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A Simple Analysis of Recent Trends in Total Fertility Rates in Bangladesh:

**What Can the Family-planning Programme
Do to Reinitiate Fertility Decline?**

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ABSTRACT

The total fertility rate has been stagnant in Bangladesh during the last 10 years. This study mainly examined the proportion of unwanted births and use of family-planning methods among couples with less than four and four or more living children in rural and urban Bangladesh using data from the Bangladesh Demographic and Health Surveys and Matlab Demographic Surveillance System of ICDDR,B. Results of the study showed that 90% of 2,750 couples with more than three living children did not want an additional child. The contraceptive-use rate among them was only around 50%. Thus, by catering to the needs of this motivated group of high-parity couples who contribute to 30% of total births in the country, the total fertility rate can be reduced to around 2.5. The possible strategies for targeting high-parity couples through the existing service-delivery system are also discussed in the paper.

Keywords: Fertility; Fertility decline; Family planning; Bangladesh.

INTRODUCTION

Bangladesh has been cited as a success case in the developing world for popularizing its family-planning services during the last 20 years (1,2). The rate of contraceptive use among married couples of reproductive age increased from a mere 13.8% in 1983 to 47.3% in 2004 (3). This was paralleled with a decline in the total fertility rates from 5.1 in 1984-1988 to 3.0 in 2004 (3). During the second half of the nineties when the contraceptive-use rate was still increasing, there was a halt in the declining trend in the total fertility rate (TFR) (4,5). This raised a serious concern among various stakeholders as, by implication, the future population is likely to reach an unsustainable size before it stabilizes. As a response to this concern, some researchers made attempts to understand the reasons behind this stagnation of TFR and have come up with various explanations (4). The stakeholders are still unclear about what is to be done to reduce the TFR further for the analysis then existing could not provide a clear guidance to the family-planning service-delivery programmes. It is against this background that the present study examined the trends in the recent TFRs and the role of other sociodemographic and programmatic factors, aiming at identifying strategies for the family-planning programmes to be effective in reducing the TFR further.

MATERIALS AND METHODS

This paper is primarily based on the first three Bangladesh demographic and health surveys (BDHS), starting in 1993-1994. The BDHS is a cross-sectional survey that has been carried out once every two years since 1993 among nationally-representative samples of women, similar to what is done in many other countries. The BDHS is part of the worldwide demographic and health survey (DHS) programme, which collects information on various aspects, such as demographic characteristics, reproductive history, and family planning. A nationally-representative two-stage probability sample design was used in the surveys in which 9,900 (8,390 rural and 1,510 urban), 9,335 (7,841 rural and 1,494 urban), and 10,544 (7,611 rural and 3,274 urban) ever-married women of reproductive age were successfully interviewed in the 1993-1994, 1996-1997, and 1999-2000 surveys respectively. Details of the methodologies used in the BDHS are available in the BDHS reports (3,6-8). The paper is also based on data from all currently-married women aged 10-49 years included in the surveys for the analysis of trends. Analysis of factors associated with use of family planning was based on data from 2,184 rural and 413 urban women with three or more surviving children at the time of the 1999-2000 survey. Currently-pregnant women were excluded from analysis of factors associated with use of family planning. The analysis was carried out separately for rural and urban areas since the rural and urban societies are so different.

The present paper is based on the premise that the TFR (among fecund couples) is primarily determined by couples' desire for offspring and, in some instances, for offspring of a particular sex (5,9,10). Family-planning methods, especially the modern ones, are an aid to help couples achieve their desired family size and sex composition in an interval of their choice. Thus, it is the number of children (and, maybe, their sex composition) a couple has at a particular point in time that should determine their fertility behaviour. In Bangladesh, the mean number of children couples want is between 2 and 3 and they prefer having at least one girl and one boy. Given the current sex ratio at birth (52% boys), 50% of couples may end up not having a child of both sexes if they have two children. Some of them may prefer to go for a third child, depending on their strength of sex preference. Thus, three children should be a reasonable cut-off point in the context of prevailing norms for targeting couples to enhance the contraceptive prevalence rate to reduce the TFR further.

Keeping the above in mind, the present paper examined the trends in the TFR, the mean number of desired children by couples, trends in contraceptive-use rate and the method-mix by couples having more than three living children, and the association between a set of independent variables with use of modern contraceptive methods by these couples. The set of independent variables included age and education of women, number of living children and their sex composition, desire for additional children, approval of use of family-planning methods by women and their husbands, visits by family-planning workers during the 6- month period preceding the survey, learning about family planning from TV and radio during 30 days preceding the survey and household economic status, and administrative divisions in which the respondents live. Logistic regression analysis was carried out to assess the net effects of the independent variables on contraceptive use. In the logistic regression analysis, all the independent variables were coded as categorized variables, and a dummy coding scheme was used. The dependent variable was contraceptive-use status, which was coded as 1 for women who are currently using any modern method and 0 for otherwise.

RESULTS

The overall national TFR and those of urban and rural Bangladesh since 1991 are presented in figure 1. The TFR in rural Bangladesh was around 4.5 in 1991, which declined to 3.5 during 1993-1994 and has continued to be stagnant afterwards. The urban figures, on the other hand, showed a declining trend from 2.9 in 1991 to 2.1 during 1996-1997 and an upward trend afterwards. The national trend was dominated by the rural figures.

Figure 1. Trends in TFR by area of residence, 1991-2000.

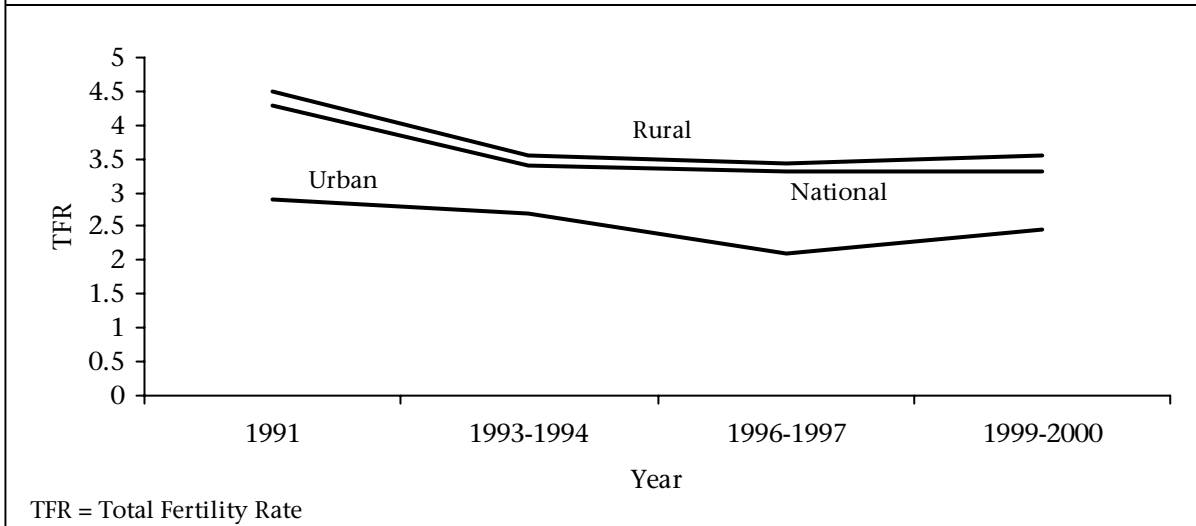
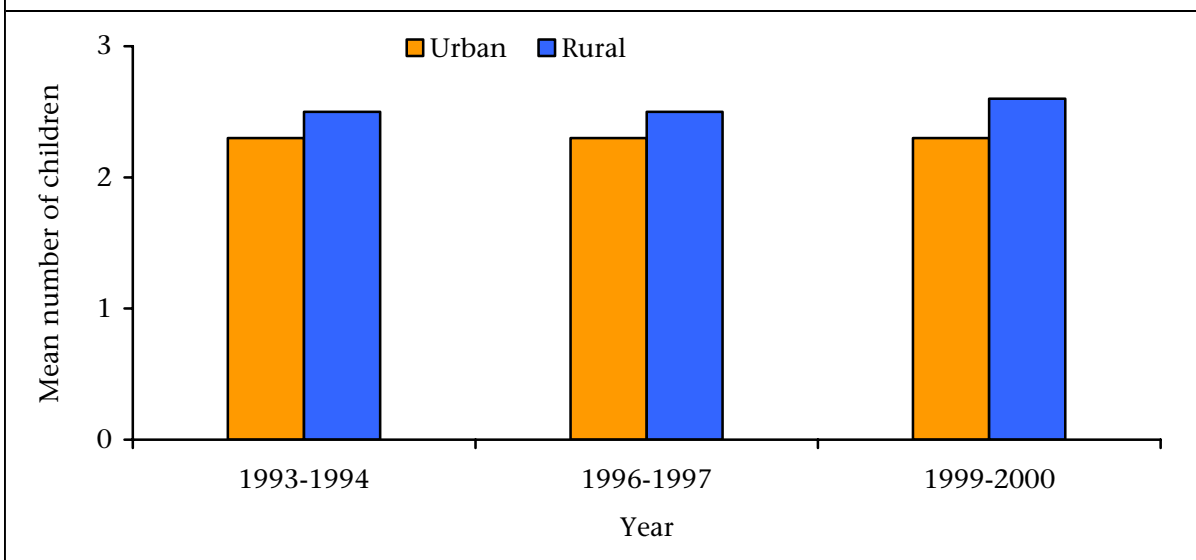
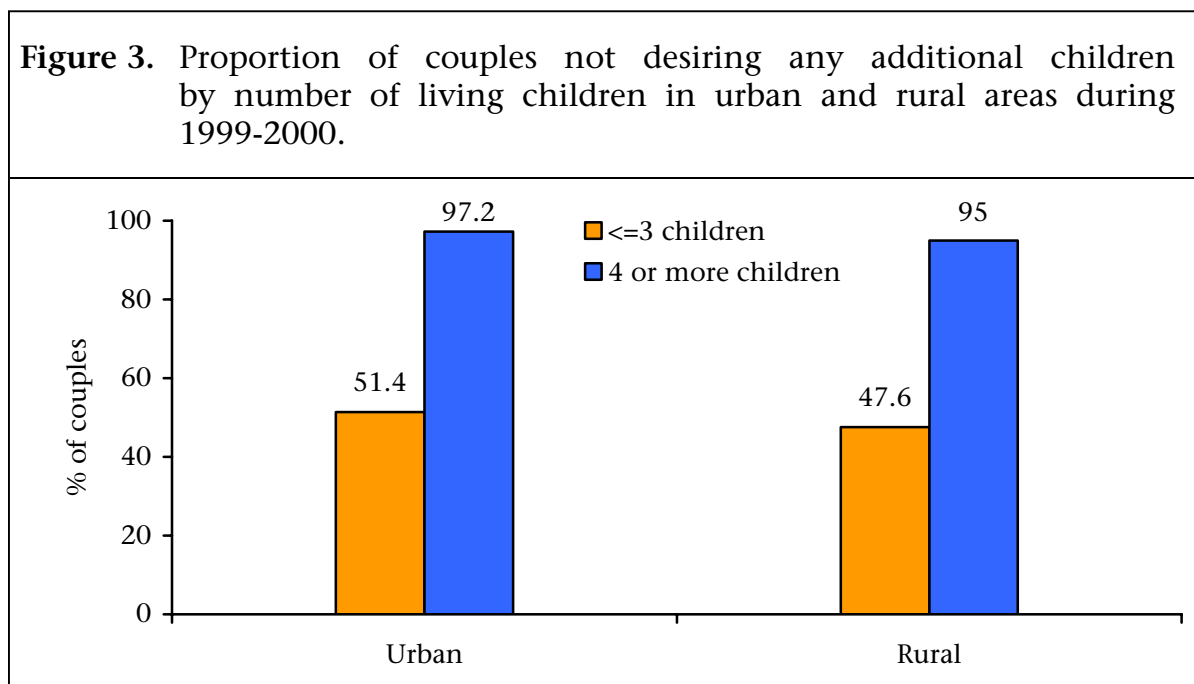


Figure 2 shows the mean ideal number of children according to currently-married women of reproductive age during the nineties. The mean number for rural areas has remained constant at 2.5 children since 1993-1994. The number of children desired by couples in urban areas also remained static at 2.3 since 1993-1994.

Figure 2. Mean ideal number of children as opined by currently-married women in Bangladesh.



Data on desire for additional children showed that 97% of urban and 95% of rural couples with more than three children did not want any additional child. Figure 3 provides evidence of the proportions of couples not wanting any additional child by number of living children.



The proportions of unintended births during 1993-1994, 1996-1997, and 1999-2000 among couples with more than three living children are presented in figure 4 and 5. It can be seen from the figures that the proportions of unintended births among the first-order and second-order births were very small and remained unchanged during all the three time periods. The proportion of unintended births among couples with three and more children showed an increasing trend in both rural and urban areas. Although over 90% of the couples with more than three children did not want an additional child, over 30% of the births during 1999-2000 were reported to be unintended. This difference (90% vs 30%) exists mainly because women tend not to report a pregnancy of a living child as unintended. The difference between urban and rural areas with a higher proportion of urban couples having unintended births and also the increasing trend in the proportion of unintended births may reflect a decrease in the reporting bias mentioned above during the recent survey, particularly among urban women.

Figure 4. Trends in proportions of unintended births by birth order in rural areas of Bangladesh.

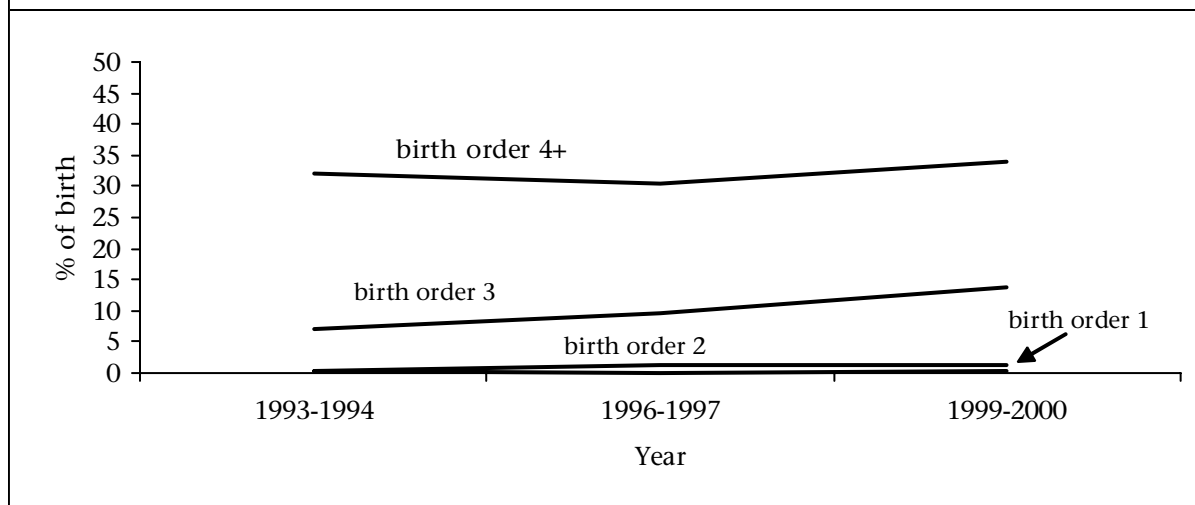
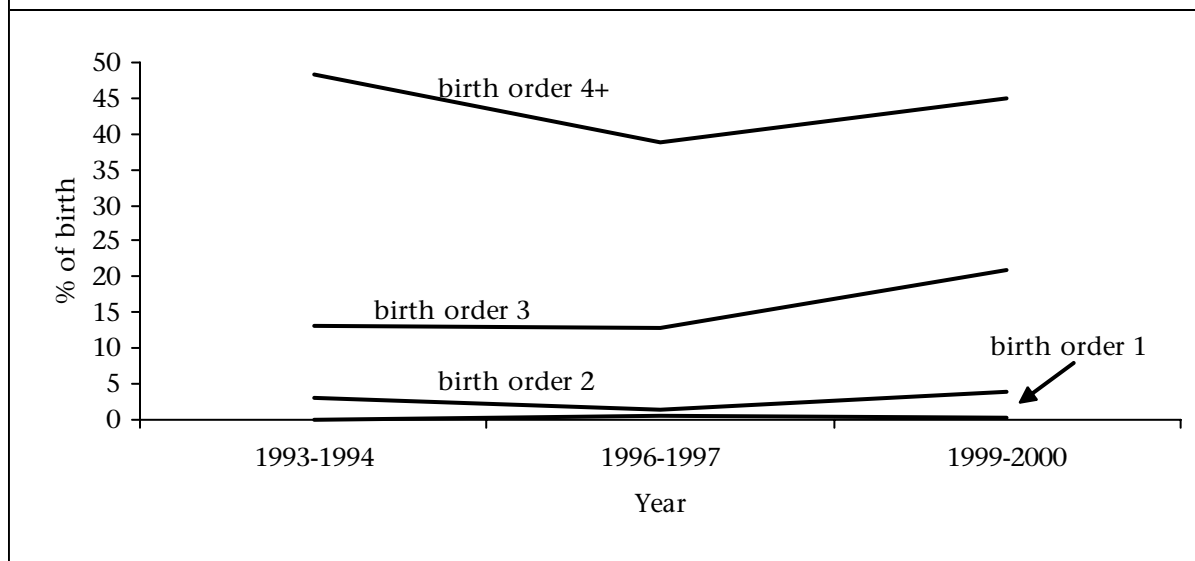


Figure 5. Trends in proportions of unintended births by birth order in urban areas of Bangladesh.



During 1993-1994, nationally, 29% of births took place among women with more than three living children, and this percentage went down to around 22% in the 1999-2000 period, indicating a declining trend. The figures for the rural and urban areas for the same time period are presented in figure 6.

Figure 6. Trends in percentages of births among women with more than three children in rural and urban Bangladesh.

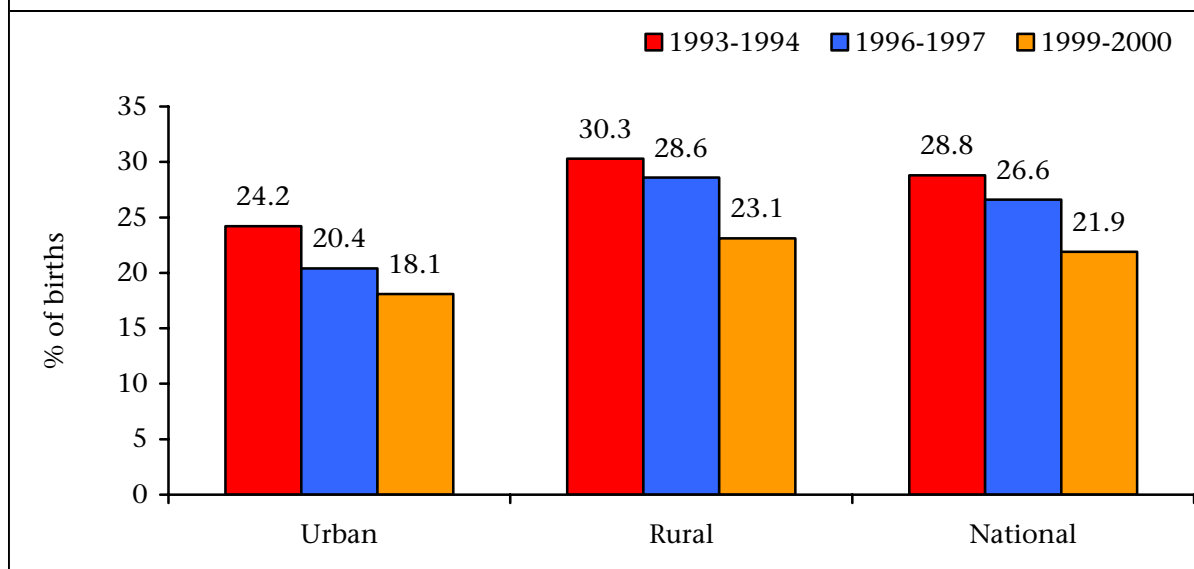


Figure 7. Trends in family-planning method-mix of women having more than three children in rural areas.

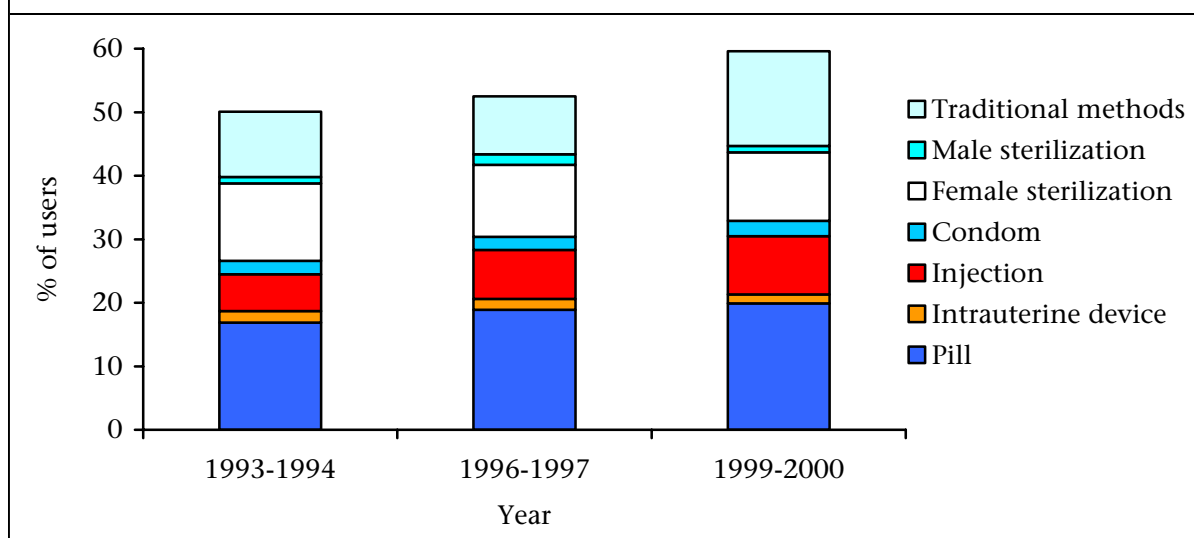
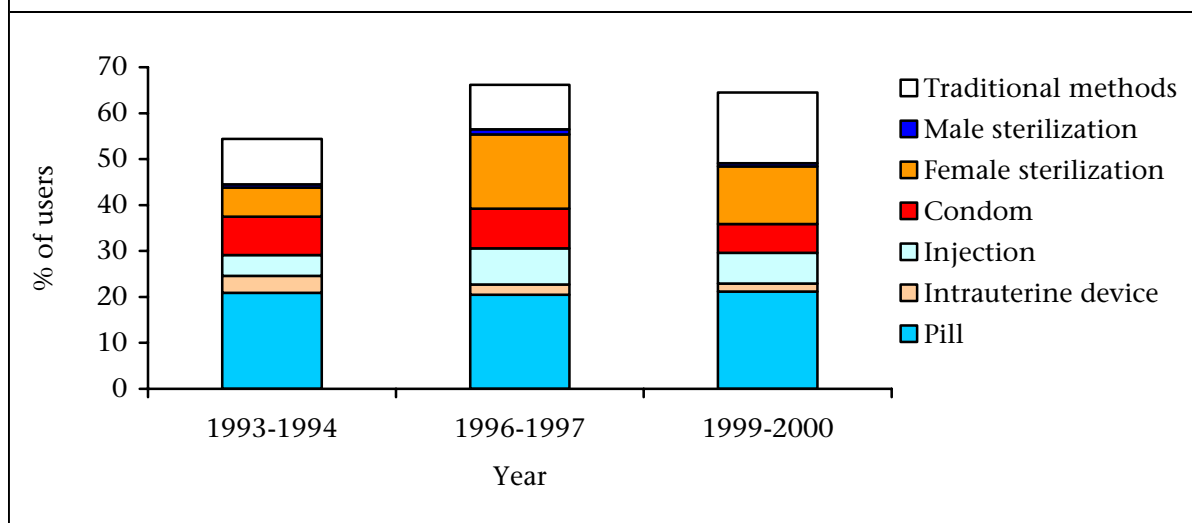


Figure 8. Trends in family-planning method-mix of women having more than three children in urban areas.



The distribution of family-planning methods used by couples with more than three children in rural and urban areas during 1993-1994, 1996-1997, and 1999-2000 is presented in figures 7 and 8. The figures show that the pill has been the most commonly-used method in both urban and rural areas, followed by traditional methods, female sterilization, condom, injection, intrauterine device (IUD), and male sterilization. The use of male sterilization remained proportionately low although in both rural and urban areas. The use of pill and traditional methods increased modestly in both rural and urban areas. The other methods did not show any consistent trend.

Table 1 presents the percentages of high-parity couples using modern family-planning methods by various independent variables, separately for rural and urban samples. The corresponding results of logistic regression analysis are presented in Table 2 and 3.

Rural areas

Results of bivariate analysis for rural areas showed that, other than sex composition of living children and household economic status as measured by assets owned, all other variables included in the analysis had statistically significant relationships with the use of modern family-planning methods (Table 1). Results of logistic regression analysis, however, identified age of women, desire for additional child, husband's and wife's approval of family-planning methods, administrative division of the respondent, number of visits by family-planning workers, and hearing about family planning on TV recently, as having statistically significant relationships with the use of modern family-planning methods (Table 2).

Use of family planning was highest among couples with wives aged 30-40 years and lowest among couples with wives aged 40 years and above. As a relative measure, the odds of using family planning was 1.95 times higher in the first group compared to the second group. In the case of couples with wives aged less than 30 years, the odds were 1.45 times that of the couples with wives aged over 40 years.

Regional/divisional variations in the use of modern family-planning methods in rural areas were quite striking. Sylhet was lowest on the list, which was followed by Chittagong, Khulna, Dhaka, Barisal, Rajshahi, and Khulna.

The desire for an additional child at the time of the interview had a negative effect on the use of family-planning methods. The odds of family-planning practice among couples wanting no additional child was 5.35 times that of those wanting any additional child. Sex composition of living children did not affect the use of family-planning methods. Approval of use of family-planning methods by husband and wife had statistically significant relationships with the use of family-planning methods. The odds of family-planning use were 3.47 and 3.96 times higher among couples with husband and wife approving family planning respectively compared to non-approvers.

The number of visits by family-planning workers during the month preceding the survey influenced the use of family-planning methods positively. The odds of use were 1.98 and 2.82 times higher among couples who were visited once and more than once compared to those who were not visited at all. Listening to family-planning messages on the radio during the month preceding the survey did not make a difference; however, watching family-planning messages on TV did make a positive contribution of a magnitude 1.71 in the odds.

Household socioeconomic status measured by ownership of household articles and level of education of women did not have any influence on the use of family planning in rural areas.

Urban areas

Results of bivariate analysis for urban areas showed a statistically significant relationship between the age of women, husband's and wife's approval of family planning, number of visits by family-planning workers and the use of modern family-planning methods (Table 1). Results of logistic regression for urban areas only picked up husband's and wife's approval and visits by family-planning workers as statistically significant variables (Table 3).

The odds of family-planning use among couples when husbands approved of family planning was 2.43 times that of those with non-approving husbands.

When the wives approved, the odds of family-planning use was 5.50 times that of couples with non-approving husbands.

Table 1. Use of modern family-planning methods among couples with more than three children by various independent variables in rural and urban areas, BDHS 1999-2000.

Independent variable	Rural area		p value	Urban area		p value
	No. of women	% using modern methods		No. of women	% using modern methods	
Education			0.016			0.370
No education	1,369	42.7		193	47.7	
Primary	609	49.4		113	49.6	
Secondary+	206	52.4		107	56.1	
Age of women			0.000			0.030
<30	273	45.8		34	52.9	
30-40	964	53.6		178	57.3	
40+	946	36.2		201	43.8	
Division			0.000			0.912
Barishal	170	44.7		17	52.9	
Chittagong	471	40.3		102	48.0	
Dhaka	586	43.7		159	49.7	
Khulna	207	49.3		148	45.8	
Rajshahi	575	55.5		72	55.6	
Sylhet	172	23.3		15	53.3	
Respondent approves FP			0.000			0.000
No	229	6.6		25	8.0	
Yes	1,954	49.6		386	53.4	
Husband approves FP			0.000			0.000
Disapproves	514	15.8		71	25.4	
Approves	1,665	54.1		341	55.7	
Desire for more child			0.000			0.512
Wants more	109	11.9		9	55.6	
Wants no more	2,072	46.8		403	50.4	
Sex composition			0.152			0.311
All male	75	56.0		23	47.8	
All female	59	55.8		16	68.8	
At least one of both sexes	2,049	44.7		374	49.5	
No. of visits by FP worker			0.000			0.000
0	1,699	39.2		345	46.4	
1	116	53.4		16	56.3	
2+	368	69.6		52	75.0	
Heard of FP on radio last month			0.002			0.336
No	1,825	43.6		316	49.1	
Yes	358	52.5		97	54.6	
Heard of FP on TV last month			0.000			0.490
No	1,898	42.8		212	48.6	
Yes	285	60.0		202	52.0	
No. of items owned			0.630			0.411
0-3	761	44.2		58	50.0	
4-6	778	44.6		131	45.8	
7-12	644	46.6		224	53.1	
Total	2,184	42.2		413	47.2	

BDHS= Bangladesh Demographic and Health Survey; FP= Family planning

Table 2. Results of logistic regression analysis for rural couples with more than three children, BDHS 1999-2000.

Independent variable	Coefficient	SE	p value	Odds ratio	95% CI for odds ratio	
					Lower	Upper
Education			0.310			
No education	RC					
Primary	0.058	0.117	0.624	1.059	0.842	1.333
Secondary+	-0.229	0.185	0.216	0.796	0.554	1.143
Age (years)			0.000			
<30	0.369	0.162	0.023	1.446	1.052	1.989
30-40	0.669	0.105	0.000	1.953	1.590	2.400
40+	RC					
Division			0.000			
Barishal	0.912	0.267	0.001	2.488	1.473	4.203
Chittagong	0.630	0.227	0.005	1.878	1.204	2.928
Dhaka	0.666	0.223	0.003	1.947	1.258	3.012
Khulna	0.637	0.255	0.012	1.891	1.148	3.115
Rajshahi	1.157	0.223	0.000	3.181	2.057	4.920
Sylhet	RC					
Respondent approves FP			0.000			
No	RC					
Yes	1.375	0.299	0.000	3.956	2.202	7.100
Husband approves FP			0.000			
No	RC					
Yes	1.243	0.149	0.000	3.466	2.586	4.640
Desire for more children			0.000			
Wants no more	RC					
Wants more	1.677	0.342	0.000	5.350	2.736	10.460
Sex composition			0.304			
All male	0.382	0.261	0.143	1.465	0.878	2.444
All female	0.178	0.315	0.573	1.194	0.644	2.215
At least one of both sexes	RC					
No. of visits by FP worker			0.000			
0	RC					
1	0.681	0.215	0.002	1.976	1.297	3.009
2+	1.038	0.135	0.000	2.824	2.168	3.679
Heard of FP on radio last month			0.790			
No	RC					
Yes	-0.037	0.141	0.790	0.963	0.731	1.270
Heard of FP on TV last month			0.000			
No	RC					
Yes	0.539	0.162	0.001	1.714	1.248	2.350
Household items			0.844			
0-3	RC					
4-6	-0.065	0.120	0.587	0.937	0.740	1.180
7+	-0.064	0.139	0.644	0.938	0.714	1.230
Constant	-7.139	0.751	0.000			

BDHS=Bangladesh Health and Demographic Survey; CI=Confidence interval; RC=Reference category; SE=Standard error

Table 3. Results of logistic regression analysis for urban couples with more than three children, BDHS 1999-2000

Independent variable	Coefficient	SE	p value	Odds ratio	95% CI for odds ratio	
					Lower	Upper
Education			0.667			
No education	RC					
Primary	-0.198	0.271	0.465	0.820	0.482	1.396
Secondary+	0.037	0.294	0.900	1.038	0.583	1.845
Age (years)			0.089			
<30	0.155	0.406	0.703	1.167	0.527	2.585
30-40	0.499	0.228	0.029	1.647	1.052	2.577
40+	RC					
Division			0.993			
Barishal	0.091	0.768	0.906	1.095	0.243	4.939
Chittagong	-0.027	0.595	0.963	0.973	0.303	3.122
Dhaka	0.026	0.581	0.964	1.026	0.329	3.202
Khulna	0.038	0.642	0.952	1.039	0.295	3.660
Rajshahi	0.192	0.611	0.753	1.212	0.366	4.016
Sylhet	RC					
Respondent approves FP			0.023			
No	RC					
Yes	1.705	0.749	0.023	5.503	1.269	23.870
Husband approves FP			0.009			
No	RC					
Yes	0.888	0.339	0.009	2.431	1.251	4.720
Desire for more children			0.731			
Wants no more	RC					
Wants more	0.274	0.795	0.731	1.315	0.277	6.240
Sex composition			0.693			
All male	-0.115	0.482	0.811	0.891	0.347	2.292
All female	0.484	0.611	0.428	1.623	0.490	5.379
At least one of both sexes	RC					
No. of visits by FP worker			0.006			
0	RC					
1	0.462	0.553	0.403	1.588	0.537	4.697
2+	1.138	0.357	0.001	3.119	1.548	6.284
Heard FP on radio last month			0.907			
No	RC					
Yes	-0.032	0.274	0.907	0.968	0.566	1.650
Heard FP on TV last month			0.508			
No	RC					
Yes	-0.161	0.244	0.508	0.851	0.528	1.370
Household items			0.391			
0-3	RC					
4-6	-0.193	0.349	0.581	0.825	0.416	1.635
7+	0.170	-0.193	0.349	0.581	0.825	0.416
Constant	-3.234	0.170	0.360			

BDHS=Bangladesh Demographic and Health Survey; CI=Confidence interval; RC=Reference category; SE=Standard error; FP=Family planning

DISCUSSION

The finding that the frequency of visits by family-planning workers to women helped increase the chance of using family-planning methods is a clear indication that a focused and responsive programme to fulfill the unmet needs of high-parity couples can, in fact, increase the rates of family-planning use among high-parity couples. The positive role of television in increasing rates of family-planning use was also an encouraging finding in this context. Absence of socioeconomic differentials and the insignificant effect of sex composition of children on the adoption rate of family planning was indicative of softening of major barriers to increase the use of family-planning services among high-parity couples. Now the question is: if the adoption of family planning increases among high-parity couples, and consequently births are averted, what impact will these have on the TFRs?

TFR is a function of age-specific fertility rates, which are functions of births given by women in a particular year. Conception and births are mostly determined by couples' desire for children and the actions taken by them to avoid pregnancies and/or births. The number of children desired, on the other hand, is influenced by many social, economic, and cultural factors, including one's religion and preference for children of a particular sex. The adoption of family-planning methods, on the other hand, is largely determined by couples' knowledge of family-planning methods and their accessibility and suitability. The decline in the TFR in Bangladesh till the mid-1990s as reflected in the forgoing analysis was concomitant to the declining trend in the desired number of children and increased use of modern family-planning methods.

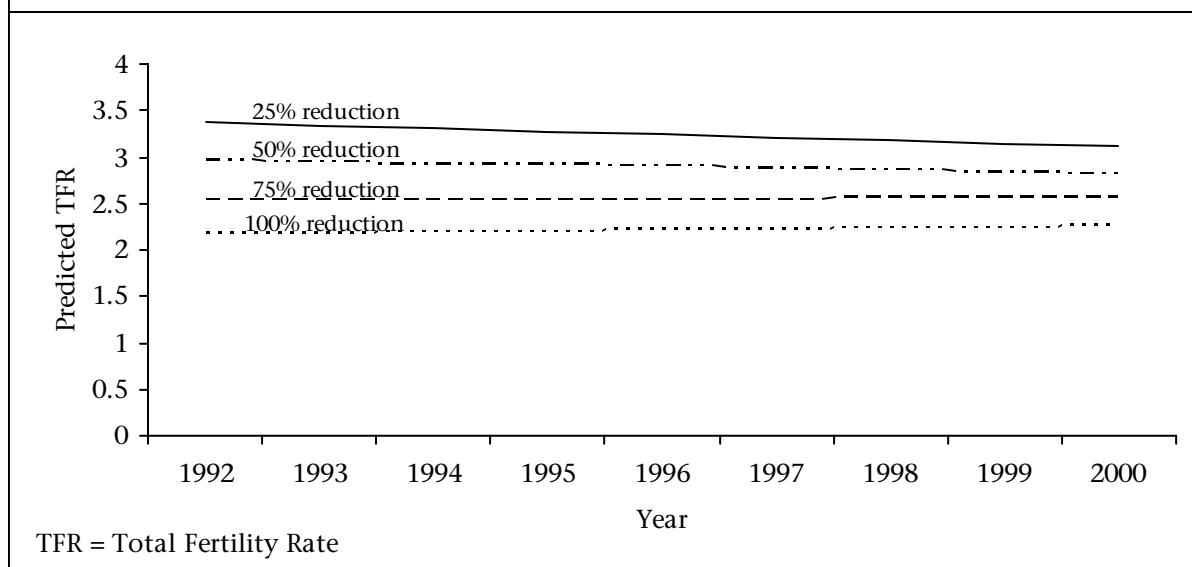
Let us now examine what the TFR would be if all the births beyond the third were averted. About 28% of the births in Bangladesh are now taking place among couples with more than three children (8). Thus, with an aversion of all the births beyond three, the TFR will be reduced substantially. Data on unwanted births by birth order revealed that 40% of the births beyond three are unwanted by the couples. In reality, this proportion may be much higher because the couples do not feel very comfortable in reporting births relating to living children as unwanted. In fact, 95% of the couples with three or more living children did not want any additional child.

Figure 9 provides a projected scenario (fitting regression lines) of TFR based on various levels of reduction of fertility rates among couples with more than three children. The figure shows that, with a 75% reduction in fertility rates among couples with more than three children, the TFR can be brought down to 2.5.

Thus, an immediate reduction in the TFR can easily be achieved by making family-planning services responsive to the needs of couples having more than

three children; in other words, by increasing the family-planning use among high-parity couples. This should be relatively easier to do, for these couples are already motivated not to go beyond three children. In this context, establishing frequent contacts with couples can be of help as was the case with increasing the overall use of family-planning methods.

Figure 9. Trends in predicted TFR based on various levels of reduction in fertility rates among women with more than three living children in the government-served area in Matlab, Bangladesh.



The next question, then, is: how to target high-parity couples and with what family-planning methods? Targeting high-parity couples will require identification of couples, which should be straightforward. High-parity couples can simply be marked in the family-planning couples register on the basis of existing information. The second issue would be: what are the methods to present to the couples? This should be individually decided depending on past use by couples themselves. However, it may be easier to suggest short-term methods to non-users to begin with and progressively respond to the desire of couples with suggestions for long-term methods.

Can this targeting of high-parity couples or segmentation of customers adversely affect family-planning use among couples with less than three children in general and newly-weds in particular? Possibly not, as low-parity couples are also younger and likely to be educated and are already aware of family-planning methods and have plans for small-sized families. Thus, they are likely to continue to use family-planning methods, even if the attention given to them by service providers is less compared to that given to high-parity couples. It would, however, be important to monitor the rate of family-planning use among low- and high-parity couples to discover any unexpected shift in use rates if greater attention is given to high-parity couples.

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