

Birth-Based Approach to Family Planning: An Empirical Justification

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This paper presents an alternative to the traditional approach of calculating the population needing family planning services. It is argued that by focusing on pregnant women and recently delivered mothers, instead of women under the 15-45 age group; the contraceptive services program could be managed more effectively and efficiently.

The international Conference on Population and Development (ICPD), convened in Cairo in September 1994 under the auspices of the United Nations, has changed the focus of family planning programs forever. Earlier, most of the countries that launched national programs of family planning did so with the intention of reducing the fertility levels and growth rates of their population. This was the main objective of family planning programs in developing countries. According to the recommendations contained in the Program of Action adopted at the end of the Cairo conference, family planning programs are to be viewed as part of the reproductive health activities of the State enabling couples to have their children as they desire in timing and number, and not as policy instruments of Government to reduce or manipulate the aggregate levels of fertility (United Nations 1995). The Cairo document recommends that all population programs including family planning programs should aim at respecting individual rights, women's right and reproductive rights and enhancing gender equality. Fertility reduction at the aggregate level is to be viewed as a by-product of meeting the unmet needs of couples for spacing and limitation and not to be pursued as a goal in itself at the macro level. The Government of India, which is a signatory to the Cairo document has followed up on the recommendations by abolishing all contraceptive acceptance-targets and fertility goals from April 1996.

In the context of persistently high rates of population growth in developing countries, doubts have been raised whether the switchover from a fertility-reduction oriented family planning program to a reproductive-health oriented and meeting-unmet-needs based program of contraceptive services will lead to a slowdown in the pace of fertility decline and ultimately aggravate the population problems and developmental issues in these countries. In this article, an attempt is made to partly answer this question and

suggest a reorientation of the program strategy so that they will simultaneously meet the micro-level needs of couples and the macro-level objective of fertility reduction simultaneously in an efficient manner.

Birth-Based Approach: The Recommended Strategy

The recommended strategy in the new paradigm is the birth-based approach to family planning program, in which efforts will be made to identify all pregnant women and recently delivered mothers and provide services to them. Such an approach will form an essential component of the reproductive health program, in which every pregnant woman in the population is contacted before the second trimester of pregnancy and is followed up with essential postnatal care services including physical check-up, immunization, and nutrition supplementation; provided with skilled attention at the time of delivery either at home or in an institution; and rendered post-natal maternal and infant care services. Contraceptive services are offered to such women as part of the post-natal care services to facilitate proper spacing of births so that their health is restored after maternal depletion, and the children's growth and nutrition is ensured. The mother is advised about proper spacing between births and avoiding childbearing in high risk stages of their life (at ages and in their life cycle when the risk to their health is minimum and the survival chance of the child is high). In short, the mothers are advised against "too early, too frequent, and too many" children as a part of protecting their reproductive health. The birth-based approach is essentially same as the post-partum approach traditionally advocated in the family planning program in developing countries, with the main difference that all women who have recently delivered children, irrespective of place of delivery, are followed up with postnatal care and contraceptive services. There is selective targeting of the program to currently pregnant women (CPW) and recently delivered mothers (RDM) rather than on all eligible couples with the wife in the age range 15-44, as in the conventional family planning program .

In this birth-based approach the target group to be served will be pregnant women and recently delivered mothers; the contraceptive services program will be geared to meet the needs for spacing and limitation of this group of mothers. In India, the peripheral female health worker, the Auxiliary Nurse Mid-wife (ANM), is the key functionary involved in reproductive health and family planning programs and usually serves a population of 5000. In this population there will be approximately 120 CPW and 160 RDM at any time, assuming a crude birth rate of 32 in the population. In the birth-based strategy, services need to be provided to these 280 women and their children; as soon as the basic services are provided to them they can be considered to have graduated from the minimum service list and new entrants can be added. In the conventional approach to family planning, the services are expected to be provided to all the currently married

women in the reproductive ages, which will number about 800. Thus, the birth-based approach is practically more feasible from the point of view of the workload of the peripheral workers.

Earlier studies on the impact of a birth-based approach to family planning programs revealed that recently delivered mothers are self-selected for high fertility not only in the past but also in the future, and providing contraceptive services to them will have a greater impact on fertility (Srinivasan and Freymann 1989). A given duration of couple-years of contraceptive use will prevent more births when adopted by, recently delivered mothers (after they have resumed menstruation) than when used by a random sample of currently married women in the reproductive periods of their life. Though at the outset it may appear that we are trying to provide family planning services to mothers after the children are born and not preventing the births before they are conceived, it can be empirically established that not only is the acceptance of contraceptive methods among the recently delivered mothers likely to be higher-because the extent and intensity of need for spacing and limitation are likely to be higher among them-but also that, since such women are self-selected for higher fertility, the impact on fertility of a given duration of contraceptive use will be higher.

In this article we attempt to empirically test from data available in a large scale sample survey two hypotheses: that the unmet needs of contraception for spacing and limitation are relatively higher among recently delivered mothers than among all women of comparable age and parity, and that recently delivered mothers are self-selected for their higher fertility. Data from the recently conducted National Family Health Survey (NFHS) in India is utilized for this purpose. In general the shifting of the target setting from the earlier focus on achievement of nationally stipulated fertility reduction goals to a focus on the coverage and quality of MCH services and responsiveness to consumer demand are examined in this analysis. Such a family planning program will be more humane while meeting the contraceptive needs of the most needy group of women in a population, and will have a higher impact on fertility.

Methods

The data set used for the present paper comes from a large scale sample survey conducted in different states of India under the title "National Family Health Survey (NFHS)" by the International Institute for Population Sciences, Bombay (IIPS), with the financial assistance of USAID during 1992-93. The data collection for the NFHS was undertaken by consulting organizations in India in collaboration with the concerned Population Research Centers (PRCs) in each state under the overall coordination of IIPS,

Bombay. The sample design adopted for the NFHS is a systematic, two-stage stratified sample of households. From each ever-married woman in the age group 13-49 in the sample households, detailed information on age at marriage, birth history and use of various family planning methods was gathered (International Institute for Population Sciences 1995). The testing of the two hypotheses mentioned above was done on the data collected in the NFHS for the States of Kerala, Tamil Nadu, Madhya Pradesh and Uttar Pradesh. These four states were selected because they represent the extremes of fertility levels and contraceptive use in the country. The crude birth rates of these state in 1994 were 17.3, 19.0, 32.8 and 35.4 (Sample Registration Bulletin 1996) respectively; the percentage of married women in age 15-44 using contraception in 1993 was 53.4, 54.5, 37.9 and 33.2 (Ministry of Health and Family Welfare 1994) respectively. The survey work in Uttar Pradesh was carried out between 10 October 1992 and 22 February 1993. A representative sample of 11,438 ever-married women in the age group 13-49 were interviewed from the 10,110 sampled households (PRC, Lucknow and IIPS 1994). In Madhya Pradesh, the survey work was conducted between 13 April and 3 August 1992 and information was gathered from a representative sample of 6,254 ever-married women aged 13-49 of 5,857 sampled households (PRC, Bhopal and IIPS 1995). The NFHS in Kerala was conducted during October 1992 and February 1993, and information was collected from a representative sample of 4,332 ever-married women aged 13-49 from 4,387 households (PRC, Thiruvananthapuram and IIPS 1995). Similarly, in Tamil Nadu, the survey work was carried out during 18 April and 28 July 1992, and data, were collected from a representative sample of 3,948 ever-married women in the age group 13-49 from 4,287 sampled households (PRC, Ambathurai R.S. and IIPS 1994). A more detailed description about the survey design, data collected and findings from the analysis can be obtained from the NFHS reports of the respective states.

The NFHS collected information on a wide array of variables on birth history, contraceptive use, child health and survival, expressed need for spacing and limitation of ever-married woman, and socioeconomic conditions of household. For the purposes of our analysis on the fertility impact, information on selected variables was sorted out for each currently married woman in the age 15-49 and transferred to a separate file in the computer. In the first stage of analysis, we identified from the birth history data whether or not the currently married women had given birth to a child in the reference year 1986, at least six years before the survey. Subsequently, the number of births to them during the five-year period following the reference year, 1987 to 1991, was computed from the same data set. The women are also classified into two categories according to their experience of contraception, as "never users" and "ever users". The parity attained by the women in the reference year is also computed and is used as a demographic control variable. The educational level of the women and the number of household objects owned are used as social and economic control variables in the present analysis. Similarly, the sex and survival status of the last child born in or before

the reference year are also used as control variables on gender preference and child survival. The main purpose of the analysis is to compare the fertility over the subsequent five year period, 1987 to 1991, of those mothers who had a birth with those who had no birth in the reference year, 1986, and validate our hypothesis that the former have a significantly higher fertility than the latter, even after controlling for the demographic, socioeconomic, gender and child survival factors. The women selected for the analysis were those married in or before the reference year 1986 and remained married till the survey date.

The methods of analysis adopted in studying the differentials in fertility in the five-year period 1987-1991 of those with a birth in 1986 and those without a birth in 1986 are (a) comparisons of the average number of children born to these two group during 1987-1991, sub-classified by contraceptive use, educational status, economic status; and survival status of the child, variables that are known to influence the fertility behavior; (b) parity progression ratios of the two groups or the proportion of women in a given parity in 1986 who progress to the next parity by the end of 1991; and (c) comparison of regression coefficients of selected predictor variables on the fertility behavior of those with or without a child in 1986, using a multiple regression equation.

In the regression equation we have used, the dependent variable is the number of births in the period "t+1" to "t+5" (B). The predictor variables include the dummy variables X1 (Delivery status, defined as 0, no birth in year 1986, and 1), X2 (Ever use of contraception, defined as 0 for never users, 1 for ever users), X3 (Sex of the last child on or before 1986, defined as 0 female, 1 male), X4 (Survival status of the last child on or before 1986, defined as 0 died, 1 survived), and discrete variables X5 (Parity achieved at the reference year), X6 (Educational level of women, in years of schooling) and X7 (Number of household objects owned). The equation used was

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$$B=a+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7 \dots(1)$$

For the purpose of control we can substitute the averages of the variables across the sample on all the other predictors X2, X3, X4, X5, X6, and X7 in the equation and compare the expected values of B with X1=1 and X1=0.

In the second stage of the analysis with regard to the unmet need for family planning, we essentially used the following variables from all the currently married women aged

15-49 with at least one child. The concept of "unmet need" used here is basically the same as the definition given in the NFHS reports: mothers who do not want any more children, ever or for the next two years, but who are not using contraception. Adjustments are made for women who are currently pregnant or in the period of lactation amenorrhea, as given by Westoff (1988). Women considered to have an unmet need are those who are fecund and wish to postpone their next birth, or who wish to avoid any further childbearing but are not practicing contraception. Women who are currently pregnant or amenorrheic are classified as being in need if they report that their pregnancy was unintended (either unwanted or mis-timed). (Westoff and Ochoa 1991)

A currently pregnant woman is considered to have an unmet need to space births (US) if she states that the pregnancy was mis-timed; for an amenorrheic woman if she reports that her last birth was mis-timed; for a woman who is fecund, not pregnant or amenorrheic, and not currently using any contraception, if she says that she wants to wait two or more years for the next birth. A fecund woman is defined as one who has resumed menstruation after her last birth and whose open interval is less than five years. Similarly, a pregnant women is said to have an unmet need to limit (UL) if she reported that the pregnancy was unwanted: for an amenorrheic woman if she said that her last birth was unwanted; for a woman who is fecund and not pregnant or, amenorrheic who is not currently using any contraception if she reported that she want no more children. The variables used are the current use of contraception, pregnancy status, amenorrheic status, menstruation status, desire for additional children and the timing desired if wanting another child. In the case of pregnant women, the variable used is the desired timing of the current pregnancy. For amenorrheic women the variable used is the desired timing of the last child. In order to compute the unmet need we have to identify whether the woman is fecund or infecund. This is identified by examining the menstruation status, last menstrual period, open birth interval and current use of contraception. The control variables used for adjusting the unmet need for family planning are the educational level, parity, sex and survival status of the last child. In addition to this we have identified the recency in birth whether the child is delivered within one year preceding the survey or before that.

The method of analysis included comparison of the level, of unmet need for spacing and limitation, between the two groups of women-those who had a birth within the last twelve months and those who did not have a birth within the last twelve months-without adjustment for any control variables, and again after adjustment of the control variables of parity, educational level of the woman, sex and survival status of the child. The dependent variables are the unmet need to space (US) and unmet need to limit (UL), and are of binary type. We carried out a logistic regression of US and UL with five predictor variables: educational level of the women (X6), sex of the last child (X8),

survival status of last child (X9), parity (X10), and the timing of delivery (X11). Education and parity are considered as numerical values. The other variables are considered as dummy variables X8 as 0=female, 1=male; X9 as 0=died, 1=survived; X10 as 0=last birth within one year preceding survey date and 1=more than one year before the survey date and X11 as 0=more than one year before the survey date and 1=more than one year before the survey date. The logistic regression equations used for US and UL are given as:

$$P(\text{US/UL}=1) = e^{\mu + \beta_1 X_7 + \beta_2 X_9 + \beta_3 X_{10} + \beta_4 X_{11} + \beta_5 X_{12} + \beta_6 X_{13}} / 1 + e^{\mu + \beta_1 X_7 + \beta_2 X_9 + \beta_3 X_{10} + \beta_4 X_{11} + \beta_5 X_{12} + \beta_6 X_{13}} \dots (2)$$

The averages of the variables across the sample are substituted for the predictors of X6, X8, X9, X10, and X11 in order to obtain the adjusted values. The adjusted values for women according to the timing of delivery is obtained by taking X11=0 and X11=1 in the said equation.

Results

The data pertaining to the currently married women in the sample households in the four Indian states were first analyzed with the objective of comparing the number of children born to women who gave birth to a child in reference year "t" (the group called BYt) with those who did not give birth to a child in year "t" (denoted by NBYt) during the following five year period "t+1" to "t+5". In the first stage, this comparison was made separately for women who ever used contraceptives and who never used contraceptives, without the controls to make gross comparisons. Table 1 presents the findings.

TABLE 1 : Percentage of excess fertility among women with birth in reference period "t" and with no birth in year "t" over five years (t+1) to (t+5) for Kerala, Tamil Nadu, Madhya Pradesh and Uttar Pradesh

State & Contraceptive use status	Mean number of births per woman in five years (t+1) to (t+5)				
	Reference year "t"	With birth in year "t"	With no birth in year "t"	Combined	% Excess fertility

Kerala	1986	0.8889	0.5249	0.5759	40.95
Never user		(72)	(442)	(514)	37.88
Ever user		0.6254	0.3885	0.4123	38.88
Combined		(315)	(2108)	(2423)	
		0.6744	0.4122	0.4250	
		(387)	(2550)	(2937)	
Tamil Nadu	1986	0.8113	0.4760	0.5131	41.33
Never user		(106)	(853)	(959)	37.26
Ever user		0.7388	0.4635	0.5083	38.26
Combined		(291)	(1495)	(1786)	
		0.7582	0.4681	0.5101	
		(397)	(2348)	(2745)	
Madhya Pradesh	1986	1.2139	0.9932	1.0474	18.18
Never user		(544)	(1670)	(2214)	42.86
Ever user		0.8269	0.4725	0.5500	29.71
Combined		(509)	(1818)	(2327)	
		1.0269	0.7218	0.7925	
		(1053)	(3488)	(4541)	
Uttar Pradesh	1986	1.2703	1.0912	1.1398	14.10
Never user		(1528)	(4103)	(5631)	33.42
Ever user		1.0203	0.6793	0.7639	19.82
Combined		(635)	(1924)	(2559)	
		1.1969	0.9597	1.0223	
		(2163)	(6027)	(8190)	

From Table 1 it can be seen that for Kerala, during the period 1987-91, a woman who gave birth to a child in 1986 (BY86 group) had on an average 0.6744 births in the subsequent five-year period 1987 to 1991, while a woman who did not give birth to a child in 1986 (NBY86 group) had 0.4122 births. Thus the BY86 group had an excess fertility of 38.9% over the NBY86 group. The results for the sub-groups of "never users" and "ever users" of contraception are also provided in the same table. Women who have given birth to a child in 1986 had in the subsequent five-year period significantly higher fertility than women who did not have a birth in the reference year. These differentials persist for "never users" and "ever users" of contraception when analyzed separately, since these two groups can be expected to have substantial differentials in their

potential fertility. For the "never users," this surplus fertility in Kerala was 41 percent; for the "ever users," it was 38 percent. In Tamil Nadu, the surplus fertility of BY86 over NCY86 group for "never users" was 41 percent and for "ever users" only 37 percent. Similarly, the surplus fertility for Uttar Pradesh was 14 percent and 33 percent and Madhya Pradesh, 18 percent and 43 percent for "never users" and "ever users" respectively. The results clearly imply that motivating women who had a birth recently to adopt contraception will have a greater impact on fertility. However, it is desirable to check whether the difference in the number of births during the period 1987-91 between the BY86 and NBY86 groups of women are statistically significant. A statistical test using binomial distributions for comparing the proportions of number of births per woman per year indicated highly significant differences between BY86 and NBY86.

The differential fertility experiences of BY86 and NBY86 groups during the five-year period 1987-91 are also observed from the respective parity progression ratios for these groups of women. The parity progression ratios during the five-year period is provided in the Table 2. It can be seen from the table that the progression to higher parity is also significantly higher for the BY86 of women in all the states.

TABLE 2 : Parity progression ratios during the five year period (t+1) to (t+5) for currently married women with birth or no birth in year "t" in Kerala, Tamil Nadu, Madhya Pradesh and Uttar Pradesh

Parity	Kerala		Tamil Nadu		Madhya Pradesh		Uttar Pradesh	
	With birth in 86	With no birth in 86	With birth in 86	With no birth in 86	With birth in 86	With no birth in 86	With birth in 86	With no birth in 86
1-2	0.8609	0.7296	0.8702	0.6176	0.8672	0.7240	0.9076	0.8356
2-3	0.3306	0.1822	0.6000	0.3154	0.7940	0.5737	0.8380	0.6688
3-4	0.3906	0.0743	0.3889	0.1699	0.6105	0.3794	0.8181	0.5217
4-5	0.4545	0.0850	0.3000	0.1614	0.5862	0.2294	0.6981	0.4495
5-6+	0.4000	0.1309	0.2542	0.0586	0.5659	0.2151	0.6702	0.3266

It may be argued that women who give birth to a child in a given year, the BYt group, are likely to be of lower parity and hence more fecund and fertile than the other NBYt group. In a birth-based approach it is necessary to control for selected variables, as

indicated in the previous section, using the multiple regression equation given in (1). Table 3 provides the adjusted values of the number of births in the period 1987-91 for the BY86 and the NBY86 groups controlling for all the predictors.

TABLE 3 : Average number of births per married woman over a period of five years (t+1) to (t+5), with birth or no birth in year "t" for Kerala, Tamil Nadu, Uttar Pradesh and Madhya Pradesh

State	With birth in year 1986 (t)			Without birth in the year 1986 (t)			% Excess fertility		
	E	N	C	E	N	C	E	N	C
Kerala	0.6254	0.8889	0.6744	0.2565	0.4803	0.2875	58.99	45.97	57.37
Unadjusted Mean	0.5695	0.8281	0.6072	0.2617	0.5203	0.2994	54.05	37.17	50.69
Adjusted Mean ^C (Adj R=-0.1494)	(315)	(72)	(387)	(1891)	(304)	(2195)			
Tamil Nadu	0.7388	0.8113	0.7582	0.3385	0.3263	0.3347	54.18	59.78	55.86
Unadjusted Mean	0.6870	0.6278	0.6690	0.3704	0.3112	0.3542	46.08	50.43	47.05
Adjusted Mean ^C (Adj R=-0.2032)	(291)	(106)	(397)	(1368)	(619)	(1987)			
Madhya Pradesh	0.8269	1.2139	1.0269	0.3901	0.9004	0.5867	52.82	25.83	42.87
Unadjusted Mean	0.7794	1.1257	0.9252	0.4791	0.8255	0.6250	38.53	26.67	32.45
Adjusted Mean ^C (Adj R=-0.2108)	(509)	(544)	(1053)	(1710)	(1072)	(2782)			
Uttar Pradesh	1.0203	1.2703	1.1969	0.5695	0.9964	0.8403	44.18	21.56	29.79
Unadjusted Mean	0.9710	1.2170	1.1326	0.7080	0.9540	0.8696	27.08	21.61	23.22
Adjusted Mean ^C (Adj R=-0.1768)	(635)	(1528)	(2163)	(1748)	(3032)	(4780)			

Among the "ever-users," even after adjustment for all the four characteristics of the women and their households and the two characteristics of the sex and survival status of the last child, the excess fertility was as high as 54 percent in Kerala, 46 percent in Tamil Nadu, 39 percent in Madhya Pradesh and 27 percent in Uttar Pradesh. Among the "never users", the maximum excess fertility was 50 percent in Tamil Nadu, 37 percent in Kerala, 27 percent in Madhya Pradesh and 22 percent in Uttar Pradesh. Thus, we see that the BY86 group has on an average about 30 percent higher fertility during the period 1987 to 1991 in comparison to the NBY86 group of women, and this excess is not due to the demographic characteristics of the women (parity), their socioeconomic characteristics, their education, the economic condition of the households assessed in terms of modern objects owned, or the sex and survival status of the children born most recently. This indicates that protecting women who have given birth to a child in year "t" over a one-year period subsequent to delivery (obviously after resumption of menstruation) will contribute to about 30 percent higher impact in terms of births averted than one year of use from a similar group of women who have not given birth, even after controlling for other characteristics. These data clearly reveal the excess of potential fertility of recently delivered mothers and their self-selection in terms of higher future fertility, even under varying fertility conditions. The statistical test using the proportion of number of births per woman per year under binomial distribution suggests that the differences are highly significant for all the states as well as the never- and ever- users of contraception, even after controlling for demographic and socioeconomic variables.

As mentioned earlier, the second objective of the present paper is to test the hypothesis that the women who had delivered recently have a higher unmet need for family planning. We have empirically shown in the previous section that the women who had a birth in the reference year (BYt) leave a significantly higher fertility than the women who had no birth (NBYt). We would now like to know whether such women are more likely to accept contraception than the other group. For comparing the unmet need, we first classified the currently married women in the age 15-49 into two groups: those who have delivered a child within one year before the survey and those who have delivered one year or more preceding the date of survey. In the next step we computed the unmet need for spacing (US) and limiting (UL) for these two groups of women separately. The results thus obtained are provided in Table 4.

TABLE 4 : Unmet need for family planning by the timing of last birth for Kerala, Tamil Nadu, Uttar Pradesh and Madhya Pradesh

State	Last birth occurred from the survey date
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	< 1 year		1 and above		Total	
	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted
Kerala	23.6	11.8	5.5	3.6	7.4	4.1
Unmet need to space	7.0	7.3	4.3	4.0	4.6	4.3
Unmet need to limit	30.6	19.1	9.8	7.6	12.0	8.4
Total	(385)		(3203)		(3588)	
Tamil Nadu	24.0	10.2	5.9	3.3	8.1	3.8
Unmet need to space	14.8	16.0	6.7	6.4	7.7	7.2
Unmet need to limit	38.8	26.2	12.6	9.7	15.8	11.0
Total	(391)		(2835)		(3226)	
Madhya Pradesh	19.6	17.5	9.5	10.6	11.5	11.7
Unmet need to space	11.2	11.6	8.0	6.4	8.7	7.2
Unmet need to limit	30.8	29.1	17.5	17.0	20.2	18.9
Total	(1015)		(4142)		(5158)	
Uttar Pradesh	25.2	17.3	12.8	10.3	15.5	11.6
Unmet need to space	14.5	14.8	14.7	12.2	14.7	12.8
Unmet need to limit	29.7	32.1	27.5	22.5	30.6	24.4
Total	(2112)		(7541)		(9653)	

Adjusted for the effect of parity, educational level of women, sex and survival status of the last child.

In respect to the unmet need for spacing, data from all four states analyzed for the present study show that the recently delivered mothers have a higher unmet need than the mothers of older children. The unmet need to limit is higher in the case of the women, who delivered recently, except in the state of Uttar Pradesh. The test for unmet

need suggests that the women who had recently delivered a child have significantly higher US and UL as compared to the other group of women.

As said earlier, it is necessary to control the effects of the correlates for making valid comparison between two groups. This was done using the logistic regression given in equation (2) above. The results are given in Table 4 in the columns on adjusted values. The adjusted values reveal that the unmet need for spacing and limitation for the group that had delivered a child within the past twelve months and those that did not are significantly higher even after controlling for demographic and socioeconomic variables. In Madhya Pradesh the unmet need to space among the recently delivered mothers, even after controlling for the selected factors, was 17.5 percent compared with 9.5 percent among others; for limitation the unmet need is 11.6% compared to 6.4%. The recently delivered mothers have reported a higher level of unmet need for spacing and limitation of births compared to others even after necessary controls.

Discussion

In recent years, there is an emerging view within India, globally endorsed at the international Conference on Population and Development at Cairo (ICPD) in 1994 and strongly advocated by women's movements throughout the world, that family planning programs should no longer be considered as public intervention programs for reducing the macro level of fertility of the populations of developing countries, but only as part of a set of wider reproductive health measures undertaken for improving the health and well-being of women and for safeguarding their reproductive rights. In this context there is an apprehension raised mostly by planners, demographers and environmentalist: that such an approach to family planning may slow down the decline in fertility levels, contribute to larger additions to the populations of already overpopulated developing countries, and cause enormous human hardships. Such apprehensions have been raised in India, especially with the abolition of family planning acceptor targets by the central government from April 1996.

In this changed paradigm, an alternative approach to family planning programs, called the "Birth-Based Approach," is recommended. It is defined in a manner consistent with the reproductive health approach and in this article has been tested for its effectiveness in terms of motivational superiority for contraceptive acceptance and effectiveness in terms of fertility reduction. This approach is the same as the conventional post-partum approach, with the exception that all pregnant women in a population are to be registered for postnatal care and services by the second trimester of pregnancy, provided with skilled attention at the time of delivery, given essential post-natal and

infant care services after the delivery, and offered contraceptive services to meet her needs for spacing and limitation of births. There is thus a selective targeting of contraceptive services and maternal-child health services to pregnant women and recently delivered mothers. The program can be promoted as an integral part of a "healthy-birth" campaign. In terms of workload of the peripheral worker, the Auxiliary Nurse Midwife, this approach will reduce the number of women to be contacted and served and make the midwife's work program more focused.

We compared the differentials in the level of unmet need for family planning for spacing and limitation among such recently delivered mothers vis-a-vis other married women, as well as the likely impact on fertility of such a program when it is confined to recently delivered mothers. We used the data available from the National Family Health Survey (NFHS) for four states, Kerala, Tamil Nadu, Madhya Pradesh and Uttar Pradesh, in 1992-93. These four states represent the wide range of fertility and contraceptive practice prevailing among various states in India, with Kerala and Tamil Nadu having low TFRs, 2.0 and 2.5 respectively, and Madhya Pradesh and Uttar Pradesh having high TFRs, 3.9 and 4.8 respectively, during 1990-92 as per the survey. The availability of information on a wide array of variables including birth history and unmet need for family planning facilitated such an analysis.

Using the survey data, we analyzed each of the four states for level of unmet need for family planning, for spacing and limitation, and for fertility behavior of married couples categorized into two groups. Group 1 consisted of those women who had a child in 1986 (BY86) and Group 2 of women who were married before 1986 but who did not have a child in 1986 (NBY86). The number of children born to women in the subsequent five-year period, 1987 to 1991, were compiled for each group and analyzed using multivariate techniques. The BY86 group was found to have a significantly higher number of children born per woman in the next five-year period, 1987 to 1991, compared to the NBY86 group. There was about thirty percent excess fertility for the BY86 group compared to the NBY86 group, and this differential persisted even after controlling for the five covariates (parity, education of the mother, standard of living in the household and child-related factors, sex of the last child and survival status of the child). This was also found to be true for the "never users" and "ever users" of family planning methods considered separately. Obviously the BY86 group, representative of mothers who has given birth to a child in the year 1986, has substantially higher fertility in the subsequent five-year period than those who have not given birth to a child in that year. They have higher potential fertility and hence any contraceptive use by these couples will have a greater impact on fertility than the same extent of use by those who have not recently delivered.

Similarly, the level of unmet need for spacing and limitation for women who had delivered a child within the previous 12 months was compared with women who had delivered earlier, and it was found that the former group had more than twice the level of unmet need of the latter group. The increased level of unmet need of the recently delivered mothers over the less-recently delivered ones persisted even after controlling for the five factors mentioned above. The differences statistically were highly significant.

These findings suggest that in many states in India, irrespective of the level of fertility and contraceptive use, mothers who have recently delivered are self-selected for higher fertility compared to others, and they have a much higher level of motivation to space and limit childbearing than the other women. Concentrating the maternal and child health services on them, and promoting family planning as a part of such services to them, is not only a humane approach to family planning but will also meet a higher level of unmet felt needs and have a higher impact on fertility for any given level of contraceptive use. The only target to be advocated in such an approach is to identify all pregnant women in the population and offer them the basic maternal and child health services-including methods of spacing and limitation-that they desire. There is one group of women who are not likely to be covered by contraceptive services in this approach: women who are recently married and who have not yet become pregnant. In Indian culture, married women are expected to bear a child as early as they can after marriage and use of contraception before the first pregnancy is not socially and culturally accepted. The use of any contraception by this group is negligible. Hence omission of this group in the birth-based approach may not be a serious omission in terms of fertility impact.

This approach has potential advantages not only in terms of motivational strategies and higher fertility impact, but also on shifting the modes of monitoring and program evaluation on the basis of characteristics of births occurring in the population. The denominator of all the indicators used-such as births where the mother was well nourished, births of order 4 and above, births to younger and older mothers, births with adequate spacing (more than 3 years from the previous birth or marriage)-can all be related to the total births. In the current system of evaluation, such as the contraceptive prevalence rate, the indicators are based on all women in the reproductive ages; the birth-based approach will help shift the focus of attention to births in the population. Using live births or various measures of "healthy births" may serve as a more positive indicator for promoting local interest in and demand for family welfare/ health services.

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