 1

Individual and household characteristics at baseline of women included in analyses sample (N=416)

Variable	Mean	Standard Deviation
Woman's Characteristics		
Age	22.16	2.23
Education (Dummy – has secondary education?)	0.58	0.49
Has used modern contraceptive method (dummy)?	0.32	0.47
Woman has any sons (dummy)?	0.63	0.48
Total number of children	1.66	0.80
Has discussed contraception with husband (dummy)?	0.40	0.49
Has discussed number of children with husband (dummy)?	0.83	0.38
Household Characteristics		
Husband's education (Dummy: Husband has SSLC or Higher?)	0.22	0.41
Husband pressured for additional child (dummy)?	0.43	0.50
In-laws pressured for additional child (dummy)?	0.31	0.46

Table 2

The determinants of sterilization among young married women in Bengaluru with at least one child: Results of a complementary log-log regression (N=716)

	Odds Ratio	RSE
Woman's Characteristics		
Age	1.02	0.05
Education (Dummy – has secondary education?)	1.12	0.30
Has used modern contraceptive method (dummy)?	0.36[***]	0.10
Woman has any sons (dummy)?[±]	3.78[**]	1.57
Total number of children[±]	3.08[***]	0.41
Interaction between sons dummy and number of children	0.32[***]	0.10
Has discussed contraception with husband (dummy)?	1.02	0.27
Has discussed number of children with husband (dummy)?	0.88	0.23
Household Characteristics		
Husband has SSLC or higher (dummy)?	1.22	0.34
Husband pressured for additional child (dummy)?	0.88	0.33
In-laws pressured for additional child (dummy)?	0.27	0.22
Household wealth - Quartile 1 (reference)		
Household wealth - Quartile 2	1.43	0.54
Household wealth - Quartile 3	2.10[**]	0.77
Household wealth - Quartile 4	2.00[*]	0.79
Control Variables		
Area: site A vs. site B	0.88	0.22
Period 1 (BL to ML)	0.06[**]	0.07
Period 2 (ML to EL)	0.05[**]	0.07

Notes:

[*] p-value <0.10;

[**] p-value <0.05;

p-value <0.001

[±] Variable is centred around its mean.

All models adjusted for clustering at the woman level.