Increased Contraceptive Use in an Impoverished Society: The Case of Bangladesh

by

Ruhul Amin, A.U. Ahmed, Jamir Chowdhury, and M. Kabir

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Ruhul Amin is principal research scientist and Jamir Chowdhury and A.U. Ahmed are research associates at the Institute for Urban Research, Morgan State University, Baltimore, MD; and M. Kabir is a professor at the Department of Statistics, Jahangirnagar University, Savar, Dhaka, Bangladesh. The research, on which this article is based, was supported by the Center for University Cooperation in Development, Bureau for Research and Development, U.S. Agency for International Development, under Cooperative Agreement No. PCE-5063-A-00-1117-00. The authors wish to express their gratitude to the Office of Population and Health, U.S. AID, Dhaka, Bangladesh, for providing data for the present study.

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Summary

Current contraceptive use in Bangladesh has increased from about 19 percent of currently married women in 1983 to about forty percent in 1991. What is unusual about Bangladesh is that this speedy increase within a short span of eight years has happened at a time when Bangladesh continued to be in the lowest rank on most of the aggregate social and economic-modernization variables that are considered to be conducive to contraceptive use and low fertility. The increased contraceptive use has happened in all major socioeconomic strata--the poor, the landless, the least educated, the landowner, the rich, and the educated. Overwhelming majority of the contraceptive users obtained their supplies from government-sponsored sources, suggesting the predominant role that the National Family Planning Program (NFPP) has played in the increased contraceptive use. In the mid 1980s, urban women, women with more education, and women of high parity were those more likely to be users of contraceptive methods. However, by the early 1990s, education and urban residence have been less strongly associated with the adoption of a method of contraception. This finding suggests that, in addition to satisfying existing latent demand among higher educated women, urban residents, and high-parity women, new demand for contraceptive use is being generated among rural residents and those with little education. This pattern of contraceptive innovation is likely to accelerate the pace of contraceptive adoption in all socioeconomic strata, precipitating the fertility transition in Bangladesh. The authors conclude that even in a very poor country, like Bangladesh, it is possible to bring about a significant increase in contraceptive use by the sheer strategy of building up large-scale, comprehensive, and subsidized family planning services.

Introduction

There is substantial literature on social, economic, and institutional circumstances that can work as barriers to any speedy adoption of fertility regulation in an impoverished and predominantly agrarian society. However, little is known how significant increase in contraceptive use can be achieved in such a society. Being among the least developed of the Third World countries, with continued low level of socioeconomic development, high infant mortality, low status of women, and predominantly agrarian economy, Bangladesh is still an unseemly society for any speedy acceptance of fertility regulation. And yet, in this paper, we bring in evidence of speedy acceptance of fertility regulation in Bangladesh. This is contrary to the general notion that couples in an impoverished society is unlikely to significantly change their reproductive behavior until they experience improvements in their socioeconomic conditions or in the status of women. What might have been the contributing factors underlying this unanticipated change in Bangladesh? What role has the family planning program played in this speedy acceptance of contraceptive use? What implications this surprising increase in contraceptive use has for the rest of the impoverished societies of Asia and Africa?

In this article, we examine trends and differentials in family planning knowledge, attitudes, and practice in Bangladesh in an attempt to examine these issues. This examination is based on a series of national level household surveys since the late 1960s. These surveys are: the 1969 National Impact Survey (NIS) of family planning, and 1979, 1983, 1985, and 1991 Contraceptive Prevalence Surveys (CPS). These surveys are nationally representative and contain detailed questions on pregnancy history, socioeconomic background and family planning knowledge, attitude, and practice. The sampling frames of all of these surveys consisted of all households in Bangladesh, from which national probability samples of ever-married women

aged 50 and younger were selected and stratified by urban-rural residence. More detailed descriptions of these surveys may be found elsewhere (Hardee and Sirageldin, 1969; Bangladesh, 1979; Mitra and Kamal, 1983; Mitra and Associates, 1987, 1992).

Contraceptive Knowledge and Practice

Table 1 shows trends and levels of knowledge and practice of contraception among currently married women aged 50 and younger between 1969 and 1991. The proportion of women who said that they knew of at least one method of contraception rose from about 63.0 percent in 1969 to almost 100 percent in 1991. Similarly, the average number of contraceptive methods that women said they knew about increased from 2.2 to 8.7 and the average number of modern contraceptive methods increased from 1.5 to 6.7 during that period.

The table further shows that the rate of current contraceptive use increased from about 4 percent in 1969 to about 25.0 percent in 1985 and 40.0 percent in 1991. The rate of use of modern contraceptives also increased from about 3.0 percent in 1969 to about 18.0 percent in 1985 and to 31.0 percent in 1991.

A dramatic increase in the knowledge and practice of contraceptives is evident in these data. These data show that the familiarity with contraceptive methods became almost universal within a decade after the initiation of the National Family Planning Program (NFPP) in 1965. However, a dramatic increase in the contraceptive use had not happened until the mid 1980s. This shows that, although a majority of Bangladeshi women showed familiarity with contraceptive methods within a few years since the initiation of the NFPP in 1965, contraceptive use rate did not significantly increase among them until mid 1980s.[1] By 1983, after 18 years of the operation of the NFPP, contraceptive prevalence rate moderately increased to about 19.0 percent of the married couples. However, this moderate increase has been unusually accelerated

Table 1: Various measures of contraceptive knowledge and contraceptive use among currently married women 50 years of age and under, Bangladesh, 1969-1991.

Measure	1969 (N = 3,088)	1979 (N = 14,326)	1983 (N = 7,662)	1985 (N = 7,822)	1989 (N = 9,318)	1991 (N = 9,745)
Average no. of methods known	2.2	2.6	6.0	7.0	7.7	8.7
Average no. of modern methods known	1.5	2.1	5.9	5.8	6.3	6.7
% who know at least one method	62.7	84.6	98.6	99.6	99.9	99.9
% who know at least one modern method	60.2	83.2	98.4	99.5	99.5	99.9
% ever used contraceptives	6.4	19.6*	35.3	34.6	48.7	61.7
% currently using contraceptives	3.6	12.7*	19.1	25.3	31.4	39.9
% currently using modern contraceptives	3.3	8.9*	13.8	18.4	24.4	31.2

Note: The percentages are based on weighted Ns.

*Based on ever married women.

since 1983 and, by 1991, the contraceptive prevalence rate shot up to about 40.0 percent. This represents more than a doubling of the percent of current users within a short span of just eight years. Other data analyzed from these surveys showed that the total fertility rate which was about seven in 1969 declined to about five births per women in 1991, a reduction of about 30.0 percent. Again, separate analyses of three national surveys--1989 CPS, 1989 Bangladesh Fertility Survey (BFS), and 1991 CPS--all taken within a year around the late 1980s and, conducted independently, gave almost identical estimates of the contraceptive use and fertility. All these evidences showed that the recent accelerated increase in contraceptive use is genuine and is not an artifact of unreliable data. What is unusual is that this dramatic change in reproductive behavior has happened at a time when Bangladesh continued to be in the lowest rank on most of the aggregate social and economic-modernization variables that are considered to be conducive to contraceptive use and low fertility. While this dramatic increase in contraceptive use has coincided with the expansion of the NFPP, it is of special interest to examine what aspects of the NFPP have contributed to this unusual increase. The data available from the recent CPSs offer an opportunity for such an examination.

Differentials in Current Contraceptive Use

Table 2 shows trends and differentials in current contraceptive use by various socio-demographic factors since 1983. Use of all methods increased between 1983 and 1991 with the increase in oral pills and injectables being relatively higher both in absolute and relative terms. Thus, the use of pills and injectables increased from 3.2 percent in 1983 to 16.6 percent in 1991--an increase of about 419 percentage points. The corresponding increases in sterilization and other modern methods were from 6.7 percent and 2.5 percent to 10.3 percent and 4.4 percent, respectively--indicating their lower increase both in absolute and relative terms.

Table 2: Percent of currently married women currently using sterilization, pills and injectables, other modern, and traditional contraceptive methods according to women's education, husband's education, land ownership, number of living children, current age, region, type of residence, and field worker's contact, 1983-1991.

	Methods of Contraceptives and Years of Survey														
	Sterilization			Pills & Injectables			Other Modern Methods			Traditional Methods			Ns*		
Background Characteristics	1983	1985	1991	1983	1985	1991	1983	1985	1991	1983	1985	1991	1983	1985	1991
All	6.7	9.4	10.3	3.2	5.6	16.6	2.5	3.4	4.4	4.5	6.9	8.7	8523	7822	9732
Women's Age															
≤20	1.2	1.0	0.5	2.5	3.8	11.2	2.0	2.2	3.2	3.0	4.0	4.9	2244	1795	2079
21-30	8.3	10.7	7.3	4.3	7.5	21.6	3.6	4.7	5.0	4.6	6.0	7.7	3251	3150	4024
31-40	11.3	15.0	20.3	3.6	5.7	17.0	1.9	3.5	5.4	7.2	11.0	12.2	1862	1936	2507
40+	5.3	9.3	17.4	0.8	2.3	7.3	1.5	1.1	2.2	3.0	6.8	11.5	1166	941	1122
Parity Status:															
0	0.5	0.7	0.6	0.5	1.7	3.3	1.6	0.9	1.5	1.9	2.7	3.8	1259	1076	1273
1	1.6	3.0	2.4	3.3	5.4	14.7	2.3	2.9	4.1	2.7	5.5	6.7	1492	1207	1643
2	6.8	8.6	9.4	4.1	7.1	22.2	3.5	5.0	6.1	4.7	5.6	8.2	1372	1309	1770
3	10.1	15.5	15.8	3.9	6.8	20.8	3.6	4.5	5.9	5.0	6.6	9.5	1197	1178	1612
4	11.6	16.2	18.3	3.6	7.7	19.7	2.4	4.4	4.8	5.8	8.5	9.5	989	982	1270
≥5	9.5	11.4	13.9	3.6	5.1	16.2	2.0	2.9	3.5	6.3	10.1	12.6	2216	2070	2164
Region:															
Dhaka	7.1	9.0	10.9	4.3	5.7	16.8	2.6	2.3	5.1	4.2	5.9	8.8	2543	2064	2842
Chittagong	3.5	6.3	6.1	2.6	2.4	11.2	1.7	2.2	3.3	3.0	4.8	6.6	2123	1814	2460
Rajshahi	8.3	11.2	13.0	3.3	6.1	20.3	2.9	4.3	4.0	5.5	8.8	8.8	2249	2099	2556
Khulna	7.7	11.1	11.3	2.3	5.6	18.2	2.9	3.3	5.2	5.7	8.1	11.1	1608	1544	1874
Field Workers:															
Contacted	8.8	11.2	3.8	3.1	4.9	33.0	3.3	3.5	7.5	5.9	8.4	9.7	2117	1975	3501
Not Contacted	6.0	8.8	14.0	3.2	5.8	7.3	2.3	3.4	2.5	4.1	6.4	8.1	6406	5847	6231
Residence:															
Urban	8.9	9.8	8.7	9.9	16.7	21.1	2.0	10.3	8.3	5.8	7.4	9.6	845	785	1463
Rural	6.4	9.4	10.6	2.5	4.3	15.7	6.9	2.6	3.7	4.4	6.8	8.5	7678	7037	8269

Table 2 (continued)

Background Characteristics	Methods of Contraceptives and Years of Survey														
	Sterilization			Pills & Injectables			Other Modern Methods			Traditional Methods			Ns*		
	1983	1985	1991	1983	1985	1991	1983	1985	1991	1983	1985	1991	1983	1985	1991
Women's Education:															
No Education	7.6	10.9	12.8	1.7	3.7	14.3	1.2	1.6	2.5	3.5	5.8	7.4	5859	5368	5774
Primary	5.1	7.0	8.2	4.8	7.8	18.0	3.4	5.1	4.8	5.9	9.0	9.8	1919	1796	2573
Secondary & Above	3.6	4.0	3.9	10.8	14.4	23.4	10.7	13.2	11.5	9.2	10.2	11.9	744	658	1385
Land Ownership:															
Yes	5.0	7.0	7.9	3.7	6.2	17.1	3.0	3.9	5.0	5.2	8.1	9.5	5628	5076	5742
No	10.0	13.9	13.8	2.3	4.5	15.7	1.7	2.5	3.5	3.1	4.6	7.5	2890	2740	3990
Husband's Education															
No Education	7.8	11.0	12.3	1.5	3.2	13.7	0.9	1.6	2.5	2.9	5.2	7.3	4213	3973	4336
Primary	6.6	9.7	11.0	2.9	5.7	16.0	1.9	2.0	2.9	5.0	6.8	8.2	1510	1783	2078
Secondary & Above	4.6	6.1	7.2	7.1	10.2	20.7	6.2	8.2	7.8	7.0	10.2	10.8	2181	2066	3318

*Cases with missing values on a variable are excluded from analysis. These are weighted Ns.

Although all socio-demographic groups participated in the increase use of various contraceptive methods, the use of male and female sterilizations was higher among lower socio-economic strata as represented by education or land ownership. The reverse seems to be true of pills and injectables, which were in higher use among higher socio-economic strata. Other modern methods, such as condoms or vaginal methods, also seemed to be in higher use among higher socio-economic strata. When these rates are examined by other socio-demographic variables, such as region, urban residence, age, or parity status, some differentials also emerged. Thus, although urban residents were in much higher use of sterilization, injectables, and oral pills in the year 1983 and 1985, this difference narrowed or even reversed by the year 1991. On the other hand, both absence of worker's contact and residence in Chittagong region were associated with lower use of all types of contraceptive methods, with the exception of sterilization, which became negatively associated with worker's contact. The latter negative association was also observed in 1989 Bangladesh Fertility Survey (Huq and Cleland, 1990).

Finally, examination by age and parity of the women revealed that women of all parity and age groups were increasingly using all types of contraceptive methods with the exception of those below age 20 and below parity two, who were lagging behind in most of the methods. However, in the use of oral pills, even these groups were catching up by 1991. This pattern of increased contraceptive use is particularly pronounced among women of parity three and four and between ages 31 and 40. Overall, there seemed to have been a rise in the use of various methods of contraceptives, especially, pills and injectables, with some variations by socio-demographic groups.

Other data from the survey questionnaires, which have been analyzed separately, demonstrated that fertility and fertility aspirations also changed during the period. For example,

total marital fertility declined from about 7 in the 1960s to about 5 in 1991--a reduction of 30 percent. Similarly, the proportion, who said they did not want any more children, increased somewhat during the period. The proportions were 48.3 percent in 1983, 59.0 percent in 1985, and 64.6 percent in 1991.

Table 3 shows that simultaneously with the rapid rise in contraceptive use, there also had been a decline in the unmet need for family planning. Thus, in 1983, about 65.0 percent of currently married women, who said they wanted no more children, were not using a method of contraception. By 1991, this proportion had dropped to about 42.0 percent--a decline of 30.0 percent. Although this decline showed that a significant proportion of unmet demand was met by the existing programs, its level still remained high enough by the terminal year 1991 to worked as a barrier to further rapid increase in contraceptive use. This residual unmet demand was higher in Chittagong region and among those not contacted by family planning workers than in non-Chittagong region and among those contacted by the family planning workers, respectively. This unmet demand was also higher among lower socio-economic strata as evident in the differentials by education and land ownership. This pattern of unmet demand suggested that while increased contraceptive accessibility was satisfying a large proportion of unmet demand, there still remained a sizeable residual unmet demand, which could be a barrier to further progress in bringing about faster than normal fertility decline in Bangladesh.

Table 4 shows that modern methods of contraception, particularly, pills and sterilization, available through the clinics, field workers, and commercial outlets constituted the growing share of the contraceptive methods used by the women. One of the noticeable findings in the table was the growing importance of the field workers as a source of supply of modern contraceptives. While the field workers became the primary sources of pills and condoms, the hospitals and

Table 3: Unmet demand for contraceptives (among women who want no more children, % not using a method) by number of living children and selected characteristics for 1983, 1985, and 1991.

Characteristics	1983					1985					1991				
		Number of Living Children					Number of Living Children					Number of Living Children			
	N	0-1	2-3	≥4	Total	N	0-1	2-3	≥4	Total	N	0-1	2-3	≥4	Total
All	3310	55.7	56.3	69.0	64.9	3708	60.6	50.7	61.1	57.7	5060	47.3	34.8	46.2	41.9
Women's Education:															
No Education	2284	61.3	58.5	72.1	68.1	2644	59.4	55.1	65.5	62.1	3135	55.9	38.3	48.7	45.3
Primary	759	52.8	58.6	64.4	62.5	773	71.8	47.0	51.9	50.6	1348	34.7	35.6	43.4	40.3
Secondary & Above	267	36.2	42.4	48.5	44.9	291	54.5	34.3	37.3	36.2	577	23.6	22.3	34.5	27.0
Husband's Education															
No Education	1791	61.0	56.6	72.5	67.3	1837	56.6	52.8	66.0	61.4	2220	50.7	39.5	47.8	44.9
Primary	627	69.4	65.7	68.0	67.4	882	69.7	55.7	61.2	59.8	1114	50.1	37.8	48.5	44.9
Secondary & Above	891	36.1	50.6	62.4	57.8	989	62.5	43.0	51.8	49.1	1726	40.3	28.3	42.2	36.1
Residence:															
Urban	378	54.9	41.3	46.2	45.0	403	43.2	30.8	43.6	38.7	802	42.2	31.3	42.0	37.4
Rural	2932	55.7	58.7	71.6	67.5	3305	62.8	53.6	63.0	60.0	4258	48.3	35.6	46.9	42.8
Region:															
Dhaka	1015	53.2	53.7	67.3	62.7	975	62.0	54.0	63.8	60.4	1480	42.2	33.0	44.4	40.1
Chittagong	930	85.9	72.8	75.0	74.7	725	75.4	65.3	67.9	67.4	1140	84.0	48.9	58.4	56.0
Rajshahi	685	44.5	50.7	65.3	59.7	1076	47.9	45.2	58.1	53.1	1413	50.1	32.0	37.0	35.3
Khulna	680	54.0	57.3	69.5	65.3	779	67.1	50.0	58.6	56.2	1027	27.4	29.7	44.4	38.1
Land Ownership:															
Yes	2235	56.8	58.1	71.8	67.6	2396	68.7	53.1	62.3	59.7	2958	51.6	36.0	47.2	43.3
No	1075	53.6	53.5	62.7	59.3	1309	47.6	47.2	58.9	54.2	2102	42.6	33.3	44.8	40.0
Visited by FP Workers in Last 6 Months:															
Yes	995	53.1	56.0	64.9	62.0	986	54.1	48.5	58.5	55.1	2025	32.0	27.8	35.4	32.1
No	2315	56.2	56.5	70.8	66.1	2722	62.5	51.5	62.1	58.6	3035	55.9	40.5	52.7	48.5
N		97	971	2,242	3310		127	1201	2379	3708		142	1925	2993	5060

Table 4: Percentage distribution of sources of supply by methods of contraceptives, 1983-1991

Year	Methods of Contraception	Sources of Supply						Total	N	% of Users
		Commer -cial	Doctor	Mobile Camp	Hospital/ Clinic	Field Worker	Others			
1983	Any Methods	17.6	1.2	2.6	59.0	12.4	7.2	100.0	1,065	100.0
	Pills	48.1	2.0	0.0	6.6	34.2	9.1	100.0	255	23.9
	Tubectomy	0.0	0.3	3.5	95.3	0.0	0.9	100.0	473	44.6
	Vasectomy	0.0	0.0	4.2	80.7	0.0	15.1	100.0	95	8.9
	Injection	7.1	21.6	5.4	56.7	1.9	7.3	100.0	19	1.7
	IUD	0.0	1.7	7.7	74.8	15.4	0.4	100.0	78	7.3
	Condom	41.5	0.3	0.0	8.9	22.1	27.1	100.0	117	11.0
	Others	68.2	0.0	0.0	27.3	0.0	4.5	100.0	22	2.6
1985	Any Methods	22.6	3.6	1.7	59.2	12.9	0.0	100.0	1,440	100.0
	Pills	49.4	8.0	0.0	6.8	32.5	3.3	100.0	440	28.0
	Tubectomy	0.0	0.2	2.9	96.4	0.0	0.5	100.0	615	42.7
	Vasectomy	0.0	0.0	1.7	92.5	0.0	5.8	100.0	121	8.4
	Injection	0.0	15.8	0.0	73.7	5.3	5.2	100.0	39	2.5
	IUD	0.0	2.7	3.6	77.9	13.3	2.5	100.0	113	7.8
	Condom	56.9	6.5	0.0	2.9	25.9	7.8	100.0	139	9.7
	Others	46.7	0.0	6.7	6.7	26.7	13.2	100.0	14	0.9

Table 4 (continued)

		Sources of Supply						Total	N	% of Users
		Commer -cial	Doctor	Mobile/ Camp	Hospital/ Clinic	Field Worker	Others			
1991	Any Methods	13.1	0.9	1.4	43.0	37.6	4.0	100.0	3,039	100.0
	Pills	22.6	1.0	0.2	4.9	66.8	4.5	100.0	1,355	44.6
	Tubectomy	0.0	0.1	2.3	97.6	0.0	0.0	100.0	886	29.2
	Vasectomy	0.0	0.0	0.0	94.8	0.0	5.2	100.0	116	3.8
	Injection	0.6	4.0	4.7	52.1	32.6	6.0	100.0	254	8.3
	IUD	0.3	0.9	2.8	70.5	15.6	9.7	100.0	177	5.8
	Condom	36.1	0.4	0.4	4.4	50.3	8.4	100.0	249	8.2
	Others	0.0	0.0	0.0	0.0	0.0	100.0	100.0	2	0.1

clinics, which are primarily managed by the NFPP, became primary sources of clinical methods. The increasing utilization of these methods and their sources of supply were coincidental with the increasing program inputs of the NFPP in these areas.[2]

The data so far presented suggest a recent dramatic increase in contraceptive use in Bangladesh. However, since simple univariate and bivariate analyses do not capture the independent effects of any background variables, we also carried out a multivariate analysis using logit regression. Table 5 presents the results of regression models estimating the net effects of the independent variables (year, woman's education, number of living children, urban-rural residence, region, and worker's contact) on contraceptive use.[3] Other variables, such as land ownership or husband's education, have been excluded from the multivariate analysis because of their insignificant or ambiguous relationship with contraceptive use. The statistical effects are measured for each of the three survey years separately and the three years combined. In order to facilitate the interpretation of results, antilogs of the coefficients, which can be interpreted as the amount by which the odds are multiplied for each unit change in the explanatory variables, are presented. In addition, one can calculate the percentage change in the odds associated with each unit change in the explanatory variable by subtracting 1 from the multiplicative coefficient and multiplying by 100. The strong positive coefficient of year 1991 shown for contraceptive use confirms the finding of dramatic increase in contraceptive use between 1985 and 1991. These findings provide support for the view that the dramatic increase in contraceptive use was achieved because the existing latent demand was increasingly and extensively met by vigorous expansion and strengthening of the NFPP.

Table 5. Odds ratios for current use of a contraceptive method among currently married women by year, women's education, number of living children, urban residence, Chittagong region, family planning worker's contact, interaction of year with parity and women's education, and interaction of urban residence with parity.

	Contraceptive Use			
Variable	1983	1985	1991	1983-1991
Year[a]:				
1991	na	na	na	2.651*
1985	na	na	na	2.173*
Women's Education (in yrs)[a]:				
≥6	3.241*	2.273*	2.177	3.300*
1-5	1.451*	1.478	1.215	1.422*
No. of Living Children[a]:				
≥4	3.935*	2.447*	4.397*	4.031*
2-3	3.206*	2.743*	3.838*	3.370*
Urban Residence	2.241*	2.784*	1.415*	2.433*
Chittagong Region	0.578*	0.850*	0.457*	0.568*
Contacted by Worker	1.127	1.714*	2.012*	1.670*
Year x Parity:				
1991 x 2-3	na	na	na	1.212
1985 x 2-3	na	na	na	0.617*
1991 x ≥4	na	na	na	0.845
1985 x ≥4	na	na	na	1.121
Year x Woman's Education:				
1991 x 1-5	na	na	na	0.849
1985 x 1-5	na	na	na	1.046
1991 x ≥6	na	na	na	0.605*
1985 x ≥6	na	na	na	0.738*
Residence x Parity:				
Urban Residence x 2-3	na	na	na	0.669*
Urban Residence x ≥4	na	na	na	0.731*
X^2 (fit model)	99.5	110.6	119.8	792.6
(Degrees of freedom)	(64)	(64)	(64)	(196)

*$p<0.05$

Note: na - not applicable

[a]Reference categories are from the top, 1983, women with no education, 0-1 living children, rural residence, non-Chittagong region, and not contacted by worker.

Changes in the differential effects of the independent variables may also be noted in Table 5. Thus, although women with higher levels of education, as well as those living in urban areas, were the most likely to be practicing contraception in all three survey years, the magnitude of the effects of these variables changed between 1983 and 1991. For instance, the positive effect of woman's education and urban residence on contraceptive use declined somewhat between 1983 and 1991. On the other hand, positive effect of worker's contact increased over the years.

Table 5 also shows significant effects on contraceptive use when interaction of the year with above primary level education and interaction of urban residence with parity are examined. On the other hand, no significant interaction effect of year and parity is found except a negative interaction effect of the year 1985 and parity 2-3. If we compare the signs of the coefficient of main effects and the interaction effects, it is possible to hypothesize that the positive effects of education on contraceptive use decreased over the years. Similarly, the positive effect of parity on contraceptive use in urban areas decreased compared to rural areas. On the other hand, although significant interaction effect of parity 2-3 and 1985 shows the decreasing effect of parity 2-3 in 1985 compared to 1983, overall effects of parity did not change much over the years. Again, these findings suggest that the NFPP was increasingly meeting the latent demand for fertility regulation among all socioeconomic, demographic, and geographic groups in Bangladesh.

Discussion

In this article, we have examined the recent unusual increase in contraceptive use in Bangladesh--one of the least developed and most impoverished countries in the world. Within a short span of just eight years, between 1983 and 1991, the current contraceptive use in

Bangladesh rose from about 19.0 percent to about 40.0 percent. This dramatic increase occurred among all women, regardless of education, residence, or parity. This happened at a time when Bangladesh continued to be in the lowest rank on most of the aggregate social and economic-modernization variables that are considered to be conducive to contraceptive use and low fertility.

There had been no apparent change in the economic, social, and institutional environments unfavorable to reproductive change during this period except the coincidental expansion of a comprehensive population program of the NFPP aimed at increasing both accessibility and availability of modern clinical and non-clinical contraceptive supplies and services. Consequently, the expansion of the NFPP may have largely contributed to this dramatic change. This explanation is further reinforced by the present study's finding that the national and regional growth in contraceptive use is proportionate to the scale of government family planning efforts and that an overwhelming majority of respondents, who used contraception, received their methods from the government supply sources or sources heavily subsidized by the NFPP.[4] These efforts neither took any recourse to political or administrative pressure found in China and Indonesia nor were facilitated by higher educational and occupational status women enjoy in Kerala, Sri Lanka, or Thailand, where similar change in reproductive behavior has happened.[5] This shows that even in the absence of any significant improvement in the low level of development and in the low status of women, a massive expansion of voluntary family planning program can bring about speedy acceptance of fertility regulation in an impoverished society.

The period prior to and during the recent dramatic increase in contraceptive use in Bangladesh did not witness any change in the objective conditions such as poverty, landlessness, low status of women, and illiteracy that could influence both attitudes and behavior affecting fertility regulations (Osmani, 1990; Khan, 1990; Khan and Hossain, 1989; Like-Minded Group, 1988). What could then prompt the recent sudden change in reproductive behavior in the face

of this continuing low level of socioeconomic development in Bangladesh? Although no systematic attempt has been made in this paper to analyze the causes of the increased contraceptive use in Bangladesh, some plausible explanations are in order.

Earlier studies showed the presence of substantial latent demand for fertility control in Bangladesh side by side with the presence of high fertility culture of a conservative society (Zaidi, 1970; Sirangeldin et al., 1975). Although the origin of the latent demand for fertility regulation can be traced to the gradual decline of mortality in the 1940s and 1950s (Amin, 1988; National Research Council, 1981), the increasing population pressure in the face of a long stagnated economy may have accentuated the latent demand. The heightened collective concern with population pressure induced by government population and family planning program, coupled with changes in ideas and aspirations generated by growing exposure to the outside world, mass media, and other changing socioeconomic and political realities,[6] may have further distabalized the erstwhile high fertility norms. But the tasks of satisfying this increasing latent demand faced formidable barriers not only because of lack of necessary managerial and administrative skills, but also because of economic and non-economic barriers of reaching inaccessible areas of the country where the bulk of women populations are governed by age-old customs of modesty and seclusion (Demney, 1975; Abdullah and Zeidenstein, 1982; Mabud, 1992). But despite such odds, the policy-makers and administrators of national family planning program have relentlessly pursued an ambitious strategy of devoting large resources towards mitigating these constraints. The central element in this strategy was to alleviate constraints to contraceptive use by increasing accessibility to contraceptive information and services as well as by mitigating the various costs of contraceptive adoption through the opening of free clinical services, domiciliary outreach efforts, commercial outlets, multi-sectoral programs, integration of primary health care and family planning, joint participation of health and family planning field

workers in the Expanded Program for Immunization (EPI), and a host of other services and financial incentives throughout the country (Karim, 1992; J. Ahmed, 1990). Thus, by the mid 1980s, 10,000 new outreach workers were added to the existing cadre of female outreach workers, family welfare assistants, male field supervisors, and family planning assistants, giving a ratio of one worker per 5,000 population. The outreach efforts of these workers were backed by the creation of an extensive network of medical centers, where surgical sterilization and other operative procedures , such as IUD or injectables, were routinely available, by domiciliary distribution of non-clinical contraceptives, such as pills and condoms, and by an array of incentives for the clients of sterilization and IUDs as well as their recruiters. The extension of these services or efforts were made possible by a combination of high political commitment, establishment of large scale bureaucratic networks, and effective financial and technical assistance from foreign donors, which continued largely uninterrupted since the inception of the NFPP. The results, as the present analysis shows, were the universal awareness of the various methods of contraceptives as well as significant increase in contraceptive use and a decrease in its unmet demand.

Overall, evidences presented in the paper are consistent with the notion that program efforts have played an important role in bringing about rapid fertility regulation in Bangladesh. But why was there a sudden rise in contraceptive use in the late 1980s when the program was in existence since 1965? The answer, again, lies in a combination of factors, which include deteriorating poverty situation, method-mix introduced by the NFPP, financial incentives introduced for certain procedures, legitimation of contraceptive use, rising living standard of a section of population, rising aspiration, vis-a-vis, a sense of relative deprivation, competing with childbearing. All these have desensitized the traditional restriction on the public discussion

on family planning and its gradual legitimization, mitigating the economic, social, and psychological costs of contraceptive use.

First, an enormous increase in the number of educated female family planning workers in the mid 1980s dispatched at the doorsteps throughout the country provided both a role model as well as legitimation to the idea of adoption of contraception. Second, as our study shows, the increased availability of a wider variety of contraceptives, especially, the oral pills and injectables, might have been the dominant factors in the recent rise of contraceptive use. This rise in reversible contraceptives might have expanded the recent pool of contraceptors by expanding the choice of methods not only to those who want to stop childbearing at higher parity, but also to those who want to space births at lower parity. The latter is evident in our finding of recent higher increase in contraceptive use among lower-parity couples. On the other hand, up to 1985, sterilization was the dominant method, whose importance declined thereafter. This oscillation in the sterilization use and the rise in the use of reversible methods are to be explained in terms of financial incentives for sterilization and availability of oral pills and injectables, with the latter two methods becoming increasingly available with the expanding network of the NFPP's field level staffs. Prior to the mid 1980s, the NFPP was not only relying more on sterilization than on pills and injectables, but was also providing compensation payments and clothing gifts to clients and referral fees to referrers of sterilization (Cleland and Mauldin, 1991). In addition, a monthly target of two sterilization cases was assigned to each family welfare assistant (NFPP's grassroots level worker). All these might have provided positive inducement or means of overcoming the cost barriers that would have otherwise impeded contraceptive sterilization in the pre-mid-1980s. Although target of two sterilizations per month per worker was dropped in 1987, reducing somewhat the pressure on the targeted sterilization clients, which is reflected in our finding of negative association between family planning

worker's contact and sterilization in the terminal year of 1991, the compensation payment to sterilization clients continued in the post-1987 period. However, since the amount of compensation payment, which was modest by the currency value of the early 1980s, was not adjusted subsequently for inflation, its real value must have shrunk considerably by the late 1980s. While this shrinking value of compensation payment may have made it less attractive to higher-income strata, its importance may not have altogether diminished for lower-income strata, who are in extreme poverty and daily struggle to survive. This was reflected in our finding of inverse relationship between sterilization and socio-economic status. The result is the continuation of higher sterilization adoption among lower socio-economic strata in addition to their increasing use of new reversible methods of oral pills and injectables that were added in the NFPP.

That both the inducement of compensation payment and poverty-driven motive to postpone or to terminate further childbearing were working on the poor was reflected in their higher or equal increase in both irreversible and reversible contraceptive use compared to the higher socio-economic strata. Paralleling this increased contraceptive use, there was also a decline in family size preference. Bangladesh is likely to get enormous benefits out of this rapid increase in contraceptive use not only because of its demonstration effect for further increase in fertility regulation, but also because of economic, social, and health benefits that may result from the decreased fertility. While the declining family size preference and unusually increasing contraceptive use reinforce the impression that Bangladesh's fertility regulation will continue to spread in the coming years, they have significant implication for the rest of the poor countries of Asia and Africa by showing the possibility of bringing about a significant increase in contraceptive use by the sheer strategy of building up large-scale, comprehensive, and subsidized family planning services.

NOTES

[1]Although no national-level data on contraceptive use is available for the period immediately preceding 1969, a 1964 study in Comilla district revealed no incidence of modern contraceptives (see S.A.H. Zaidi, *The Village Culture in Transition: A Study of East Pakistan Rural Society*, Honolulu: East-West Center Press, 1970). That Bangladesh was essentially a non-contractive society prior to the initiation of the NFPP was evident in two consecutive national surveys--1969 National Impact Survey and 1975 Bangladesh Fertility Survey--that showed contraceptive prevalence rates of less than 4.0 percent and 7.0 percent, respectively (see, Table 1 and Government of Bangladesh, Bangladesh Fertility Survey, 1975, Dhaka Bangladesh).

[2]Beginning in the late 1970s, there has been extensive efforts aimed at strengthening and expanding the family planning motivation, information, and services in Bangladesh. These efforts include an extensive network of field workers, integration of family planning with maternal and child health services, multi-sectoral programs in family planning, provision of variety of contraceptives through both public and private sectors, and establishment of village level family welfare centers. Separate analysis of 1991 and 1985 data showed that the level of family planning worker's contact with the women was lower in Chittagong region compared to other regions. While the detailed explanation of the reason of this low worker's contact and lagging response of Chittagong region is beyond the scope of the present study, it is plausible that the lower program efforts were responsible for the lower contraceptive use of the Chittagong region. (For more information on the recent expansion of family planning efforts in Bangladesh, see M.S. Karim, "Bangladesh Population Policy and Programmes," in M.A. Mabud, ed., *Bangladesh's Population Problem and Programme Dynamics*, Sheba Printing Press, Dhaka, Bangladesh, 1992).

[3]Since the dependent variables used are discrete and dichotomous, we used logit regression analysis, which is an application of maximum likelihood estimation, as a way of ascertaining net effects among a set of predictors. The analysis uses the logit, or natural logarithm, of the odds of practicing contraception, and provides consistent and asymptotically efficient estimates of the effects of various independent variables. (For a more detailed description of the methodology, see: M. Swafford, "Parametric Techniques for Contingency Table Analysis," *American Sociological Review*, 45:664, 1980.) The independent variables are represented in dummy variable form. The year variable is converted into two dummy variables: 1991 survey and 1985 survey. Female education is converted into two dummy variables: respondents who have received above-primary-level education and those who have received primary education. The number of living children is also converted into two dummy variables: four or more children and 2-3 children. No conversion is necessary for urban residence, Chittagong region, and work's contact. To study the effects of parity, respondent's education, and urban residence on trends and differentials in contraceptive use, we form interactions between dummy variables representing parity and education, and the dummy variables representing year, as well as dummy variables representing residence and parity. Other characteristics (such as husband's occupation, land ownership, and child mortality experience) have not been added because these variables tend to overlap with residence and woman's education, and because they render the direction of causality ambiguous. In addition, accessibility of a family planning outlet or of a government source of contraceptive supply are excluded, since information on these items was collected only from women using contraceptives. The method of calculation used here is described in S. Fienberg, *The Analysis of Cross-Classified Categorical Data*, MIT Press, Cambridge, Mass., 1977; and O.D. Duncan, "Logit Chi-square Regression Using S.P.S.S.", Department of Sociology, University of Arizona, Tucson, 1978.

[4*]Separate analysis of CPS data sets for 1983, 1985, 1991 shows that in term of family planning program coverage, Chittagong region, which is lagging behind the rest of the country in contraceptive use, is less well served. Not only were there fewer female family planning workers in Chittagong region, but also fewer women had been visited by a field worker in the last three months prior to the dates of surveys and fewer women knew of a family planning worker than in the rest of the country.

[5]For more information on rapid fertility transition in China, Indonesia, Thailand, Sri Lanka, and Kerala State in India, see J. Banister, *China's Changing Population*, Stanford, Calif., 1987; R. Freedman, S.E. Khoo, and B. Supratilah, "Use of Modern Contraceptives in Indonesia," *International Family Planning Perspective*, 14:131, 1988; J. Knodel and N. Debavalya, "Thailand's Reproductive Revolution," *International Family Planning Perspectives and Digest*, 4:34, 1978; D.F.S. Fernando, "Social and Demographic Determinants of Fertility in Sri Lanka," *Journal of Biosocial Science*, 14:59, 1982; K.C. Zachariah, "Kerala: Solution or Happenstance?," *Populi*, 10:3, 1983.

[6]For discussion on ideational, economical, governmental, non-governmental, and other external forces impinging on rural Bangladesh, see E.G. Jansen, *Rural Bangladesh: Competition for Scarce Resources*, University Press Limited, Dhaka, Bangladesh, 1988; D. Abecassis, *Identity, Islam, and Human Development in rural Bangladesh*, University Press Limited, Dhaka, Bangladesh, 1990; A.N. Chowdhury, *Let Grassroots speak: People's participation, Self-help Groups and NGO's in Bangladesh*, The University Press Limited, Dhaka, Bangladesh, 1990.

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