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Abortion: An Emerging Issue to Meet Son Preference and Fertility Control in Bangladesh

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Abstract

Context The contraceptive prevalence rate (CPR) has been increasing, but the total fertility rate has been stable at 3.3 in Bangladesh for the last six or seven years. Abortion is on increase and son preference is thought to be a constraint on further fertility decline in this country. This study investigated the effects of son preference on contraceptive use, abortion, and fertility, and the trends of these effects during 1982-1995, a time when Bangladesh was undergoing a demographic transition.

Methods Data for the study came from the Matlab Demographic Surveillance System (DSS). Matlab is a rural area in Bangladesh and its DSS has been recording the vital events of a population of about 200,000 by bi-weekly household visits (monthly since 1997) by Community Health Workers (CHW) since 1966. A comprehensive maternal and child health and family planning (MCH-FP) project began in half of the DSS area in 1977, and the other half, known as Comparison area, remained under the usual health and family planning program of the government. The data on CPR, abortion, and fertility were available from the DSS and the record keeping system (RKS) in the area. The effect of son preference on the CPR, abortion and fertility was measured by the method suggested by Arnold (Demography 22:280-288, 1985). This method gives an estimate of an increase or decrease in the CPR, abortion, etc. that would happen in a population in the absence of any sex preference for children. The level of sex-selective abortion (abortion of female fetus) was measured by the deviation from the expected sex-ratio at birth.

Results It is estimated that the increase in contraceptive prevalence rate (CPR) would be less than 9%, while decrease in fertility would be more than 12% in the complete absence of sex preference for children. Son preference had also an effect on abortion. However, there was no indication of sex-selective abortion in the area. It is estimated that the abortion ratio would increase by 36-52% in the absence of sex preference for children.

Conclusions The effects of son preference on fertility are mediated through both contraceptive use and abortion. A strong relationship between son preference and abortion found in this study is alarming. Elimination or reduction in son preference may increase the number of abortions initially. But it will reduce the possibility of sex-selective abortions and its related consequences. Son preference and abortion both should be discouraged. Improvement in the status of females and female children should be helpful in reducing son preference, and improvement in MCH-FP program should be helpful in reducing the number of abortions in Bangladesh.

Introduction

The decline in fertility from a total fertility rate (TFR) of more than 6 in the mid-1970s to slightly over 3 in the early 1990s in Bangladesh is remarkable. Many claimed that this decline was the outcome of a sharp increase in the contraceptive prevalence rate (CPR) from less than 10% in the mid-1970s to about 45% in 1993-94 as a result of a successful family planning (FP) program in the country[1]. Many, of course, did not fully agree with this view and expressed doubt that only FP program could bring fertility down to this level without a societal change in the country[2]. However, fertility has been almost static in the country for the period 1993-2000, although CPR has increased by about 7% points during this period[3]. The static state of fertility in spite of 8% points increase in the CPR is also found in the Matlab MCH-FP area of the country. There, the effect of an increase in CPR on TFR is found to be compensated by a decrease in abortions[4]. On the other hand, the abortion, which is a major cause of maternal morbidity and mortality in Bangladesh[5], is increasing in the country[6]. Some speculate that son preference, which has its roots in the patriarchal form of society, dependence on sons for financial support at the old age and carrying the family name, and payment for dowry for a girl in the country, is an obstacle to further decline in fertility[7]. Although several studies are available on the effects of son preference on fertility and mortality, no study on the effect of this preference on abortion for Bangladesh are available in the literature.

Abortion is one of the four most important proximate determinants of fertility[8], and in some countries, it became the principal means for fertility control at times[9]. Abortion is not always

exclusively used for fertility control. For example, in China and Korea, sex-selective abortion is very common in order to avoid children of undesired sex[10].

In Bangladesh, abortion is illegal except in a few special circumstances such as to save the life of a pregnant woman. The government of Bangladesh, however, mentioned in a memorandum in 1979 that menstrual regulation (MR) is an "interim method of establishing non-pregnancy" for a woman at risk of being pregnant, whether or not she is pregnant. In reality, a MR is used to avoid an unwanted birth, and is usually considered as an abortion in Bangladesh[11]. Because abortion is a sensitive issue and its data collection in a survey is a very difficult, no accurate estimate of abortion and its trends are available, and the purpose of its use is not clearly known in Bangladesh. This study investigated whether abortion is used to meet son preference in this country, and if so, what its relative importance is in comparison with contraceptive use to meet this preference and limit fertility, during a time when the country is experiencing a demographic transition.

In most of the countries in South and East Asia, people prefer sons to daughters[12]. This preference often influences peoples' behavior and affects both fertility and mortality[13]. The effects of this preference on mortality and its proximate determinants were examined in many studies in Bangladesh. Chen, Huq and D'Souza[14] demonstrated the existence of preferential treatment to sons in food distribution and health care. Bairagi[15] demonstrated that this preferential treatment escalated during periods of famine, and Muhuri and Preston[16] showed that discrimination against female children that led to excess female child mortality was selective, i.e., excess female child mortality was much higher for those girls who had sisters than those girls who did not have any sisters. Alam and Bairagi[17] observed that it was not only girls with one or more sisters who had higher mortality than girls without any sisters, but boys with brothers had higher mortality than the boys without brothers.

Although the effects of sex preference for children on mortality in Bangladesh and other countries are consistent, its effects on fertility are not so. Some argued that son preference

would be a strong barrier to success in family planning programs, and thus would be an obstacle to fertility decline[18]. Sheps[19] demonstrated that if all couples desired a minimum of two sons before stopping fertility, the families would have an average of 3.88 children, whereas if all couples desired at least one son and one daughter before stopping fertility, the average would be 3.00 children, in a perfectly contracepting society. However, effects of son preference on fertility was not found in the 1960s in Bangladesh and Pakistan[20], but was found in the 1970s and 1980s in Taiwan and South Korea where couples with more daughters than sons had higher subsequent fertility[21]. Chowdhury and Bairagi[22] examined the reasons for these inconsistencies and concluded from the Matlab data that the effect of son preference on fertility would be more pronounced in a population where contraceptive use was high than in a population where contraceptive use was low. Chowdhury and Bairagi's 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 use is usually high, fertility is low and the effect of son preference on fertility is usually absent. Moreover, they did not take the other proximate determinants into consideration, whereas abortion was found to be the principal means used to have children of a desired sex in Korea and China[23]. Arnold[24] examined cross-sectional data from 27 countries on fertility intention and contraceptive use and concluded that sex preference for children was not likely to have a major impact on contraceptive use and fertility. However, his analysis had several limitations due to the lack of appropriate data. His study covered a wide range of fertility intention and contraceptive use, and the difference between observed contraceptive use rate and expected contraceptive use rate in the absence of sex preference for children was considered as the effect of sex preference for children on contraceptive use. Naturally, this effect will be small if the use level is small. Furthermore, if a country does not have any sex preference for children, this effect will also be small even if contraceptive use is high. Thus, a small value of this measure over a wide range of contraceptive use does not provide a clear indication of the effect of sex preference for children on contraceptive use at different levels of use in a country with strong sex preference for children. Moreover, Arnold used data on fertility intention, not on fertility. The relationship between contraceptive use, fertility intention and actual fertility is not clear-cut. Therefore, to assess the

role of sex preference for children on demographic transition, longitudinal data at different level of contraceptive use as well as the data on other proximate determinants (particularly on abortion that has been widely used in China and Korea to meet son preference) and actual fertility are very important and useful. In this study, longitudinal contraceptive use, abortion and fertility data from Matlab, Bangladesh were used to understand the issue.

Methods and materials

Data for this study came from the Demographic Surveillance System (DSS) and Record Keeping System (RKS) of ICDDR,B: Centre for Health and Population Research in Matlab, Bangladesh. The Matlab DSS has been maintaining records of vital events of a population of more than 200,000 (in 1996) by bi-weekly household visits by Community Health Workers (CHWs) since 1966. The work of the CHW is supervised, and collected data are checked at different levels for accuracy before being transferred to the data-base[25]. In 1977, an MCH-FP project began in half of the Matlab DSS area. The remaining half, known as the Comparison area, remained under the Government's usual MCH-FP program. In the RKS, contraceptive use and reproductive status of married women of childbearing age in the MCH-FP area have been collected by the CHWs by visiting the women at two weekly intervals. At the beginning of the MCH-FP project, fertility and mortality in the two areas were almost the same[26]. The contraceptive prevalence rate (CPR) started increasing, and fertility and mortality both started declining in each area, but more rapidly in the MCH-FP area, and in 1995, the difference between the two areas was 22% points in CPR (67% versus 45%), 0.7 in TFR (3 versus 3.7) and 28 per thousand live births in infant mortality (51 versus 79).

The four most important proximate determinants of fertility are: contraceptive use, proportion of married people, post-partum amenorrhoea and abortion[8]. Son preference is unlikely to affect the proportion of married people of childbearing age or of women in sexual union in a population, and its effect on post-partum amenorrhoea is thought to be small in Matlab, because breastfeeding pattern and duration between male and female infants did not differ significantly[27]. This study, therefore, examined the effects and the trends of the effects of son preference on the other two main proximate determinants of fertility, contraceptive use and abortion, as well as on

fertility in Matlab.

The effect of parental sex preference on contraceptive use could be studied only in the MCH-FP area. Contraceptive use data were not available from the Comparison area, except in two KAP survey samples in 1984 and 1990. The KAP sample size was not sufficiently large to provide a valid estimate of the effect of sex composition of children at different parity on fertility. Contraceptive use data of the MCH-FP area were taken from three separate dates at an interval of five years: 31 December 1983, 31 December 1988 and 31 December 1993, to cover a wide range of variation in contraceptive use. The fertility effect of the sex composition of living children was examined for the periods 1984-86, 1988-89, and 1994-95. The effect on induced abortion was examined for the periods 1982-86, 1987-91 and 1982-95. The CHWs recorded all pregnancies and their outcomes including abortion for each of the women in their notebooks in both areas during their bi-weekly routine visits.

A CHW has had an excellent rapport in her area in Matlab. Yet, abortion has been found to be underestimated[28]. This underestimation is not expected to affect the trend of abortion over time, and comparison among different groups of people, because same procedure have been followed for collecting abortion data over time among different groups. In this study, an abortion means an induced abortion, including MR.

A modified Arnold Index[29] was used for estimating the effects of sex preference on contraceptive use, abortion and fertility. This index provides an estimate of the relative change that may be termed as Sex Preference Effect Measure (SPEM) in a variable in the absence of parental sex preference. The SPEM is defined as the ratio of the absolute difference between observed and expected fertility measures (contraceptive use, abortion and fertility) to the observed value expressed in 100. In estimating the expected rate, it is assumed that all couples at each parity will act in the same manner as those couples at the same parity who are currently most satisfied with the sex composition of their children. The SPEM will not be affected by reporting error (under or over reporting) of the event (CPR, abortion, etc.) unless the proportion of error differs by sex composition of children within parity. It is assumed that in case of contraceptive use and

abortion, those couples are most satisfied with the sex composition of their children in a parity whose contraceptive use rate and abortion ratio are highest; and in the case of fertility, those couples are most satisfied with the sex composition of their children in a parity whose fertility is lowest. The calculating procedure of the Index (SPEM) is available in many publications[30], and the equation for its calculation is given below:

$$SPEM = [1 - (\sum_{i}\sum_{j} f_{i.} w_{ij} / \sum_{i}\sum_{j} f_{ij} w_{ij})] \times 100$$

where,

f_{ij} = proportion of women having the event (contraceptive use, abortion or having 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,

w_{ij} = number of women with number of children i and number of sons j.

For contraceptive use and fertility, the assumptions mentioned above seem reasonable. But for abortion, it is not clear-cut. If the purpose of the abortion is to regulate fertility without knowing the sex of the fetus, this assumption seems logical. However, if the purpose of the abortion is to abort the fetus after determining her sex by amenosentosis or ultrasonogram, as is the practice in China and Korea, then the sex composition of the children needs to be considered in combination with the sex of the fetus of the current pregnancy. In the latter case, the sex ratio at birth in a son-preferring society like Bangladesh should be greater than the expected sex ratio at birth as in China and Korea[31.] In Matlab, the sex ratio at birth was within the normal range of about 104 (Figure 1). These results suggest that induced abortion in Matlab was not related to the sex of the fetus. So it seems that the women who had the highest abortion ratio in a parity were most satisfied with the sex composition of their existing children, and perhaps did not want any children of either sex.

Results

The percentage of married women aged 15-49 years using contraceptives on the last day of the year (31 December) in 1983, 1988 and 1993 in the MCH-FP area according to the sex composition of living children is shown in Table 1. Contraceptive use increased from 40% in 1983 to 54.0% in 1988 and to 63.9% in 1993. In each year, the percentage of women using contraceptives increased with parity and, within each parity, it increased with the number of sons and decreased slightly if women had only sons in parity 3 or more. The CPR was usually lowest for those women who did not have any sons. Increase in contraceptive use with parity was significantly less among women with no sons than among other groups. The results of this table suggest that although preference for sons was quite strong, the couples liked to have a daughter after having two sons.

There were 17,803 live births during 1982-86, 18,431 during 1987-91 and 11,884 during 1992-95 in the Comparison area (Table 2). In the MCH-FP area, the number of live births was 15,018, 15,092 and 10,604 respectively in these periods. The abortion ratio, defined as the ratio of abortions to the number of live births multiplied by 1,000, was 21 during 1982-86, 39 during 1987-91, and 51 during 1992-95 in the Comparison area; and in the MCH-FP area, it was 16, 25 and 24 respectively. It was shown elsewhere that the Matlab MCH-FP program was very successful in reducing abortion by increasing the CPR in the area[32]. In each area and each period, the ratio usually increased with parity, and within a parity it was lowest for those women with no sons and was usually highest for those women who had sons and also a daughter.

Fertility declined very sharply in both areas over time, but differed between areas. In the Comparison area, the percentage of women giving birth in the subsequent three years (it was for two years since 1993) was 58.1 in 1984-86, 49.6% in 1989-91 and 27.2% in 1994-95 (Table 3); and in the MCH-FP area, it was 47.3%, 36.4%, and 22.7% respectively during these periods (Table 4). The relationship of subsequent fertility with the sex composition of children of different parity in different time periods in the two areas is shown in these tables. In both areas,

fertility declined with parity of women, and within a parity, fertility was highest for those women without any sons, and it was lowest among those who had two sons in parity 2 and, in the higher parity, for those who had sons and a daughter.

The effects of sex preference for children on contraceptive use measured by the Arnold Index (SPEM) are given in Table 5. Not more than 5% additional (expected - observed) couples would use contraceptives over the study period from 1983 to 1993 in the absence of sex preference for children. Thus the effects of sex preference for children on contraceptive use were not high at any time. The contraceptive SPEM declined from 8.5% in 1983 to 5.8% in 1993. This decline suggests that the effect of sex preference for children on contraceptive use declined during 1983-1993. In other words, the relative importance of sex preference for children as a determinant of contraceptive use declined with an increase in the use of contraceptives. This phenomenon was found also in other years in both areas in and in other populations[33].

It may be noted in Table 6 that the expected abortion ratio was higher than the observed abortion ratio in each year in each area. It means the abortion ratio would increase in the absence of sex preference for children. This is due to the fact that the abortion ratio among the mothers who had children with preferable sex composition was higher than their counterpart. For example, women in parity 2 undoubtedly preferred 2 sons to 2 daughters, but the former group had higher abortion ration that the letter group (Table 2). In the Comparison area, the abortion ratio would increase by 36-38% (SPEM), while in the MCH-FP area it would increase by 27.4% during 1982-86, 36.3% during 1987-91, and 55.0% during 1992-95 in the absence of sex preference for children (Table 6). It should be noted that the increase (SPEM) in abortion ratio was greater than the increase in contraceptive use as a result of son preference; and SPEM for contraceptive use decreased but SPEM for abortion increased over time.

The Index for fertility is shown in Table 7. Total fertility rates (TFRs) during these periods are also given in this table. The effect of sex preference for children (SPEM) increased from 6.5% in 1984-86 to 8.3% in 1989-91 and to 8.6% in 1994-95 in the Comparison area. In the MCH-FP

area, the SPEM increased from 9.0% in 1984-86 to 10.4% in 1989-91, with a further increase to 12.3% in 1994-95. Although the CPR was not available for the Comparison area, there is no question that contraceptive use was increasing in the area over time.

Discussion

This study took the advantage of the largest and most comprehensive longitudinal population data in the developing world from the Matlab DSS. An estimate of the effect of sex preference for children on fertility and its related variables (SPEM) need data on these variables by sex composition of children in different parities. As a result, the standard error will be very high if there are not enough children in each category, and the overall sample size is not large. On the other hand, longitudinal data at different levels of contraceptive use and fertility is essential to investigate the trend in the effect and to predict the effect in the future. Cross-national data with different levels of contraceptive use and fertility will not serve the purpose, because the nature and amount of the sex preference for children may vary from country to country with variation in fertility and contraceptive use.

The Matlab DSS has been in operation since 1966, and a comprehensive MCH-FP program in half of the DSS area since 1978. The representation of Matlab for Bangladesh on the whole may be in question. Matlab is slightly better socioeconomically than the average of Bangladesh. 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 of Bangladesh. The difference that is found in some studies is thought to be mainly due to inferior quality of data in the national surveys[34]. Of course, the Matlab MCH-FP area is demographically different, not only from Bangladesh, but also from the Matlab Comparison area as a result of the MCH-FP Program there. The two areas in Matlab were found in 1993-94 to be virtually the same socioeconomically except for children's education, which was better in the MCH-FP area[35]. In short, it can be said that the Matlab Comparison area in most respects is very similar to Bangladesh averages, while the MCH-FP area is demographically a few years ahead of the country.

The SPEM, as calculated here, may give an underestimate of the long-term effect. If the distribution of women in the early parities according to sex composition of children is noted, it can be seen that the proportion of women with sons is greater than the expected value. For example, in Table 1, the number of women in the MCH-FP area in 1982 with two sons was 633 but with 2 daughters it was 461. Assuming sex ratio at birth of 104, it can be shown that the ratio of women with two sons to the number of women with two daughters should be 1.08 = $(0.51^2/0.49^2)$. But the ratio in the table is 1.37 = (633/461). This is mainly due to the fact that the women with two sons move to the next parity less or move slowly in comparison with the women with two daughters, and partly due to higher mortality of female children. The calculation of SPEM in this study, however, was based on the existing distribution of women. So it will give an estimate of the immediate effect of the sex preference for children on fertility or its related variables. If the situation of no preference continues for long, it will eventually bring a change in the distribution of women with different sex compositions within a parity, and the long term effect will be somewhat more than the short term effect given in this study.

The effect of sex preference for children on contraceptive use (SPEM) was not high at any time and it decreased with time with an increase in CPR (Table 5). An absolute increase in CPR without sex preference for children was not greater than 5% points at any time. The results for other years in the MCH-FP area and in the Comparison area were almost the same[36.] This study confirms the earlier results that sex preference for children will not be a constraint to family planning programs in terms of contraceptive use in Bangladesh[37]. However, this can not be said in the case of fertility. Fertility was decreasing in both areas, but the sex preference effect measure (SPEM) was increasing consistently with time and with a decrease in fertility. It is reasonable to assume that the change in the proportion of married women giving birth and the percent change in TFR will be the same. So it can be said that SPEM increased almost linearly with a decrease in TFR. This is consistent with the hypothesis that the effect of sex preference for children will be more acute in low fertility situations, because couples will have to have the children with desired sex within a small number of children. If the number of children is large,

couples will usually get the children of the preferred sex. The TFR would decrease by 12.3% in the absence of son preference in the Matlab MCH-FP area in 1994-95 when the TFR in the area was 3.0. However, this effect is much less than the effect estimated by Sheps[38] in a perfectly contracepting population.

A comparison of the SPEM for CPR, abortion and TFR reveals some important and interesting features. Here SPEM for CPR is smaller than the SPEM for fertility (see Table 5 and 6). If the effect of sex preference for children on fertility would mediate through contraceptive use only, the results should be otherwise, i.e., SPEM for CPR should be more than the SPEM for fertility (see note 1). This suggests that the effect of sex preference for children on fertility is mediated not only through contraceptive use but also through one or more of the other proximate determinants of fertility. It was mentioned earlier that among the three other important proximate determinants of fertility, abortion was the most prospective candidate. As seen in Tables 5 and 6, SPEM for abortion increased while for contraceptive use it decreased with time; for abortion it was much greater than it was for contraceptive use. All these suggest that in comparison with contraceptive use, abortion was used more liberally to meet sex preference for children (of course, one may easily show from CPR and abortion ratio that the number of births averted by CPR was much more than the birth averted by abortion). This is not a healthy sign. It is true that sex identification of the fetus and sex selective abortion was absent in Matlab until this study, and the Matlab MCH-FP program was successful in reducing induced abortion. But if this practice of abortion to meet son preference goals continues, a time may come when the facilities will be available to identify the sex of a fetus and many of the female fetuses will consequently be aborted resulting further increase in abortion. Unfortunately, no study on sex-selective abortion in Bangladesh is available in the literature. But the situation in the neighboring India is distressing. About 1 million female fetuses were aborted in India during 1981-91[39]. About 70% of all abortions performed in Delhi were the terminations due to the fetus being female[40] . The sex-selective abortion was so serious that the Indian Government announced a ban on the abortion of healthy female fetus identifying during permissible genetic tests[41] .

Abortion is allowed in India, but not in Bangladesh. Yet, about 0.75 million abortions occur in Bangladesh each year, whereas the total number of abortion in the entire South-eastern Asia is 4.7 millions[42]. Islam, which is thought to have conservative attitude towards abortions, is the religion of 85% people of Bangladesh, and Hinduism is the religion of 85% people of India. But the religious and some other cultural differences between India and Bangladesh do not seem to make much difference in the abortion and son preference, in sex-selective abortion between these two countries. Policy makers thus need to find how to bring down both son preference and abortions in Bangladesh. An improvement in the status of females and female children should be helpful in reducing son preference[43] , and an improvement in MCH-FP services should be helpful in reducing the number of abortions[44] in the country.

Note 1 According to Bongaarts and Potter[45], TFR = 7.3 –0.063 * CPR. If CPR is 50, TFR will be 4.1. If CPR increased to 60 (20% increase), TFR will be 3.46. That is the decrease in TFR will be (0.65 = 4.10 -3.46), i.e., about 16%, which is less than the increase in CPR (20%), and so on.

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Table 1. Percentage of women using contraceptives according to sex composition of their Children in different years, MCH-FP area, Matlab, Bangladesh.

		1983		1988		1993	
Living Children	Living Son	Women	% Using	Women	% Using	Women	% Using
0	**0**	**907**	**7.2**	**659**	**10.2**	**1162**	**14.9**
1		**2276**	**25.4**	**2401**	**39.9**	**2993**	**49.7**
	0	1100	23.8	1164	40.1	1445	46.4
	1	1176	26.8	1237	39.8	1548	52.8
2		**2207**	**34.7**	**2594**	**50.3**	**3263**	**61.1**
	0	461	28.4	552	41.1	636	50.3
	1	1113	35.0	1293	50.7	1677	64.2
	2	633	38.9	749	56.3	950	63.1
3		**1954**	**44.5**	**2507**	**57.6**	**3231**	**72.7**
	0	204	26.0	229	36.7	313	59.1
	1	672	41.8	829	53.4	1096	67.2
	2	830	51.7	1126	65.3	1438	80.4
	3	248	43.1	323	56.3	384	70.8
4		**1761**	**50.2**	**2115**	**65.5**	**2665**	**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	1050	81.0
	3	479	55.5	553	70.7	713	83.6
	4	114	52.6	136	62.5	177	75.1
5+		**3178**	**55.2**	**3166**	**66.4**	**3096**	**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
All		**12,283**	**40.0**	**13,442**	**54.0**	**16,410**	**63.9**

Table 2. Abortion ratio per 1,000 live births according to sex composition of living children in different periods by area in Matlab 1982-95.

		Comparison Area						MCH-FP Area					
		1982-86		1987-91		1992-95		1982-86		1987-91		1992-95	
Lining Children	Living Son	# Live birth	Ratio	# Live birth	Ratio	# Live birth	Ratio	# Live birth	Ratio	# Live birth	Ratio	# Live birth	Ratio
0	0	**4352**	**16**	**4518**	**21**	**3450**	**22**	**4270**	**12**	**4509**	**16**	**3591**	**11**
1		**3720**	**9**	**3859**	**20**	**2721**	**20**	**3513**	**9**	**3652**	**15**	**2704**	**11**
	0	1857	11	1943	21	1364	16	1736	7	1799	15	1320	8
	1	1863	8	1916	19	1357	24	1777	11	1853	15	1384	14
2		**3122**	**17**	**3376**	**24**	**2112**	**30**	**2635**	**9**	**2900**	**19**	**1994**	**16**
	0	715	4	847	21	589	15	629	10	781	14	568	9
	1	1532	18	1690	20	1008	37	1317	8	1415	18	919	22
	2	875	25	839	35	515	33	689	10	704	27	507	12
3		**2346**	**21**	**2666**	**34**	**1586**	**52**	**1866**	**13**	**1898**	**32**	**1227**	**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
4		**1754**	**43**	**1761**	**62**	**1001**	**107**	**1258**	**24**	**1035**	**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
5+		**2509**	**68**	**2251**	**121**	**1014**	**222**	**1476**	**51**	**1098**	**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
All		**17,803**	**21**	**18,431**	**39**	**11,884**	**51**	**15,018**	**16**	**15,092**	**25**	**10,604**	**24**

Table 3. Percentage of women giving birth in different follow-up periods according to sex composition of their children immediately before follow-up, Comparison area, Matlab, Bangladesh.

		1984-86		1989-91		1994-95	
Living Children	Living Son	Women	% Giving birth	Women	% Giving birth	Women	% Giving birth
0		**1609**	**82**	**962**	**72**	**1618**	**55**
1		**2437**	**80**	**2522**	**78**	**2800**	**47**
	0	1206	82	1226	80	1358	47
	1	1231	78	1296	75	1442	46
2		**2171**	**76**	**2408**	**69**	**2717**	**36**
	0	478	81	558	73	604	42
	1	1113	73	1237	68	1414	34
	2	580	75	613	68	699	36
3		**1989**	**61**	**2446**	**55**	**2821**	**26**
	0	195	70	251	68	308	40
	1	701	64	851	59	947	30
	2	814	57	1007	47	1227	20
	3	279	60	337	59	339	27
4		**1845**	**50**	**2219**	**40**	**2673**	**17**
	0	100	55	112	59	124	24
	1	416	56	487	48	594	22
	2	683	50	858	38	1084	15
	3	515	42	609	31	712	12
	4	131	50	153	46	159	20
5+		**4168**	**31**	**4598**	**24**	**4721**	**9**
	0	114	24	101	35	85	25
	1	422	34	436	28	502	15
	2	886	37	1032	28	1107	9
	3	1106	32	1279	23	1353	8
	4	944	29	996	20	989	7
	5+	696	25	754	18	685	7
All		**14,219**	**58.05**	**15,155**	**49.6**	**17,350**	**27.2**

Table 4. Percentage of women giving birth in different follow-up periods According to sex composition of their children immediately before follow-up, MCH-FP area, Matlab, Bangladesh.

		1984-86		1989-91		1994-95	
Living Children	Living Son	Women	% Giving birth	Women	% Giving birth	Women	% Giving birth
0		**1083**	**80**	**892**	**72**	**1447**	**60**
1		**2462**	**74**	**2865**	**65**	**3380**	**39**
	0	1186	77	1390	67	1625	40
	1	1276	72	1475	64	1755	39
2		**2348**	**62**	**2976**	**50**	**3537**	**28**
	0	494	73	635	63	687	28
	1	1182	61	1500	48	1825	26
	2	672	58	841	43	1025	25
3		**2093**	**47**	**2837**	**34**	**3476**	**17**
	0	227	61	266	55	336	33
	1	721	53	937	40	1179	20
	2	886	39	1265	25	1547	10
	3	259	47	369	34	414	19
4		**1905**	**35**	**2429**	**21**	**2930**	**10**
	0	100	59	129	43	139	32
	1	441	39	581	25	668	11
	2	719	32	940	17	1155	8
	3	520	29	622	17	776	7
	4	125	38	157	30	192	12
5+		**3810**	**20**	**4113**	**12**	**3806**	**5**
	0	153	18	131	17	106	11
	1	438	25	472	17	483	5
	2	844	22	992	13	976	7
	3	1042	19	1154	11	1072	5
	4	794	19	816	9	728	4
	5+	539	14	548	10	441	2
All		**13,701**	**47.3**	**16,112**	**36.4**	**18,576**	**22.7**

Table 5. Observed and expected percentage of contraceptive use in different years,MCH-FP area, Matlab, Bangladesh.

	1983	1988	1993
Observed	40.0	54.0	63.9
Expected	43.4	58.4	67.6
*Contraceptive SPEM	8.5	8.2	5.8

Table 6. Observed and expected abortion ratio per 1,000 live births in Matlab, Bangladesh 1982-95

	Comparison Area			MCH-FP Area		
	1982-86	1987-91	1992-95	1982-86	1987-91	1992-95
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
Abortion SPEM*	36.0	36.5	38.0	27.4	36.3	55.0

* SPEM = (|Observed - Expected|/Observed) x 100.

Table 7. Observed and expected percentage of women giving birth in three years (two years in 1994-95) in Matlab, Bangladesh.

	Comparison Area			MCH-FP Area		
	1984-86	1989-91	1994-95	1984-86	1989-91	1994-95
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
Fertility SPEM*	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

* SPEM = (|Observed - Expected|/Observed) x 100.

Figure 1.Sex ratio at birth (3 yearly moving average) Matlab, Bangladesh