

Socioeconomic Correlates of Contraceptive Use among the Ethnic Tribal Women of Bangladesh: Does Sex Preference Matter?

S. M. Mostafa Kamal; Ph.D.^{1,2}, Che Hashim Hassan; Ph.D.²

¹ Unit for the Enhancement of Academic Performance, University of Malaya, 50603 Kuala Lumpur, Malaysia

² Department of mathematics, Islamic university, Kushtia, Bangladesh

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Abstract

Objective: To examine the relationship between socioeconomic factors affecting contraceptive use among tribal women of Bangladesh with focusing on son preference over daughter.

Materials and methods: The study used data gathered through a cross sectional survey on four tribal communities resided in the Rangamati Hill District of the Chittagong Hill Tracts, Bangladesh. A multistage random sampling procedure was applied to collect data from 865 currently married women of whom 806 women were currently married, non-pregnant and had at least one living child, which are the basis of this study. The information was recorded in a pre-structured questionnaire. Simple cross tabulation, chi-square tests and logistic regression analyses were performed to analyzing data.

Results: The contraceptive prevalence rate among the study tribal women was 73%. The multivariate analyses yielded quantitatively important and reliable estimates of likelihood of contraceptive use. Findings revealed that after controlling for other variables, the likelihood of contraceptive use was found not to be significant among women with at least one son than those who had only daughters, indicating no preference of son over daughter. Multivariate logistic regression analysis suggests that home visitations by family planning workers, tribal identity, place of residence, husband's education, and type of family, television ownership, electricity connection in the household and number of times married are important determinants of any contraceptive method use among the tribal women.

Conclusion: The contraceptive use rate among the disadvantaged tribal women was more than that of the national level. Door-step delivery services of modern methods should be reached and available targeting the poor and remote zones.

Keywords: Bangladesh, Contraceptive use, Ethnic tribal women, Sex preference, Logistic regression

Introduction

Son preference over daughter is a recognized social determinant of gender discrimination. Despite this, in

many societies there is often a pronounced preference for sons over daughters, although the desire for at least one child of each sex is also common (1-3). Even though son preference over daughter is a common phenomenon in many countries, it is more pronounced in patriarchal setting. Studies from Bangladesh, India, Nepal, Pakistan and Sri Lanka have confirmed the

Correspondence:

Dr. Mostafa Kamal, Department of Mathematics, Islamic University, Kushtia 7003, Bangladesh.
Email: kamaliubd@yahoo.com

widespread presence of son preference in South Asia and its impact on reproductive attitudes (1,4-6).

Numerous studies have explored parental sex preference in many developing (1,2,7-16) and recently in the developed countries (17-20). These studies focused on the impact of sex preference of children, various issues of reproductive, as well as socio-demographic behavior like fertility (9,11,12,14,16), mortality (5), abortion (12), contraception (1,8, 10-14,16), and family size (7,16). Studies conducted on the plain land women of Bangladesh and elsewhere on the effect of sex composition of children on the contraceptive use evidently showed that, in general, women without a son were less likely to be using a family planning method than those who had at least one son (1,4,8,10-14,16).

Although strong preference for sons is often assumed to be a significant barrier to fertility reduction, no consistent association has been observed between the sex composition of the children and fertility regulation. For example, in cross-national settings among developing countries, a study concluded that, fertility decisions are less influenced by sex preference and more by the costs and benefits involved with a child (21). Studies in India and Pakistan in the period 1960-1970 have provided no clear evidence that son preference significantly affects fertility (22,23). A study in Sri Lanka argued that, "son preference has proven to be no substantial obstacle to achieving significant fertility decline" (24).

The studies on sex preference of children in a comprehensive way are of utmost importance for several reasons, particularly for deepening the understanding of the nexus of gender discrimination, reproductive behavior including fertility, contraceptive practice and the family structure. The study on the issue may also improve understanding the possible fertility transition of a society. However, the studies conducted so far on the effect of sex preference on various aspects of socioeconomic and reproductive behaviour in Bangladesh are mainly concentrated on the plain land Bengali women (1,12,13,). Little is known on the impact of the socio-demographic factors, in particular, the effect of sex preference of children on contraceptive use among the ethnic minority communities, called the indigenous or tribes, who are diverged from the mainstream way of life.

Till date, systematic studies on reproductive preference and other demographic issues on the patriarchal tribal societies of Bangladesh are rare. The use pattern, factors affecting the use of contraceptive

method, sex preference of child and its effect on the use of family planning methods, preference and sources of contraceptive methods among the ethnic tribal women are yet to be investigated. This study is an attempt to fill in these gaps and aims to examine the relationship between gender preference and any contraceptive use among the ethnic tribal women residing in the southeastern part of Bangladesh. The particular objective of the study is to examine the effect of socio-demographic factors, and particularly, the effect of son preference on any contraception adoption among four ethnic tribal communities residing in Rangamati Hill District under Chittagong Hill Tracts (CHT) of Bangladesh. The main hypothesis of the study is that there has a strong son preference over daughter in the patriarchal tribal society.

Status of tribal women in the Chittagong Hill Tracts
Very little secondary sources are available about the current status of the tribal women residing in the CHT region in terms of their changing relationships. The tribal women generally participate in food production in the fields, even some women work as sales girl in the shop and some are engaged in weaving in their homes, which are very rare in the mainstream Bengali neighbors. It appears that females are burdened with some routine works than their male counterparts (25). Although women put in equal labour to men in the production process, her labour is not fully recognized as the men's (26). Despite this, tribal women are accorded considerable respect in their own communities. This may be due to prevailing traditional beliefs, cultural norms and social values in the tribal societies of the country.

With regard to inheritance, only sons can inherit father's property in the Chakma and Tanchangya society. In the Tripura, a son may only inherit his father's property and a daughter enjoys her mother's property, while in the Marma, both males and females have equal rights in inheriting family property (25). In the public domain, tribal women enjoy relatively more freedom than her Bengali sisters do (26). There is no preference for either a boy or a girl in the Marma society (27), the second highest tribal community in the CHT region.

The entire CHT region was lagging behind the other regions of the country in terms of educational status. A study pointed out that, no male of the 47 percent of the households and no female of the 66 percent of the households were able to read or to write a letter (25). The overall literacy rate among the adults was 32 percent; 42 percent among males and

20 percent among females. Among five ethnic communities, the literacy rates in females were found highest in the Chakma (38 percent), followed by Bangali (30 percent), Marma (30 percent), Tripura (22 percent) and the Mro (3 percent) (25).

Materials and methods

A cross-sectional survey was conducted by the author in Rangamati Hill District during January to March, 2011. A multistage sampling procedure was adopted to collect data from four major tribal groups: the Chakma, Marma, Tanchangya and Tripura, which were selected purposively. This was considered to have the minimum representation of the major tribes of the study area and to examine the effect of various socio-demographic factors including sex composition of the living children and the ethnic identity on any contraception use. Step by step three Upazillas (sub districts), ten Unions and thirty villages were randomly selected.

Since the outcome variable “current use status of any contraceptive method” is dichotomous by nature, hence the sample size was estimated by the following formula (28):

$$n = \frac{2z^2 \times p \times q}{d^2}$$

where, n = estimated sample size;

p = probability of contraception use;

q = probability of not using contraception; and

d = degree of accuracy desired.

Taking into consideration the probability of using contraception in an earlier report (29) and a confidence level of 95 percent corresponding to z value of 1.96, and with a 10 percent error level, the sample size for an estimate for each community was required to be 179. Primarily, it was decided to gather information from 200 currently married women of reproductive age from each of the communities except for the Chakma. Since the Chakma is the largest tribal community in the study area, it was decided to gather information from 300 women from this group. Thus, the estimated sample size stood at 900. A total of 900 eligible women were randomly selected and 865 women were successfully interviewed. The response rate was 96.1 percent. Among them, 806 women were currently married, non-pregnant and had at least one living child, which are the basis of this study.

A pre-tested and structured questionnaire was used

to collect information from the women. The questionnaire included various socio-demographic information, such as household amenities, couples' age and education, working status, number of children ever born, number of living children, living sons, living daughters, desire for additional children, ever and current use status of family planning method, and sources of non-clinical modern contraceptive materials. Four groups of higher educated and well trained interviewers from the four tribal communities, consisting of two females and one male in each group, collected data. Each of the groups was assigned to gather information from their own community for easy interaction between interviewees and interviewers as languages differ between the tribal groups. The author himself supervised the survey.

A variable namely ‘sex composition of surviving children’ was created on the basis of information provided by the respondents regarding the number of living sons and living daughters to test the hypothesis of the study. Both quantitative and qualitative statistics were applied on the data. Chi-square tests were applied to examine the association between current use of contraception and a set of independent variables consisting socio-demographic characteristics of the respondents. Along with the sex composition of the living children, the other covariates taken into consideration for analyses are as follows: tribal identity, current age of the women, women's education, husbands education, place of residence, women's working status, experience of child mortality, type of family, access to television (TV) and electricity, number of times married and visitations by family planning workers (FPW). Two separate binary logistic regression models were fitted to assess the effect of the selected socio-demographic factors including gender composition of the living children on the current use of contraception. In the first model of the logistic regression analysis, only one independent variable namely “sex composition of the living children” was included to examine its crude effect on the “current use of any contraceptive method”. Further, a multivariate model of logistic regression was constructed to examine the net effect of the “sex composition of the living children” after confounding over other independent socioeconomic variables. For the logistic regression models, if a woman or her husband was using any contraceptive method, she was coded as “1” and “0” for otherwise. Multi-collinearity in the selected independent variables was considered prior to perform the

multivariate analysis. The collected data was summarized, tabulated and analyzed by SPSS 17.0 version. The logistic regression model used in this study is as follows:

$$P = \frac{1}{1 + e^{-\beta X}}$$

where, P is the probability of the use of any contraceptive method, β is a vector of unknown coefficients, and X is a vector of covariates that affect the dependent variable. Thus, the general multivariate logistic regression model can be expressed as:

$$\text{Log}_e \frac{P_i}{1 - P_i} = \beta X = \sum \beta_j X_{ji}$$

which expresses the log odds of the outcome variable as a linear function of the independent or explanatory variables.

Study settings

Rangamati Hill District is a land of charming beauty. It is mixed together with lake and mountains. The district is located at the southeastern part of Bangladesh. The area of the district is 6,116.13 sq km of which 53.54 sq km is riverine and 4,824.63 sq. km is under forest. The population density of the district was 86 per sq km. The overall literacy rate was about 42 percent in 2001. The district is comprised of 10 Upazillas, 48 Unions and 1,353 villages. The total population of the district was 525,100 in 2001. Ten different tribal communities constituted about 55 percent of its total population. The major tribal groups: the Chakma, Marma, Tanchangya and Tripura constituted 98 percent of all tribal communities and 54 percent of the total population of the district in 2001 (29). The Chakma, Marma and Tanchangya belong to Buddhists and the Tripura are Hindus.

Results

Profile of the ethnic tribal women

The mean age of the respondents was 31.6 (SD \pm 7.4) years. The mean age at first marriage of the women was 18.6 (SD \pm 2.7) years. The mean number of children ever born to per currently married woman was 2.6 (SD \pm 1.5) and had 2.4 (SD \pm 1.3) living children. The mean ideal family size reported by the women was 2.5 (SD \pm 0.8) children. Two-thirds (66.3 percent) of

the women reported that two or lesser children were

ideal for a family, while one-third (33.7 percent) reported three or more children as ideal family size (these statistics are not shown in the Table).

Table 1 shows the background characteristics of the respondents. With regard to the sex composition of the living children, a slightly over one-fifth (22.7 percent) had only daughter(s), a slightly over one-fourth (27.8 percent) had only son(s) and half (49.5 percent) of the tribal women had both son(s) and daughter(s). Of the women, the Chakma were 31.6 percent, Marma 23.1 percent, Tanchangya 22.2 percent and the Tripura were 23.2 percent. Among the respondents, 43.9 percent were aged 25-34 years. Also, 60.5 percent of the women had no formal education and only 12.7 percent had completed at least secondary level of education. Among the husbands of the women, 35.0 percent had no formal education, while 22.8 percent had completed at least secondary level of education. The most (77.9 percent) of the women were from rural areas. Almost half (48.3 percent) of them were housewives and only 10.7 percent were paid employed. Among them, 16.1 percent of the women had had experience of at least one child death. A slightly less than one-fourth (23.0 percent) of the

respondents were from joint or extended family. Over two-fifths (41.8 percent) had electricity connection in their households (HH) and almost the same (40.2 percent) had ownership of Television (TV). The obtained data showed 3.8 percent of the ethnic tribal women were married more than once. Finally, 46.3 percent of the women were paid for visits by a Family Planning Worker (FPW) in the last three months prior to the survey date.

Differentials of current use of contraception

Table 2 shows the prevalence and differentials of contraceptive use by various socio-demographic factors. Overall, the contraceptive prevalence rate (CPR) was 73.1 percent in the study women. Gender composition of living children was significantly associated with any contraceptive use. The rate of contraceptive use was higher among women who had both son(s) and daughter(s) than women who had only daughter (s) or who had only son(s). The CPR was 68.3 percent among women who had only daughter (s), and the corresponding figure for the women who had only son(s) was 69.6 percent. The difference of CPR among women who had only son(s) or only daughter(s) was minimal.

Table 1: Profile of the ethnic tribal women of Rangamati Hill District, Bangladesh

Characteristics	n	%
Gender composition of living children		
Only daughter(s)	183	22.7
Only son(s)	224	27.8
Both daughter(s) and son(s)	399	49.5
Tribal groups		
Chakma	254	31.5
Marma	186	23.1
Tanchangya	179	22.2
Tripura	187	23.2
Current age		
<25	136	16.9
25-34	354	43.9
35+	316	39.2
Women's education		
No education	488	60.5
Primary	106	13.2
Junior	110	13.6
Secondary+	102	12.7
Husband's education		
No education	35.0	35.0
Primary	21.5	21.5
Junior	20.7	20.7
Secondary+	22.8	22.8
Residence		
Rural	628	77.9

Urban	178	22.1
Women's work status		
Homestead/Housewife	389	48.3
Self-employed	331	41.1
Paid employment	86	10.7
Experience of child mortality		
No	676	83.9
Yes	130	16.1
Type of family		
Nuclear	621	77.0
Extended	185	23.0
Have electricity connection in the household		
No	469	58.2
Yes	337	41.8
Have TV		
No	482	59.8
Yes	324	40.2
Number of times married		
Once	775	96.2
More than once	31	3.8
Visited by FPW		
No	433	53.7
Yes	373	46.3
Total	806	100.0

The rate of contraceptive use varied significantly among the ethnic tribal groups. The highest prevalence of contraception was in the Chakma (78.7 percent), followed by the Tanchangya

(76.5 percent), Tripura (62.4 percent) and the Marma (62.4 percent). Women's age showed to have significant association with current contraceptive use. The highest prevalence was in the women aged

Table 2: Current use status of contraception of the ethnic tribal women by socio-demographic characteristics

Characteristics	% using contraceptives		Chi-square
	No	Yes	
Gender composition of living children			6.90*
Only daughter(s)	31.7	68.3	
Only son(s)	30.7	69.6	
Both daughter(s) and son(s)	22.8	77.2	
Tribal groups			16.09***
Chakma	21.3	78.7	
Marma	37.6	62.4	
Tanchangya	23.5	76.5	
Tripura	27.3	72.7	
Current age			15.60***
<25	39.7	60.3	
25-34	22.0	78.0	
35+	26.9	73.1	
Women's education			13.05**
No education	30.9	69.1	
Primary	22.6	77.4	
Junior	24.5	75.5	
Secondary+	14.7	85.3	
Husband's education			23.64***
No education	36.2	63.8	
Primary	19.1	80.9	
Junior	28.1	71.9	
Secondary+	19.0	81.0	
Residence			14.55***

Tribal women, contraceptive use

Rural	30.1	69.9	
Urban	15.7	84.3	
Women's work status			1.25 ^{ns}
Homestead/Housewife	27.0	73.0	
Self-employed	28.1	71.9	
Paid employment	22.1	77.9	
Experience of child mortality			1.17 ^{ns}
No	26.2	73.8	
Yes	30.8	69.2	
Type of family			5.30 ^{**}
Nuclear	25.0	75.0	
Extended	33.5	66.5	
Have electricity connection in the HH			11.14 ^{***}
No	31.3	68.7	
Yes	20.8	79.2	
Have TV			15.40 ^{***}
No	32.0	68.0	
Yes	19.4	80.6	
Number of times married			7.55 ^{***}
Once	26.1	73.9	
More than once	48.4	51.6	
Visited by FPW			41.76 ^{***}
No	37.8	62.2	
Yes	17.6	82.4	
Total	26.9	73.1	

Note: Level of significance *** p<0.001; ** p<0.01; and ^{ns} not significant

25-34 years and the lowest in the women aged below 25 years. Level of education for both husbands and wives were significantly (p<0.01) positively associated with any contraceptive use.

Place of residence showed significant association with the use of any contraceptive method. The CPR was 84.3 percent in urban areas as against of 69.9 percent in rural areas. Women's work status and child mortality did not show to have significant association with current use of contraception. Nonetheless, the prevalence of any contraceptive method was higher among the women who were paid employed and who had no experience of child mortality. Significantly, more women from nuclear family, who had electricity connection in their HH, who had access to TV and who were visited by FPW, were using more contraceptives. Women's "number of times married" was negatively associated with contraception use.

Contraceptive method mix and sources

Among the ethnic tribal women, 63.9 percent were using any modern methods and 9.2 percent were using any traditional methods. In national level, the overall CPR was 55.8 percent. The prevalence of

modern and traditional methods was 47.5 percent and 8.3 percent, respectively (NIPORT et al., 2009). The most preferred modern methods among the study women were the oral pill (42.1 percent), followed by injectables (13.0 percent) and female sterilization (5.5 percent). The use rate of condom was only 2.0 percent. The prevalence of periodic abstinence was 7.8 percent. A comparison of contraceptive method mix between the study indigenous women and national level has been provided in Figure 1.

Local pharmacies and shops were the main sources of non-clinical methods, which provided 42.2 percent of the total demand. The community health workers and FPW provided 32.8 percent of the contraceptive materials, and 25.0 percent materials were supplied from upazilla health complexes (not shown in Table). Thus, more than two-fifths of the contraceptive clients were willing to pay, while the rest of three-fifths needed supports from the government facilities.

Determinants of contraceptive use

Table 3 demonstrates the unadjusted odds ratios of sex composition of living children on the current use of any contraceptive method among the ethnic tribal 22.2 percent, respectively, among the women who

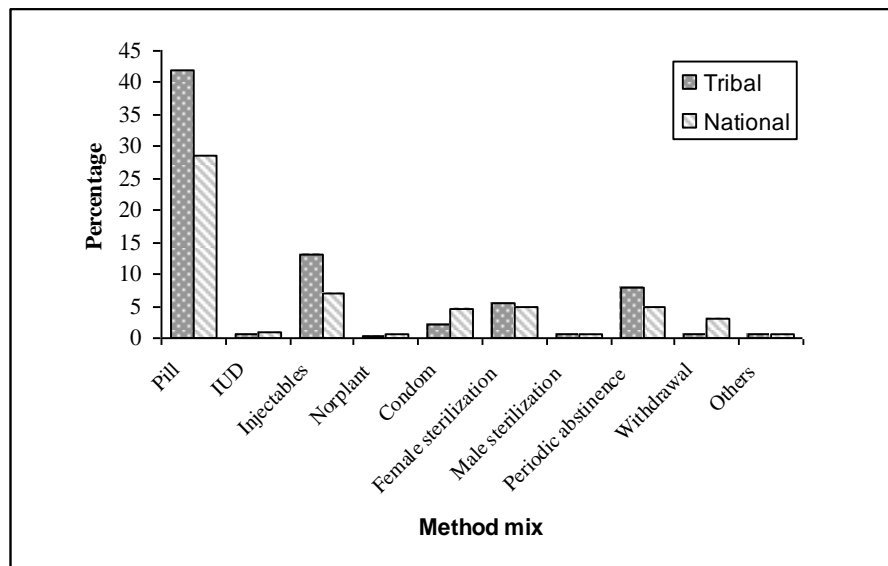


Figure 1: Contraceptive method mix among tribal women and in national level

Table 3: Crude odds ratios with 95% confidence interval (CI) of the logistic regression analysis showing the effects of sex composition of living children on current use of any contraceptive method among the ethnic tribal women

Characteristics	Odds ratio	95% CI	
		Lower	Upper
Gender composition of living children			
Only daughter(s)	0.637*	0.431	0.940
Only son(s)	0.678*	0.469	0.980
Both daughter(s) and son(s)	Reference	---	---

Note: Level of significance * p<0.05.

had only daughter(s) and who had only son(s) as women. As can be seen, the odds of the use of any contraceptive method decreased by 26.3 percent and compared to those who had both daughter(s) and

son(s). The difference in the likelihood of being a contraceptive user was 4.1 percent higher among the tribal women who had only son(s) than those who had only daughter(s).

Table 4: Odds ratios with 95% confidence interval (CI) of the logistic regression analysis showing the effects of socio-demographic characteristics on current use of contraception of the ethnic tribal women

Characteristics	Odds ratio	95% CI	
		Lower	Upper
Gender composition of living children			
Only daughter(s)	0.559**	0.343	0.910
Only son(s)	0.586**	0.368	0.934
Both daughter(s) and son(s)	Reference	---	---
Tribal groups			
Chakma	Reference	---	---
Marma	0.567**	0.353	0.912
Tanchangya	1.521 [‡]	0.907	2.551
Tripura	0.867 ^{ns}	0.501	1.500
Current age			
<25	Reference	---	---
25-34	2.043**	1.254	3.327
35+	1.145 ^{ns}	0.647	2.027
Women's education			
No education	Reference	---	---
Primary	1.383 ^{ns}	0.762	2.509

Tribal women, contraceptive use

Junior	1.307 ^{ns}	0.682	2.502
Secondary+	2.065 [‡]	0.787	5.416
Husband's education			
No education	Reference	---	---
Primary	1.827 ^{**}	1.098	3.039
Junior	1.069 ^{ns}	0.626	1.827
Secondary+	0.915 ^{ns}	0.430	1.947
Residence			
Rural	Reference	---	---
Urban	1.622 [‡]	0.885	2.975
Women's work status			
Homestead/Housewife	Reference	---	---
Self-employed	0.982 ^{ns}	0.643	1.500
Paid employment	0.816 ^{ns}	0.395	1.685
Experience of child mortality			
No	Reference	---	---
Yes	0.944 ^{ns}	0.583	1.528
Type of family			
Nuclear	Reference	---	---
Extended	0.579 ^{**}	0.383	0.876
Have electricity connection in the HH			
No	Reference	---	---
Yes	1.476 [‡]	0.885	2.460
TV ownership			
No	Reference	---	---
Yes	1.458 [‡]	0.923	2.302
Number of times married			
Once	Reference	---	---
More than once	0.376 ^{**}	0.164	0.860
Visited by FPW			
No	Reference	---	---
Yes	2.776 ^{***}	1.960	3.932

Note: Level of significance *** p<0.001; ** p<0.01; * p<0.05; ‡ p<0.10; and ^{ns} not significant

Table 4 shows the odds ratios of the multivariate logistic regression analysis on contraceptive use against the contextual factors included in the analyses along with the sex composition of the living children among the indigenous women. The inclusion of other socio-demographic factors in this model would help in understanding that how much other socioeconomic factors capture the effect of sex composition of living children on the current use of any contraceptive method. However, the findings of the multivariate logistic regression are consistent with those obtained in bivariate analyses. Although women's work status and experience of child mortality were identified to have no significant association with contraceptive use, those were also included in the multivariate analysis to examine whether those variables have net effect after adjusting for other confounding factors.

Findings reveal that after controlling for other confounding factors, the effect of sex composition of the living children on the use of any contraceptive use appeared as vague. The likelihood of contraceptive use was somewhat lesser among the ethnic tribal women who had only daughter(s) or

who had only son(s) as compared to those who had both daughter(s) and son(s). The risk of being a contraception user was 44.1 percent and 41.4 percent respectively lower in the women who had only daughter(s) and who had only son(s). The difference of odds ratio of contraceptive use among the women who had only son(s) than women who had only daughter(s) was only 2.7 percent, indicating no significant preference for son over daughter among the study tribes.

Table 4 further suggests that, tribal identity had net effect on current use of contraception. After being adjusted for other socio-demographic factors, the Marma were 43.3 percent less likely and the Tanchangya were 52.1 percent more likely to use any contraceptive method than the Chakma women. The difference of likelihood of contraception use between the Chakma and the Tripura was found to be insignificant. The women with at least secondary education were 2.1 times as likely as to be current users of any contraceptives than those who had no formal education. In contrast, the women with husbands having primary education were significantly

83 percent more likely to use any contraceptive method than the women whose husbands had no formal education. The urban women as compared to their rural counterparts were 1.62 times tended to use any contraceptive method.

The tribal women who were from joint family, were significantly ($p < 0.01$) 42.1 percent less likely to use contraception than those who were from nuclear family. The odds to be a contraceptive user significantly ($p < 0.10$) increased by 47.6 percent among woman who had electricity connection in their households than those who had no access to the facility. The access to electronic media such as TV increased the likelihood of being a current contraceptive user by 45.8 percent in the tribal society. The women married more than once were significantly ($p < 0.01$) less likely to use any contraception than women who were married only once. Home visitations by FPW appeared as the most single significant ($p < 0.001$) determinant of current use of contraceptives of the indigenous women. The women who were paid for visits by a FPW were 2.78 times as likely as to use any contraception than those who were not paid for visits by FPW.

To confirm whether the study tribes have preference for son over daughter, we showed contraceptive use by parity of women in Table 5. The univariate logistic regression analyses conducted for contraceptive use for all models were found to be

insignificant. Following these, we conducted multivariate logistic regression analyses to examine whether there was any preference for son or daughter among the study tribes after controlling for women's education, residence, electricity connection in the household and ownership of TV. The Both univariate and multivariate logistic regression analyses did not show apparent picture for the preference of son or daughter. The only model constructed for parity 3 showed that the women who had one son and two daughters were more likely to use any contraceptive method than women who had three daughters, while other models showed significant association between parity and contraceptive use.

Discussion

Son preference over daughter is a common phenomenon in South Asia and in patriarchal setting. The sex preference of a child in developing countries, particularly in patriarchal society has been studied extensively. The issue in the ethnic tribal communities has attracted little attention among researchers and policy makers in Bangladesh. This paper attempts to fill in this gap through the investigation of any contraceptive use among the ethnic tribal communities residing in the Rangamati Hill District –the southeastern part of Bangladesh.

Table 5: Odds ratios with 95% confidence interval (CI) of the logistic regression analysis showing the effects of parity on current use of contraception of the ethnic tribal women

Parity	Unadjusted odds ratios (OR) with 95% confidence interval			Unadjusted odds ratios (OR) with 95% confidence interval		
	OR	95% CI		OR	95% CI	
		Lower	Upper		Lower	Upper
Parity 1: 0 son	Reference			Reference		
Parity 1: 1 son	1.43	0.84	2.43	1.41	0.81	2.45
Parity 2: 0 son	Reference			Reference		
Parity 2: 1 son	0.85	0.37	1.96	1.10	0.46	2.66
Parity 2: 2 sons	0.55	0.22	1.35	0.72	0.28	1.84
Parity 3: 0 son	Reference			Reference		
Parity 3: 1 son	2.17	0.63	7.51	4.11*	1.03	16.45
Parity 3: 2 sons	0.83	0.26	2.65	1.30	0.37	4.60
Parity 3: 3 sons	2.08	0.41	10.53	3.11	0.56	17.30
Parity ≥4: 0 son	Reference			Reference		
Parity ≥4: 1 son	0.33	0.04	3.12	0.31	0.03	2.93
Parity ≥4: 2 sons	0.49	0.06	4.27	0.46	0.05	4.11
Parity ≥4: ≥3 sons	0.36	0.04	3.31	0.32	0.03	3.04

Note: Level of significance * $p < 0.05$

Adjusted for women's education, residence, electricity connection in the HHs and TV ownership.

The findings suggest that, the overall CPR in the study women having at least one child was 73.1 percent. In national level, the overall CPR was 55.8 percent in 2007. The contraceptive use rate in the Chittagong division was the second lowest (43.9 percent) among the six administrative regions of the country (NIPORT et al., 2009). These statistics indicate that the CPR was much higher in the indigenous women than that of the plain land mainstream women at regional as well as national level. Finding further reveals that the modern method use rate was 16.4 percent higher in the indigenous women than their plain land Bengali neighbors.

The results of both bivariate and multivariate analyses reveal statistically unbiased use of contraceptive method among the ethnic tribal women regarding to sex composition of the living children. Earlier studies reveal strong preference for girls in the matrilineal Garo tribe in Bangladesh (30) and slightly more preference for son over daughter in the Indian tribal women (8). Thus, the finding of the study does not support the hypothesis of son preference over daughter in the patrilineal ethnic tribal society of Bangladesh. This finding is in contrast with earlier studies which showed stronger effect of particular sex preference, preferably son on contraceptive use in the patrilineal settings in Bangladesh (12,13) and elsewhere (2,3,31). In settings where women are subjugated socially and financially, son preference over daughter is more widespread there.

Among the four studied tribal communities, the CPR was highest in the Chakma and the lowest in the Marma society. The higher likelihood of contraceptive use in the Chakma and Tanchangya may be attributed to their better-off economic status and higher education than other tribal communities in the study area (32). This finding is consistent with that of earlier studies on the CHT region (33). Among others, the splendid possible reasons of overall higher practices of contraception in the indigenous women may be their stronger motivation toward smaller family size and higher autonomy they enjoy in their society than their mainstream Bengali sisters do. Another vital reason may be the stronger family planning program in the study area. For instance, about half (46.3 percent) of the women were paid for visits by the FPW in the study area, whereas this rate was only 15.7 percent in national level (34).

With regard to contraceptive method mix, oral pill and injectables were more preferred methods in the

ethnic tribal women, while the use rate of condom among them was about half in comparison with national level. This implies that contraceptive method mix was highly prejudiced towards female methods. One of the possible reasons of higher preference of oral pill may be attributed to availability and free supply by FPW. Besides, the preference of injectables may be due to longevity, which is suitable for the indigenous women as many of the tribes live in the remote zones of the hilly terrains, where non-clinical temporary modern methods are not easily accessible. Beside these, lower use rate of condom may be their ignorance regarding STD/STI and HIV/AIDS. It is notable that one out of ten women relied on traditional method. Among modern method users, about two-fifths collected free of cost non-clinical methods from government facilitated sources, which may be a constraint in the success of family planning programme in the study area, unless supplies of modern methods are continued among those disadvantaged women from government sources and free of cost.

Most studies recognize the positive effect of women's education on contraceptive use (1,2,13,31,35). Finding of this study is also consistent with those of aforementioned studies for women's education, although the effect appeared to be somewhat weaker. Educated women are more likely to exercise the 'quality-quantity trade-off' of their children. Most of these women are likely to see the benefit of their schooling; they may develop higher aspirations for their own children's schooling (35), resulting in higher likelihood of contraception use for spacing and limiting childbirth. A conflicting finding of the study is related to husband's education. While the bivariate analysis indicated a strong significant positive association between contraceptive use and husband's education, the multivariate analysis yielded higher likelihood and stronger effect of husband's with primary education compared to other categories of this variable. This may be due to the fact that, the effect of husband's higher education on contraception use has been largely captured by other socioeconomic factors included in the analysis.

The higher likelihood of contraceptive use of the urban residents may be attributed to easy availability, increased knowledge of modern methods and higher education among them than their rural counterparts. The analyses of the study suggest that women belonged to joint family were less likely to use

contraceptive methods. This is likely that in nuclear family, mother is the primarily responsible for taking care of children. In the joint family additional kin including grandmothers often take care of the infant and child, and substantially creates opportunity to be reluctant of being contraceptive users, which has reflected from the findings of the study. This finding is also consistent with earlier studies (36,37).

Ownership of TV is a proxy indicator of economic status and electricity is a development indicator. These variables positively contribute to be contraceptive users. Electricity broadens the use of TV in a HH, while TV plays important role by broadcasting adverse effect of large family size and motivational messages regarding the benefit of smaller family. Couples can select alternatives and suitable methods for family planning through programmatic discussion of electronic media. Studies conducted elsewhere also showed positive effect of the variables on contraceptive use (38,39). Number of times married of the study tribal women appeared as a significant determinant in the use of any contraception. The lesser likelihood of contraception among women married more than once may be attributed to the fact that, these women had elapsed substantial times through marital disruption and had not yet achieved children as their desired size.

Home visitations by FPW appeared as the most single significant determinant of contraceptive method use in the indigenous women. It is beyond the question that the FPW can motivate couples by providing them with counseling on family planning methods and by providing family planning services and disseminating supplies to achieve their widespread availability. In the very remote areas of Bangladesh, the FPW are the only contacts with the family planning programme that village women ever have (40). Home visits by FPW are important not only because they generate demand for contraceptive methods, they also provide a convenient source of supply for women who already are inclined to use them (41). Our finding is also consistent with those conducted on the mainstream women of Bangladesh (41,42).

The study did not find influence of son preference on contraceptive use in the patriarchal ethnic tribal women residing in the southeastern part of Bangladesh. The CPR among the indigenous women was higher than that of the mainstream plain land women at regional and national level. In fact, the likelihood of contraception use was found to be vague

when the living children of the women were grouped into parity by male and female. The findings substantiate that women were more likely to have two children either male or female and were more preferred to have a balanced sex composition of surviving children. Tribal identity was identified as an important determinant of contraception use in the women. Among socio-demographic factors, electricity connection in the household, access to mass media and number of times married were identified important factors to be contraceptive users. The most single determinant of contraception practice was visitations by FPW. Very low use rate of condom may be the ignorance regarding STD/STI and HIV/AIDS in the tribal society. Appropriate measures should be undertaken to influence the use of condom in these disadvantaged and vulnerable communities to protect them from various sexual diseases. The findings of this study illustrate an important clue in future constraint of family planning programme in the study area. The door-step delivery services of modern contraceptive methods should be continued; otherwise, the present success of family planning programme may be restraint among the disadvantaged ethnic tribal communities of the hilly remote areas of Bangladesh.

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