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Fertility, Contraceptive Use, and Socioeconomic Context in Bangladesh

PAST studies of fertility rarely provided a clear picture of fertility changes and differences in Bangladesh. While a few studies documented some minor socioeconomic differences, it remained uncertain whether demand (involving deliberate fertility control) or supply (without deliberate control) factors explained the small differences in fertility (Lee and Amin, 1981; Amin and Faruquee, 1980; Stoeckel and Chowdhury, 1980). Part of this uncertainty could be explained by the nature of the society in which extensive deliberate control of fertility was absent because of the initial stage of organized family planning efforts. The situation, however, began to change in mid-1975 when contraceptive rate in Bangladesh showed an upward trend with anticipated effect on fertility. In the context of recent socioeconomic conditions in Bangladesh, the present study seeks to examine the effect of this contraceptive use and other socioeconomic factors on fertility.

This study examines recent birth intervals together with total and cumulative fertility¹. Recent birth intervals, which have been ignored in previous empirical studies on fertility in Bangladesh, are sensitive to various factors such as con-

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1. Most of the previous studies used cumulative fertility measures which might not coincide or might pre-date *the* independent variables. Moreover, because in the current stage of Bangladesh society, women with larger families have greater motivation to contracept, it is difficult to establish the negative effect of contraceptive use on cumulative fertility. Although we too use cumulative fertility for comparison with past studies, our analysis of cumulative fertility is supplemented by birth interval analysis.

traceptive use, infant mortality, or breast-feeding. These factors may antedate or be operative within the birth interval in question.

The causes of differences or changes in fertility in Bangladesh—whether in short-term national fluctuation or in local socioeconomic differences—are often debated. In this regard, a number of propositions have been made. Some researchers postulated lowered infant mortality (Sirageldin *et al.*, 1975) as the principal cause and others attributed spreading knowledge of and access to efficient methods of contraception as key factors (Phillips, 1982). Still others claim general changes such as modern education or improved health (Stoekel and Chowdhury, 1973, 1980) as the basic reasons for the differences or changes in fertility.

In our view, Bangladesh is no longer a pre-modern society, lacking totally deliberate control of fertility. Rather, it is going through a transitional stage in which the idea of family size regulation or contraceptive use is gradually spreading. However, on a continuum of between completely uncontrolled fertility to fully deliberately controlled fertility, Bangladesh is still at an early stage of a transitional society. Although it is difficult to envisage fertility control or contraceptive use in such early transitional society, organized family planning efforts are likely to induce some fertility or contraceptive response (Freedman and Berelson, 1976).

In the context of Bangladesh, this response will be more prevalent among women of high-parity than among those of low-parity because of the likelihood of contraceptive decision being based on "realisation of excess fertility experience. There are several key reasons why this contraceptive decision is based on fertility experiences. First, demand of children for lineage continuation, risk insurance, and family labor force are still high (Arthur, McNicoll and McNicoll, 1978; Cain, 1977, 1981). Consequently, immediate demonstration of fertility after marriage and a minimum number of living children as family-size target are major family-size goals. However, there are constraints on such demand in contemporary Bangladesh. For example, those who demand higher number of children need simultaneously higher resources to raise and support these children as well as maintain social status—a task that is becoming increasingly difficult to fulfill because of population pressure and faltering economy. Second, due to declining marginal value of each extra child in an unfavorable land-man ratio, it is now much harder than ever to use surplus labor profitably. As a result, more and more families are experiencing increasing strain from traditional unrestricted fertility. On the other hand, governmental campaigns for family planning has increased the awareness of and access to the family planning services. All these changing conditions may have precipitated contraceptive use and fertility change, through their impact on various other intermediate variables of fertility.

Several hypotheses can be put forward with respect to the linkage between fertility change and other socioeconomic factors. First, since contraceptive use

is likely to be adopted more by high-fertility women. Its negative effect on fertility may be offset by the lower fecundity of non-adopter. Similarly, access to supplementary wage income, modern education, and non-agricultural employment may contribute both to the increased use of contraceptives as well as temporary spouse separation with a depressing effect on fertility. Third, household and regional differences in child and infant mortality, breast-feeding, age- and nutrition-related subfecundity, and program-induced postpartum contraceptive use may lead to fertility differentials. Regional differences in fertility may also stem from differences in population pressure, education, non-agricultural employment, health and nutritional care, and family planning services (Caldwell, 1980; Freedman, 1979; Van de Walle and Knodel, 1980).

Data Source

This study is based on the 1977 Poverty and Fertility Survey conducted in four rural areas (Manikganj in Dacca, Companyganj in Chittagong, Narail in Rajshahi, and Khulnal in Khulna region) of Bangladesh. The survey was sponsored by Bangladesh Institute of Development Studies (BIDS). 1384 ever married women were randomly selected for the individual level interview, which collected information on complete pregnancy, contraceptive and marriage histories as well as socioeconomic background information.

Definition of Variables

Children ever born, total fertility for recent periods, and recent birth intervals are the outcome variables of this study. The independent variable mother's age and her age at marriage, partly of birth, child mortality experience (division of the total dead infants by total live births or child dead prior to the beginning of a birth interval), current and ever use of contraceptives (dummy = 1, if used); mother's years of education; husband's years of education; female work experience, outside home (dummy = 1, if yes); duration of breast-feeding in months; number of times meat and fish consumed during preceding week; number of times rice taken on the preceding day; size of landholding in acres; number of modern consumer items owned; and region (Manikganj; Companyganj; Khetlal; Narail).

Regional Socioeconomic Differences in Rural Bangladesh

Since significant increases in contraceptive use are recent phenomenon in Bangladesh (NIPORT, 1981), and in view of our aim to assess the impact of this increase on fertility, a brief analysis of socioeconomic conditions in Bangladesh is appropriate. Table 1 presents the means and standard deviations of the indicators of demographic and socioeconomic conditions by Regions collected in the present survey. The table shows that small differences in some socioeco-

**TABLE 1-MEANS AND STANDARD DEVIATIONS OF THE INDICATORS OF DEMOGRAPHIC
AND SOCIOECONOMIC CONDITIONS BY REGION, BANGLADESH, 1977**

Indicators of Demographic and Socio-economic Conditions	N					Mean					Standard Deviation				
	Regions*					Regions*					Regions*				
	1	2	3	4	All	1	2	3	4	All	1	2	3	4	All
Breast-feeding (Duration in months)	250	189	209	131	779	25.5	20.2	22.5	20.3	22.5	8.3	6.9	9.8	9.7	8.9
Female Age at Marriage	342	251	289	237	1,119	14.4	14.4	13.9	13.6	14.1	2.5	2.9	2-9	2.9	2.8
Proportion of Children died	376	253	340	220	1,189	.25	.18	.28	.16	.23	.25	.22	.26	.22	.25
Land Holding Size (in Acres)	426	287	267	265	1,245	.59	.59	.54	.48	.56	.39	.41	.40	.43	.25
Value of Land Owned	1,027	1061	870	1023	3,981	26,000	33,000	35,000	37,000	33,000	28,000	36,000	34,000	36,000	34,000
Number of Modern Consumer Items	426	287	267	265	1,245	.18	.33	.40	.50	.33	.53	.73	.99	.99	.83
Number o- Times Rice was Take* Yesterday	426	287	267	265	1,245	2.6	2.8	2.8	2.5	2.7	.58	.45	.52	.69	.58
One Year's Consumer Durables (Value in Local Currency)	154	71	303	515	1,043	402	573	691	280	438	578	583	662	725	701
Yearly Income from Bangladesh Currency	394	466	153	376	1,389	1,462	2,949	1,077	1,318	1,879	2,617	7,492	1,399	1,483	4,706

**Last Year Household
Expenditure in Bangla-
desh Currency**

	1,091	1,049	886	1,017	4,043	1,489	1,677	1,550	2,326	1,762	1,734	3,961	1,800	3,353	2,920
Husband's Education	426	287	267	265	1,245	2.2	3.7	2.6	3.2	2.8	3.6	4.1	3.4	4.2	3.8
Wife's Education	426	287	267	265	1,245	.52	1.3	.72	1.3	.89	1.6	2.4	1.7	2.6	2-1

SOURCE : BIDS Survey (1977).

*1. Manikganj, 2. Companyganj, 3. Khetlal, 4. Narail

TABLE 2-AGE-SPECIFIC* AND TOTAL FERTILITY* RATES BY VARIOUS SOCIOECONOMIC VARIABLES AND REGIONS FROM FERTILITY SURVEY FILE-, BANGLADESH, 1977

Socio-Economic Variables	Years	Age of Women						Total Fertility	N	
		15-19	20-24	25-29	30-34	35-39	40-44			45-49
<i>All</i>	1976-77	220	.110	270	175	155	60	20	6.10	1,109
<i>Region</i>										
Manikganj	1976-77	205	305	260	200	155	105	5	6.18	318
Companiganj	1976-77	210	345	340	220	175	65	25	6.90	245
Khetlal	1976-77	250	330	175	145	100	0	5	5.25	592
Narail	1976-77	205	250	310	145	195	65	0	5.85	251
<i>Husband's Years of Education:</i>										
0	1976-77	210	320	275	210	160	50	30	6.31	910
≥ 1	1976-77	225	305	265	135	150	70	10	5.80	417
<i>wife's Year; of Education:</i>										
()	1976-77	210	320	260	180	165	55	30	6.10	879
≥ 1	1976-77	245	285	310	140	105	85	0	5.85	230
<i>Land Holding Size</i>										
≤ 3 Acres,		215	310	280	185	170	55	25	6.20	894
> 3 Acres		260	320	220	150	70	85	2	5.63	215
<i>Modern Contraceptive Items:</i>										
0	1976-77	230	300	265	183	160	55	35	6.14	896
≥ 1	1976-77	195	355	305	130	120	35	9	5.99	213
<i>Meat Taken</i>										
Low	1976(1-77)	225	315	200	180	140	55	35	6.05	612
High	1976-77	220	305	280	165	175	60	2	6.13	494
<i>Rice Intake</i>										
Low	1976-77	240	340	295	150	205	70	45	6.73	313
High	1976-77	220	305	260	190	130	60	25	5.95	791
<i>Duration of Breast-feeding:</i>										
Lower	1976-77	465	375	305	180	175	65	10	7.88	241
Higher	1976-77	250	420	280	160	135	85	5	6.68	413
<i>Ever Use of Contraceptives:</i>										
Yes	1976-77	260	250	290	145	120	80	79	6.12	240
No	1976-77	210	340	260	195	180	65	25	6.37	844

SOURCE : BIDS Survey (1977)

*Two years average rate per thousand.

conomic conditions have began to emerge between the regions of Bangladesh. Thus, while the Companyganj and Narail regions are ahead of Khetlal and Manikganj regions in male and female educational levels as well as household expenditures, the latter two regions exceed the former in duration of breast-feeding and the proportion of children died. Non-agricultural employment are slightly more prevalent in Companyganj and Manikganj than in Khetlal and Narail, reflecting the proximity of Companyganj and Manikganj to the primate cities of Dacca and Chittagong as well as the impact of population pressure.

Colonially exploited by the British for two centuries followed by economic and political deprivation under Pakistan, the socioeconomic base of Bangladesh has not undergone any major changes. Neither has there been any noticeable expansion in the non-agricultural sector nor has there been any major improvement in agricultural production. Consequently, as Table 1 shows, basic homogeneity or undifferentiated character of the traditional society is still retained. Some changes are, however, discernable. Thus, areas advanced in educational attainments are ahead in relaxing traditional prolonged lactation as well as lowering child mortality. Similarly, regions more exposed to modern schooling or nearer large urban centers are displaying relatively more rapid expansion of off-farm employment opportunities.

What has been the impact of these small beginnings of social change in the reduction of fertility? Have the recent increase in population pressure and organized family planning program begun to influence fertility by increasing fertility regulation? Or are traditional restraints, such as prolonged lactation or secondary sterility (Chen *et al.*, 1974; Stocckel and Chowdhury, 1969), still depressing fertility from its theoretical maximum (Chen *et al.* 1974)? We examine these questions in the following section,

Current Fertility

Tables 2 and 3 present the results of current fertility analysis by various factors. Thus, Table 2 reveals no major differences by socioeconomic factors or region. A slightly lower total fertility, however, for less accessible regions of Khetlal and Narail and for higher socioeconomic strata, indexed by parental education, landholding size, or modern consumers items is observed. Similarly, the frequency of rice intake is inversely related to total fertility. Because of the positive relationship of rice intake with socioeconomic status, its negative relationship with total fertility may reflect more the relationship between socioeconomic status and fertility than between nutritional status and fertility.

Both contraceptive use and duration of breast-feeding are negatively related to total fertility. Figure 1 further shows that the negative relationship of socioeconomic status and contraceptive use with total fertility is stronger among higher-parity and older women. The negative relationship of breast-feeding with fertility has been documented earlier (Amin and Faruqee, 1980; Amin,

TABLES—ESTIMATES OF MARITAL FERTILITY RATE* FOR BANGLADESH

Age Group	BIDS Fertility Survey ¹		Bangladesh ²	Impact Survey ³
	1972-1975	1976-1977	Fertility Survey ² 1972-1975	1963-1965
15-19	235	220	232	312
20-24	318	310	297	353
25-29	273	270	280	324
30-34	258	175	227	262
35-39	170	155	156	159
40-44	105	60	82	8
45-49	33	30	32	a
Total Marital Fertility (15-44 years)	6.96	6.10	6.53	7.09

¹BIDS Surveys (1977)

²Bangladesh Fertility Survey (1975)

³Impact Survey (1968)

aNot available

Two to four years average rate per thousand.

1979). The negative relationship between contraceptive use and total fertility or between socioeconomic status and total fertility is consistent with our hypotheses of changing environmental conditions of traditional unrestricted fertility as well as increasing difficulty of supporting a large family in the context of increasing resource constraints.

Nevertheless, although contraceptive use may be the mechanism through which higher socioeconomic strata may have lowered their current fertility, other mechanisms such as shorter birth-intervals via reduction in the length of postpartum amenorrhea for lower socioeconomic strata, associated with their increased child and infant mortality, may have increased latter's fertility. Similarly, the mechanism of prolonged breast-feeding rather than contraceptive use in less accessible regions of Khetlal and Narail is, perhaps, the reason for their depressed fertility (Table 2). Disaggregation of the confounding effects of these variables on fertility will(be further explored in our multivariate analysis below.

One way of checking the validity of our current findings is to compare with those obtained in other studies. Table 3 displays such comparison of the current study with 1968 Impact Survey (Pakistan, 1974) and 1975 Bangladesh (world) Fertility Survey (Bangladesh, 1978). The data in the table shows that the recently lowered fertility shown by the current study is slightly lower than those

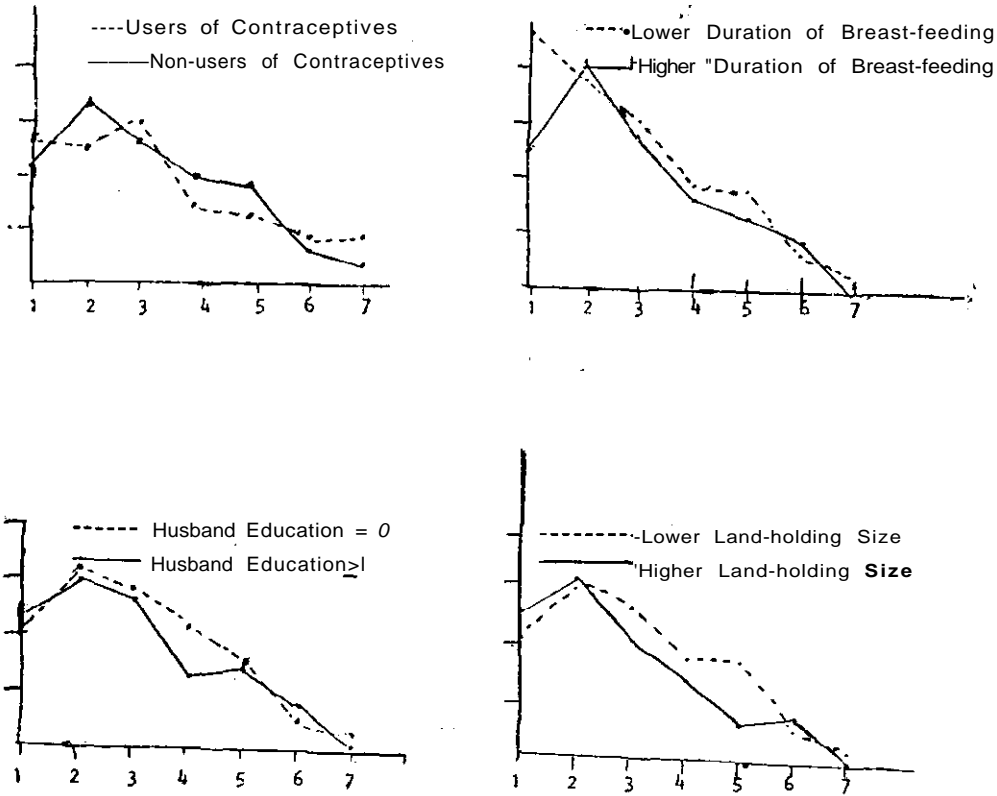


Fig. 1. Socio-economic status, breast-feeding, contraceptive use, and fertility.

SOURCE : BIDS Survey (1977).

of the earlier studies. Although one should exercise caution in extrapolating trend analysis based on retrospective data because of usual problems of reporting error and recall lapse, the recent rise in contraceptive use may have contributed to this small decline in fertility. This decline is more marked for older women, confirming our hypothesis that the burden of excess children rather than planned family building process causes such fertility response.

Cumulative Fertility

Another way of analyzing fertility differentials is cumulative fertility—measured by the total number of children ever born per married woman. Table 4 presents the results of our multivariate analysis of cumulative fertility. Two measures of cumulative fertility have been adopted here: (1) unadjusted children ever born, and (2) adjusted measure of children ever born. The second measure

TABLE 4-REGRESSION RESULTS WITH THE CHILDREN EVER BORN AND THE ADJUSTED MEASURE OF CHILDREN EVER BORN* AS THE DEPENDENT VARIABLES

<i>Independent Variables</i>	<i>Dependent Variables</i>	
	<i>Children Ever Born (unadjusted)</i>	<i>Adjusted Measure of Children Ever Born</i>
Age	.462***	-.461***
Age at Marriage	-.121***	—
Household Assets	-.038	-.028
Husband's Education	.071	.053
Wife's Education	-.093*	-.069
Landholding Size	.053	.076*
Child Mortality Experience	.257***	.233***
Duration of Breast-feeding	-.099**	-.058*
Ever Use of Contraceptives	.108***	.071*
R²	.361 ^b	.230 ^c

"Boulier and Rosengweigh, 1978, *op.cit.*

**P* < .05

***P* < .01

****P* < .001

SOURCE: BIDS Survey (1977)

^b26 percent of the total variation is explained by age alone.

^c16 percent of the total variation is explained by age alone.

SOURCE: BIDS Survey (1977).

is derived from the first by adjusting both age at marriage and duration of marriage. This adjustment is done by dividing the number of children ever born to a woman by the number of children she would have had, if she reproduced according to a schedule of natural fertility from her date of marriage to the date of survey (Boulier and Rosenzweigh, 1978),²

The results in the table show that child mortality experience and contraceptive use are positively, and age of marriage, wife's education, and breast-feeding

2. This adjusted measure of cumulative fertility is arrived at by dividing the reported children ever born by the expected children on the basis of Coale and Trussell's Model Fertility Schedule (Boulier and Rosenzweigh, 1978).

are negatively, related to unadjusted children ever born, controlling for the obvious effect of age of the mother. Also, negatively associated with adjusted children ever born are breast-feeding and age of mother just as positively associated are contraceptive use, child mortality, and land-holding size. The large negative effect of age of mother on adjusted children ever born reflects the wide prevalence of secondary sterility or fecundity impairment among the older reproductive women of Bangladesh, perhaps, resulting from the mutually reinforcing effects of repeated child births, prolonged lactation, malnutrition, and morbidity. Lastly, while the strong positive relationship of child mortality experience and negative relationship of breast-feeding with adjusted children ever born reconfirm our hypothesis of supply factors still dominating the determination of fertility pattern in Bangladesh, the positive effect of contraceptive use shows that contraceptives are adopted mostly late in a couple's reproductive career.

Birth Intervals

The foregoing analysis of cumulative fertility measures may fail to reflect adequately the recent change in fertility because of the inclusion of births that occurred before the initiation of recent rise in contraceptive use, in respect, particularly, of high-fertility women. To circumvent the effect of this dilution of the measure, we next analyze recent birth intervals. Since recent birth intervals are conterminal with the recent rise in contraceptive use, the latter are likely to reflect the effect of the former.

To avoid recall problems associated with earlier birth intervals because of time lag, only last three birth intervals, are analyzed: (1) "open" interval, (2) last closed interval, and (3) closed interval preceding the last closed interval. Although no definite conclusion can be drawn about open birth interval because of its extension beyond the date of interview, contraceptive use is more likely to prolong than to shorten it at the cut-off date of interview.

Table 5 shows birth probabilities within specified successive duration of intervals and Table 6 displays the results of the multiple regression analysis of birth intervals. In constructing birth probabilities in Table 5, we applied life-table analysis technique (See Bumpass *et al.*, 1982). This technique seeks to determine the pace at which a given birth is followed by another birth. To facilitate comparability across various characteristics of women and birth intervals, the following three duration segments were defined: the first 20 months after a birth, 21-26 months, and 27-50 months of exposure. Separate samples are constructed for each of the intervals following life table logic (Bumpass *et al.*, 1982). For example, the sample for 21-26 months segment is limited to intervals not closed before 21 months.

The results in Table 5 show that the pace at which a given birth is followed by another birth is decelerated in successive segments. For example, the pro-

TABLE 5-BIRTH PROBABILITIES WITHIN SUCCESSIVE DURATION SEGMENTS" OF INTERVAL 2 AND 3 BY CONTRACEPTIVE USE, CHILD MORTALITY EXPERIENCE, BREAST-FEEDING, AND OTHER SOCIOECONOMIC VARIABLES

<i>Independent Variables and Duration Segment of Interval</i>	<i>INTERVALS</i>					
	<i>INTERVAL 2</i>			<i>(Closed Interval Preceding</i>		
	<i>(Last Closed Interval)</i>			<i>Last Closed Interval)</i>		
	<i>Percent with Birth within Duration Segment of Interval</i>			<i>Percent with Birth within Duration Segment of Interval</i>		
	<i>Segment</i>			<i>Segment</i>		
	<i>< 20</i>	<i>21-26</i>	<i>27-50</i>	<i>< 20</i>	<i>21-26</i>	<i>27-50</i>
<i>All</i>	10.8	32.8	76.3	16.1	47.9	89.9
<i>Contraceptive Use :</i>						
Users	11.1	32.2	76.5	14.9	49.3	91.2
Non-users	10.2	34.6	75.9	19.1	44.1	86.4
<i>Child Death :</i>						
Died	19.8	39.4	86.4	31.7	53.6	100.0
No Death	8.6	31.3	74.4	11.5	46.6	87.9
<i>Breast Feeding Duration</i>						
< 18 months Duration	9.6	43.1	85.7	14.0	51.9	92.2
> 18 months Duration	9.8	28.1	69.3	15.2	46.0	85.5
<i>Land Ownership size :</i>						
.5 Acres size	10.7	28.3	78.1	16.7	48.0	95.2
.5 + Acres size	10.9	36.3	74.8	15.6	47.8	85.7
<i>Modern Consumer Items :</i>						
No Items	10.3	32.6	76.1	16.5	49.5	92.0
1 Item or more	13.0	33.6	73.2	14.1	41.2	82.0
<i>Mother's Years of Education :</i>						
No Education :	11.8	31.9	74.8	15.9	49.5	91.8
One or More Years of Education :	7.0	36.1	82.4	16.5	41.8	83.0
<i>Father's Years of Education :</i>						
No Education :	10.9	30.6	75.3	16.9	45.7	76.0
One or More Years of Education :	10.6	35.5	78.3	14.8	45.4	88.5

•Bumpass *et al.*,1982.

SOURCE: BIDS Survey (1977)

TABLE 6-REGRESSION RESULTS OF THE CONTRACEPTIVE USE, CHILD MORTALITY EXPERIENCE, BREAST-FEEDING, AND OTHER SOCIOECONOMIC VARIABLES WITH THE RECENT BIRTH INTERVALS AS THE DEPENDENT VARIABLES

<i>Variables</i>	<i>Open Interval</i>	<i>Last Closed Interval</i>	<i>Preceding the Last Closed Interval</i>
	(1)	(2)	(3)
Contraceptive Use	-0.005	.015	-.025
Mother's Years of Education	-.091	.012	.076
Husband's Years of Education	-.103	-.091	-.029
Modern Consumer Items	-.110	.044	.082
Companyanj Region	-.022	.071	-.053
Child Mortality Experience	.062	-.062*	-.103*
Age of Mother	.325**	-.045	-.073
Breast-feeding	-.001	.193**	.010
Landholding Size	.041	-.001	.003
<i>R*</i>	.133	.051	.033

*P < .05

**P < .01

SOURCE : BIDS Survey (1977).

portions with a succeeding birth within the first 20 months after the preceding birth are 10.8 and 16.1 percents compared to 32.8 and 76.3, and 47.9 and 89.9 percent for second and third segments respectively—a reflection of the protection from early conception owing to breast feeding. The table further shows that this pattern of fertility pace prevails across women differentiated by various socioeconomic characteristics interrupted more by supply factors (e.g., child death or breast-feeding) than by contraceptive use. That is, the pace at which a birth is followed by another is somewhat accelerated with child death and breast-feeding. Mother's education is also somewhat associated with accelerated pace for the closed interval preceding the last one, indicating, again, the former's depressing effect on fertility via shortening or cessation of breast-feeding practice.

Further analysis of birth intervals by multiple regression in Table 6 shows that the net effect of child mortality on the closed birth interval is negative, reflecting shortened birth intervals owing to the reduction of post partum amenorrhea (Chowdhury *et al.*, 1976). On the other hand, the net effect of

respondent's age on the open birth interval is positive due to the decreased fecundability of older women (Stoeckel and Chowdhury, 1969). Finally, the effect of contraceptive use, although positive for the last closed birth interval, is statistically insignificant, supporting our contention that supply factors rather than fertility regulation dominate the determination of fertility pattern and that fertility regulation is too recent to have any significant effect on fertility. However, its adoption by high-fertility mothers may have prevented their fertility from rising still higher. Other studies also suggest that marital fertility decreases only slightly during the early phase of fertility transition and that increases in contraceptive use do little more than offset increases in natural marital fertility (Bongaarts, 1982).

Summary and Conclusion

This paper has tested several hypotheses about fertility among Bangladesh women, using data from the 1977 Poverty and Fertility Survey conducted by Bangladesh Institute of Development Studies. Because this analysis has been restricted to a rural population, showing a recent rise in contraceptive use that is still far from pervasive, the results reported here cannot be considered a final test of these hypotheses. Nevertheless, this study provides some new evidence on fertility and (the contraceptive *situation in Bangladesh*).

Although environmental constraints like population pressure or shrinking per capita resources, in association with contraceptive availability through organized family planning program, have led to some recent increases in contraceptive use, such rise is still ineffective to have any significant impact on fertility decline.

A slight decline in current fertility, however, as measured by total fertility for the most recent period is observed for less accessible regions, higher socio-economic strata, and contraceptive users. Contraceptive use is also associated with the slight prolongation of the last closed birth interval, suggesting some role of contraceptive use in depressing fertility from rising still higher because of improved health and relaxation of traditional restraints such as prolonged lactation or post-partum abstinence, especially among higher socioeconomic strata. Nonetheless, supply factors such as breast-feeding, interruption of postpartum amenorrhea via child and infant mortality, and secondary sterility (reflected by age of women) still dominate the determination of fertility pattern in Bangladesh. Since the effects of these supply factors on fertility are counter-balanced by socioeconomic status, our hypothesis of no major socioeconomic differences in fertility is confirmed. Contraceptive use is positively related to cumulative fertility, confirming the role of pressure of high parity on fertility and contraceptive response.

No substantial change, however, either in demographic profile or in socio-economic institutions in rural areas is found in our study. There is a general

lack of systematic economic, social, or political improvement of the kind that would contribute significantly to demographic responses. These observations are consistent with those made earlier (Demny, 1975; Amin and Faruqec, 1980), emphasizing the need to boost family planning efforts by socioeconomic changes favourable to fertility decline. Although some of these changes when intensified will eventually lead to significant fertility decline, the crucial question is whether or not policy interventions directed to "earlier than normal" fertility decline can be achieved through a family planning program.

Is this general lack of significant impact explained by inadequate services and information? Since family planning Services and information availability as explanatory variables are absent in our analyses, the answer to this quest/on cannot be given from the present study. Other studies, however, indicate that improvement in the quality and availability of contraceptive services significantly leads to fertility reduction (Hogan and Frenzen, 1981; Phillips *et al.*, 1982). Nonetheless, the odds against major fertility response based solely on the availability of contraceptive services are equally high in Bangladesh. Large family size goals, fatalistic attitudes towards reproduction, low female status, worsening social security situation, strong son preference, and high level of infant and child mortality depress the demand for family planning services. Owing to this diminished demand, couples may start contracepting only at higher parities or discontinue when faced with inconveniences of contraceptive use, resulting in an insignificant effect on fertility reduction, This partly explained why major fertility response continues to be absent in Bangladesh despite rapidly worsening man-Land ratio and increasing poverty,

References

1. Amin, R., 1979, Factors Differentiating Fertility in Bangladesh, *Ph.D. Dissertation*, Catholic University, Washington, D - C.
2. Amin.R. and Faruqee, R., 1980, Fertility and its regulation in Bangladesh, *World Bank Staff Worktop Paper* No- 383.
3. Arthur, W., McNicoll. Brian and McNicoll Geoffrey, 1978, An analytical survey of population and development in Bangladesh, *Population and Development Review* (New York), 4(1), 25-80.
4. Bongaarts, J., 1982, The fertility-inhibiting effects of the intermediate fertility variables, *Studies in Family Planning*, 13(617), 179-189.
5. Bumpass, Larry, *et al.*, 1982, Intermediate variables and educational differentials in fertility in Korea and Phillipines, *Demography* **19** (1), 241-260.
6. Bangladesh, Government of People's Republic of, 1978, Bangladesh Fertility Survey 1975.1976. First Report (*Mimeographed*).
7. Boulier, B., and Rosenzweigh, M. R-, 1978, Age, biological factors, and socio-economic determinants : A new measure of cumulative fertility for use in the empirical analysis of family size, *Demography*, **15** (4), 487-497.
8. Caldwell, John C-, 1980. Mass education as a determinant of the timing of fertility decline, *Population and Development Review*, 6 (2), 225-255.

9. Cain, Mead T., 1977, The economic activities of children in villages in Bangladesh, *Population and Development Review* 3 (3), 201-228.
10. Cain, Mead T., 1981, Risk and insurance : Perspectives on fertility and agrarian change in India and Bangladesh, *Population and Development Review*, 7 (3).
11. Chen, L- C., *et al.*, 1974, A prospective study of birth interval dynamics in rural Bangladesh, *Population Studies*, 28, 277-298.
12. Chowdhury; *et al.*, 1976, Effect of child mortality experience on subsequent fertility in Pakistan and Bangladesh, *Population Studies*, 30 (2), 249-261.
13. Demney, Paul, 1975, Observations on population policy and population program in Bangladesh, *Population and Development Review*, 5 (3).
14. Freedman, R., 1979, Theories of fertility decline : A reappraisal, *Social Forces*. **58**, 1-17.
15. Freedman, R. and Berelson, B., 1976, The record of a family planning program, *Studies in Family Planning*, 7, 1-40.
16. Frish, Rose E., 1978, Nutrition, fatness, and fertility : The effect of food intake on reproductive ability. In : W. Henry Mosley (ed.), *Nutrition and Human Reproduction*, Plenum Press, N. Y.
17. Hogan, D. P. and Frenzen, P. D-, 1981, Antecedents to contraceptive innovation and evidence from rural northern Thailand, *Demography*, 18 (4), 596-614.
18. Lee, Che-Fu and Amin, R., 1981, Socioeconomic factors, intermediate variables, and fertility in Bangladesh, *Journal of Biosocial Science*.
19. National Institute of Population Research and Training (NIPORT), 1981, *Bangladesh Contraceptive Prevalence Survey—1979*. Dacca, Bangladesh.
20. Pakistan, Government of, 1974, *Pakistan National Impact Survey—1968-69*, Pakistan Family Planning Council.
21. Phillips, James F., *et al.*, 1982. *The Demographic Impact of the Family Planning*, Health Services Project in Matlab, Bangladesh.
22. Sirageldin, *et al.*, 1975, **Fertility** in Bangladesh : Facts and fancies, *Population Studies*, **29**, 207-217.
23. **Stoeckel**, John and Chowdhury, M. A., 1973, *Fertility, Infant Mortality and Family Planning in Bangladesh*, **Dacca : Oxford University Press**.
24. Stoeckel, John and Chowdhury, A. K. M. A., 1969, The effects of fecundity on fertility in rural East Pakistan, *Social Biology*, 19, 193-201.
25. Stoeckel, John and Chowdhury, A. K. M. A., 1980, Fertility and Socioeconomic status in rural Bangladesh : Differentials and linkages. *Population Studies*, **34** (3), 519-524.
26. **U. S. Bureau** of Census. 1982, *Country Demographic Profiles for Bangladesh*.
27. Vande Walle, E. and Knodel, J., 1980, Europe's fertility transition : New evidence and lessons for today's developing world, *Population Bulletin*, **34** (6), Washington, D. C. : Population Reference Bureau, Inc.