Effects of Sex Preference on Contraceptive Use, Abortion and Fertility in Matlab, Bangladesh

By Radheshyam Bairagi

Context: *Contraceptive prevalence in Bangladesh has been increasing, but for the last 6–7 years the total fertility rate has remained at 3.3 lifetime births per woman. Son preference is thought to be a constraint on further fertility decline.*

Methods: *Data from the Matlab Demographic Surveillance System were used to investigate the effects of son preference on contraceptive use, abortion and fertility, and trends in these effects over time, in the Matlab maternal and child health and family planning project area and in a comparison area. A modified Arnold Index was used to estimate the increase or decrease in contraceptive prevalence, abortion or fertility that would occur in the population in the absence of sex preference. The level of sex-selective abortion was measured by the deviation from the expected ratio of males to females at birth.*

Results: *Between the early 1980s and the middle 1990s, contraceptive use and recourse to abortion increased in Matlab, while fertility declined. Method use rose with parity in the project area. (Adequate data were not available for the comparison area.) At low parities, method use increased with the number of sons; among women with three or more children, however, it stabilized or decreased among those who had at least two sons. In the absence of sex preference, contraceptive use in the project area would have risen by 9% in 1983, by 8% in 1988 and by 6% in 1993. The abortion ratio increased with parity; within parities, it was generally lowest for women with no sons and was often highest for those with at least two sons and a daughter. In the absence of sex preference, the abortion ratio would have increased by 27% in 1982–1986, by 36% in 1987–1991 and by 55% in 1992–1995 in the project area, and by 36%, 37% and 38%, respectively, in the comparison area. The percentage of women giving birth declined as parity rose and, within parities, was highest for women without sons. Among women with more than two children, fertility was lowest for those who had sons and a daughter. In the absence of sex preference, fertility would have decreased by 9% in 1984–1986, by 10% in 1989–1991 and by 12% in 1994–1995 in the project area, and by 7%, 8% and 9%, respectively, in the comparison area. There was no evidence of sex-selective abortion in Matlab.*

Conclusions: *Sex preference does not have a strong effect on contraceptive use in Matlab. Its absence, however, would probably increase recourse to abortion, which is used to limit fertility once couples have the number of sons they desire. The effect of sex preference on childbearing is becoming stronger as fertility declines, because couples must achieve their desired number of sons within a smaller overall number of children.*

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The decline in the total fertility rate (TFR) of Bangladesh from more than six lifetime births per woman in the mid-1970s to slightly more than three births per woman in the early 1990s is remarkable. Some observers, pointing to a sharp increase in contraceptive prevalence—from less than 10% in the mid-1970s to about 45% in 1993–1994—attribute this decline to a successful national family planning program.[1] Others, however, express doubt that the program could have reduced fertility by half without societal change.[2]

Fertility remained relatively static in Bangladesh between 1993 and 2000, despite a seven-point increase in contraceptive prevalence.[3] In Matlab, where fertility was also stable during that period, the effect of an eight-point increase in contraceptive use was offset by the effect of a decrease in abortion.[4] On the other hand, recourse to abortion is increasing in the country overall.[5]

Son preference, which has its roots in the patriarchal form of society, dependence on sons for financial support during old age and continuation of the family name, and the necessity of a dowry for female children, may be an obstacle to further decline in fertility.[6] Although several studies have examined the effects of son preference on fertility and mortality, none has looked at its effect on abortion in Bangladesh.

Abortion is one of the four most important proximate determinants of fertility;[7] in some countries, it has at times been the principal means of fertility control.[8] Abortion is not always used exclusively for fertility control, however. In countries where the preference for sons is strong, such as China and Korea, sex-selective abortion is very common.[9]

In Bangladesh, induced abortion is illegal except to save the life of a pregnant woman. The government of Bangladesh, however, stated in a 1979 memorandum that menstrual regulation is an "interim method of establishing nonpregnancy" for a woman at risk of being pregnant, whether or not she is actually pregnant. In reality, menstrual regulation is used to avoid unwanted births, and the procedure is usually considered as abortion in Bangladesh.[10] Because abortion is a sensitive issue on which data collection is very difficult, no accurate estimates of abortion prevalence and trends are available, and the purposes for which it is used in Bangladesh are not clearly understood. The study on which this article is based investigated whether son preference is a common reason for abortion in Bangladesh and, if so, how much abortion contributes (relative to contraceptive use) to achieving a couple's desired number of sons and daughters, as well as to limiting fertility.

In most of the countries in South and East Asia, people prefer sons to daughters.[11] This preference often influences people's behavior and affects both fertility and mortality.[12] The effects of son preference on mortality and its proximate determinants have been examined in many studies in Bangladesh. One study revealed preferential treatment of sons in food distribution and use of health care.[13] Other research demonstrated that preferential treatment escalated during periods of famine,[14] and that excess female child mortality was much higher among girls who had sisters than among those who did not.[15] In another study, however, mortality was higher among both girls and boys who had one or more siblings of the same sex than among those who did not.[16]

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Table 1. Percentage of women using contraceptives, by parity and number of sons, according to year, Matlab project area, Bangladesh

Parity and number of sons	1983		1988		1993	
	N	% using	N	% using	N	% using
All	**12,283**	**40.0**	**13,442**	**54.0**	**16,410**	**63.9**
Parity 0	**907**	**7.2**	**659**	**10.2**	**1,162**	**14.9**
Parity 1	**2,276**	**25.4**	**2,401**	**39.9**	**2,993**	**49.7**
0	1,100	23.8	1,164	40.1	1,445	46.4
1	1,176	26.8	1,237	39.8	1,548	52.8
Parity 2	**2,207**	**34.7**	**2,594**	**50.3**	**3,263**	**61.1**
0	461	28.4	552	41.1	636	50.3
1	1,113	35.0	1,293	50.7	1,677	64.2
2	633	38.9	749	56.3	950	63.1
Parity 3	**1,954**	**44.5**	**2,507**	**57.6**	**3,231**	**72.7**
0	204	26.0	229	36.7	313	59.1
1	672	41.8	829	53.4	1,096	67.2
2	830	51.7	1,126	65.3	1,438	80.4
3	248	43.1	323	56.3	384	70.8
Parity 4	**1,761**	**50.2**	**2,115**	**65.5**	**2,665**	**77.9**
0	89	21.3	102	37.3	123	48.8
1	407	44.0	490	62.7	602	72.4
2	672	53.6	834	67.6	1,050	81.0
3	479	55.5	553	70.7	713	83.6
4	114	52.6	136	62.5	177	75.1
Parity ≥5	**3,178**	**55.2**	**3,166**	**66.4**	**3,096**	**77.9**
0	100	55.0	87	55.2	87	59.8
1	355	48.7	362	63.0	405	73.6
2	732	56.8	799	67.3	811	79.0
3	894	56.8	902	68.8	874	82.3
4	664	55.7	608	70.2	591	77.5
≥5	433	53.3	408	59.1	328	74.7

Although the effects of sex preference on mortality in Bangladesh and other countries are consistent, its effects on fertility are not. Some observers have argued that son preference would be a strong barrier to the success of family planning programs, and thus would be an obstacle to fertility decline.[17] According to one study, given perfect contraceptive use, if all couples desired at least two sons, families would have an average of 3.9 children, whereas if all couples desired at least one son and one daughter, the average would be three children.[18]

Son preference was not found to have an influence on fertility in the 1960s in Bangladesh and Pakistan.[19] In Taiwan and South Korea in the 1970s and 1980s, however, couples with more daughters than sons had higher subsequent fertility.[20] Investigators examining the reasons for this inconsistency concluded from the Matlab data that the effect of son preference on fertility would be more pronounced in a population with high contraceptive prevalence than in a population with low contraceptive prevalence.[21]

Their work explains the relationship between son preference and fertility in countries with low or moderate levels of contraceptive use, but does not explain the situation in developed countries, where contraceptive prevalence is usually high, fertility is low and son preference has little or no effect on fertility. Moreover, their study did not take the other proximate determinants into consideration. In Korea and China, abortion was found to be the principal means used to have children of the desired sex.[22]

An examination of cross-sectional data on fertility intentions and contraceptive use from 27 countries concluded that sex preference was not likely to have a major impact on contraceptive use and fertility.[23] That analysis, however, had several limitations because of the lack of appropriate data. It covered a wide range of fertility intentions and contraceptive use, and the difference between observed contraceptive use and expected contraceptive use in the absence of sex preference was interpreted as the effect of sex preference on contraceptive use. Naturally, this effect will be small if prevalence is low. Furthermore, if a population does not prefer children of a particular sex, the effect will be small even if contraceptive use is high. Thus, at low values, this measure does not provide a clear indication of the effect of sex preference on contraceptive use (regardless of level of use) in a country in which sex preference is strong.

Moreover, that study used data on fertility intentions, not on fertility. The relationship between contraceptive use, fertility intentions and actual fertility is not clear-cut. Therefore, longitudinal data at different levels of contraceptive prevalence, as well as data on other proximate determinants (particularly on abortion) and on actual fertility, are very important and useful in assessing the role of sex preference on demographic transition. The research reported on in this study used longitudinal data on contraceptive use, abortion and fertility from Matlab, Bangladesh, to examine the issue.

Data and Methods

Data for this study came from the Demographic Surveillance System and the Record-Keeping System of the ICDDR,B: Centre for Health and Population Research in Matlab, Bangladesh. Since 1966, ICDDR,B has been recording data on the vital events of Matlab's population. The data, collected during biweekly household visits by community health workers, are checked at different levels for accuracy before being transferred to the surveillance system database.[24] In 1977, a maternal and child health and family planning project began in half of the Matlab surveillance area. The remaining half, known as the comparison area, remained under the government's standard program. Information on the contraceptive use and reproductive status of married women of childbearing age has been collected every two weeks by community health workers in the project area only.

At the beginning of the project, neither fertility nor mortality differed between the two areas.[25] Over time, contraceptive prevalence increased* and fertility and mortality declined in each area, but change occurred more rapidly in the project area. By 1995, statistics in the project area were more favorable than those in the comparison area for contraceptive prevalence (67% vs. 45%), the total fertility rate (3.0 vs. 3.7 lifetime births) and the infant mortality rate (51 vs. 79 deaths per 1,000 live births).

The four most important proximate determinants of fertility are contraceptive use, the proportion of women of reproductive age who are married, postpartum amenorrhea and abortion.[26] Son preference is unlikely to affect the proportion of people of childbearing age who are married or of women in sexual union in a population, and its effect on postpartum amenorrhea is thought to be small in Matlab because the patterns and duration of breastfeeding of male and female infants do not differ significantly.[27] This article, therefore, examines the effects of son preference and the trends in these effects on the other two main proximate determinants of fertility—contraceptive use and abortion—as well as on fertility in Matlab.

*Contraceptive use data were not available for the Matlab comparison area for 1977 and 1995; however, it was assumed that prevalence in that area does not differ markedly from prevalence in rural Bangladesh as a whole, which has been increasing since the middle 1970s. Information on the method use of wives of household heads was collected during a 1996 socioeconomic status survey. After adjustment for age, these data were used to estimate contraceptive prevalence for 1996; crude estimates for the other years were obtained through extrapolation and interpolation of the data.

Table 2. Number of live births and abortion ratio in Matlab comparison and project areas during three periods, by parity and number of living sons

Parity and no. of sons	Comparison area						Project area					
	1982–1986		1987–1991		1992–1995		1982–1986		1987–1991		1992–1995	
	No. of live births	Abortion ratio	No. of live births	Abortion ratio	No. of live births	Abortion ratio	No. of live births	Abortion ratio	No. of live births	Abortion ratio	No. of live births	Abortion ratio
All	**17,803**	**21**	**18,431**	**39**	**11,884**	**51**	**15,018**	**16**	**15,092**	**25**	**10,604**	**24**
Parity 0	**4,352**	**16**	**4,518**	**21**	**3,450**	**22**	**4,270**	**12**	**4,509**	**16**	**3,591**	**11**
Parity 1	**3,720**	**9**	**3,859**	**20**	**2,721**	**20**	**3,513**	**9**	**3,652**	**15**	**2,704**	**11**
0	1,857	11	1,943	21	1,364	16	1,736	7	1,799	15	1,320	8
1	1,863	8	1,916	19	1,357	24	1,777	11	1,853	15	1,384	14
Parity 2	**3,122**	**17**	**3,376**	**24**	**2,112**	**30**	**2,635**	**9**	**2,900**	**19**	**1,994**	**16**
0	715	4	847	21	589	15	629	10	781	14	568	9
1	1,532	18	1,690	20	1,008	37	1,317	8	1,415	18	919	22
2	875	25	839	35	515	33	689	10	704	27	507	12
Parity 3	**2,346**	**21**	**2,666**	**34**	**1,586**	**52**	**1,866**	**13**	**1,898**	**32**	**1,227**	**34**
0	246	4	337	18	243	33	246	4	290	14	216	9
1	884	21	997	28	639	52	710	13	749	27	489	18
2	909	25	963	44	504	69	677	18	613	47	354	68
3	307	23	369	41	200	30	233	9	246	28	168	42
Parity 4	**1,754**	**43**	**1,761**	**62**	**1,001**	**107**	**1,258**	**24**	**1,035**	**43**	**646**	**68**
0	116	9	120	8	70	43	120	0	102	0	93	22
1	437	32	470	51	316	57	334	12	282	18	178	45
2	643	48	627	73	324	120	432	32	338	53	211	76
3	437	59	408	64	212	160	287	31	232	78	121	132
4	121	33	136	88	79	165	85	35	81	37	43	47
Parity ≥5	**2,509**	**68**	**2,251**	**121**	**1,014**	**222**	**1,476**	**51**	**1,098**	**82**	**442**	**152**
0	62	0	64	47	44	23	45	22	46	0	30	67
1	60	31	243	82	142	134	208	38	165	55	79	89
2	609	71	565	108	246	183	367	38	310	55	115	165
3	701	57	641	117	259	251	411	73	268	104	113	186
4	529	83	427	129	205	268	287	45	188	112	70	143
≥5	348	106	311	190	118	339	158	57	121	123	35	229

The effect of son preference on contraceptive use could be studied only in the project area, as contraceptive use data for the comparison area were available only in two knowledge, attitude and practice survey samples from 1984 and 1990. These sample sizes were not large enough to provide a valid estimate of the fertility effects of numbers of sons and daughters at different parities.

To cover a wide range of levels of contraceptive prevalence, we took contraceptive use data from the project area for three dates at five-year intervals: December 31, 1983; December 31, 1988; and December 31, 1993. We examined the fertility effect of the number of sons and daughters in a family for the periods 1984–1986, 1988–1989 and 1994–1995, and the effect on induced abortion for the periods 1982–1986, 1987–1991 and 1992–1995.*

The occurrence of abortion† has been found to be underestimated, despite the record-keeping efforts of the community health workers.[28] This underestimation is not expected to affect abortion trends over time or comparisons among different groups of people, because the procedures used in collecting abortion data have been the same.

A modified Arnold Index[29] is used here to estimate the effects of sex preference on contraceptive use, abortion and fertility. This index provides an estimate of the relative change in a variable caused by an absence of sex preference. It is defined as the ratio of the absolute difference between observed and expected fertility measures (contraceptive use, abortion and fertility) to the observed value, multiplied by 100.‡ (When the expected rate was estimated, it was assumed that all couples at a given parity will act in the same manner as the couples at that parity who are currently most satisfied with the number of sons and daughters among their children.) The index is not affected by errors in reporting contraceptive use, abortion or fertility, unless the amount of error differs by the number of sons and daughters within a given parity. Couples were assumed to be most satisfied with their number of sons and daughters at the parity at which contraceptive use and the abortion ratio were highest and at which fertility was lowest.

The assumptions regarding contraceptive use and fertility seem reasonable, but for abortion, the situation is not clear-cut. If the purpose of abortion is to regulate fertility without knowing the sex of the fetus, the assumption regarding abortion seems logical. However, if the purpose is to abort the fetus only if amniocentesis or ultrasound identifies it as being female (as often occurs in China and Korea), then the current number of sons and daughters needs to be considered in combination with the sex of the fetus. In the latter case, the observed sex ratio at birth in Bangladesh should be greater than the expected sex ratio at birth, as is the case in China and Korea.[30] In Matlab, the sex ratio at birth (about 104) remains within the normal range. These results imply that induced abortion in Matlab is not related to the sex of the fetus, suggesting that the women who have the highest abortion ratio in a parity do not want more children of either sex.

*Different periods were chosen for fertility and abortion to allow the most recent data for each event to be used and to provide adequate numbers for analysis.

†In this study, an abortion means an induced abortion, including menstrual regulation.

‡The equation for calculation of the index is: Effect of sex preference = $[1 - (\sum_i \sum_j f_{i.} w_{ij} / \sum_i \sum_j f_{ij} w_{ij})] \times 100$, where f_{ij} = proportion of women having the event (contraceptive use, abortion or birth) in the cohort with number of children i and number of sons j; $f_{i.}$ = maximum of f_{ij} with number of children i in case of contraceptive use and abortion, and minimum of f_{ij} in case of fertility; and w_{ij} = number of women with number of children i and number of sons j.

Table 3. Number of women and percentage giving birth in Matlab comparison and project areas during three periods, by parity and number of sons immediately before period

Parity and no. of sons	Comparison area						Project area					
	1984–1986		1989–1991		1994–1995		1984–1986		1989–1991		1994–1995	
	No. of women	% giving birth	No. of women	% giving birth	No. of women	% giving birth	No. of women	% giving birth	No. of women	% giving birth	No. of women	% giving birth
All	**14,219**	**58**	**15,155**	**50**	**17,350**	**27**	**13,701**	**47**	**16,112**	**36**	**18,576**	**23**
Parity 0	**1,609**	**82**	**962**	**72**	**1,618**	**55**	**1,083**	**80**	**892**	**72**	**1,447**	**60**
Parity 1	**2,437**	**80**	**2,522**	**78**	**2,800**	**47**	**2,462**	**74**	**2,865**	**65**	**3,380**	**39**
0	1,206	82	1,226	80	1,358	47	1,186	77	1,390	67	1,625	40
1	1,231	78	1,296	75	1,442	46	1,276	72	1,475	64	1,755	39
Parity 2	**2,171**	**76**	**2,408**	**69**	**2,717**	**36**	**2,348**	**62**	**2,976**	**50**	**3,537**	**28**
0	478	81	558	73	604	42	494	73	635	63	687	28
1	1,113	73	1,237	68	1,414	34	1,182	61	1,500	48	1,825	26
2	580	75	613	68	699	36	672	58	841	43	1,025	25
Parity 3	**1,989**	**61**	**2,446**	**55**	**2,821**	**26**	**2,093**	**47**	**2,837**	**34**	**3,476**	**17**
0	195	70	251	68	308	40	227	61	266	55	336	33
1	701	64	851	59	947	30	721	53	937	40	1,179	20
2	814	57	1,007	47	1,227	20	886	39	1,265	25	1,547	10
3	279	60	337	59	339	27	259	47	369	34	414	19
Parity 4	**1,845**	**50**	**2,219**	**40**	**2,673**	**17**	**1,905**	**35**	**2,429**	**21**	**2,930**	**10**
0	100	55	112	59	124	24	100	59	129	43	139	32
1	416	56	487	48	594	22	441	39	581	25	668	11
2	683	50	858	38	1,084	15	719	32	940	17	1,155	8
3	515	42	609	31	712	12	520	29	622	17	776	7
4	131	50	153	46	159	20	125	38	157	30	192	12
Parity ≥5	**4,168**	**31**	**4,598**	**24**	**4,721**	**9**	**3,810**	**20**	**4,113**	**12**	**3,806**	**5**
0	114	24	101	35	85	25	153	18	131	17	106	11
1	422	34	436	28	502	15	438	25	472	17	483	5
2	886	37	1,032	28	1,107	9	844	22	992	13	976	7
3	1,106	32	1,279	23	1,353	8	1,042	19	1,154	11	1,072	5
4	944	29	996	20	989	7	794	19	816	9	728	4
≥5	696	25	754	18	685	7	539	14	548	10	441	2

Results

The percentage of married women aged 15–49 years who were practicing contraception on the last day of the year (December 31) in 1983, 1988 and 1993 in the Matlab project area, according to the number of sons at each parity, is shown in Table 1 (page 138). Contraceptive use increased from 40% in 1983 to 54% in 1988 and to 64% in 1993. In each year, the percentage of women using contraceptives increased with parity; within each parity, it increased with the number of sons, except for a slight decrease among women at parities greater than two who had only sons. Contraceptive use increased less with parity (and sometimes decreased) among women with no sons than among other groups. The data also suggest that although the preference for sons was quite strong, couples liked to have a daughter after having two sons.

Table 4. Observed and expected contraceptive prevalence and effect of sex preference on prevalence in Matlab project area, by year

Prevalence	1983	1988	1993
Observed	40.0	54.0	63.9
Expected	43.4	58.4	67.6
Effect*	–8.5	–8.2	–5.8

*Calculated as ([Observed prevalence – Expected prevalence]/Observed prevalence) x 100.

Women in the comparison area had 17,803 live births during 1982–1986, 18,431 during 1987–1991 and 11,884 during 1992–1995 (Table 2, page 139). In the project area, the numbers of live births in these periods were 15,018, 15,092 and 10,604, respectively. The abortion ratio, defined as the ratio of abortions to live births multiplied by 1,000, was 21 during 1982–1986, 39 during 1987–1991 and 51 during 1992–1995 in the comparison area. In the project area, those ratios were 16, 25 and 24, respectively. In each area and each period, the abortion ratio usually increased with parity, and within a parity it was generally lowest for women with no sons and was often highest for women who had sons and a daughter.

Fertility fell sharply in both areas over time, but the decline differed between areas. In the comparison area, the percentage of women giving birth was 58% in 1984–1986, 50% in 1989–1991 and 27% in 1994–1995; in the project area, those percentages were 47%, 36% and 23%, respectively (Table 3). In both areas, fertility declined with rising parity; within each parity, fertility was highest for women without sons. Among women in the project area with two living children, fertility was lowest among those who had two sons. Among women with more than two children, the lowest fertility in both areas was found among those who had sons and a daughter.

The effects of sex preference on contraceptive use as measured by the modified Arnold Index are shown in Table 4. The proportion of couples practicing contraception in 1983–1993 would have increased by no more than five percentage points (expected minus observed) if there had been no preference for children of a particular sex. Thus, the impact of sex preference on contraceptive use was not great at any time. The contraceptive index declined from 9% in 1983 to 6% in 1993, indicating a decrease in the effect of sex preference on contraceptive use. In other words, the relative importance of sex preference as a determinant of contraceptive use declined as use of contraceptives increased.

The expected abortion ratio was higher than the observed abortion ratio in each year in each area (Table 5), suggesting that the abortion ratio would increase in the

Table 5. Observed and expected abortion ratio and effect of sex preference on the abortion ratio in Matlab comparison and project areas, by period

Ratio and effect	Comparison area			Project area		
	1982–1986	1987–1991	1992–1995	1982–1986	1987–1991	1992–1995
Observed	20.9	39.5	51.1	15.6	24.8	23.8
Expected	28.5	53.9	70.5	19.9	33.8	36.9
Effect*	–36.0	–36.5	–38.0	–27.4	–36.3	–55.0

*Calculated as ([Observed ratio – Expected ratio]/Observed ratio) x 100.

absence of son preference. This finding reflects the fact that the abortion ratio among women who had their desired number of sons was higher than the ratio among women who did not. For example, women with two living children preferred two sons to two daughters, and those who had two sons had a higher abortion ratio than those with two daughters (Table 2). In the comparison area, the abortion ratio would have increased by 36–38% in the absence of sex preference, while in the project area it would have increased by 27% during 1982–1986, 36% during 1987–1991 and 55% during 1992–1995 (Table 5). The increase in the abortion ratio as a result of son preference was greater than the increase in contraceptive use; moreover, the effect on contraceptive use decreased over time, but the effect on abortion increased.

The index for fertility and the TFRs during three periods are shown in Table 6. The effect of sex preference in the comparison area increased from 7% in 1984–1986 to 8% in 1989–1991 and 9% in 1994–1995. In the project area, the index increased from 9% in 1984-86 to 10% in 1989–1991, with a further increase to 12% in 1994–1995. Although the contraceptive prevalence rate for the comparison area was not available, there is no question that contraceptive use was increasing in the area over time.[31]

Discussion

The great advantage of this study is its use of the largest and most comprehensive longitudinal population data set in the developing world. An estimate of the effect of son preference on fertility and its related variables requires data on these variables according to the number of sons and daughters at different parities. If the overall sample is not large and if there are not enough children in each category, the standard error will be very high. On the other hand, longitudinal data at different levels of contraceptive use and fertility are needed to investigate trends in the effect and to predict future effects. Cross-national data with different levels of contraceptive use and fertility will not serve these purposes, because the nature and intensity of sex preference may vary from country to country, along with fertility and contraceptive use.

The use of Matlab to represent Bangladesh as a whole may be questioned. Matlab is slightly better off socioeconomically than Bangladesh in general. However, there is no evidence that Matlab is an atypical area in Bangladesh; rather, trends and differentials in fertility and mortality in Matlab are similar to those in the country overall. The differences found in some studies are thought to be due mainly to the inferior quality of data in the national surveys.[32] The project and comparison areas in Matlab were found in 1993–1994 to be virtually the same socioeconomically, except for the level of children's education, which was higher in the project area.[33] The Matlab comparison area in most respects is similar to Bangladesh as a whole, while the project area is demographically a few years ahead of the rest of the country.

The long-term effects of son preference, as calculated here, may be underestimated. An examination of the distribution of women with one or two children according to the number of sons shows that the proportion of women with sons is greater than expected. For example, in Table 1, the number of women in the Matlab project area in 1982 with two sons and no daughters was 633, while the number with two daughters and no sons was 461, a ratio of 1.37. However, assuming a sex ratio at birth of 104, the ratio of women with two sons to the number with two daughters should be 1.08 (or $0.51^2 / 0.49^2$). This disparity occurs mainly because women with two sons and no daughters move to the next parity less often or more slowly than women with two daughters and no sons, and partly because of higher mortality among female children than among male children. In this article, however, the calculation of the effect of sex preference was based on the existing distribution of women, so it will yield an estimate of the immediate effect of sex preference on fertility and its related variables. If a situation in which parents preferred neither sons nor daughters persisted over a long period, the distribution of women by number of sons within a given parity would eventually change, and the long-term effect would be somewhat greater than the short-term effect found in this study.

The effect of sex preference on contraceptive use was never high, and it decreased over time as contraceptive prevalence rose (Table 4). The absolute increase in contraceptive prevalence in the absence of sex preference would be no more than five percentage points at any time. Results from previous research for other years in the project area and the comparison area were almost identical.[34] This study confirms results of earlier research indicating that sex preference is not a constraint to contraceptive use in Bangladesh.[35]

The same cannot be said, however, in the case of fertility. The effect of sex preference increased consistently over time as fertility declined. It is reasonable to assume that the change in the proportion of married women giving birth was the same as the percentage change in the TFR. Thus, the effect of sex preference increased almost linearly with the decrease in the TFR. This finding is consistent with the hypothesis that the effect of son preference is stronger in low-fertility situations, because couples have to have their desired number of sons and daughters within a smaller overall number of children. The TFR in the Matlab project area in 1994–1995 (three lifetime births per woman) would have decreased by 12% in the absence of son preference. However, this effect is much weaker than the effect estimated in a population that uses contraceptive methods perfectly.[36]

Table 6. Observed and expected percentage of women giving birth, effect of sex preference on fertility, and TFR in Matlab comparison and project areas, by period

%, effect and TFR	Comparison area			Project area		
	1984–1986	1989–1991	1994–1995	1984–1986	1989–1991	1994–1995
Observed	58.1	49.6	27.2	47.3	36.4	22.7
Expected	54.3	45.4	24.9	43.1	32.6	19.9
Effect*	6.5	8.3	8.6	9.0	10.4	12.3
TFR	5.5	4.7	3.8	4.3	3.3	3.0

*Calculated as ([Observed percentage – Expected percentage]/Observed percentage) x 100.

A comparison of the effect of sex preference on contraceptive prevalence, abortion and the TFR reveals some important and interesting features. Here, the effect on contraceptive prevalence is smaller than the effect on fertility (see Tables 4 and 6). If the effect of sex preference on fertility were mediated by contraceptive use alone, the effect on contraceptive prevalence should be greater than the effect on fertility.* This finding suggests that the effect of son preference on fertility is mediated not only by contraceptive use but also by one or more of the other proximate determinants of fertility.

Among the other three important proximate determinants of fertility, abortion is the most likely candidate. As Tables 4 and 5 show, the effect of son preference on abortion increased over time, while the effect on contraceptive use decreased; moreover, the effect on abortion was much greater than the effect on contraceptive use. These results suggest that abortion was used more liberally than contraceptives to maintain the desired number of sons and daughters. It is true that fetal sex identification and sex-selective abortion did not exist in Matlab at the time of this study, and that the Matlab maternal and child health and family planning program was successful in reducing induced abortion.[37] But if son preference remains strong in the area, facilities that identify the sex of a fetus may become available, resulting in an increase in the abortion of female fetuses.

The literature includes no studies on sex-selective abortion in Bangladesh. In neighboring India, however, about one million female fetuses were aborted in 1981–1991,[38] and about 70% of all abortions in Delhi were performed because the fetus was female.[39] Sex-selective abortions were so common that the Indian government announced a ban on the abortion of healthy female fetuses identified during permissible genetic tests.[40]

Abortion is legal in India, but not in Bangladesh. Yet, about 750,000 abortions occur in Bangladesh each year.[41] Islam, which is thought to discourage abortion, is the religion of 85% of the people in Bangladesh, while Hinduism is the religion of 85% of India's population. But the religious and other cultural differences between India and Bangladesh do not seem to lead to much difference in the prevalence of abortion or son preference in the two countries. Policymakers thus need to find how to reduce both son preference and recourse to abortion in Bangladesh. An improvement in the status of women and female children should be helpful in reducing son preference,[42] and an improvement in maternal and child health and family planning services should be helpful in reducing the number of abortions in the country.[43]

*According to Bongaarts and Potter, TFR = 7.3 – 0.063 x CPR (where CPR is the contraceptive prevalence rate). For example, if the CPR is 50, the TFR will be 4.10. If the CPR rises to 60 (a 20% increase), the TFR will be 3.46. That is, the decrease in the TFR will be (0.65 = 4.10 – 3.46), or about 16%, which is less than the increase in the CPR. (See: Bongaarts J and Potter RG, *Fertility, Biology and Behavior,* New York: Academic Press, 1983, p. 119.)

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Resumen

Contexto: *La prevalencia del uso de anticonceptivos en Bangladesh ha estado aumentando, aunque durante los últimos 6–7 años, la tasa global de fecundidad ha permanecido en un nivel de 3,3 nacimientos vivos por mujer. Se considera que la preferencia por los hijos varones es un impedimento para que se produzca una mayor reducción de la fecundidad.*

Métodos: *Se utilizaron datos del* Matlab Demographic Surveillance System *para analizar los efectos que tiene la preferencia por el hijo varón—con respecto al uso de anticonceptivos, al aborto y la fecundidad, y las tendencias de estos efectos a través del tiempo—en el área del proyecto de planificación familiar y salud materno-infantil de Matlab y un área de comparación. Se utilizó el* Arnold Index *modificado para calcular el incremento o reducción de la prevalencia del uso de anticonceptivos, el aborto y de la fecundidad que podría tener lugar en la población en caso que no hubiera preferencia sobre el sexo de los hijos. Se midió el nivel del aborto selectivo según el sexo mediante la desviación del razón esperado de varones y niñas en el momento del nacimiento.*

Resultados: *Desde inicios de los años 1980 y mediados de los años 1990, el uso de anticonceptivos y la recurrencia al aborto aumentó en el área del proyecto de Matlab, en tanto que la fecundidad disminuyó. En esta área aumentó el uso de métodos anticonceptivos con la paridad. (No se dispuso de datos adecuados correspondientes al área de comparación). En los casos de baja paridad, aumentó el uso de anticonceptivos con el número de hijos varones; entre las mujeres que tenían tres o más hijos, sin embargo, dicho uso estabilizó o disminuyó entre aquéllas que tenían por lo menos dos varones. Si no hubiera habido preferencia por el sexo del hijo, el uso de anticonceptivos en el área del proyecto hubiera aumentado en un 9% en 1983, en 8% en 1988 y en 6% en 1993. La razón del aborto (el número de abortos por 100 embarazos) aumentó con la paridad; dentro de las diferentes paridades, generalmente la razón más baja correspondió a las mujeres que no tenían hijos varones, y la más elevada a menudo se presentaba entre mujeres que tenían dos hijos varones y una hija. Al no haber una preferencia por el sexo de los hijos, la razón de aborto hubiera aumentado en un 27% en 1982–1986, en 36% en 1987–1991 y en un 55% en 1992–1995 en el área del proyecto Matlab y en un 36%, 37% y 38%, respectivamente, en el área de comparación. El porcentaje de mujeres que daban a luz disminuyó a medida que aumentó la paridad y dentro de las paridades, el mayor nivel de fecundidad se registró entre las que no tenían hijos varones. Entre las mujeres que tenían más de dos hijos, la fecundidad presentó su nivel más bajo entre las que tenían hijos varones y una hija. Al no haber una preferencia de sexo, la fecundidad hubiera disminuido en un 9% en 1984–1986, en 10% en 1989–1991 y en 12% en 1994–1995 en el área del proyecto, y en un 7%, 8% y 9%, respectivamente, en el área de comparación. No hubo pruebas de abortos selectivos según el sexo en el área del proyecto de Matlab.*

Conclusiones: *La preferencia por un sexo no surte un gran impacto con respecto al uso de anticonceptivos en el área del proyecto de Matlab. Sin embargo, la ausencia de este factor probablemente provocaría un aumento en el aborto, que se usa frecuentemente para limitar la fecundidad una vez que las parejas han obtenido el número deseado de hijos varones. El impacto de la preferencia del sexo de los hijos es cada vez más significativo a medida que disminuye la fecundidad, porque las parejas desean tener un determinado número de hijos varones dentro de una familia con una cantidad limitada de hijos.*

Résumé

Contexte: *La prévalence contraceptive est en hausse au Bangladesh, mais l'indice synthétique de fécondité demeure à 3,3 naissances par femme depuis 6 à 7 ans. La préférence pour les garçons semble entraver le déclin continu de la fécondité.*

Méthodes: *Les données du Système de surveillance démographique de Matlab ont servi à l'étude des effets de la préférence pour les garçons sur la pratique contraceptive, l'avortement et la fécondité, et à la recherche des tendances de ces effets, en fonction du temps, dans la zone du projet de planning familial et santé maternelle et infantile de Matlab, par rapport à une zone de comparaison. Un index d'Arnold modifié a été utilisé pour estimer la hausse ou la baisse de la prévalence contraceptive, de l'avortement ou de la fécondité que l'on pourrait attendre en l'absence de préférence relative au sexe de l'enfant. Le niveau de l'avortement sélectif en fonction du sexe du fœtus a été mesuré sur la base de l'écart par rapport à la proportion de filles et de garçons attendue à la naissance.*

Résultats: *Entre le début des années 1980 et le milieu des années 1990, la pratique contraceptive et le recours à l'avortement ont augmenté à Matlab, tandis que la fécondité baissait. Plus la parité était élevée, plus la pratique contraceptive l'était aussi dans la zone du projet. (La zone de comparaison ne disposait pas de données adéquates.) Aux parités faibles, la pratique augmentait avec le nombre de garçons; parmi les mères d'au moins trois enfants, toutefois, elle se stabilisait ou diminuait même parmi celles qui avaient au moins deux garçons. En l'absence de préférence de sexe, la pratique contraceptive aurait augmenté, dans la zone du projet, de 9% en 1983, 8% en 1988 et 6% en 1993. Le taux d'avortement augmentait aussi avec la parité. Aux différents niveaux de parité, il était généralement le plus faible parmi les femmes qui n'avaient pas de garçons et souvent le plus élevé parmi celles qui avaient au moins deux fils et une fille. En l'absence de préférence de sexe, le taux d'avortement aurait augmenté de 27% en 1982–1986, de 36% en 1987–1991 et de 55% en 1992–1995 dans la zone du projet, par rapport à 36%, 37% et 38%, respectivement, dans celle de comparaison. Le pourcentage de femmes ayant encore des enfants diminuait aux parités élevées, où il atteignait son niveau le plus haut parmi les femmes qui n'avaient pas de fils. Parmi les mères d'au moins deux enfants, la fécondité était la plus faible parmi celles qui avaient plusieurs fils et une fille. En l'absence de préférence de sexe, la fécondité aurait diminué de 9% en 1984–1986, 10% en 1989–1991 et 12% en 1994–1995 dans la zone du projet, par rapport à 7%, 8% et 9%, respectivement, dans celle de comparaison. Aucun signe d'avortement sélectif en fonction du sexe du fœtus n'était évident à Matlab.*

Conclusions: *La préférence relative au sexe de l'enfant n'affecte pas sérieusement la pratique contraceptive à Matlab. Son absence, toutefois, renforcerait probablement le recours à l'avortement, pratiqué pour limiter la fécondité dès le moment où les couples ont atteint le nombre de fils désirés. L'effet de la préférence de sexe sur la procréation s'intensifie à mesure que la fécondité décline, les couples devant atteindre le nombre de garçons désiré dans le cadre d'une progéniture totale moindre.*