Demography India
Vol24, No. 2 (1995), pp. 225-244

Md. Nazrul Hoque* and Steve H. Murdock*

Socioeconomic Development, Status of Women, Family Planning and Fertility in Rural and Urban Bangladesh**

Introduction

BANGLADESH has undergone rapid population growth during the twentieth century.

The population of Bangladesh increased from 35.6 million in 1931 to 76.4 million in 1974. Concern over this growth resulted in the establishment of government family planning programs throughout the country. The issue of population growth has been an important one in the Government's Five Year Plans since the early 1960s and has been identified as the most urgent national priority. As a result of the government's family planning policies, contraceptive prevalence in Bangladesh has increased substantially in recent years. Contraceptive use, which had a prevalence rate of less than 8 percent in 1975, reached almost 46 percent by 1991. Data from the Bangladesh Contraceptive Prevalence Survey and Fertility Surveys show that fertility has declined substantially in the past 15 years, with women having around 4.6 live births over their reproductive life spans as opposed to about 7 during the 1960s. This represents an extraordinary change nationwide in only 15 years. Numerous studies have investigated contraceptive use among Bangladeshi women, but none has focused on the differentials in contraceptive use in rural and urban Bangladesh.

The purpose of this paper is to examine the impacts of socio-economic development, status of women and family planning on contraceptive use and the extent to which these effects vary among rural and urban areas in Bangladesh. By comparing the contraceptive practice levels of the rural residence to those of urban women, we are able to discern whether these differences can be explained by differing compositional characteristics with respect to socio-economic development and the status of women in rural and urban populations. We are also able to establish whether the differences in contraceptive use of rural and urban women are diverging, converging or remaining the same.

•Department of Rural Sociology, Texas A & M University, College Station, TX 77843-2125.
**An earlier version of this paper was presented at the 89th Annual Meetings of the American Sociological Association, August 5-9, Los Angeles, California. Address any correspondence to Md. Nazrul Hoque.

In the process we seek to ascertain whether shifts in population composition *per se* may account for the observed increase in contraceptive use in rural and urban Bangladesh. Decomposition procedures are used to delineate factors that may have contributed to the observed rural-urban differences in contraceptive use in Bangladesh.

This study is different from previous studies in several ways. First, nearly all previous studies of Bangladesh contraceptive use have concentrated on the country as a whole or on a single subregion (Matlab Thana). As a result, the potential effects of rural-urban differences have not been adequately examined. Secondly, although Bangladesh CPS data have been available since 1979, as far as we can determine, no previous study has examined trends and differentials in contraceptive use in rural and urban Bangladesh. This paper is thus unique because it represents the first attempt to examine trends and differentials in contraceptive use between rural and urban Bangladesh. This is particularly important because the data cover a period of substantial social and economic change in Bangladesh. During this period, Bangladesh made substantial progress in educational attainment and in the reduction of infant mortality rates. Women's participation in the labour force and age at first marriage also increased considerably during this period.

Knowledge of rural-urban differentials in fertility is important for policy purposes. With such knowledge, the design and location of development projects, which indirectly have an impact on fertility, as well as family planning programmes which directly affect contraceptive practice, can be chosen and when appropriate, adjusted to suit different policy objectives and requirements in rural and urban areas (United Nations 1987).

Prior empirical studies have yielded various results concerning the pattern and magnitude of rural-urban differences in fertility. Rural fertility consistently has been found to be higher than urban fertility in European and other developed countries. Results for developing countries have not been as consistent. In Latin American and Caribbean countries, a pattern similar to that for developed countries has been observed, with urban fertility being lower than rural fertility (United Nations 1987). In Africa and Asia, however, somewhat different patterns have been observed. In some countries, higher rural fertility has been reported; in other countries, higher urban fertility. In still other countries, no significant differences by place of residence have been reported. However, urbanization in many developing countries has often been associated with higher levels of education, better access to medical care and family planning services, and other social services. Consequently, rates of contraceptive use are expected to be higher in urban than in rural areas. This implies that changes in the residence patterns of a population can lead to changes in fertility. Apart from this, many social trends may begin in urban areas and later spread to rural areas. This in predicting fertility levels and trends, it is useful to take into account the magnitude of rural-urban differences in fertility.

Data and Methodology

This paper analyzes 1983,1989 and 1991 Bangladesh Contraceptive Prevalence Survey data. All of the surveys were developed and conducted by Mitra Associates and funded by the United States Agency for International Development (USAID1983; USAID1989; USAID

1991). A three-stage stratified cluster sampling design was used. The Bangladesh Contraceptive Prevalence Survey obtained data on contraceptive use and on background characteristics for large, nationally representative samples of 15,916 women in 1983,11,800 women in 1989 and 12,050 women in 1991 from the nineteen districts of Bangladesh. All of the surveys used the same type of questions on contraceptive use and employed the same methodology using female interviewers to administer questionnaires in local languages.

Empirical Model

Logistic regression procedures are used to evaluate the effect of a select group of variables on the probability of using modern contraceptive methods in rural and urban areas in Bangladesh. Logistic regression is in appropriate statistical technique because the dependent variable is dichotomous (Demaris 1992). The logistic regression model for the log odds of contraceptive use is

$$\text{Ln}\,[P_i / 1 - P_i] = \beta_0 + \Sigma\,(\beta_k X_k)$$

Where Ln $[P_i / 1 - P_i]$ is simply the conditional odds of using contraceptive method, X_k represents the explanatory variables used in the equation B_k represents the effects parameters associated with the explanatory variables, and B_0 is the constant term.

Two multivariate logit models are used for this analysis, one for rural areas and the other one for urban areas. We examine the results for differences across areas in terms of the significance of coefficients, as well as in direction and magnitude of the effects of selected variables. Decomposition procedures are also used to delineate factors that may have contributed to the observed difference in contraceptive use. Regression decomposition techniques were used to decompose difference in contraceptive use into its constituent parts (i.e., composition, rates and interaction components). This technique is similar to one developed by Clogg and Eliason (1986), Coombs and Sun (1981), and Lams and Thornton (1975). The equation for the rural area is

$$\text{Ln}\,[P_i / 1 - P_i]_{(r)} = \beta o_{(r)} + \beta_i X_{i(r)} + \ldots + \beta_n X_{n(r)}$$

the equation for the urban area is

$$\text{Ln}\,[P_i / 1 - P_i]_{(u)} = \beta o_{(u)} + \beta_i X_{i(u)} + \ldots + \beta_n X_{n(u)}$$

The difference in $\text{Ln}\,[P_i / 1 - P_i]_{(r)} - \text{Ln}\,[P_i / 1 - P_i]_{(u)}$ then is decomposed by using the following equation:

$$\text{Logit}_{(u)} - \text{logit}_{(r)} = \beta o_{(r)} - \beta o_{(u)} + \Sigma\, P_{ij(r)}\,(\beta_{ij(u)} - \beta_{ij(r)}) + \Sigma\, \beta_{ij(r)}\,(P_{ij(u)} - P_{ij(r)}) + \Sigma\, P_{ij(u)} - P_{ij(r)}\,(B_{ij(u)} - B_{ij(r)})$$

Where

$\text{logit}_{(r)} = \text{Ln}\,[P_i/(1-P_i)]$ in rural areas;
$\text{logit}_{(u)} = \text{Ln}\,[P_i/(1-P_i)]$ in urban areas;

$P_{ij_{(r)}}$ = Proportion in the *j*th category of the *i*th explanatory variable in rural areas;
$P_{ij_{(u)}}$ = Proportion in the *j*th category of the *i*th explanatory variable in urban areas;
$\beta 0_{(r)}$ = regression intercepts for rural areas;
$\beta 0_{(u)}$ = regression intercepts for urban areas;
$\beta_{ij_{(r)}}$ = the coefficient for the *j*th category of the *i*th explanatory variable for rural areas;
$\beta_{ij_{(u)}}$ = the coefficient for the *j*th category of the *i*th explanatory variable for urban areas;

This procedure results in four components: (1) the intercept component reflects the difference in the inctercepts of the equations for the rural and urban areas; (2) the rates or coefficient component indicates the differences between the slopes; (3) the composition component, indicates the part of the overall differences produced by the independent variables; and (4) the interaction component, which is the covariation or collinearity between the means and the coefficients for the rural and urban areas. This last component can be interpreted as the effect of changing both means and regression coefficients together versus the effects of changing them one at a time (Lams and Thornton 1975).

Explanatory Variables

The dependent variable in this analysis is current use of modern methods of contraception, coded 1 for current use and 0 otherwise. We focus on modern methods of contraception because they account for most of the contraceptive use in Bangladesh. To trace contraceptive use trends, we include several independent variables to control for factors that are incorporated frequently in models of fertility behaviour in Bangladesh and elsewhere (United Nations 1987). Independent variables are grouped into three categories. These are socio-economic development variables, women's status variables, and family planning variables that have been shown in earlier studies to be influential in accounting for fertility decline and increases in contraceptive use. Other variables also affect contraceptive use and may have contributed to change over time, but they have been excluded from the analysis, either because they were not adequately measured in the survey or they were totally excluded from the data sets. For example, this study excludes variables describing the expansion of family planning services because community-level data on availability and/or accessibility of family planning were not obtained in all three surveys.

The importance of women's education as a variable influencing fertility behaviour has been documented in several studies both in developed and developing countries (Greenspan Gomes 1984; Cochrane 1979). Education is expected to influence women's access to modern knowledge and desires for a new ways of life, and hence the extent to which they are familiar with and approve of contraception, know how to acquire and correctly use contraceptive

methods and can engage in such new forms of behaviour as contraception. In addition, women's education tends to break down barriers to communication about contraception between spouses. As a result of the diminished costs associated with fertility regulation, as well as the motivation arising from their potentially higher supply of and lower demand for children, better educated women are more likely to practice contraception.

The evidence available from developing countries indicates that the fertility enhancing effects of education are strong in societies that are in the early stages of the fertility transition but that, as the process continues, these effects are gradually overtaken by the fertility reducing effects characteristic of modern societies. For example, an analysis of the relationship between education and fertility in over 30 developing countries concluded that the more developed of these countries often reveal a negative association, whereas the less developed countries were likely to exhibit a curvilinear or positive association (United Nations 1987). In the present study, respondent's education is a categorical variable indicating whether she has no formal education, primary education (one to five years), secondary education (six to ten years), or a college or university level of education (eleven years or more).

Increased labor force participation of women has been proposed repeatedly in both the demographic literature and population policy statements as a means of promoting development and reducing fertility in developing countries (Miah and Mizan 1992; United Nations 1985). It has been argued that women who work may be more independent and enjoy a more egalitarian marital relationship, which allows them to exercise more control over fertility decisions (Oppong 1983). In addition, some evidence indicates that with increasing education and greater participation of women in the labor force, domestic labor becomes more equally divided between husband and wife. Although women still perform the majority of domestic labor, this change may precipitate a shift to lower desired family sizes among men. Fertility may also be related to the timing of work. Women who work prior to marriage may marry later than women with no pre-marital work experience. They may also develop greater commitment and motivation to work, thereby raising the opportunity costs of children during marriage.

Substantial empirical work has been carried out which examines the relationship between women's employment and fertility in developing countries. The assertion that women's employment is negatively related to fertility receives support from most empirical studies. Nevertheless the claim that work is causally related to fertility is, as yet, inadequately examined for Bangladesh. In this analysis, a woman's employment status is a categorical variable indicating whether she is working outside for money or not.

Region of residence has received increasing attention as a macro structural factor affecting contraceptive use in many developing countries (Haque 1992; Poston and Gu 1987). Studies with this emphasis propose two major explanations for regional differentials in contraceptive use. The socio-economic development hypothesis suggests that regions whose women have low education, limited formal-sector employment, and limited access to health and family planning outlets may be expected to have low rates of contraceptive use. A second explanation for the importnance of region of residence is that it may be as a proxy for ethnic and cultural boundaries that are related to acceptance of contraceptive

methods and can engage in such new forms of behaviour as contraception. In addition, women's education tends to break down barriers to communication about contraception between spouses. As a result of the diminished costs associated with fertility regulation, as well as the motivation arising from their potentially higher supply of and lower demand for children, better educated women are more likely to practice contraception.

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methods. The important mechanisms through which ethnicity may affect the use of modern contraceptives are norms and customs affecting age at marriage, type of marital unions, postpartum abstinence, breast-feeding, and resilience in the face of innovation (Lesthaeghe 1989; Murty and De Vos 1984). Regions of residence in this study is coded into four categories representing the administrative divisions that were covered by both surveys.

Studies of the relationship between contraceptive use and child mortality yield contradictory findings. Most studies suggest that couples who have experienced the death of one or more children are less likely to use a contraceptive method than those who have not. Yet Van de Walle and Kondel (1980) argue that prior child death may be a sign of an unmet need for contraception. In their opinion child deaths often may be caused by intentional neglect because the births were unwanted. Consequently, women with prior child deaths may be more highly motivated to practice contraception than those without. Child loss in this study is coded as a dummy variable indicating whether or not the mother has experienced the loss of a child.

Findings

An initial objective is to document the extent of rural-urban differences in contraceptive use in Bangladesh. Table 1 presents the proportions of currently married nonpregnant women using contraceptives in rural and urban Bangladesh. Several patterns emerge from data in this Table. First, the proportion of Bangladeshi women using a contraceptive method has increased both in rural and urban areas, more than doubling in the period between the 1983 the 1991 Contraceptive Surveys. In 1983,21.5 percent of rural women and 49.5 percent of urban women were using a modern contraceptive method but, by 1991, the figure increased to 43.7 percent for rural women and 53.8 percent for urban women. A second pattern

TABLE 1: PERCENT OF WOMEN USING CONTRACEPTIVES AMONG CURRENTLY MARRIED NONPREGNANT WOMEN IN RURAL AND URBAN BANGLADESH, 1983, 1989 AND 1991

Independent Variables	Rural	Urban	Urban-Rural Difference	Percent Difference
Women's Status Variables				
Education				
1983				
No Education	19.06	30.85	11.79	61.86
Primary	20.46	43.96	23.50	114.86
Secondary	24.47	57.94	33.47	136.78
College/University	44.38	74.29	29.91	67.39
1989				
No Education	30.88	36.11	5.23	16.94
Primary	35.44	53.36	17.92	50.56
Secondary	47.77	63.87	16.10	35.70
College/University	50.00	69.39	19.39	38.78

Independent Variables	Rural	Urban	Urban-Rural Difference	Percent Difference
1991				
No Education	41.32	45.32	4.00	9.68
Primary	45.53	52.60	7.07	15.33
Secondary	51.29	64.46	13.17	25.68
College/University	66.67	71.82	5.15	7.72
Employment				
1983				
Not Employed	20.15	41.51	21.36	106.01
Employed	34.42	49.15	14.73	42.79
1989				
Not Employed	32.25	51.29	19.04	59.04
Employed	42.38	56.19	13.81	32.58
1991				
Not Employed	40.28	52.48	12.20	30.29
Employed	52.26	58.67	6.41	12.27
Socio-economic and Demographic Variables				
Age				
1983				
15-19	10.61	25.41	14.80	139.49
20-24	20.81	37.84	17.03	81.84
25-29	26.98	50.82	23.84	88.36
30-34	28.75	54.52	25.77	89.63
35-39	29.99	53.73	23.74	79.16
40-44	21.18	39.34	18.16	85.76
45-49	11.17	24.09	12.92	115.97
Total	21.47	42.29	20.82	96.97
1989				
15-19	17.43	29.56	12.13	69.59
20-24	27.16	45.40	18.24	67.16
25-29	38.60	54.78	16.18	41.92
30-34	46.45	57.79	11.34	24.41
35-39	44.92	61.22	16.30	36.29
40-44	35.50	51.12	15.62	44.00
45-49	20.53	31.16	10.63	51.78
Total	33.39	49.48	16.09	48.18
1991				
15-19	22.75	31.97	9.22	40.53
20-24	36.95	49.72	12.77	34.56
25-29	49.97	58.90	8.93	17.87
30-34	54.92	64.08	9.16	16.68
35-39	58.38	65.43	7.05	12.08
40-44	45.88	54.24	8.36	18.22
45-49	30.17	31.25	1.08	3.58
Total	43.69	53.76	10.07	23.05

Table 1 (cond. on p. 232)

Table 1 *(cond. from* p. 231)

Independent Variables	*Rural*	*Urban*	*Urban-Rural Difference*	*Percent Difference*
Child Loss				
1983				
None	22.69	44.73	22.04	97.14
One or more	7.92	12.79	4.87	61.49
1989				
None	34.34	47.22	12.88	37.50
One or more	32.63	50.71	18.08	55.41
1991				
None	45.72	51.00	5.28	11.55
One or more	42.20	55.19	12.99	30.78
Desire for Children				
1983				
Wants more children	8.65	22.18	13.53	156.41
Undecided	8.06	31.43	23.37	289.95
Wants no more children	33.86	56.62	22.76	67.22
1989				
Wants more children	17.55	34.11	16.56	94.36
Undecided	11.27	37.18	25.91	229.90
Wants no more children	45.25	59.99	14.74	32.57
1991				
Wants more children	24.26	38.88	14.62	60.26
Undecided	38.18	50.00	11.82	30.96
Wants no more children	57.20	62.75	5.55	9.70
Religion				
1983				
Muslim	20.38	40.76	20.38	100.00
Non-Muslim	30.41	53.51	23.10	75.96
1989				
Muslim	32.19	48.17	15.98	49.64
Non-Muslim	42.89	57.50	14.61	34.06
1991				
Muslim	42.46	51.82	9.46	22.28
Non-Muslim	52.40	65.85	13.45	25.67
Be longs to Women 's Organization				
Don't Belong	42.34	53.35	11.01	26.00
Belong	53.79	59.09	5.40	9.85

Independent Variables	*Rural*	*Urban*	*Urban-Rural Difference*	*Percent Difference*
Husband's Occupation				
1991				
Daily Laborer	41.32	45.61	4.29	10.38
Agriculture	44.07	40.43	-3.64	-9.00
Business	47.34	59.39	12.05	25.47
Services	39.79	58.39	18.60	46.75
Professional	61.93	65.00	3.07	4.96
Source of Drinking Water				
1991				
Pond, River	38.72	36.84	-1.88	-4.89
Tube well	44.22	51.26	7.04	15.92
Pipe	54.63	65.64	11.01	20.15
Place of Defecation				
1991				
Outdoor	42.69	39.41	-3.28	-7.68
Kutcha toilet	43.53	48.82	5.29	12.15
Pukka toilet	46.84	60.95	14.11	30.12
Flush toilet	77.14	72.37	-4.77	-6.18
Family Planning Variables				
Visit by a Family Planning Worker				
1989				
Did not visit	32.11	48.44	16.33	50.86
Visit	38.72	51.88	13.16	33.98
1991				
Did not visit	34.65	44.55	9.90	28.57
Visit	56.16	66.19	10.03	17.86
Visit Hospital/Health Centre				
Don't Visit	40.43	47.69	7.26	17.96
Visit	58.08	64.71	6.63	11.42
Region of Residence				
1981				
Dhaka	35.83	54.38	18.5J	51.77
Raj shah i	38.12	50.33	12.21	32.03
Chittagong	20.15	36.82	16.67	82.73
Khulna	38.72	56.32	17.60	45.45
1991				
Dhaka	45.30	57.08	11.78	26.00
Rajshahi	51.37	55.33	3.96	7.71
Chittagong	29.18	44.00	14.82	50.79
Khulna	49.71	59.48	9.77	19.65

is that every subgroup showed some gains in use, although the amount of change differed greatly among groups. Third, there were subgroups differences at each and every period, but these differences declined sharply from 1983 to 1991. The 1983 survey data show clear differentials in contraceptive use for many of the variables considered for analysis, especially education, urbanization, child loss, and region of residence. By 1991, however, contraceptive use had increased in all strata except among more highly educated women where use rates were already high by 1983. In absolute sense, the age-specific contraceptive practice rates for all the age groups show uniformly for both rural and urban areas across the three time periods. As a consequence of these increases, the rural-urban convergence has occurred across all the age groups. The right hand column of Table 1 reveals that all of the age groups show a regular decline in rural urban differences in contraceptive use across the three time periods. In 1991, for age group 45-49, the difference is very small. In sum, the overall convergence in contraceptive use is evident among both rural and urban women in Bangladesh.

TABLE 2: PROPORTION OF RESPONDENTS IN BANGLADESH CONTRACEPTIVE SURVEY BY SELECTED CHARACTERISTICS, 1991

Independent variables	*Proportion*		*Urban-Rural*	*Percent*	*Sample Size*	
	Rural	*Urban*	*Difference*	*Difference*	*Rural*	*Urban*
Women's Status Variables						
Education						
No Education	62.9	42.9	-20.0	-31.8	4577	1069
Primary	26.3	25.5	-0.8	-0.3	1914	635
Secondary	9.6	24.3	14.7	153.1	702	606
College/University	1.2	7.3	6.1	508.3	87	181
Employment						
Not Employed	71.7	79.4	7.7	10.7	5216	1978
Employed	28.3	20.6	-7.7	27.2	2063	513
Socio-economic and Demographic Variables						
Age						
15-19	13.8	10.8	-3.0	21.7	1002	269
20-24	21.7	21.4	0.3	1.4	1577	533
25-29	19.9	21.9	2.0	10.1	1447	545
30-34	16.8	16.6	-0.2	-1.2	1221	414
35-39	12.7	14.1	-1.4	11.0	925	350
40-44	8.8	9.5	0.7	8.0	643	236
45-49	6.4	5.8	-.6	-9.4	465	164
Child Loss						
None	42.2	65.8	23.6	55.9	4206	1638
One or more	57.8	34.2	-23.6	-40.8	3064	851
Desire for Children						
Wants more children	40.6	37.2	-3.4	-8.4	2651	926
Undecided	0.8	0.9	0.1	12.5	55	22
Wants no more children	58.6	61.9	3.3	5.6	4264	1541

Independent variables	*Proportion*		*Urban-Rural*	*Percent*	*Sample Size*	
	Rural	*Urban*	*Difference*	*Difference*	*Rural*	*Urban*
Religion						
Muslim	87.6	86.8	-0.8	-0.9	6380	1430
Non Muslim	12.4	13.2	0.8	6.5	900	1059
Belong to Women 's Organization						
Don't Belong	88.2	92.9	4.7	5.3	6413	2313
Belong	11.8	7.1	-4.7	-39.8	857	176
Husband's Occupation						
Daily Laborer	32.6	27.5	-5.1	-15.6	2372	684
Agriculture	37.4	9.3	-28.1	-75.1	2716	231
Business	15.5	30.2	14.7	94.8	1128	752
Services	11.7	29.4	17.7	151.3	852	721
Professional	2.7	4.0	1.3	48.2	197	100
Source of Drinking Water						
Pond, River	12.4	2.3	-10.1	-18.5	906	57
Tube well	86.1	78.0	-8.1	-9.4	6266	1944
Pipe	1.5	19.7	18.2	1,213.3	108	490
Place of Defecation						
Outdoor	37.6	10.8	-26.8	-71.3	2735	270
Kutcha toilet	52.6	45.8	-6.8	-12.9	3828	1141
Pukka toilet	9.4	37.3	27.9	296.8	682	928
Flush toilet	0.5	6.1	5.6	1,120.0	35	152
Family Planning Variables						
Visit by a Family Planning Worker						
Did not visit	58.0	57.5	-0.5	2.2	4222	1432
Visit	42.0	42.5	0.5	1.2	3058	1059
Visit Hospital/Health Centre						
Don't Visit	81.5	64.4	-17.7	21.0	5927	1604
Visit	18.5	35.6	17.7	92.4	1343	887
Region of Residence						
Dhaka	27.8	35.5	7.7	27.7	2020	883
Rajshahi	27.7	20.0	-7.7	-27.8	2013	497
Chittagong	25.6	26.1	0.5	2.0	1861	650
Khulna	18.9	18.4	-0.5	-2.7		

Table 2 suggests that the composition of the population differed in ways that may have contributed to the remaining rural-urban differentials in contraceptive use in Bangladesh. For example, the proportion of women with no formal education is higher in rural areas than urban areas. The proportion of college/university educated women is lower in rural areas than urban areas. The proportion of women with secondary levels of education is also lower in rural areas than urban areas. The proportion of women who experienced the death of a child

TABLE 3: LOGISTIC COEFFICIENTS FOR REGRESSION ON CONTRACEPTIVE USE AMONG CURRENTLY MARRIED NONPREGNANT WOMEN IN RURAL AND URBAN BANGLADESH, 1991

Independent Variables	*Rural*		*Urban*	
	Coefficient	*Std. Error*	*Coefficient*	*Std. Error*
Women's Status Variables				
Education				
(No Education)				
Primary	.147*	.065	.151	.115
Secondary	.597*	.104	.501**	.133
College/University	1.229*	.277	.685**	.219
Employment				
(Not Employed)				
Employed	.233**	.062	.197**	.115
Socio-economic and Demographic Variables				
Age				
(15-19)				
20-24	.213*	.102	.412*	.171
25-29	.384**	.110	.412*	.185
30-34	.414**	.119	.512*	.203
35-39	.458**	.128	.568*	.217
40-44	.017	.139	.048	.232
45-49	-.731**	.154	-.726*	.269
Child Loss				
(None)				
One or more	.091	.060	-.077	.106
Desire for Children				
(Wants more children)				
Undecided	.439	.302	.335	.471
Wants no more children	1.440**	.072	.994**	.118
Religion				
(Muslim)				
Non Muslim	.351**	.081	.601**	.137
Belong to Women 's Organization				
(Don't Belong)				
Belong	.088	.084	.095	.178
Husband 's Occupation				
(Daily Laborer)				
Agriculture	-.007	.065	-.093	.172
Business	.148*	.084	.242*	.123
Professional	.500**	.178	.123	.257

Independent Variables	*Rural*		*Urban*	
	Coefficient	*Std. Error*	*Coefficient*	*Std. Error*
Source of Drinking Water				
(Pond. River)				
Tube well	.104	.083	.438	.303
Pipe	.261*	.253	.572	.327
Place of Defecation				
(Outdoor)				
Kutcha toilet	.168*	.061	.254	.155
Pukka toilet	.248*	.109	.564**	.173
Flush toilet	1.641**	.477	.742	.288
Family Planning Variables				
Visit by a Family Planning Worker				
(Did not visit)				
Visit	.677**	.055	.647*	.093
Visit Hospital/Health Centre				
(Don't Visit)	.424**	.070	.350**	.098
Visit				
Region of Residence				
(Dhaka)				
Rajshahi	.299**	.072	.226	.132
Chittagong	-.704**	.078	-.391**	.117
Khulna	.104	.079	.284*	.132
Constant	-2.083**	.134	-2.378**	.368
Log-Likelihood	1617.39	—	479.96	—
Chi-square	1481.12	—	444.46	—
N	7269	—	2489	—

Reference Category in Parentheses.
* significant at .05 or better ** significant at .001 or better

is higher in rural areas than urban areas. The proportion of women with lower socio-economic status is higher in rural areas than urban areas. All of these conditions favour higher fertility and lower contraceptive use in rural areas of Bangladesh.

Table 3 presents the results of the multivariate analysis of the determinants of contraceptive use among currently married nonpregnant women in rural and urban Bangladesh. Columns 1 and 2 show the coefficients and standard errors for the regressions on contraceptive use for rural women and columns 3 and 4 show the coefficients and standard errors for the regressions on contraceptive use for urban women. By comparing the coefficients for the rural and urban areas we can determine whether the effects of each variable on contraceptive use differ significantly for women in rural and urban areas.

The results show that the variables selected for the analysis are generally important predictors of contraceptive use. Overall, age had significant net positive effects under age 45 both in rural and urban areas which suggests that high parity women are likely to use contraception. The effects of education on contraceptive use are those which one would expect from previous research. Large, statistically significant differences in contraceptive use by educational level were observed despite controls for other variables both in rural and urban areas. Women with the highest levels of education (college/university degree) are three times more likely to use contraceptives that those who had no education in rural areas. In urban areas, women with the highest levels of education (college/university) degree are two times more likely to use contraception than those who had no education.

Logit analysis confirms the expectation that employed women are more likely to use modern contraceptive methods than those who are not employed. The coefficient is statistically significant and the odds are almost two to one both in rural and urban areas.

Experience of a child death was not a significant predictor of contraceptive use in either rural or urban areas although the association was in the expected directions.

The positive relationship between desire for no more children and contraceptive use is strong and consistent. Even when other variables are held constant, the desire for no more children has significant effects on the decision to use a contraceptive method; the probability of contraceptive use among rural women who desire no more children is four times greater than among those who want more children. The probability of contraceptive use among urban women who desire no more children is two times greater than among those who want more children.

Religion is an important determinant of contraceptive use in Bangladesh. The coefficient is positive and significant both in rural and urban areas; suggesting that non-Muslim women are more likely to practice contraception than Muslim women. However, the difference is more pronounced in urban areas than rural areas.

Place of defecation was a significant predictor of contraceptive use both in rural and urban areas in Bangladesh. Those who use a flush toilet are twice as likely to use contraceptive methods than those who do not have a flush toilet. This variable can be seen as an indicator of the level of modernization or socio-economic development in an area. The impact of this variable is more pronounced in rural areas than in urban areas.

Visits to a hospital or health center are also significant in explaining contraceptive use among Bangladeshi women both in rural and urban areas. Women who visited a hospital or health center are two times more likely to use a contraceptive method than those who did not visit such a facility.

Visits from a family planning worker were significantly related to the use of contraception both in rural and urban areas and the impact was more pronounced in rural areas than in urban areas.

With regard to regions of residence, Table 3 shows that the differences between Dhaka division (reference region) and other divisions were narrower in 1991 than in 1989 both in rural and urban areas in Bangladesh. The most notable difference observed is in Chittagong division. Chittagong division has significant negative coefficient both in rural and urban

areas. However, the coefficient for rural areas are two times higher than for the urban areas. Rajshahi and Khulna divisions have positive coefficients both for rural and urban areas. The coefficient for rural areas for Rajshahi is significant while the urban coefficient is significant for the Khulna division. Therefore, the Bangladesh government's efforts to make family planning services more accessible to all the areas of the country may have operated more efficiently in some areas than in others and regional differences remained important in 1991 as in 1983.

Decomposition of Contraceptive Use in Rural and Urban Bangladesh

The above analysis highlights differences in contraceptive use in rural and urban Bangladesh and shows that key demographic variables are related to differences in contraceptive use in both rural and urban areas. The analyses does not explain whether this difference is due to differences in rates of contraceptive use or differences in population composition between rural and urban populations. Thus, to assess the relative importance of rate effects and composition effects, we provide the results of the decomposition analysis in Table 4. The composition effect measures difference resulting from population composition, assuming no difference in specific rates. The rate effect measures difference in specific rates assuming no difference in population composition. The interaction effect involves differences resulting from both composition and specific rates. A comprehensive discussion of the rationale for and the mathematical formulation has been presented by Kitagawa (1995). Others who have contributed to the development of decomposition methods include Das Gupta(1978); Clogg and Eliason (1986); and Kim and Strobino (1984). From this table one can see that the major component of the difference in contraceptive use, explaining 42 percent of the difference, is the difference due to rates. Differences due to composition are also important, contributing about 26 percent of the overall difference in contraceptive use in rural and urban Bangladesh. Fourteen percent of the difference in contraceptive use is due to interaction effects.

Decomposition analysis also suggests that differences in rural-urban population composition favoured differences in contraceptive use in rural and urban Bangladesh. Rural-urban differences in educational composition played a significant role in differences in contraceptive use. Twelve percent of the absolute difference in contraceptive use is explained by educational differences among women in rural and urban areas of Bangladesh. The proportion of women who wished to cease child bearing is also important in explaining compositional change in the population. Place of defecation and visits to hospital are also important, explaining 15 percent of absolute difference in contraceptive among rural and urban women in Bangladesh. Education and employment explained 6 percent of the absolute difference in contraceptive use in rural and urban Bangladesh.

The importance of place of residence is evident when the rates or coefficient effects are examined. Regions of residence explained almost 10 percent of the absolute change in rates in contraceptive use in Bangladesh. Desire for children and source of drinking water are also important. Finally, these data reveal that the mix of'rate' and 'composition' effects varies

significantly across explanatory variables. For example, district of residence does not have explanatory power for compositional effects while it has major significant explanatory power for rate effects. This suggests that both socio-economic development and family planning programmes played an important role in increasing contraceptive practice rates across the country.

TABLE 4: DECOMPOSITION OF RURAL AND URBAN DIFFERENCES IN CONTRACEPTIVE USE IN BANGLADESH, 1991

	Intercepts	*Percentage of change due to*		
		Composition	*Rates or Regression Coefficients*	*Interaction*
Education	—	156.74	-14.16	45.91
Employment	—	-16.65	-7.14	1.94
Age	—	5.43	79.83	-0.29
Child Loss	—	20.83	-94.18	38.46
Desire for Children	—	46.46	254.27	-14.35
Religion	—	2.72	30.06	1.94
Belongs to Women's Organization	—	-4.01	0.80	-0.32
Husband's Occupation	—	5.53	1.45	75.36
Source of Drinking Water	—	37.93	283.51	28.61
Place of Defecation	—	145.20	68.28	31.13
Visit Hospital/Health Center	—	72.79	13.28	12.70
Visit by a Family Planning Worker	—	3.28	-12.22	0.15
Region of Residence	—	-10.57	91.07	7.81
Intercept	286.13	—	—	—
Total	286.13	435.68	694.85	229.05
Percentage of Absolute Change	17.38	26.47	42.22	13.92
Percentage of Absolute Change for Model excluding region or residence	18.37	28.65	38.77	14.21

We also examine a model that excluded region of residence. The results of the decomposition analysis show that the significant explanatory power for the rate effect is lost when district of residence in dropped from the regression model. For example, the proportion of change due to the rate effect decreased from 21.1 percent to 12.8 percent, while the proportion of change due to composition increased from 30.3 percent to 35 percent (see the lower panel of Table 4). Change in the intercept is also larger than in the previous model indicating that this regression equation contains a larger unexplained component than that presented earlier in this paper.

Table 4 also reveals that 17 percent of the differences in contraceptive use is due to differences in the intercept. This can be interpreted as the difference in the rates for variables not considered in the model. Although many factors that may determine contraceptive use could not be included in the study, one major set of elements which were not directly measured but may have contributed to the differences may be socio-economic factors and the availability of family planning services in the community. Previous studies show that the availability of family planning services has significantly affected contraceptive use in Bangladesh. Income may be another variable which is significantly related to contraceptive use. The analysis of such effects must await future analyses.

Summary and Conclusions

This paper examined the trends and differentials in contraceptive use in rural and urban Bangladesh. We used data from the 1983,1989 and 1991 Bangladesh Contraceptive Survey. To our knowledge, no previous study has examined the trends and differentials in contraceptive use in rural-urban Bangladesh. Our findings suggest that socio-economic development, the status of women and family planning programmes played important roles in increasing contraceptive use both in rural and urban Bangladesh. All of these variables were significantly related to contraceptive use in Bangladesh.

A substantial increase in contraceptive use occurred both in rural and urban Bangladesh. In rural areas in 1983,21.5 percent of women were using a contraceptive method but, by 1991, the figure increased to 43.7 percent, this increase was shared by all groups investigated in this study, but the amount of change differed greatly among groups. Better educated, employed women were more likely to use a contraceptive method in both periods. This study suggests that contraception was adopted initially by younger women; however, in 1991 the differential between age groups had narrowed considerably. In urban areas, in 1983, 42.3 percent of women used a contraceptive method, but, by 1991, the figure increased to 53.8 percent. In 1991, rural-urban differences in contraceptive use declined considerably and the convergence has occurred across all age groups. For age groups 45-49 the difference is almost non-existent. This suggests that family planning programs have been quite successful in rural areas. Visits to a hospital or health center were also significant in explaining contraceptive use in Bangladesh. Visit from a family planning worker also played an important role in increasing contraceptive use in Bangladesh.

Our analysis demonstrates that contraceptive practice rates in Bangladesh vary among regions. In rural areas, family planning practice rates in 1989 ranged from a low of 20 percent in Chittagong division to a high of 39 percent in the Khulna division. In urban areas, contraceptive use rates in 1989 ranged from a low of 36 percent again in Chittagong division to a high of 56 percent in Khulna division. Contraceptive use rates for all the regions have increased considerably over the period between 1983 and 1991 and the gap between the regions was narrower in 1991 than in 1983. However, family planning practice rates in 1991 were still lower in Chittagong division both in rural and urban areas. In 1991, rural-urban

differences in contraceptive use in Rajshahi division were very small. This suggests that family planning programmes operated more efficiently in some regions than in others and regional differences remained important in 1991 as in 1983.

This study also decomposed the difference in contraceptive use between rural and urban areas in Bangladesh. The decomposition revealed that difference in population composition—towards an increase in the proportion of women who are better educated, the proportion of women who had not experienced the loss of a child and the proportion of women who want to cease childbearing—were the primary sources of differences in contraceptive use in rural and urban Bangladesh. Differences in rates were also important, particularly those for the region of residence. Differences in the intercept suggest that important variables have been excluded from the compositional analysis. This suggests that family planning variables and contextual variables may have explained some of the variation.

Overall, the results of this analysis suggest that policy-based programmes may substantially impact contraceptive use and, through such use, fertility levels, but that regional levels of variation in socio-economic development may hinderthe full adoption of such programmes. Thus the findings showing the effects of reduced levels of child loss and a desire for fewer children on contraceptive use, clearly suggest that health and contraception related government programmes may have shown impact on contraceptive use. This impact appears unlikely to have resulted from increased levels of socio-economic development because few indications of such development are evident in available data. Also, the extent of the increase in contraceptive use is so extensive across such a large number of areas as to make it unlikely to have been caused by socio-economic differences. In addition, the fact that contraceptive use changed substantially in virtually all districts in Bangladesh shows that contraceptive change has been pervasive. Such results suggest that policy-related changes may impact contraceptive use.

At the same time, the existence of continuing regional effects suggests that the primary differences between regions, which appear to be primarily their levels of socio-economic development, are factors affecting contraceptive use. Very limited levels of socio-economic development may inhibit even extensive policy related changes to promote contraceptive use.

In regard to the continuing debate about the relative importance of development and family Xplanning factors in fertility decline, the results here seem to lean toward the importance of programme related changes with differentials in socio-economic development largely play.ing a mediating role in moderating or inhibiting the impacts of change. Thus, large rural and urban differences in dependent variables did not appear to inhibit the rate of increase in contraceptive use. Clearly, analyses involving more direct family planning variables and village-level development variables may be necessary to further unravel these relative effects. Nevertheless, the case of Bangladesh makes evident the fact that rapid increases in contraceptive use may be obtained if programmes to increase child health and welfare are improved and contraception is readily available.

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