<u>Extended Abstract</u>

A Retrospective Cohort Analysis of Family Planning Behaviour in India

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Introduction

India is the first country to adopt the family program in 1952, since after government tried to decrease the fertility levels but still it is the second largest populous country in world today. Although the studies of time trends in family planning (FP) behaviour are common, the number devoted to cohort analysis is small, and most of these have been of post transitional societies. The findings of cohort studies of family planning behaviour in developed countries uniformly reveal a steady increase in the ever-use of contraception since early in the twentieth century among successive birth and marriage cohorts. In the United States, Britain, and Australia, ever-use rates attained very high levels (over 70 percent) for all cohorts by the 1950s. Among cohorts that began contraception in the 1960s, ever-use reached 80-90 percent within a few years of marriage. This acceleration has been uniformly attributed to increased contraception prior to the first birth and to the introduction of oral contraceptives. Narrowing social group differentials have accompanied these trends.

Cohort studies of family planning behaviour appear to have been completed in only two developing nations, Nigeria and Turkey. In Nigeria, Caldwell and Igun examined the geographical and chronological spread of antenatal knowledge and practice. The transitional period, when knowledge and use of contraceptives first spread to significant numbers of urban women, occurred during the late 1950s and early 1960s. Levels of family planning ever-use by given points in time are only one index of family planning behaviour. Therefore, it is also important to examine changes in rate of adoption of FP over time to determine if and where discontinuities exist. Examination of change over time allows us to look for both period effects and cohort effects. So, we have examined changes in levels of ever- use of FP (contraception, abortion and sterilization) over time and assess impact of martial behaviour.

Data Source and Methodology

We conceptualize the transition in the control of marital fertility as a process that begins with minimal levels of birth control and terminates when such efforts are nearly universal. Further, this transition takes place both within and across marriage cohorts. Thus, we will be concerned with the cohorts in which given behaviors first occur and both the stage in the marriage history and the period in India history at which they take place.

The data from four rounds of National Family Health Survey (NFHS), India conducted in 1992-93, 1998-2000, 2005-06 and 2015-16, was pooled to construct marriage cohorts. Twelve consecutive marriage cohorts were made from 1957 to 2016. Total sample of ever married women of ages 15-49 years was 7,49,102. A trend analysis was performed on cohorts married after 1957 to determine if they will ultimately attain ever-use of family planning levels. Cochran-Mantel-Haentzel (CMH) test has been used for trend analysis. Bivariate and multivariate analysis is done to understand the family planning behaviour by marital cohorts. Different background variables were considered while using multivariate technique such as state, place of residence, Women education level, Husband education level, religion, caste, Wealth index and Duration of marriage to find the effect on family planning behaviour.

Results

Ever use of contraception has decreased across the marital cohorts. It is probably most of the women had not completed the reproductive span. While terminated pregnancy and Sterilization has decreased significantly. Ever- use of contraception ranged from 77 percent in the 1983-1986 cohorts

after 20-24 years of marriage to 60.3 percent in the 1999-2002 cohorts after less than 15 years of marriage. It is unlikely that the youngest cohort (2003-2006), which just reached 31.6 percent contraception (as opposed to family planning) ever-use after less than 5 years of marriage. Ever-use of sterilization ranged from 67.9 percent for the 1983-1986 cohorts to 19 percent for the 1999-2002 cohorts. Very little sterilization occurred before women completed five years of marriage, but the operation became more common as women entered their 30s. Finally, ever-had terminated pregnancy ranged from about 12 to 2 percent from the early to the recent cohorts. Results from logistic shows that Contraceptive ever-use has increased significantly, also terminated pregnancy and sterilization has reduced significantly over the period. It was also found that women had started using the contraception when they already had more the two living children and increased as the marital duration increases. The other results shows that most of the women had chosen the sterilization method when they already had more than two children which as increased along the marital cohorts.

Discussion

Taken as a whole, these findings indicate that the final stage of the Indian demographic transition is complete. India passed through the final transitional stage with revolutionary suddenness. As indicated by the high ever-use rates, the practice of family planning has almost totally overcome class barriers. Each cohort adopted family planning at a faster rate than the cohorts before it. Succeeding cohorts also began family planning earlier, both in terms of duration of marriage and in terms of number of living children. These cohort trends appear similar to those reported for developed nations. The cohort trends in adoption rates probably reflect qualitatively different cohort experiences. (The cohorts in this study span an era that began when India was a predominantly traditional society and closed when India was a mass industrial society. The typical experiences of earlier cohorts at a given age were different from the experiences of later cohorts at the same age.) Period effects were clearly evident in the family planning behavior of Indian couples and appear to be stronger than differences among cohorts. The period effect in India was probably produced by the rapid introduction of several modern methods of family planning by a national family planning program.Government has promoted several programs to increase the prevalence of contraceptive use.

Conclusion

The major conclusions that can be drawn from the literature are that contraceptive use is virtually universal in the English-speaking developed world and that the majority of women married since the 1950s begin to use contraceptives prior to the birth of their first child. The advent of oral contraceptives in the early 1960s appears to have played an important role in producing both phenomena. Unfortunately, there are not enough cohort studies of family planning in developing nations to permit generalization.

Strength and Limitation

The examination of the time trends in family planning behaviour among Indian women utilizes marriage cohorts rather than birth cohorts. Three primary reasons underlie this decision. First, the focus of the study is the use of family planning to control marital fertility. Second, evidence suggests that pre- marital use of birth control was infrequent in India for most of the study period. Third, the results of analysis of the behaviour of birth control cohorts would be difficult to interpret because they would be confounded with factors that selected for marriage at a specific age.

Marriage Cohorts	Ever Use any Contraception Method	Ever had a terminated pregnancy	Sterilization	Total Sample
1957-1961	42.4	24.9	42.0	3,125
1962-1966	49.7	23.4	48.5	9,057
1967-1971	55.3	22.6	53.2	16,446
1972-1976	56.5	22.1	53.5	26,145
1977-1981	54.5	20.0	50.4	42,126
1982-1986	52.2	17.7	47.9	75,416
1987-1991	49.9	16.2	45.1	1,06,839
1992-1996	52.3	17.2	46.7	1,07,428
1997-2001	51.9	17.4	45.2	1,06,021
2002-2006	46.6	17.3	39.1	97,166
2007-2011	32.9	15.8	23.9	93,282
2012-2016	12.6	8.1	8.2	66,051
Total	**45.6**	**16.8**	**39.9**	**7,49,102**

Ever Use any Contraception Method

Marriage Cohorts	Marital duration						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
1957-1961							42.4
1962-1966					0.0	50.3	48.6
1967-1971				100.0	55.7	54.1	56.5
1972-1976			0.0	53.8	58.5	59.3	55.6
1977-1981		100.0	46.5	57.1	59.2	58.7	54.8
1982-1986		27.9	49.2	57.8	62.6	58.9	57.4
1987-1991	9.3	31.5	49.8	63.0	61.3	60.2	
1992-1996	12.0	31.1	54.0	61.5	61.1		
1997-2001	9.1	36.9	58.2	59.5			
2002-2006	12.5	47.5	53.0				
2007-2011	25.4	35.7					
2012-2016	12.6						

Ever had a terminated pregnancy

Marriage Cohorts	Marital duration						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
1957-1961							24.9
1962-1966			0.0	0.0		24.34	21.7
1967-1971					23.2	22.6	20.9
1972-1976			0.0	23.0	23.1	21.7	18.7
1977-1981		0.0	20.9	23.0	23.6	18.0	13.2
1982-1986		17.2	23.0	23.2	19.5	14.0	14.4
1987-1991	9.2	18.7	22.0	21.7	16.0	15.2	
1992-1996	10.5	18.7	21.0	17.9	17.2		
1997-2001	8.4	18.5	18.4	18.1			
2002-2006	9.8	17.2	18.7				
2007-2011	13.0	16.8					
2012-2016	8.1						

Sterilization

Marriage Cohorts	Marital duration						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
1957-1961							42.0
1962-1966			0.0	100.0		48.9	47.8
1967-1971				100.0	52.9	51.9	56.0
1972-1976			0.0	49.4	55.0	57.2	55.0
1977-1981		100.0	40.2	50.9	55.1	57.2	54.2
1982-1986		19.6	41.0	51.2	59.7	57.2	56.5
1987-1991	2.0	21.3	41.0	58.1	57.9	58.0	
1992-1996	3.2	21.6	47.6	56.8	56.8		
1997-2001	3.5	28.8	50.8	53.1			
2002-2006	8.2	39.6	44.9				
2007-2011	15.1	26.8					
2012-2016	8.2						

Marriage Cohorts	Ever Use any Contraception Method	Ever had a terminated pregnancy	Sterilization
1957-1961			
1962-1966	1.66*	0.88*	1.05
1967-1971	2.62*	0.91*	1.02
1972-1976	3.41*	0.88*	1.04
1977-1981	4.16*	0.85*	1.1
1982-1986	4.07*	0.8*	1.05
1987-1991	3.6*	0.68*	0.95
1992-1996	3.79*	0.65*	1.05
1997-2001	3.91*	0.61*	1.23
2002-2006	3.65*	0.55*	1.47*
2007-2011	3.53*	0.62*	1.37*
2012-2016	1.6*	0.32*	1.4*

Controlled variable are State, Place of residence, Women education level, Husband education level, religion, caste, Wealth index and Duration of marriage, * shows that it is significant at 5% level

Marriage Cohorts	Atleast have 3 children	Wants more children
1957-1961	91.7	1.0
1962-1966	89.0	1.8
1967-1971	87.3	3.5
1972-1976	83.8	6.3
1977-1981	77.3	9.7
1982-1986	66.9	13.1
1987-1991	53.2	19.3
1992-1996	48.4	16.7
1997-2001	42.2	18.4
2002-2006	31.7	26.1
2007-2011	11.7	45.2
2012-2016	0.5	82.5
Total	43.9	25.9

Marriage Cohorts	Ever use of contraceptive			
	1	2	3	4
1957-1961	42.6	37.5		
1962-1966	49.3	51.1		
1967-1971	55.3	56.0	54.3	
1972-1976	54.7	59.5	57.1	
1977-1981	48.6	59.3	58.9	49.8
1982-1986	31.9	55.1	61.3	53.4
1987-1991	12.8	41.3	62.0	55.6
1992-1996	3.8	20.9	53.9	57.2
1997-2001		5.6	36.9	55.6
2002-2006			15.4	48.2
2007-2011				30.4
2012-2016				12.6

Marriage Cohorts	Parity at Sterilization		
	0-2	3-4	5+
1957-1961	4.52	28.52	66.95
1962-1966	6.57	36.69	56.74
1967-1971	8.3	43.91	47.78
1972-1976	11.64	53.63	34.73
1977-1981	19.14	56.83	24.03
1982-1986	26.18	54.74	19.08
1987-1991	35.56	49.47	14.97
1992-1996	43.25	46.17	10.59
1997-2001	51.13	42.52	6.35
2002-2006	62.55	35.42	2.03
2007-2011	80.71	19.01	0.28
2012-2016	83.76	14.54	1.7
Total	39.49	45.55	14.96