

Religion, Contraceptive Method Mix, and Son Preference Among Bengali-Speaking Community of Indian Subcontinent

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Abstract This paper examines the influence of religion on contraceptive method mix in the context of son preference among Bengali-speaking population of eastern India (i.e., West Bengal and Tripura) and Bangladesh. In spite of cultural similarity and parallel programmatic approach to family planning in these two distinct geopolitical spaces, differential use of contraception is evident. Using National Family Health Survey (2005–2006) and Bangladesh Demographic Health Survey (2007) and by employing sequential logit model, the paper finds evidence of latent son preference in adoption of modern contraception in Bengali-speaking Hindu and Muslim communities of eastern India. However, such practice is observed only among Hindus in Bangladesh. The paper further argues that although diffusion of the culture of son preference cuts across religious groups among Bengali-speaking community in eastern India, religious identity dominates over region in Bangladesh, encouraging minority Hindus to adopt a distinct pattern of contraceptive behavior with reference to sons. Such finding calls for further research in understanding the *pros and cons* of behavioral diffusion in majority–minority population mix in similar tradition and culture.

Keywords Bengali · Contraception · Religion · Son preference · Sequential logit model · Eastern India · Bangladesh

Both the authors have contributed equally at different stages of preparation of the manuscript.

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Introduction

Bengali or *Bangla* is the national language of Bangladesh and native language in the states of West Bengal and Tripura in eastern India. Few north-eastern states in India also comprise Bengali-speaking community. The deep sociocultural linkages between Bengali linguistic community in eastern India and Bangladesh remain stable even after the political partition and independence of India in 1947. Commonality in history and social-cultural environment of eastern India and Bangladesh has created a milieu that is conducive to similar social change (Basu and Amin 2000). Bengali language is one of the fundamental elements in this connectivity (ibid) (Fig. 1).

In a recent study, Ghosh and Begum (2015) elucidate that greater reliance of natural contraceptive method in West Bengal, as a whole, is markedly related with higher preference for sons, albeit latent, compared to that in Bangladesh. In the analysis, the authors used religion as a control variable as it often appears that religion plays a crucial role in determining the demographic performance in a country (see Basu 2004). In fact, the only key difference among the Bengali community over the two separate geopolitical spaces is the nature of their religious



Fig. 1 Bengali-speaking region. *Note* Bengali-speaking community/region includes current Bangladesh, Tripura, a small part of southern Assam (which is not included in the study), and West Bengal (except the northernmost hilly blocks). *Source* <http://www.geocurrents.info/geopolitics/red-tripura-and-the-geopolitics-of-greater-bengal#ixzz4ipq6U7Ih>

affiliation. Most of the Bangladeshi Bengalis are practitioners of Islam, while the majority of Bengalis in India are followers of Hinduism.

An extension of the work of Ghosh and Begum (2015) could be proposed on the ground that given the religious difference it is expected that son preference would also differ within Bengali linguistic regions and plausibly it would have an effect on contraceptive method mix. In fact, distinct difference is observed between the two regions regarding the use of natural methods (IIPS and Macro International 2007; NIPORT et al. 2013). It is worth mentioning that although emphasis of family planning programs in Bangladesh and India is on modern methods, importance on method type is different between these two countries. Emphasis of Bangladesh government was to train female Family Welfare Assistants (FWA) for providing doorstep services of modern temporary methods and evidence showed that such practices helped Bangladesh to increase family planning awareness, as well as the rate of the use of modern temporary methods (Kamal and Islam 2010; Islam et al. 2004; Barkat-e-Khuda 2004; Barkat-e-Khuda et al. 2001; Barkat-e-Khuda and Hossain 1996). In contrary, Government of India has placed its exclusive emphasis on modern permanent method, particularly female sterilization, since 1960s and such emphasis has continued even today (Dyson 2004; Srinivasan 1998; Visaria 2000; Srinivasan 2006; Ghosh and Siddiqui 2017). Moreover, a 2006 government scheme suggested that women opting for tubal ligation were eligible for Rs. 600 (USD 10) and men undergoing vasectomy were eligible for Rs. 1100 (USD 19), to compensate for wages lost during recovery (Singh et al. 2012). Furthermore, grass-root level public health and family welfare workers are also entitled Rs. 150 (USD 2.5) for tubal ligation and Rs. 200 (USD 3) for vasectomy along with counseling, motivating and providing follow-up visits to the sterilization acceptors (Government of India 2007).

It is worth noting that although the use of natural methods was never promoted in Indian family planning program possibly due to their 'ineffectiveness' or 'non-reliability' (Zachariah et al. 1994; Oddens 1997; Alan Guttmacher Institute 1994), use of such methods remained persistently at a high level (more than 20%) among Bengali-speaking communities in eastern India irrespective of religious affiliation (IIPS & Macro International 2007). Additionally, field evidences from India suggest that the Muslim women want to use contraception to the same extent as the Hindu women (Jejeebhoy and Sathar 2001; Iyer 2002) albeit lower use of contraception among Muslims in India. Muslims of West Bengal behave in a similar fashion with Muslims of Bangladesh with regard to fertility (Das and Chattopadhyay 2012). Religion does play an important role, as the Muslim women have higher fertility and lower decision-making power in West Bengal, while in Bangladesh the Muslim women enjoy better decision-making status than the minority Hindus in spite of the latter's relatively lower fertility (Chattopadhyay and Goswami 2007; Das and Chattopadhyay 2012). So behavior of a religious group depends heavily on sociocultural assimilation across space. Religious group per se does not determine status; rather it is the geopolitical space (development policy and program implementation) that plays a more important role in shaping the position of a particular group. Yet, the effect of religion in terms of its practices and preaching cannot be ignored (Iyer 2002; Chattopadhyay 2009; Das and Chattopadhyay 2012).

Role of religion on contraceptive method mix in the context of son preference has not been well discussed in Indian subcontinent, particularly in a backdrop of similar geospace and linguistic integrity. Nevertheless, debate of these three issues proceeds independently of each other for decades (Iyer 2002). The issues of adverse child sex ratio and that of ‘missing women’ are debated with reference to son preference and the impact of such preference on the marriage market (or ‘marriage squeeze’), fertility, dowry, and future sex ratio at birth in India (Sen 2001; Edlund 1999; Bhat and Zavier 2003; Botticini and Siow 2003; Roy and Chattopadhyay 2012; Guilmo 2009, 2012). On the other hand, in India, “the Muslim issue” is discussed in terms of the number of children without much discussion on sex of children (Iyer 2002) with the assumption that the Muslim have larger family size, lower use of permanent method of contraception, and lesser son preference as evident from higher child sex ratio in favor of girls (Bhat and Zavier 2003; Alagarajan 2003; Alagarajan and Kulkarni 2008) in spite of the fact that, irrespective of religion, preference for son exists across all groups in India (Iyer 2002; Borooah and Iyer 2004).

Son preference in its pervasive form has never been manifested satisfactorily within Bengali community. Rather, Bengalis are being praised often for their egalitarian gender attitude unlike Indian community of northern India (Sen 2005; Roy and Chattopadhyay 2012). At the same time, it must be addressed that new pockets of son-seeking segments are emerging in India; one such example is urban Odisha, an adjacent state of West Bengal having more or less similar cultural traits like the Bengalis (Roy and Chattopadhyay 2012). Thus, non-existence of statistically significant son preference among the Bengalis should not be equated with ‘no son preference.’ Needless to mention here, both Hindu and Islamic scriptures reveal preferential treatment for sons. According to scriptural analyses, economic cost of daughters is less recoverable for the Hindus compared to the Muslims due to certain marriage customs, mainly dowry. However, recent studies conducted in Bangladesh have found that instead of bride-price (or *mehr*), payment of dowry, though relatively recent phenomenon, has become almost ubiquitous among Muslim community (Shenk et al. 2014). Ambrus et al. (2010) have shown that in Bangladesh major changes in dowry took place specifically after the changes in legal system and it has significant correspondence to simultaneous changes in levels of *mehr*. The study further provides strong evidence of the role of legal issues governing marital separation in explaining dowry trends in Bangladesh. In India, studies (for example, Abdul and Moinuddin 2003) have shown that dowry practice exists among Muslims of rural West Bengal along with the practice of *mehr*. Waheed (2009) argued that dowry among Muslims communities in India exists in different forms, for example *jahez*. Nonetheless, the social correlates and consequences of dowry are complex (Shenk 2007; van Willigen and Channa 1991) and such practice cannot be fingered out for a particular religious practice. On the other extreme, according to traditional Hinduism, once married, women cease to be members of their natal home and are seldom permitted to remarry in the event of divorce or widowhood (Borooah et al. 2009). Moreover, Hindu marriages are generally accompanied by considerable dowries (concept of bride-price, at present, does not exist in Hinduism except few belts) (Edlund 1999; Bhat and Zavier 2003;

Botticini and Siow 2003). Such customs engender higher degree of son preference and daughter aversion among the Hindu (Borooah and Iyer 2004). One can argue that dowry could be the part of the reason of son preference, but there are likely more to it than that of dowry which is virtually ubiquitous. For example, a recent ethnographic study from Nepal revealed that despite modest improvements in gender equality, levels of education, and standard of living, the belief that daughters will be lost to other lineages restricts willingness to invest in daughters and continue procreating until they produce a son due to societal pressure (Brunson 2010).

Research Questions

The paper considers Bengali-speaking community of West Bengal and Tripura (of eastern India) and Bangladesh to understand the religious context, son preference, and contraceptive method mix within and across geographical space. We pose the question that whether there is any association between religious beliefs and practices with son preference in a given space where linguistic and cultural connection is pretty strong, yet family planning practices differ? We hypothesize that evidence of son preference in adoption of modern contraception is existing only among Bengali-speaking Hindu communities across border, and thus religious identity dominates over region. That means women continue to accept transitory method of family planning till giving birth to a son. It can also be termed as latent son preference because such preference does exist but may not be manifested. Son preference is being observed in the given geographical space, not in a very distinct but in a perceptible manner. In such spaces, the intention to regulate fertility would likely to be strong when the desired number of sons is achieved, subsequent to which women/couples go for modern methods (modern temporary and permanent) to secure maximum protection from birth of further child. On the contrary, the intention to stop childbearing remains weak and usage of natural method would increase if the desired number of sons remains unachieved. Husain et al. (2013) argued that natural method users often have unsatisfied fertility desires, particularly in terms of preference for sons, which might influence their decision to use or not use effective modern methods. Religious doctrines may widely influence contraceptive method mix, as well as son preference. So followers of the same religious faith may show a distinct pattern if religious teaching is strong, while region may play a stronger role if acculturation is strong.

For clarity of understanding, it is essential to define the following terms used in this paper:

Bengal region Bangladesh and West Bengal share the major part of erstwhile Bengal region. However, Tripura, a small state of northeast India bordering Bangladesh, is also dominated by Bengali community since historic past and thus included in this study. Although Cachar district of Assam is majored by Bengalis, in this paper we only considered states (West Bengal and Tripura of India) or country (Bangladesh) as a whole as unit of analysis. Bengal region is interchangeably used as Bengali linguistic region.

Eastern India Eastern part of India consists of different states. It generally includes Bihar, Jharkhand, Orissa, and West Bengal lying in the east of Bangladesh. In broader sense, seven smaller north-eastern states of India are also considered as part of eastern India. The paper uses this term commonly in the result and discussion parts to denote the selected states i.e., West Bengal and Tripura of India.

Bengali-speaking community/Bengalis Bengali language is spoken mainly by people of Bangladesh, West Bengal, and Tripura, though the community is spread across India and abroad. It is the national language of Bangladesh and popular regional language of eastern India. It is the native language of West Bengal and Tripura and the second most popular language of Assam and Andaman-Nicobar Island of eastern India. In this paper, we consider the Bengali-speaking community staying in West Bengal, Tripura, and Bangladesh.

Contraceptive method mix Contraception is primarily used for preventing conception which includes limiting and spacing fertility. As defined in DHS measures, it provides a profile of the relative level of use of different contraceptive methods. A broad method mix suggests that the population has access to a range of different contraceptive methods. Practitioners suggest that program should respond to the changing needs of the population at different stages in the reproductive life cycle and offer reversible methods for those who desire to space pregnancies and permanent methods for those who have completed their desired family size.

Natural method, modern method, and transitory method of contraception Different types of contraception are appropriate for different situations. The appropriate method of birth control depends on a variety of factors like overall health, age, frequency of sexual activity, number of sexual partners, desire to have children in the future, and family history of certain diseases.

Natural family planning (NFP) method includes a variety of methods used to prevent or plan pregnancy, based on identifying a woman's fertile days like abstinence, withdrawal, and lactational amenorrhea. Intrauterine devices, implants, injectable contraception, and pills are long-term modern reversible or transitory contraception. Condom is a barrier method and is easily reversible. All these methods are non-emergency modern methods. Sterilization is another modern method, non-transitory and either prevents a woman from conception or prevents a man from releasing sperm. This paper assumes that women's current contraceptive use is an indicator of wanting/not wanting children.

Some demographic and health indicators of three distinctly Bengali-dominated regions are presented in Table 1. To note, the estimates provided in Table 1 also include other ethnic minorities as well. Bangladesh is far ahead of West Bengal and Tripura in overall sex ratio (female per thousand male). However, on indicators of literacy, utilization of maternal health care services like antenatal care, institutional delivery, and postnatal care, West Bengal performs the best, while Tripura shows somewhat an average of West Bengal and Bangladesh. Nonetheless, the core demographic indicators like total fertility rate (TFR), life expectancy, or infant mortality do not differ much across states/nation. In 2013, TFRs in West Bengal and

Table 1 Some important demographic and health indicators of West Bengal, Tripura, and Bangladesh. *Sources* Table states the State indicators as a whole, not for Bengali population only

Demographic and health indicators	West Bengal	Tripura	Bangladesh
Population, 2011 ('000s)	91,348 ^a	3673 ^a	152,518 ^b
Population density, 2011 (persons/km ²)	1029 ^a	350 ^a	1015 ^b
Sex ratio, 2011 (female/1000 male)	947 ^a	960 ^a	998 ^b
% population aged 6 + that is literate, 2011	77.1 ^a	87.2 ^a	56.1 ^d
% female population aged 6 + that is literate, 2011	71.2 ^a	82.7 ^a	53.4 ^d
Child (0–6 years) sex ratio, 2011	950 ^a	957 ^a	957 ^{dj}
Life expectancy at birth (in years)	69.9 ^c	71/74 ^{c1}	66.8 ^d
Infant mortality rate, 2014	31 ^e	26 ^c	37 ^d
Total fertility rate, 2013	1.6 ^e	1.7 ^{e1}	2.3 ^f
Maternal mortality ratio	117 ^g	NA	194 ^h
% mothers who had at least 3 ANC for last birth	81.0 ⁱ	63.8	31.5 ^f
% skilled attendance at delivery	82.4 ⁱ	77.0	18.0 ^f
% institutional delivery	74.6 ⁱ	72.7	14.6 ^f
% mothers who received skilled postnatal care within 2 days of delivery	50.2 ⁱ	42.3	27.1 ^f

^aCensus of India, 2011^bCensus of Bangladesh, 2011^cSRS-based Abridged Life Table, 2009–2013^{c1}Tripura Human Development Report, 2007—71 years for males and 74 years for females^dReport of the Sample Vital Registration System, 2010^eSample Registration System Bulletin 2014^{e1}Sample Registration System Bulletin 2007^fBangladesh Demographic and Health Survey, 2013^gSample Registration System, 2011–2013^hBangladesh Maternal Mortality and Health Care Survey, 2010ⁱDistrict Level Household and Facility Survey, 2013–2014^jChild sex ratio for Bangladesh refers to 0- to 4-year age group

Tripura were 1.6 and 1.7, respectively, whereas it was 2.3 in Bangladesh. Life expectancy at birth and infant mortality rate across these distinct spaces show marginal difference. Thus, it is evident that Bengali community has attained a satisfactory level of demographic indicators in a span of past seven decades cutting across political boundaries.

Theoretically, adoption of permanent methods can only prevent any further biological children. At the same time, choice of modern methods for spacing (modern temporary methods) and limiting (permanent method) is determined by the availability and accessibility of those methods as well as promotion of some particular methods by the state (Amin et al. 2002). It may be observed that, in Bangladesh, irrespective of religious affiliation a substantial proportion of currently

married women/couple would continue to use modern temporary methods even if they did not want any more children, while in West Bengal a considerable proportion adopts permanent methods in such cases (IIPS and Macro International 2007; NIPORT et al. 2013). In Bangladesh, birth control is used for several reasons, including limiting total fertility, birth spacing, and delaying birth. Use of birth control does not necessarily indicate a desire for no further children. The conceptual frame (Fig. 2) potentially captures the broad domains of contraceptive method mix as explained above.

Materials and Methods

Data and Variables

We have used Demographic Health Survey (DHS) data sets of India and Bangladesh for comparable methodology or sampling designs. India's third round of National Family Health Survey (NFHS), 2005–2006, and Bangladesh Demographic and Health Survey (BDHS), 2007 [see IIPS and Macro International (2007) and NIPORT et al. (2009) for details of sampling design and data collection methodology] are used in this paper. The study includes currently married women aged 15–49 years who have reported Bengali as their mother tongue, had at least one live-birth, and are non-pregnant and non-menopausal at the time of the survey. For eastern India, samples consisting of 3544 and 979 women from West Bengal and Tripura, respectively, are culled out, while sample from Bangladesh consisted of 8632 women. Unit-level data of NFHS and BDHS of the stated round have been used for analyses. Appropriate weights were considered in the analyses. Both NFHS and BDHS have calculated weights on the principle of inverse of the selection probability of respondents. Out of total Bengali-speaking community of India, nearly 77% are concentrated in these two selected states—West Bengal and Tripura

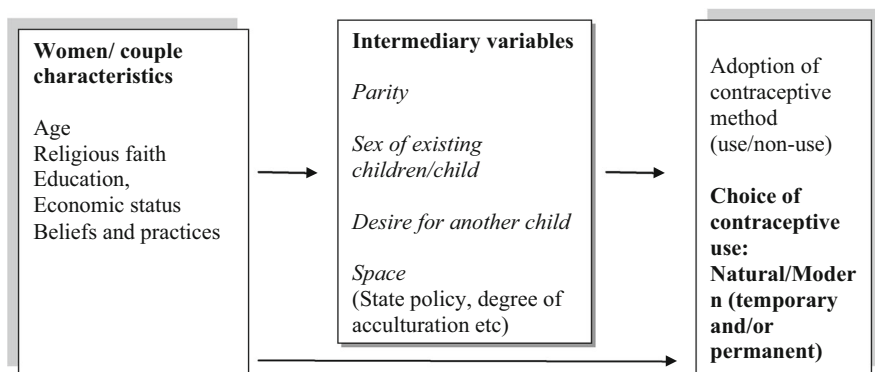


Fig. 2 Conceptual frame

(NFHS 2005–2006)—and could be considered as representative of the Bengali community in India by and large.

We have combined the contraceptive method use, the response variable, into categories. These categories are modern method users—temporary as well as permanent (IUD, pill, injectable, implant, Norplant, condom, female and male sterilization), natural method users (periodic abstinence/rhythm/safe period and withdrawal), and non-users or users of folkloric methods that do not have any proven efficacy. The predictor variable of the study is the sex composition of children, particularly the number of sons a woman is having/not having by parity. Therefore, women aged 15–49 are categorized by the number and sex composition of living children at each parity as follows: parity 1 (0 sons, 1 son), parity 2 (0 son, 1 son, 2 sons), and parity 3 + (0 son, 1 son, 2 sons, 3 or more sons). A number of potential confounding variables are controlled in the multivariate models (for details of variables, please refer to the footnote of Table 6).

Analytical Model

The paper applies sequential logit (SL) model (Buis 2007) while studying son preference and contraceptive method mix in West Bengal and Bangladesh. The model estimates the effect of the explanatory variables on the probabilities of passing through a set of transitions. In the present analysis, first transition refers women’s decision regarding whether to use a method or not (indicating contraceptive adoption) and model this choice using a conventional logit model. Second transition focuses exclusively on women who have decided to use a method and model their choice of method (indicating contraceptive choice) using another conventional logit model (Rodríguez 2015).

We may suppose that there are J alternatives, which are divided into H sub-choice sets, A_1, A_2, \dots, A_H . An individual’s choice process could be divided into two stages of transitions such that, in Transition 1, an individual chooses one of the H sub-choice sets, or A_h for some h ; in Transition 2, an individual chooses alternative $j \in A_h$, i.e.

$$\Pr(y \in A_k) = \frac{\exp(\dot{X}\delta_h)}{\sum_{u=1}^K \exp(\dot{X}\delta_u)} \quad \text{for } h = 1, \dots, H \tag{1}$$

$$\Pr(y = j|A_h) = \frac{\exp(\dot{X}\alpha_h)}{\sum_{k \in A_h} \exp(\dot{X}\alpha_k)}, \tag{2}$$

where $\delta_h \in \mathbb{R}^k, h = 1, 2, \dots, H$ and $\alpha_j \in \mathbb{R}^k, j = 1, 2, \dots, J$.

The model is identifiable with normalization $\delta_h = 0$ and $\alpha_{j_h} = 0 \forall h$, where j_h is the first element in A_h . One can derive this model in the context of ‘utility maximizing behavior’ by defining the utilities for each choice separately, at the first stage set A_h and at the second stage for each alternative $j \in A_h$ (Ghosh and Begum 2015; Buis 2007).

To note, testing the property of independence of irrelevant alternatives (IIA) is not required as in the case of multinomial logit model. Adjusted odds ratios (AOR) and average marginal effects (AME) have been estimated and used in interpretation. Data were analyzed using Stata Release 14.

Further, we have also estimated the ‘Arnold Index’ (Arnold 1985) of gender preference in order to substantiate our findings of multivariate models. In this index, it is assumed that the most desired sex compositions have the highest contraceptive prevalence level, while in the absence of gender preference all couples having the same number of living children would have the same level of contraceptive prevalence. As suggested by Arnold (1985), the overall impact of son preference on contraceptive usage can be understood better in ‘parity-specific contraceptive use approach’

$$\frac{\sum C_i * P_i}{\sum P_i},$$

where C_i is the maximum contraceptive use rate at each parity ‘ i ’ and P_i is the number of women at each parity ‘ i .’ The extent of son preference on contraceptive usage = [Expected contraceptive prevalence in absence of gender preference (in %) – Actual contraceptive prevalence (in %)].

To understand the extent of gender preference on contraceptive usage, only the prevalence of modern contraceptive methods is used in the computation since the underlying premise is that the women/couple would like to switch over to modern methods from natural methods after achieving the desired number of sons.

Results

Characteristics of the Bengali-Speaking Respondents

Table 2 depicts sample characteristics of the Bengali-speaking respondents who are currently married non-pregnant women with at least one living child of Bangladesh and West Bengal–Tripura. Respondents are predominantly rural, poor and with low education in both the selected regions. The major difference is observed in their religious affiliation—only about 8% of the respondents of Bangladesh are followers of the Hinduism, while it is nearly 74% in the selected two states of India. A higher proportion of women in Bangladesh are engaged in agricultural and allied activities, while Bengali women of eastern India are working more in non-agricultural activities such as in tailoring, housekeeping, and preparing tobacco-related products. In contrast, a larger proportion of Bangladeshi men are engaged in non-agricultural blue-collar occupations, while in eastern India Bengali men are generally engaged in white-collar activities. Mean number of children ever born as well as mean number of living children is relatively higher among Bangladeshi women compared to their counterparts in the eastern India.

Table 2 Background characteristics of currently married non-pregnant women with at least one living child of the study regions. *Source* Calculated from unit-level data of BDHS (2007) and NFHS (2005–2006) by the authors

Background characteristics	Bangladesh	West Bengal and Tripura	Total
Place of residence			
Rural	78.1	74.9	76.7
Urban	21.9	25.1	23.3
Wealth quintiles^a			
Poorest	19.5	24.2	21.5
Poorer	19.5	26.3	22.4
Middle	19.6	20.8	20.1
Richer	21.1	15.6	18.7
Richest	20.3	13.2	17.3
Mean years of schooling of respondent	4.1 (4.2) [0 17]	4.3 (4.4) [0 18]	4.2 (4.3) [0, 18]
Mean years of schooling of respondents' partners	4.7 (4.9) [0 19]	5.5 (5.0) [0 20]	5.0 (4.9) [0 20]
Religious affiliation			
Hinduism	8.3	73.9	36.4
Islam	91.7	26.1	63.6
Respondent's occupation			
Not working	65.8	67.1	66.3
Agricultural and allied activities	18.8	12.9	16.7
Other blue-collar activities	14.3	15.9	15.0
White-collar activities	1.2	4.1	2.4
Partner's occupation			
Not working/Agricultural and allied activities	34.8	39.6	36.8
Other blue-collar activities	55.2	34.6	46.4
White-collar activities	10.0	25.9	16.8
Median age of respondents	31.0 (8.9) [15 49]	32.0 (8.5)[15 49]	31.0 (8.8) [15–49]
Median age of respondents' partners	40.0 (10.7) [18 91]	40.0 (9.9) [17 95]	40 (10.4) [17 95]
Percent of respondents exposed to family planning messages in any mass media ^b	35.9	57.4	45.1
Mean number of children ever born	3.1 (1.9) [1 14]	2.8 (1.7) [1 11]	3.0 (1.8) [1 14]
Mean number of living children	2.7 (1.6) [0 12]	2.5 (1.4) [0 10]	2.6 (1.5) [0 12]
Mean number of living sons	1.4 (1.1) [0 7]	1.3 (1.0) [0 8]	1.4 (1.1) [0 8]
Mean number of living daughters	1.3 (1.2) [0 10]	1.2 (1.1) [0 7]	1.3 (1.1) [0 10]
Mean number of child losses	0.4 (0.8)[0 9]	0.3 (0.7) [0 6]	0.3 (0.7) [0 9]
Degree of participation in household decision making by the respondents ^c	2.7 (1.4) [0 4]	2.0 (1.5) [0 4]	2.4 (1.5) [0 4]
Total cases (unweighted)	3544	979	8632

Table 2 continued

Background characteristics	Bangladesh	West Bengal and Tripura	Total
Total cases (weighted) ^d	82,386	61,694	144,080

The value within parentheses represents the standard deviation of the variable, while the value within square brackets represents the range of the variable

^aWealth quintiles were computed by NFHS and BDHS based on possession of durable assets, land holding, and availability of basic amenities by employing principal component analysis (PCA). It may be noted that although wealth quintile of Bangladesh tallies with almost 20% in each category, for West Bengal such quintile was calculated nationally and the same was used for all states. For this reason, the distribution of each category of this variable is not exactly 20%. To note, such index is a simple summative measure for standard of living of households

^bThe variable was created from three separate variables, namely 'heard family planning messages on radio in last month,' 'heard/seen family planning messages in TV in last month,' and 'read family planning messages in newspaper in last month.' If the respondent is exposed to any of the above, then she is considered to be exposed to family planning messages

^cThe variable was created from four separate variables, namely 'respondent has any say in obtaining own healthcare,' 'respondents has any say in major household purchase,' 'respondents has any say in daily needs of household,' and 'respondents has any say in visiting her own friends/relatives.' These dummy variables are added and treated as a continuous variable ranging from 0 (no say in any decision) to 4 (has say in all decisions)

^dWeights were calculated by NFHS and BDHS on the principal of inverse of probability of selection of the respondent

Methods of Contraception

Table 3 shows proportions of women who have completed or on the verge of completion of their fertility size according to usage of permanent and non-permanent methods of contraception in two geographical spaces. Natural method users are marginally higher in West Bengal–Tripura region compared to Bangladesh. Distinct difference in contraceptive use is found in permanent method. While the usage of permanent method is 54.4% among Hindus and 39.0% among Muslims in eastern India, the same figures for the subpopulation in Bangladesh go with 24.0 and 15.0% only. On the other hand, the proportion of women/couples using modern non-permanent method is much higher in Bangladesh than in eastern India. The table also reveals that despite higher usage of modern non-permanent methods among women/couples of Bangladesh compared to eastern India, there exists hardly any difference in want of children according to method choice. Moreover, irrespective of difference of religious affiliation, the mean number of living sons is found to be between 1.5 and 2.5.

Indicators of fertility preferences by contraceptive use among study groups are presented in Table 4. The difference in median age of natural and modern method users is statistically significant irrespective of religious affiliation in Bangladesh. But it is not so among the Bengalis of West Bengal–Tripura. To elucidate, in Bangladesh, users of natural contraceptive methods among both the Hindu and the Muslim tend to be significantly older than users of modern methods. However, among Bengalis of eastern India, modern method users tend to be somewhat

Table 3 Contraceptive preferences, number of living children, number of living sons, and want of children among respondents aged 40 and more by study region. *Source* Calculated from unit-level data of BDHS (2007) and NFHS (2005–2006) by the authors

	Current use of types of contraceptive method (in percent)			Mean number of living children	Mean number of living sons	Not wanting future children (in percent)
	Non-permanent		Permanent			
	Natural	Modern				
Bangladesh-Hindu	13.1	20.5	24.3	3.6 (1.4)	1.9 (1.1)	98.8
Bangladesh-Muslim	13.1	20.5	15.0	4.1 (1.8)	2.1 (1.3)	98.1
West Bengal-Tripura-Hindu	16.7	3.0	54.4	2.8 (1.4)	1.6 (1.1)	99.6
West Bengal-Tripura-Muslim	14.2	7.9	39.0	4.8 (2.0)	2.5 (1.4)	100.0

relatively higher in age compared to users of natural methods (but not statistically significant), irrespective of religious affiliation. In Bangladesh, although a very low percentage of natural method users of both religious groups reported their desire for another child, such desire is relatively higher among users of natural methods among Bengalis of Eastern India, particularly among Hindus. A possible explanation for such pattern could be that the Bangladeshi women who are using natural methods have completed their desired fertility size, while natural method users of Hindu Bengalis of eastern India are still in the process of family building.

To explore the bivariate relationship between mean differences in the actual and ideal numbers of sons and daughters among natural and modern method users, *t* test has been performed. The *t* test statistic is known as the *t*-ratio and reported in Table 3. It is noticed that both the actual number of sons and the actual number of daughters among all groups of Bengali contraceptive users irrespective of region and religion exceeded the ideal numbers of sons and daughters that they desired to have had. Yet, on one hand difference between the actual number of sons and the ideal number of sons is minimal and statistically significant among Bengali Hindus of eastern India who are using natural methods compared to the users of modern methods ($t = 6.55$; $p < 0.001$), while the difference between the excess number of sons and daughters is found to be larger and statistically significant for users of natural methods belonging to the aforementioned group ($t = 4.11$; $p < 0.001$). This plausibly implies that the natural method users of Bengali Hindus of eastern India may be considered as better achievers of the desired number of sons compared to any other group. At the same time, irrespective of religious affiliation, natural method users of Bangladesh have a significantly excess number of daughters compared to the modern method users ($t = 2.16$; $p < 0.05$ among Hindus of

Table 4 Fertility preferences and gap between the actual and ideal numbers of boys and girls by contraceptive choice among the study groups. *Source* Calculated from BDHS (2007) and NFHS (2005–2006) by the authors

Indicators	Bangladesh-Hindu			Bangladesh-Muslim			West Bengal-Tripura-Hindu			West Bengal-Tripura-Muslim		
	Natural		<i>t</i> -ratios	Natural		<i>t</i> -ratios	Natural		<i>t</i> -ratios	Natural		<i>t</i> -ratios
	Modern		Modern		Modern		Modern		Modern		Modern	
Median age of respondents	35.0	30.0	3.47**	36.0	29.0	12.79***	32.0	33.0	1.05	28.0	30.0	1.58
% of respondents wishing to have another child	7.3	55.9	-	5.5	47.0	-	34.0	32.3	-	25.9	30.3	-
(a) Mean difference between actual number of sons and ideal number of sons	0.34	0.36	0.20	0.54	0.41	2.44	0.02	0.36	6.55***	0.29	0.42	1.17
(b) Mean difference between actual number of daughters and ideal number of daughters	0.65	0.30	2.16*	0.61	0.42	3.35**	0.27	0.39	2.43	0.64	0.46	0.77
<i>t</i> -Ratios between (a) and (b)	-1.33	0.58	-	-0.61	0.86	-	-4.11***	-1.14	-	-1.89	-0.51	-

p* < 0.05; *p* < 0.001

Bangladesh and $t = 3.35$; $p < 0.001$ among Muslims of Bangladesh) conceivably has following two explanations. First, irrespective of religious affiliation, natural method users of Bangladesh might want at least a living daughter compared to the users of modern methods. Secondly, natural method users of Bangladesh would have produced more daughters for want of a son, i.e., although they have son preference; they have lower daughter aversions as revealed by Iyer (2012). However, such speculations should be closely examined by employing regression modeling after controlling for other potential confounders.

Table 5 presents contraceptive method mix by gender–parity composition of living children. Adoption of any contraceptive method, particularly modern method, increases with an increase in the number of sons up to parity two, except for the Bengali Muslims in eastern India. Although the use of natural method declines with an increase in the number of sons among Bangladeshi Hindu women in their second parity, women of first parity with a son from the same community did not reveal any such trend. Nevertheless, Bengali women of eastern India, irrespective of their religious affiliation, tend to switch to modern methods from natural methods with an increase in the number of sons up to parity two. A plausible explanation could be that Bengali women in eastern India and to some extent Bangladeshi Hindus use natural methods as a transitory method during the reproductive cycle when they are yet to achieve the desired number of sons.

Transitional Probabilities of Contraceptive Use: Sequential Logit Regression Models

Adjusted odds ratios (AOR) and average marginal effects (AME) obtained from the sequential logit regression models, after controlling for a number of potentially confounding covariates, are estimated for parity by religion of two specified regions (Tables 6, 7). The odds and transitional probabilities of adopting a contraceptive method as opposed to not using a method signify first transition, while second transition referred to the odds and transitional probabilities of choosing a modern method over the natural method (Transition 2). AOR and AME estimates of first transition (Table 6) indicate that except Bengali Muslim women of eastern India women of other three groups are more likely to adopt any method with an increase in the number of sons, up to parity two. For example, at parity one, probability of contraceptive use increases by more than 11, 6, and 4 percentage-points among women with one living son for Bangladeshi Hindus, Bangladeshi Muslims, and Bengali Hindus of eastern India, respectively, compared to their counterparts who do not have a living son. On the other hand, women of Bengali Muslim community of eastern India who have one living son are nearly 8 percentage-points less likely to adopt contraceptive method compared to their counterparts who do not have a son. The likelihood of increase in contraceptive adoption among second parity women who have two living sons is considerably higher among the Hindu women in both eastern India and Bangladesh when compared to their Muslim counterparts. However, adoption of any contraception does not vary significantly among Bengali Muslim women of eastern India who have two living sons against their counterparts who do not have any living son. At parity three and above, women of Bangladesh,

Table 5 Contraceptive choice among women according to gender and parity composition of children. *Source* Calculated from unit-level data of BDHS (2007) and NFHS (2005–2006) by the authors

Gender–parity composition	Bangladesh-Hindu				Bangladesh-Muslim			
	Not using methods	Using natural methods	Using modern methods	Number of cases (weighted)	Not using methods	Using natural methods	Using modern methods	Number of cases (weighted)
Parity 1								
No son	42.5	6.3	51.2	670	46.8	4.8	48.5	7414
One son	29.1	9.1	61.8	967	39.7	6.9	53.4	8091
Parity 2								
No son	28.9	18.0	53.1	388	38.8	7.6	53.6	3904
One son	22.6	13.2	64.2	1025	30.2	7.0	62.8	10,643
Two sons	19.6	4.0	65.3	530	28.1	8.8	63.0	4229
Parity 3 and more								
No son	30.6	15.0	54.4	1486	40.3	9.4	50.3	18,691
One son	36.5	11.5	52.1	655	37.0	10.2	52.8	5949
Two sons	22.3	17.2	60.5	489	29.8	8.9	61.4	5189
Three or more sons	30.6	13.2	56.2	598	46.0	9.6	44.4	11,468
Total	29.4	12.0	58.6	6808	38.6	8.3	53.2	75,578
Gender–parity composition	West Bengal–Tripura-Hindu				West Bengal–Tripura-Muslim			
	Not using methods	Using natural methods	Using modern methods	Number of cases (weighted)	Not using methods	Using natural methods	Using modern methods	Number of cases (weighted)
Parity 1								
No son	27.9	40.7	31.4	5235	33.7	29.9	36.5	820
One son	23.5	38.2	38.3	6552	42.1	23.6	34.3	1212

Table 5 continued

Gender-parity composition	West Bengal-Tripura-Hindu				West Bengal-Tripura-Muslim			
	Not using	Using natural methods	Using modern methods	Number of cases (weighted)	Not using	Using natural methods	Using modern methods	Number of cases (weighted)
Parity 2								
No son	25.0	26.8	48.2	3287	19.1	32.2	48.7	833
One son	15.8	19.2	65.0	8420	24.4	27.4	48.2	2212
Two sons	10.9	14.2	74.9	4329	23.7	21.9	54.4	1030
Parity 3 and more								
No son	14.7	15.0	70.3	7612	35.0	18.3	46.7	4414
One son	10.7	12.9	76.5	3923	25.4	15.1	59.5	1324
Two sons	6.2	10.0	83.9	3181	29.8	11.2	59.0	993
Three or more sons	18.7	10.1	71.2	3043	31.6	15.7	52.7	3274
Total	17.4	22.0	60.6	45,582	30.7	20.3	49.1	16,112

Table 6 Adjusted odds ratios (AOR) and average marginal effects (AME) of contraceptive method adoption by religion and region

Gender-parity composition	Transition 1: adoption of contraception (not using vs. using)															
	Bangladesh-Hindu				Bangladesh-Muslim				West Bengal-Tripura-Hindu				West Bengal-Tripura-Muslim			
	Odds ratio	Average marginal effect	Z-stat		Odds ratio	Average marginal effect	Z-stat		Odds ratio	Average marginal effect	Z-stat		Odds ratio	Average marginal effect	Z-stat	
Parity 1																
No son (ref)	1.00				1.00				1.00				1.00			
One son	1.88	0.1121	4.62***		1.33	0.0631	8.23***		1.34	0.0438	5.80***		0.67	-0.0777	-3.56***	
N (weighted)	1626			15,482				11,787				2032				
Parity 2																
No son (ref)	1.00				1.00				1.00				1.00			
One son	1.44	0.0470	1.84*		0.99	-0.0005	-0.06		1.31	0.0304	4.36***		0.89	-0.0164	-0.98	
Two sons	1.95	0.0863	3.21***		1.14	0.0946	2.40**		2.13	0.0855	10.10***		0.91	-0.0136	-0.68	
N (weighted)	1943			18,739				16,036				4075				
Parity 3 and more																
No son (ref)	1.00				1.00				1.00				1.00			
One son	0.50	-0.1275	-5.82***		0.90	-0.0235	-3.16***		1.31	0.0273	4.20***		1.64	0.0878	5.83***	
Two sons	0.93	-0.0138	-0.56		1.32	0.0426	5.38***		2.40	0.0884	10.22***		0.87	-0.0257	-1.65	
Three or more sons	1.03	0.0055	0.26		0.86	-0.0327	-5.87***		0.84	-0.0182	-2.83***		1.50	0.0422	7.24***	
N (weighted)	3224			41,233				17,759				10,005				

Table 6 continued

Gender-parity composition	Transition 1: adoption of contraception (not using vs. using)							
	Bangladesh-Hindu		Bangladesh-Muslim		West Bengal-Tripura-Hindu		West Bengal-Tripura-Muslim	
	Odds ratio	Average marginal effect	Z-stat	Odds ratio	Average marginal effect	Z-stat	Odds ratio	Average marginal effect
Total weighted cases	6793			75,454			45,582	
							16,112	

A number of potential confounding variables controlled in the multivariate models are as follows: age and age-square of women; education; occupation of husband (categorized as agriculture, other blue-collar jobs, white-collar jobs); place of residence (categorized as rural, urban); wealth index (categorized as no/irregular and almost regular/regular); months since the woman had their last child (continuous); and intention to have another child (categorized as no, yes). Additionally, degree of participation in household decision making was obtained by adding the following four dummy variables (self/jointly with other family members, other than self): decision on own healthcare, visiting friends/relatives, in purchase of daily needs, and in purchase of expensive household items

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 7 Adjusted odds ratios (AOR) and average marginal effects (AME) of contraceptive method choice by religion and region. *Source* Calculated from unit-level data of BDHS (2007) and NFHS (2005–2006) by the authors

Gender-parity composition	Transition 2: choice of contraception (natural vs. modern)											
	Bangladesh-Hindu			Bangladesh-Muslim			West Bengal-Tripura-Hindu			West Bengal-Tripura-Muslim		
	Odds ratio	Average marginal effect	Z-stat	Odds ratio	Average marginal effect	Z-stat	Odds ratio	Average marginal effect	Z-stat	Odds ratio	Average marginal effect	Z-stat
Parity 1												
No son (ref)	1.00			1.00			1.00			1.00		
One son	1.13	0.0107	0.47	0.83	- 0.0175	- 2.53*	1.50	0.0898	8.72***	1.29	0.0510	1.83*
<i>N</i> (weighted)	1626			15,482			11,787			2032		
Parity 2												
No son (ref)	1.00			1.00			1.00			1.00		
One son	3.14	0.11124	5.65***	1.38	0.0295	4.10***	1.50	0.0635	6.75***	0.87	- 0.0247	- 1.10
Two sons	15.48	0.2769	8.10***	1.13	0.1002	1.34	2.64	0.1525	13.72***	1.23	0.0381	1.46
<i>N</i> (weighted)	1943			18,739			16,036			4075		
Parity 3 and more												
No son (ref)	1.00			1.00			1.00			1.00		
One son	0.82	- 0.0292	- 1.20	0.67	- 0.0516	- 7.01***	1.15	0.0166	2.06*	1.11	0.0186	1.05
Two sons	0.57	- 0.0810	- 3.23***	0.96	- 0.0049	- 0.61	1.46	0.0453	5.02***	1.39	0.0570	2.82***
Three or more sons	1.04	- 0.0052	0.23	0.99	- 0.0010	- 0.17	1.46	0.0451	5.22***	1.41	0.0589	4.63***
<i>N</i> (weighted)	3224			41,233			17,759			10,005		

Table 7 continued

Gender-parity composition	Transition 2: choice of contraception (natural vs. modern)											
	Bangladesh-Hindu			Bangladesh-Muslim			West Bengal-Tripura-Hindu			West Bengal-Tripura-Muslim		
	Odds ratio	Average marginal effect	Z-stat	Odds ratio	Average marginal effect	Z-stat	Odds ratio	Average marginal effect	Z-stat	Odds ratio	Average marginal effect	Z-stat
Total weighted cases	6793			75,454			45,582			16,112		

A number of potential confounding variables controlled in the multivariate models are as follows: age and age-square of women; education; occupation of husband (categorized as agriculture, other blue-collar jobs, white-collar jobs); place of residence (categorized as rural, urban); wealth index (categorized as no/irregular and almost regular/regular); months since the woman had their last child (continuous); and intention to have another child (categorized as no, yes). Additionally, degree of participation in household decision making was obtained by adding the following four dummy variables (self/jointly with other family members, other than self): decision on own healthcare, visiting friends/relatives, in purchase of daily needs, and in purchase of expensive household items

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

irrespective of religion, do not show any definite pattern of contraceptive use. For example, at parity three and above, Bangladeshi Hindu women with one living son and Bangladeshi Muslim women with one, two, or three or more living sons are significantly less likely to use any contraceptive method. Non-use of contraception among Bangladeshi women at parity three or more could be due to attainment of higher ages, reduced fecundity, and nearly completion of family size. It could also be due to reduced coital frequency among older women/couples who have married for a longer period of time. Although propensity to adopt any contraceptive method significantly increases among Bengalis of eastern India who have two living sons, irrespective of religious affiliation, it declines among the Hindu women who have three or more sons but not among the Muslim women of the same parity of eastern India.

The AOR and AME estimates from the second transition (Table 7) reveal that, at parity two, the likelihood of choosing a modern method over the natural method substantially increases among women of the Hindu community with an increase in the number of sons irrespective of their region of stay. For example, the probability of using modern methods for Bangladeshi and Bengali Hindu women of eastern India at parity two with one and two living sons increases nearly by 11, 6, 28, and 15 percentage-points, respectively, compared to women with no living son. Even at parity one with a living son, the probability of adopting a modern method increases almost by 9 percentage-points among Bengali Hindus of eastern India. However, the likelihood of adopting a modern method was found to be insignificant for their Bangladeshi counterparts.

Contraceptive choice does vary among Bengali Muslims in two regions. Although, at parity one, Bangladeshi Muslim women with a living son are significantly less likely to choose modern contraceptive methods, Bengali Muslim women of eastern India are considerably more likely to choose modern methods over natural methods (by 5.1 percentage-points) when they have a living son compared to those who do not have so. At parity two, Bangladeshi Muslim women are significantly more likely to accept modern methods if they have a son, but such choice is found to be insignificant if both children are sons. Similarly, such choice is also found to be insignificant for Muslim women of the same parity belonging to eastern India with one or two living sons. This probably indicates a desire for a daughter among Muslim women of second parity irrespective of region. AME suggests that the likelihood of using modern methods for Bengali Muslims of eastern India at parity three or more with two or three and more sons significantly increases by about 6 percentage-points compared to women with no living son. However, we have not observed such trend to accept modern methods among higher parity Muslim women of Bangladesh. These women could be older and traditional who value larger family sizes and averse to use modern contraceptive methods.

From these findings, it appears that Bengali Hindu women of both the regions and Bengali Muslim women of eastern India use natural methods as a transitory method and once they achieve the desired number of sons they switch over to modern methods. However, such a pattern is not observed among Bangladeshi Muslim women. In other words, it seems that the number of children plays an important role over the sex composition of children in influencing contraceptive

choice among Bangladeshi Muslim women, while sex composition seems to be more important than the number of children among other three study groups, i.e., Hindus at parity two irrespective of regions and Muslims of eastern India.

The actual and expected prevalence of modern contraceptive usage computed by Arnold index is presented in Table 8. A positive difference between the expected and actual prevalence indicates a negative impact of gender preference on the use of modern methods. The Arnold estimates show that modern contraceptive use would have been higher by about 11, 7, and 8% among Bangladeshi Hindu women and Bengali Hindu and Muslim women of eastern India, respectively, if there was no preference for sons. However, among Bangladeshi Muslim women, the absence of son preference would have increased modern contraceptive usage only by 3%.

Discussions

The study highlights the role of religion on contraceptive method mix in the context of son preference among Bengali linguistic community settled in two culturally similar yet politically separate spaces, i.e., Bengali-speaking community of West Bengal and Tripura of eastern India and Bangladesh. Our subpopulation is divided into four groups, i.e., Bengali-speaking Hindus and Muslims of West Bengal and Tripura and, similarly, Bengali Hindus and Muslims of Bangladesh. Although cross-border cultural flow is strong, yet contraceptive choice among the Hindus and the Muslims are different in two Bengali communities in eastern India and Bangladesh. For example, natural method use is substantially higher among Bengalis in eastern India though the program's emphasis in both these regions has been always on modern contraceptive methods. Thus, the thrust of the econometric analysis of the paper is to identify whether the differential pattern of contraceptive use is an outcome of differential preference for sons in two dominant religious groups among the Bengali community of two distinct geopolitical spaces. We hypothesize that evidence of son preference in adoption of modern contraception is existing only among Bengali-speaking Hindu communities across space, and thus religious identity dominates over region.

Two major findings of the paper are that the choice of method does not vary much according to religion but it varies according to the geopolitical region and that the adoption of modern methods is related to preference for son for three out of the four subpopulation groups. Choice of method does not vary according to sex composition of the living children among the Muslims in Bangladesh, while it is not so among the Bengali Hindus and Muslims in West Bengal–Tripura of eastern India and only among the Hindus in Bangladesh. In other words, Bengali women of eastern India irrespective of their religious affiliation and the Hindu women of Bangladesh use natural methods as a transient contraceptive method. Once they achieve the desired number of sons, they switch over to modern methods. Such pattern is not observed among the Muslims in Bangladesh.

In this context, we have argued that unlike the son preference of north-western India, which is generally manifested through sex-selective abortions and poorer nutritional status among girl children compared to boys; the preference for son in

Table 8 Actual and expected contraceptive use based on Arnold Index among study groups. *Source* Calculated from unit-level data of BDHS (2007) and NFHS (2005–2006) by the authors

	Bangladesh-Hindu		Bangladesh-Muslim		West Bengal-Tripura-Hindu		West Bengal-Tripura-Muslim	
	Currently using modern methods	Expected use in the absence of sex preference	Currently using modern methods	Expected use in the absence of sex preference	Currently using modern methods	Expected use in the absence of sex preference	Currently using modern methods	Expected use in the absence of sex preference
First parity	57.5	61.8	51.1	53.4	35.3	38.3	35.2	34.3
Second parity	65.3	76.4	60.9	63.0	64.2	74.9	49.9	54.4
Third or more parity	57.1	92.3	56.9	61.6	76.9	83.9	58.8	78.8
Total	60.4	76.0	56.6	59.5	58.2	65.5	49.5	57.8

West Bengal has remained restricted at the attitudinal level (Ghosh and Begum 2015). Our study also supports the finding that such attitude is manifested through differential use in contraception, particularly in terms of the use of natural methods. One may call it as latent son preference because couples without a desired number of living sons prefer natural methods over modern methods due to the fact that couples are not overtly concerned with pregnancy or the failure of contraceptive (natural) methods as well as the costs (economic and/or social) of unwanted children. The above argument could further be strengthened for Bengalis of eastern India by the fact that there is no large-scale evidence which suggests that if the unwanted child is a girl, she is tagged as 'unwanted' or being deprived of other privileges such as immunization, nutrition, education, and well-being, though some micro-level studies have reported preference for boys over girls cutting across religion, economic standing, and educational attainment (Dey (Pal) and Chaudhuri 2009; Mukhopadhyay 2013; Saha et al. 2015). However, such gender preference would increase in future with fertility decline (Roy and Chattopadhyay 2012). Decline in child sex ratio in 2011 census is largely attributed to the differential stopping behavior (DSB) of Bengali couples of West Bengal due to attitudinal son preference and it is not attributed to sex-selective abortion (Das 2014). Similar trend is also observed in Nepal where despite modest improvements in gender empowerment measures Hindu households pressure couples who might otherwise be willing to invest in daughters to continue procreating until they produce a son. Incidentally, Nepali couples do have a discrepancy between their initially stated reproductive ideals and their ultimate behavior (Brunson 2010).

One can argue that similar to diffusion of the Hindu cultural traits such as caste system and dowry practices among a significant proportion of the Muslims in India including West Bengal (Khanam 2013), son preference has also diffused among Bengali Muslims acknowledging the fact that higher fertility among the Muslim women is also a consequence of son preference arising out of sociocultural and religious factors (Nasir and Kalla 2006). Further, it has generally been observed that the Indian Muslims do have such preference due to their lower socioeconomic status that creates circumstances leading to demand for son, being the best socioeconomic insurance—Bengali Muslims are not an exception (Asghar et al. 2014; Nasir and Kalla 2006). Thus, space dominates over religion in eastern India in determining son preference and contraceptive method mix, negating our hypotheses partially for the fact that region dominated over religion.

On the contrary, the preference for sons among Bangladeshi Hindus is a reflection of their inherent sociocultural favoritism for sons, in spite of being in a Muslim-dominated space, indicating a stronger impact of religion over space, supporting our hypotheses. Evidence for sex selection at parity two among Bangladeshi Hindus residing in minority pockets exists when the previous born child/children is/are female (Visaria 2015). It is worth mentioning at this juncture that, in Bangladesh, the proportion of the Hindu was 22% in 1951 (i.e., during independence of undivided India in 1947) which has been reduced to 8.5% in 2011—indicating a massive outflow of the Hindu minority population from Bangladesh to other countries (mainly in India) possibly due to the fear of insecurity and lack of faith in institutions, which provide only lip service to their

marginalization (Pattanaik 2013). Another study estimated that over the period of 1964–1991 5.3 million Hindus, or 538 persons each day, went missing, with as much as 703 persons going missing per day from 1964 to 1971 (Barkat et al. 1997). Pattanaik (2013) also notes that if the nation state gives primacy to the religion of majority, even if recognizing religions of minorities, “creates space for religious-cultural hegemony, makes room for discrimination, nurtures social biases and undermines the concept of equal citizenship” (Pattanaik 2013, p. 422). Perhaps, the sociocultural settings are not conducive enough for cultural assimilation of minorities and the process of ideational diffusion of dominant culture to the minorities is plausibly weak. In congruence with such argument, Munshi and Myaux (2006) have found that, in Bangladesh, although a woman’s decision regarding contraception responds significantly to changes in contraceptive prevalence in her own religious group within the village, cross-religion effects are entirely absent. In such situation, religion could override region and is ideal for testing ‘minority status’ hypothesis in terms of son preference.

The research focus on the last quarter of the twentieth century over the extent of son preference in Bangladesh demonstrated that there was indeed a strong son preference in general, particularly among Bangladeshi Muslims (Chen et al. 1981; Mannan 1988; Amin and Mariam 1987; Muhuri and Samuel 1991; Chowdhury 1994; Alam and Bairagi 1994; Gu and Roy 1995). However, recent studies suggest that there is a reorientation of son preference among the Muslims in Bangladesh possibly due to change in labor market conditions, enhancement of economic empowerment due to micro-finance activities, and government’s education policy (Basher 2007; Chattopadhyay and Goswami 2007; Ram et al. 2007; Fraser 2014; Kabeer et al. 2014; Shah 2005; Begum et al. 2012; Shenk et al. 2014; Ghosh and Begum 2015), and couples increasingly want a son as well as a daughter. Fraser (2014) has argued that although majority of the women in rural Bangladesh do not participate directly in the labor market, the labor-related economic changes of recent years have affected the preference for the son in the country. According to Fraser, women in recent years, both as daughters and wives, are shouldering an increasing share of the social and familial burden at home, while men are migrating to cities, as well as abroad, to harness better earning opportunity. In effect, the women in Bangladesh are mostly acting as buffer between the family and the local community. Studies have also pointed out that the rapid change in fertility behavior in Bangladesh is not only a reflection of its efficient family planning program but also the integration of women in socioeconomic change (Das and Chattopadhyay 2012; Mitra and Nawab 2000, 2004). Arguably, because of these developments, the rural societies perhaps have started recognizing the economic importance of women in addition to their day-to-day familial role leading to a reduction in the preference for son at the societal level. Kabeer (2012) and Kabeer et al. (2014) argued that the Bangladeshi young Muslim mothers/couples are less likely to discriminate between sons and daughters than in the past with respect to survival and investments in human capital, and rather they want a smaller number of children; girls currently have enough job opportunity in the labor market particularly from the export-oriented garment industry and can assist elderly parents, while the sons are increasingly failing in their responsibility to

look after the older parents. These changes indicate a weakening of patriarchal structures and cultural norms around fertility intentions and sex composition of families in Bangladesh.

It is worth mentioning that the family size preference has declined in most of the south Asian countries including the current study area of eastern India and Bangladesh. However, in contrary to India, Bangladesh has experienced fertility declines without distinct display of worsening sex ratio at birth (Kabeer et al. 2014); however, regional variation on sex ratio at birth in Bangladesh is worth exploring. Interestingly, while the western region shows normal sex ratios at birth, the eastern region that is closer to Tripura and West Bengal of India displays distorted sex ratios. Recent evidences reveal that women of eastern Bangladesh do have distinct preference for sons, while women from the west Bangladesh have demand for both son and daughter equally (Talukder et al. 2015). Moreover, women's use of contraception was associated with the sex composition of their living children (ibid).

Certain limitations of the present study must be acknowledged. First, cross-sectional data on which the study is based ideally do not allow determining cause-effect relationship. Second, community-level variables, for example, mean educational attainment in a village, were not available in the dataset, and due to this reason we could not adjust our findings against community-level variables. Finally, the data on desired fertility are self-reported data, which could be biased due to post facto rationalization.

In summary, the paper highlights the difference in the use of contraception among two religious groups, namely the Hindu and the Muslim, residing in two geographical entities that are similar in cultural settings. The contraceptive method that a Bengali couple might choose depends on parity and existing sex composition of children. Hindus and Muslims of eastern India are identical to Hindus of Bangladesh in contraceptive method mix, and all of these three groups switch to modern method when they achieve their desired number of sons. Thus, a strong association between contraceptive method mix and latent son preference is visible among Hindus cutting across international boundaries. While Bengali Muslims of eastern India do show strong latent son preference, such practice is unidentified among Bangladeshi Muslims who want both daughters and sons, as both of them serve a purpose. So the connection between contraceptive method mix and son preference is stronger in eastern India irrespective of religion, indicating a stronger role of space over religion. Thus, the interplay of religion and space on contraceptive method mix is varied, complex, and difficult to generalize. The minority religious group might follow the culture of the majority in certain spaces, while the minority might maintain their certain preferential social norms, barring the culture of the majority, in a given geospatial entity.

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Compliance with Ethical Standards

Competing interest The author(s) declare that they have no competing interests.

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