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AREA VARIATIONS IN USE OF MODERN CONTRACEPTION IN RURAL BANGLADESH: A MULTILEVEL ANALYSIS

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Summary. This study in Bangladesh found that inter-cluster variation in the use of modern reversible methods of contraception was significantly attributable to the educational levels of the female family planning workers working in the clusters. Women belonging to clusters served by educated workers had a higher probability of being contraceptive users than those whose workers had only completed primary education. At the household level, important determinants of use were socioeconomic status and religion. At the individual level, the woman being the wife of the household head and having some education were positively related to her being a user. The model also found that inter-household variation was significantly greater than inter-cluster variation. Finally, the study concludes that after controlling for various covariates at all three levels, the clusters do not have significantly different levels of use of modern reversible methods of contraception. There are, however, some special areas where contraceptive use is dramatically low, and these contribute significantly to the observed inter-cluster variation.

Introduction

In many parts of the developing world where family planning programmes are operational, area variations in the use of modern contraception have been observed (Hatmadji, 1990). This is also the case in Bangladesh, where a family planning programme has been operational for over 20 years and dramatic increases in the use of modern contraception have been achieved. Fertility surveys conducted since 1975 have observed that although use of modern contraception has increased in all areas, the level of use is not the same (Cleland *et al*., 1994). Amin, Diamond & Steele (1996) investigated the reasons for variations between districts (second highest administrative unit) and found that district-level aggregate measures of literacy and religiosity were important explanatory factors. However, they found that the between-cluster variation in use was higher than the between-district variation, indicating a need to investigate between-cluster variation in detail. (Clusters are primary sampling units (PSU) defined

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by the National Census of 1981, and correspond approximately to villages in rural areas.)

An alternative approach of the aggregate effect of religiosity and overall modernism is to assume that it operates at the *bari* level. In rural Bangladesh, the unit of dwelling is the bari, commonly a patrilineal family home housing one or more huts. Bari members also share common socioeconomic and cultural patterns and the bari head is known to have considerable influence on the other members of the bari (Aziz & Maloney, 1985). Studies have found that attributes of bari heads (and their wives) are correlated with the use of modern contraception by bari members in Bangladesh (Rahman, 1986; Nahar & Rahman, 1995). Thus, the organization of the bari may affect the use of modern contraception by bari members in a number of ways. For example, it may affect the freedom of movement within the cluster and the leniency of the bari towards its women.

This issue of women's own mobility is recognized by the Bangladeshi government (Government of Bangladesh, 1996) as a factor in contraceptive use. The programme strategy of doorstep delivery of contraception, and the recruitment of 24,000 family planning workers for this purpose, was devised particularly to address this issue (Amin, Li & Ahmed, 1996). Under this programme, each female family planning worker (Family Welfare Assistant or FWA) serves a geographical area with a population of about 4000 (Koenig *et al*., 1992). Her job is to inform and motivate, and supply modern methods of contraception to eligible women in her area. She can refer her cases to a health centre (Family Welfare Centre or FWC) built for this purpose at the union level (lowest unit of administration).

However, in spite of the best efforts of the Bangladeshi government, not all villages have received uniform services by FWAs and FWCs. Additionally, during the initial recruitment of FWAs (in 1978), some selection criteria had to be relaxed due to the unavailability of suitable applicants, resulting in lesser qualified FWAs in some clusters (Neaz & Banu, 1992). Indeed, some of the inter-village variations in use of modern contraception may be attributed to characteristics of the FWA (Rahman, 1986). Studies have found that FWAs differ in their performance for various reasons, such as their relationship with clients, societal placement, age, education and marital status (Andaleeb, 1996; Neaz & Banu, 1992; Rahman, 1986). However, none of the above-mentioned studies has investigated the effect of community-level (cluster here) socioeconomic and access variables on inter-cluster variation. The present study investigates the inter-cluster variation in use of modern contraception in rural Bangladesh by considering variation at three levels: between individuals, baris and clusters.

To analyse data with three levels of variation it is important to control the correlation that exists within clusters and baris. In this study, it is successfully achieved by using a multilevel model. This model supplies the correct tool to investigate whether differentials of the FWA explain any inter-cluster variation in use of modern contraception in rural Bangladesh, over and above individual and bari characteristics. The use of the multilevel model incorporating the three levels of variation in rural Bangladesh is new to the literature and unique to this study.

In this article the cluster-level variations are investigated for use of modern reversible methods (MRMs) only (and not permanent methods). This choice is justified

by the observation that the increase in use of modern methods in the last decade in Bangladesh has been almost solely attributable to the increase in use of modern reversible methods. In fact, the acceptance of permanent methods has declined slightly in recent years and the increase in use of oral pills has been mainly responsible for the increase in contraceptive prevalence rate (CPR) in Bangladesh (Mitra *et al.*, 1994). It is therefore felt that modern reversible methods are the choice of future users and an investigation of inter-cluster variation in use of these methods will be useful for policymakers in Bangladesh.

Methods

This two-staged study was conducted in 1994. In the first stage, sixteen villages were randomly selected, as sub-samples of the 1991 Contraceptive Prevalence Survey (Mitra, Lerman & Islam, 1992), four from each of the four administrative divisions of Bangladesh (NB: two more divisions were added in 1994, making a total of 6). In the second stage, random sampling was used to select around 60 baris from each village, resulting in a total of 936 baris. In each bari, every eligible ever-married woman (between ages 15 and 49) was interviewed. In total 3165 women from rural Bangladesh were interviewed. Sterilization acceptors were excluded, and the remaining 2861 women were used in the analysis.

Modern reversible methods (MRMs) considered here include oral pills, condoms, IUDs, foam and injections. 'Current use' (coded 1 if user, 0 otherwise) was the independent variable. Of 2861 women, 40% were found to be current users of any modern reversible method. Users of traditional methods like safe period, abstinence, withdrawal etc. constituted only 2% of the sample; they were considered to be non-users in this model.

The model

The multilevel logistic model used in this study is a special case of the multilevel linear model proposed by Goldstein (1991). Here, multilevel logistic regression is used to model current use of modern contraceptives on selected individual-, bari- and cluster-level variables, including the FWA's characteristics, in a three-level model. Let y_{ijk} be the binary response of the ith individual in the jth bari in the kth cluster, where $y_{ijk}=1$ for being a user and 0 otherwise, and let $p_{ijk}=\Pr(y_{ijk}=1)$. Then the three-level random coefficients logistic model can be written as follows:

$$\text{logit}\, p_{ijk}=\log(p_{ijk}/1-p_{ijk})=H_{ijk},$$

where

$$H_{ijk}=X\beta+u_{jk}\gamma+w_k\eta,$$

and

$$p_{ijk}=\{\exp(X\beta+u_{jk}\gamma+w_k\eta)\}/\{1+\exp(X\beta+u_{jk}\gamma+w_k\eta)\}+e_{ijk},$$

where H_{ijk} is the linear predictor. X, γ and η are design matrices containing covariates which may be defined at any of the three levels in the model. These may be characteristics of the woman such as her age, education, or socioeconomic characteristics of the bari or variables acting at the cluster level. β values are the associated vector of parameter estimates and these are known as 'fixed effects'. In a multilevel model the variation not explained by the observed covariates is split into

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Table 1. Computation of the variable 'house'

Variable	Categories
House wall	Bera/wood = 0; tin/cement = 1
House roof	Chan/bera = 0; tin/cement = 1
House floor	Mud = 0; cement = 1
Electricity	None = 0; yes = 1

components corresponding to each level in the hierarchy, with a separate error term for each level. Variation at the woman level is represented by e_{ijk}, which is assumed to have a binomial distribution, while u_{jk} and w_k are the level two (bari) and three (cluster) error terms respectively. These are assumed to follow normal distributions with zero means and respective variance/covariance matrices Ω_2, Ω_3.

Variables used

Individual-level factors

The individual-level factors include age, education, number of living children, experience of child mortality and relationship with bari head. The choice of correlates was based on prior experiences in the literature. Age, education and number of living children are well known correlates of use of modern contraception.

Relationship with bari head. In the field it was observed that compared with other relatives, wives of bari heads were more likely to be users. This phenomenon has been observed in other studies (Blanchet, 1991) and 'relationship with bari head' was considered as a predictor variable in this study.

Experience of child mortality. This variable was coded 1 if any of a woman's children died under the age of 5, and 0 otherwise. Earlier results have shown experience of child mortality to be negatively related to contraceptive use by rural Bangladeshi women (Chowdhury, Fauveau & Aziz, 1992).

Bari-level factors

Bari-level variables include both socioeconomic information of the bari as a whole and attributes of the bari head.

Socioeconomic variables. Five socioeconomic indicators were available for this study. Because of high collinearity between them, they were investigated by principal component analysis (Tabachnick & Fidell, 1989). Two factors were obtained. The results showed (not presented here) that house roof, house wall, house floor and electricity constituted one factor with almost equal loadings. Possession of a tube-well was the sole contributor to the second factor.

A five-point score named 'house' was constructed by summing across the variables house roof, wall, floor and electricity (Table 1). The superior categories were given a score 1 and 0 otherwise, and the resulting variable was recoded into two categories

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Table 2. Distribution of users of modern reversible methods of contraception according to selected individual-level variables, rural Bangladesh, 1994 ($N = 2861$)

Variable	Frequency	% user	χ^2 significance
Age of woman (years)			
≤19	216	23	<0·001
20–24	779	39	
25–29	712	53	
30–34	448	60	
35–39	312	60	
40–44	216	50	
≥45	178	41	
Number of living children			
None or one	1029	28	<0·001
Two or three	1025	59	
Four or more	807	55	
Education			
None	1928	43	<0·001
Literate	933	57	
Experience of child mortality			
Yes	298	49	0·32
No	1867	47	
Relationship with bari head			
Wife	536	58	<0·001
Daughter-in-law	662	44	
Sister-in-law	675	49	
Other	988	43	

(<3, ≥3). The variable 'possession of tube-well' was considered as an independent variable in the regression analysis.

Religion. Bangladesh is predominantly an Islamic state with 84% of the population being Muslim, and the current sample had the same proportion. Previous studies have found that non-Muslim couples have a higher probability of being users of modern contraception, so this was considered as a control variable in the present study (Kamal & Sloggett, 1993; Kamal, 1994).

Characteristics of bari head. The question 'Do you fast during Ramadan' (yes/sometimes/no) was taken as a measure of the bari head's religiosity. The bari head's age and education were also included.

Number of households in the bari. In rural Bangladesh it has been observed during fieldwork that baris with fewer households have a greater number of users of MRMs. This observation was tested by including the variable 'number of households in the bari'. It was hypothesized that fewer households in the bari may be associated with

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better coverage by FWAs. Use may also be higher because of less impediment from members of the older generation.

Membership of a non-governmental organization. Several non-governmental organizations (NGOs) are active in promoting contraception in Bangladesh, and these have made important contributions to the acceptance of family planning methods and decline of fertility. Many studies have found that if any member of the bari is involved with an NGO, there is a higher likelihood of her (and others in the bari) being users of modern contraception (Kamal, Rahman & Ghani, 1992; Schuler & Hashemi, 1994). Kabir & Amin (1995) found that attendance of group discussions by the members of NGOs provides intense motivation for achieving higher standards of living, as well as for the use of contraception. Amin *et al*. (1996) found that non-members in a programme area also followed the norms set by NGO members. Hence, this variable was considered as a factor at the bari level.

Sanction of girls' attendance at school by bari head. During fieldwork it was observed that although the Bangladeshi government has provided free schooling for girls since 1993, not all bari heads allow their girls to attend local schools. Desai (1994) remarks that fear of loss of virginity, extra costs incurred by the household in sending the girls to school and opportunity costs for female children may be some of the reasons for the reluctance to send girls to school. This variable was therefore included in the study as an indicator of progressive behaviour by the bari head. Table 3 presents the distribution of the bari-level factors and significance levels of chi-square tests of independence. Bari head's age and religiosity and participation with any NGO were not correlated with their use of MRMs. All other variables included at the bari level showed significant correlation with use of MRMs.

Village-level factors

Communication variables. Four factors were considered in this study as indicators of communications of the village with the outside world. These were: presence of public television, paved road, railway station, and post office within 5 km of the cluster. These factors were initially investigated with principal component analysis. The presence of a public television and a post office were found to make one cohesive factor with almost equal factor loadings, and the presence of a paved road and a railway station were found to make another factor. The communications variables were therefore considered as two factors: one combining television and post office, and the other combining road and railway. The presence of a public television was considered to be a crucial determinant of use of modern contraception, because the Bangladeshi government broadcasts skits, advertisements etc. to convey messages and advocate use of modern methods.

Economic indicators. The economic indicators considered in this study were distance to a girl's secondary school, NGO and market.

Access variables. The presence of an FWC in the union and distance to a family planning retail shop were considered as covariates in this category.

Family Welfare Assistant (FWA) characteristics. In rural Bangladesh, the FWA plays a crucial role in motivation for use and supply of family planning methods,

Table 3. Distribution of users of modern reversible methods of contraception according to bari-level variables, rural Bangladesh, 1994 ($N = 2861$)

Variable	Frequency	% user	χ^2 significance
Age of bari head (years)			
≤44	940	52	0·11
45–54	743	48	
55–64	700	41	
≥65	478	46	
Education of bari head			
None	1525	42	<0·01
Primary or above	1336	54	
Variable 'house'			
Score <3	2230	45	<0·01
Score ≥3	631	54	
Ownership of tube-well			
Yes	1551	53	<0·01
No	1310	41	
Religiosity			
Irregular	1206	46	0·23
Regular	1655	48	
Religion			
Muslim	2568	45	<0·01
Other	293	66	
Number of households in the bari			
Two	385	53	<0·01
Three	593	51	
Four	572	45	
Five	441	48	
Six or more	870	44	
Sanction of bari girls' education			
Yes	2142	52	<0·01
No	719	34	
Bari member participate with NGO			
Yes	880	46	0·20
No	1981	48	

especially MRMs. It was observed in the field that rural women also visit the FWA's residence and rely heavily on her advice in their hour of need, not only for family planning methods but also for other common illnesses. Several characteristics were observed to be important during the pilot tests and were included in this study as possible differentials. These are: distance to the FWA's residence from the cluster, her professional training in delivering Expanded Programme on Immunization (EPI) to children under five, her age and her educational qualifications.

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Region of residence. Use of MRMs has been observed to vary extensively between administrative regions of residence (Kamal, 1994). Adjustment for region of residence was made by the inclusion of dummy variables for each region except Dhaka, which includes the capital.

Results

Bivariate analysis

The individual-, bari- and cluster-level correlates considered in this study are presented in Tables 2, 3 and 4 respectively, along with their frequencies and the significance of chi-square tests of independence.

All individual-level covariates except 'experience of child mortality' showed significant variation (5% level of significance). At the bari level, education of the bari head, house variable, ownership of a tube-well, religion, number of households in the bari, and sanction of bari girls' education were all significant at the 5% level. However, age of the bari head, his religiosity and participation with an NGO were not significantly correlated with the use of MRMs. At the cluster level, both the communication variables, distance to the residence of the FWA, and the FWA's educational qualifications and the EPI training were significant at the 5% level. Region of residence was also found to vary significantly according to use of MRMs. Other cluster-level variables, such as distance to market, girls' secondary school, health centre, family planning retail shop, branch office of NGO and age of FWA, were all found to be insignificant.

Multivariate analysis

The final multilevel logistic regression model of all 2861 women is presented in Table 5. All variables found to have significant (5% level) between-group variation in chi-square tests of independence were entered into the final model as explanatory variables. A parsimonious multilevel model was selected using a combination of forward and backward selection for the three-level model.

The final model finds number of living children, age, education, relationship with bari head, religion and socioeconomic status of the bari, and the FWA's education to be significant (5%) predictors of use of MRMs in rural Bangladesh.

In this model, the educational level of the FWA was found to be the most significant predictor of use of MRMs, apart from the basic predictor 'number of living children'. Women served by FWAs with adequate qualifications had almost twice (1·9) the probability of being users compared with those served by FWAs with only primary education. This is a very important finding, and its policy implications will be discussed later.

Number of living children and educational levels of the woman were found to be significant determinants of use of MRMs in this model. These variables have been discussed extensively in the literature and observed patterns matched prior studies (Cleland *et al.*, 1996; Amin, Li & Ahmed, 1996).

The age of a woman was a significant predictor of use of MRMs in this model. Women aged between 20 and 39 had the highest probability of use, while women aged above 40 had the lowest probability of use.

Table 4. Distribution of users of modern reversible methods of contraception according to selected cluster-level variables, rural Bangladesh, 1994 ($N = 2861$)

Variable	Frequency	% user	χ^2 significance
TV/post office			
≤5 km	2382	49	<0·01
>5 km	479	40	
Road/railway			
≤5 km	1850	51	<0·01
>5 km	1011	40	
Girls' secondary school			
≤5 km	1525	48	0·52
>5 km	1336	47	
FP retail shop			
≤5 km	2158	48	0·53
>5 km	703	47	
NGO			
≤5 km	1800	47	0·66
>5 km	1061	47	
Market			
≤5 km	2266	46	0·04
>5 km	595	51	
Family welfare centre			
≤5 km	1320	48	0·71
>5 km	1541	47	
FWA's residence			
≤5 km	1782	51	<0·01
>5 km	1079	45	
Education of FWA			
Primary	483	37	<0·01
Higher	2378	49	
Age of FWA			
≤24	180	48	0·16
>24	2681	38	
EPI training of FWA			
Yes	2565	48	<0·01
No	296	38	
Region of residence			
Dhaka	688	44	<0·01
Chittagong	713	43	
Khulna	632	49	
Rajshahi	828	54	

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Table 5. Results of logistic regression of modern reversible methods of contraception on selected individual-, bari- and cluster-level variables, rural Bangladesh, 1994 ($N = 2861$)

Variable	Odds ratio	95% confidence interval
Fixed effects		
Individual-level variables		
Number of living children		
One or none	1·00	—
Two or three	3·44	2·82–4·18
Four or more	4·20	3·29–5·38
Age of the woman		
≤19	1·00	—
20–39	1·64	1·20–2·26
≥40	0·72	0·48–0·91
Education of woman		
None	1·00	—
Primary or higher	1·66	1·37–2·04
Relationship with bari head		
Wife	1·00	—
Daughter-in-law/sister-in-law	0·77	0·61–0·97
Other	0·72	0·56–0·90
Bari-level variables		
Religion of bari		
Muslim	1·00	—
Other	1·53	1·05–2·23
Ownership of tube-well by bari		
No	1·00	—
Yes	1·38	1·13–1·67
Cluster-level variables		
Education of FWA		
Primary	1·00	—
Higher	1·89	1·05–3·41
Random effects		
Between-cluster variance	0·1965 (0·0806)*	
Between-bari variance	0·2440 (0·0772)*	

−2log-likelihood = 3553·93. *Estimate, with standard error in parentheses.

The relationship of the woman with the bari head was found to be a significant predictor of use in the model. Women who were daughters-in-law, sisters-in-law, or other relatives of the bari head were found to have lower use of MRMs than wives. It may be possible that there is some 'access restriction' imposed by the bari head/wife on the others. Similar results were observed by Blanchet (1991): if a woman is a daughter-in-law of the bari head she has a low status in the family and most of the

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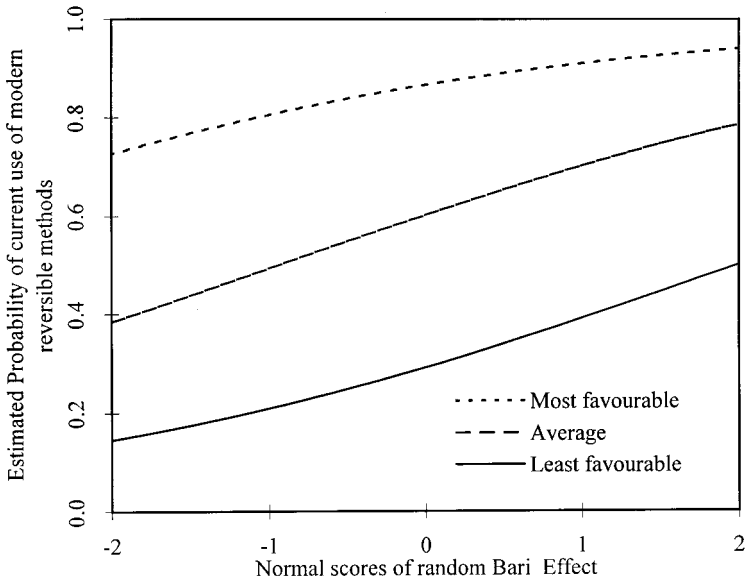

Fig. 1. Bari-level variation in current use of modern reversible methods of contracepton, rural Bangladesh, 1994.

decisions are made by the men or the mother-in-law. The exact mechanism of this result was not evident from this study and demonstrates scope for further research.

The religion of the bari was found to be an important predictor variable. Women from non-Muslim baris had a higher probability of use than those from Muslim baris. This has also been observed in other studies, and has been discussed extensively in the literature (Shahidullah & Chakroborty, 1993; Kamal & Sloggett, 1996).

The socioeconomic status of the bari was also found to be a significant predictor of use. Women from higher socioeconomic baris had 1·38 times greater odds of use than women from lower socioeconomic baris (indicated by ownership of a tube-well). Previous models have found a woman's individual socioeconomic status to be a determinant of her contraceptive use (Kamal & Sloggett, 1993, 1996). This result re-establishes the importance of the socioeconomic status of the bari as a determinant of use of MRMs in a model controlled for the correlation between women from the same bari.

There were no significant differences between the administrative regions in this model. It is possible that compared with other models in the literature, the observed variables in this model have accounted for most of the variations between divisions. All possible combinations of the first degree interaction terms were investigated and none of them showed significant variation. None of the variables included in this study was found to have significant random variation. Inter-cluster random variation was still significant, but the model had reduced the variation from 18% to 13%. This implies that unobserved variation accounts for 13% of the total inter-cluster variation.

Bari effects. To examine the bari effect (second level) this study used an approach employed by Curtis, Diamond & McDonald (1993). Figure 1 shows the estimated probabilities of current use for different values of the bari effect and for three sets of

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characteristics. These characteristics were least favourable, average and most favourable. Most-favourable characteristics were for those where all values of the covariates were at the maximum. Average characteristics were when all covariates were held at their average proportions. In the least-favourable model all covariates were held at the most-unfavourable values, but age of women and number of living children were fixed at average values (age was fixed between 20 and 39, and number of living children at two or three). In all three models the cluster effect was held equal to zero.

In Fig. 1 there are indications of unobserved heterogeneity existing among baris in the current use of MRMs. In general, probability of use was higher for women with average characteristics than for women with least-favourable characteristics. However, when a woman had least-favourable characteristics yet belonged to a favourable bari (high random effect), she had a higher probability of use than a woman with average characteristics and from a worst possible bari (low random effect). Similar relationships were observed for women with average characteristics and those with most-favourable characteristics.

Cluster effects. Using a method proposed by Goldstein & Healy (1995), simultaneous confidence intervals were constructed for all sixteen clusters. Simultaneous confidence intervals were determined such that any overlap at all suggests a non-significant difference between groups. If they did not overlap, the differences were statistically significant at the chosen level.

Figure 2 shows the adjusted rankings of clusters according to their rates of current use of MRMs for each cluster with approximately 95% simultaneous confidence intervals for the cluster effects in this study. These probabilities had been calculated for each cluster while holding all other covariates at average values and the random bari-level effect at zero.

Figure 2 shows that the simultaneous confidence intervals overlap for most clusters in this study, with the possible exception of clusters Benua and Uttar Khaleya. This showed that the model had accounted for most of the cluster-level variation in this study and most clusters were not significantly different from each other in their current use of MRMs. However, there were pockets which showed lower than average probability. Benua in Dhaka division and Uttar Khaleya in Rajshahi division showed low probability of ever use of MRMs. Both these clusters are economically poor. Benua is particularly poor compared with other clusters in Dhaka division, and Uttar Khaleya is poor compared with other clusters in Rajshahi division. Similarly, poor clusters were found in other divisions as well. One possible explanation for low use in these clusters may be that the family planning programmes in other divisions have geared themselves up for their poor economic situations. Conversely, in the Dhaka and Rajshahi divisions, which are more developed generally, these two clusters may not have received appropriate attention from the family planning programme.

Confidence intervals of the probability of use in Benua only overlapped with those of Uttar Khaleya, and also showed a significantly low probability of use. This may be because a renowned religious leader resided in Benua and prevented women from being users by spreading contradictory sermons in the mosques. When these two clusters were excluded from the multilevel logistic regression analysis the between-cluster variation in the model was found to be insignificant, indicating that these two clusters were the main contributors to the between-cluster variation.

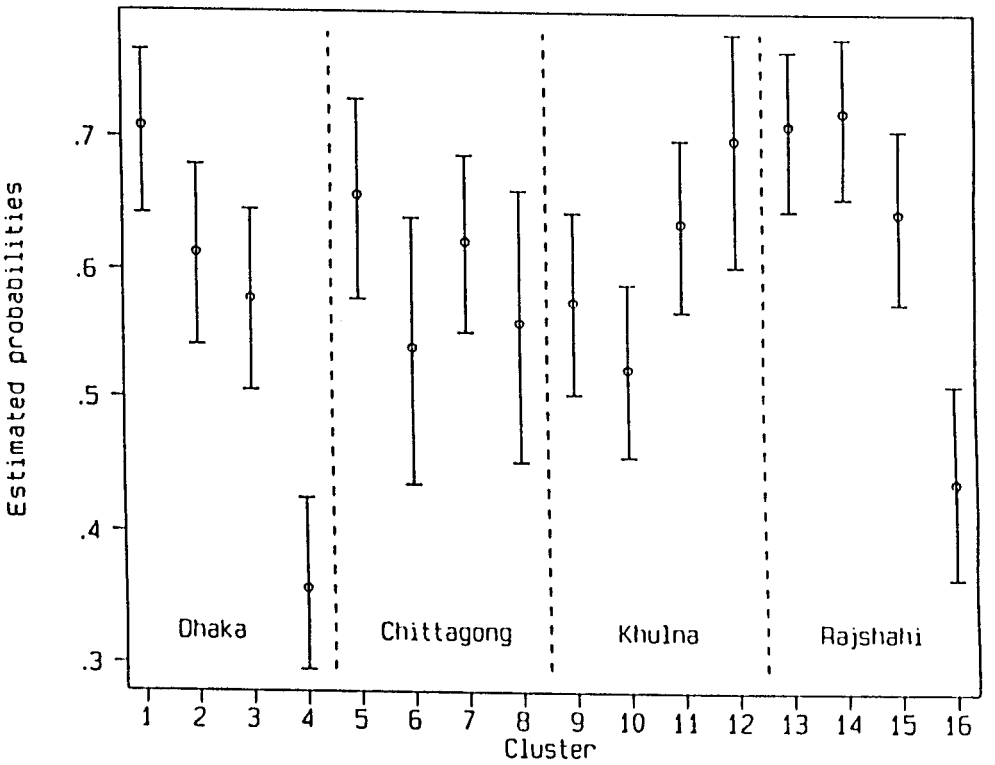

Fig. 2. Estimated average probabilities of current use of modern reversible methods of contraception by cluster with approximate simultaneous 95% confidence intervals for cluster effects, rural Bangladesh, 1994. The age of women was set to 20–39, and number of living children to two or three. All other covariates were set to average values and bari effect u_{jk} was set to 0. Cluster key. *Dhaka division*: 1, Nannar; 2, Bakarkanda; 3, Dhanikhola; 4, Benua; *Chittagong division*: 5, Kadhur Khil; 6, Abdul Nabi; 7, Fakirtilla; 8, Dewanbazar. *Khulna division*: 9, Jalalabad; 10, Charsakina; 11, Kapasdanga; 12, Sura. *Rajshahi division*: 13, Jagjibonpur; 14, Amair; 15, Chandipur; 16, Uttar Khaleya.

Discussion

The principal finding of this study is the importance of the educational qualifications of the female family planning worker in the clusters. Use is low for those clusters where the worker has lower than primary education, indicating the importance of programmatic effectiveness as a cause of area variation in the use of modern contraception. This observation may be extended to other countries where area-level variations are observed and programme performance may outweigh the importance of socioeconomic factors of the community.

The study finds that at the bari level, both religion and socioeconomic status are important predictors of use of MRMs by bari members. These findings suggest that in rural Bangladesh, the bari – the common homestead for extended families – still exists as a common social and cultural unit, and this observation may prevail for other developing countries where similar extended families exist.

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At the individual level, relationship with bari head emerges as an important predictor of use of modern reversible contraceptive methods. This may be true for other developing nations (such as sub-Saharan Africa) where a woman's role in the extended family varies according to her seniority (Oni, 1996).

One limitation of the study is that only sixteen rural clusters are included here, and the power of the tests is affected by this small size. Inter-bari differences in the use of MRMs were found to be more significant than inter-cluster differences, and the causes could not be identified from this study. It is concluded that most clusters in rural Bangladesh have similar levels of contraceptive use, except for a few unusual pockets where use is significantly low. These areas deserve priority targeting, and programmatic deficiencies, including fieldworker performance, should be strictly monitored.

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