

Towards an Explanation of India's Fertility Transition

GEORGE SIMMONS MEMORIAL LECTURE

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INTRODUCTION

The twentieth century has been witness to remarkable changes in India's society, polity, and economy. The country became independent of foreign rule, there was economic development, and the society changed in many ways. The demographic transition also began and reached a level near completion during the century. While secular mortality decline began during the first quarter of the century, fertility decline followed with a lag, as normally happens, and by the end of the century the transition was at an advanced stage. The change from moderately high fertility, nearly unregulated within marriage, to fairly regulated low to moderate fertility has been impressive and has implications for the society, the economy, and broadly, livelihoods of the people of India. But the passage of the transition has not been smooth. Soon after the middle of the twentieth century, there was concern about India's rapid population growth as that of the developing world as a whole since substantial mortality decline had occurred but fertility continued to be at a fairly high level thereby causing high population growth. India experienced annual growth rates exceeding two percent for quite some time. Soon after independence, a population programme was introduced by the government primarily aimed at reducing fertility. But initially hardly any change in fertility was seen. In public debates, rapid population growth on account of high fertility was frequently cited as the principal hindrance to improving levels of living and overall development. There were apprehensions of food shortages and starvation and India did suffer from such shortages from time to time, the 1965-67 drought being the most damaging. This created a strong neo-Malthusian atmosphere and the family planning programme was strengthened. But high fertility was blamed on lack of development and apprehensions were expressed about the success of population programmes in the then socioeconomic setting (Davis, 1971). Forecasts of doom were commonly made in the 1960s and 70s. Drastic steps such as compulsory sterilisation were called for to curb fertility and come out of the vicious cycle of low development causing high fertility and in the opposite direction high fertility

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and population growth impeding development. India did take a position at Bucharest supporting development as the best contraceptive. But soon, in 1976, the programme was intensified stating that one cannot wait for development to take effect. This resulted in the emergency period disaster and the programme received a setback. The population programme continued on low key without much political support. By then some fertility decline was observed but further progress was uncertain and for some time in the 1980s stagnation was seen; hardly any rise in contraceptive use and no decline in fertility. Again, there was a mood of despair and frustration. Yet, by the end of the decade, impressive fertility decline was seen in many parts of the country and soon this became widely pervasive, covering all parts of India and all sections of population though to varying degrees. Progress towards low fertility is by now well established throughout the country and achieved in about half. The results of the 2011 census (India, Registrar General, 2011a) that revealed that India's population growth rate has also fallen dispelled any doubts media and civil society had about fertility decline. There are now hardly any apprehensions of India's achieving transition to low replacement level fertility and most probably moving further to below replacement fertility. It is not easy to forecast when this would occur, that is, the timing, but the eventuality is taken for granted.

How did the changes take place? Did fertility decline because of economic development? There has been some mention of poverty causing fall in fertility. Or did the social changes bring in the transition? Diffusion of the innovative behaviour of fertility regulation has also been cited as a dominant factor in the transition. Moreover, India has long had a government population programme designed to bring about fertility decline. A number of research studies have addressed the various factors that have plausibly contributed to the fertility transition in India and in various regions of the country; these included analyses based on data from the census and the Sample Registration System (SRS), national and state level surveys like the National Family Health Surveys (NFHS), the National Sample Surveys, the Mysore and Bangalore Population Studies, the Karnataka and Kerala Fertility Surveys, the South India Fertility Study, surveys in some large cities, localized fertility surveys and micro-investigations. This paper looks at some (but by no means all) of these and makes an effort to see if a general explanation emerges. First, a brief account of the timing of the decline in fertility, the pattern, and spatial variations is presented and is followed by discussion of various explanations.

TRENDS IN FERTILITY

While it is generally accepted that fertility in India was high in the distant past, good estimates are not available as the vital registration system had not functioned well. But indirect estimates by census actuaries and demographers (Davis, 1951) show that at the beginning of the twentieth century the Crude Birth Rate (CBR) was in the range 45-50 per thousand. Estimates by the Registrar General show some fall in the 1940s but this is not corroborated by independent estimates by Bhat (1998) using the variable-r method according to which the CBR was just above 45 and the Total Fertility Rate (TFR) around 6 up to the 1950s, with only minor fluctuations (Fig.1). Applications of the modified Rele method by Rele (1987) and Ram and Ram (2009) also show the TFR to be around 6

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through the 1950s. Given that the TFR was just about 6, one could say that at the national level fertility was moderately high through the middle of the century (Fig. 2).

Table 1

Trends in Crude Birth Rate and Total Fertility Rate, India, 1901-2009

Period	CBR		TFR	
	Census based	Variable-r method	Rele's method	Variable-r method
1901-10	49.2	46.8	6.3	5.77
1911-20	48.1	46.0	6.6	5.75
1921-30	46.4	46.4	6.4	5.86
1931-40	45.2	46.6	5.8	5.98
1941-50	39.9*	45.4	5.6	5.96
1951-60	41.7	45.7	6.0	6.11
1961-70	41.1	40.9	5.9	5.72
	SRS estimates			
1971-75	35.6		5.0	
1976-80	33.4		4.5	
1981-85	33.6		4.5	
1986-90	31.4		4.0	
1991-95	28.9		3.5	
1996-2000	26.6		3.3	
2001-05	24.6		3.0	
2006-09	23.0		2.7	

CBR: Crude Birth Rate, per 1000 population;

CDR: Crude Death Rate, per 1000 population.

SRS: Sample Registration System

* Believed to be an underestimate.

Sources:

CBR: Census based: 1901-41: Davis (1951); 1941-71 by Registrar General cited in Rele (1982); Variable-r method: 1901-71: Bhat (1998); SRS estimates: 1971-2009: computed from Registrar General (2010a, 2010b, 2011b).

TFR: Rele's method: 1901-51: Ram and Ram (2009); 1951-81 Rele (1987);

Variable-r method: 1901-71: Bhat (1998); SRS estimates: 1971-2009: averages computed from Registrar General (2010a, 2010b, 2011b).

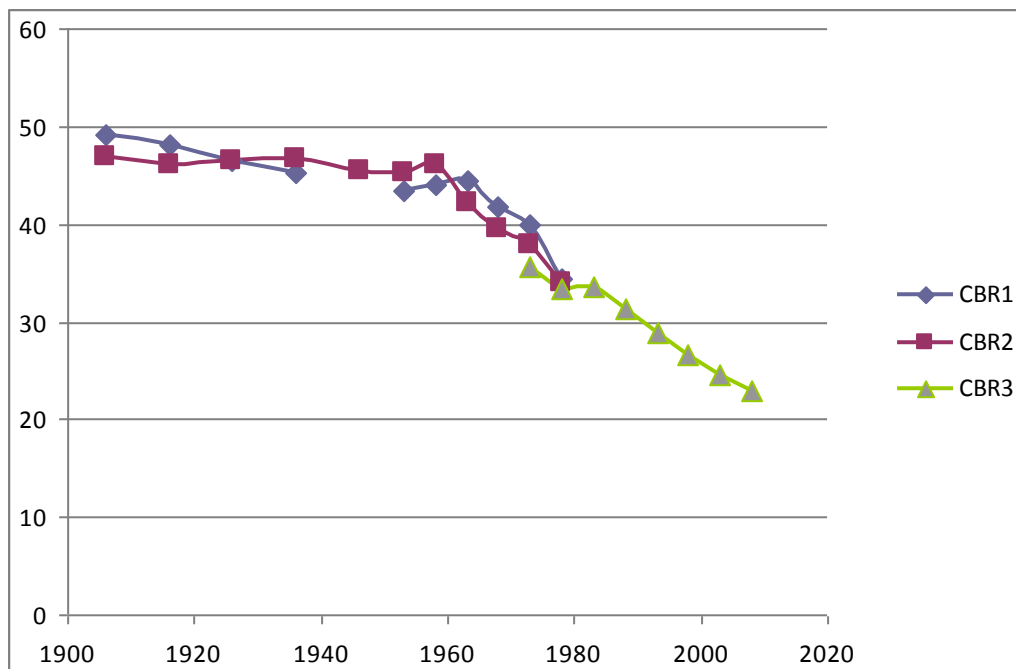


Fig. 1: Trends in Crude Birth rate, India, 1901-2009.

CBR1: Census based; CBR2: Variable-r method; CBR3: SRS based.
Source: Table 1.

During the 1960s, especially the late 1960s, some fall in fertility was evident. Fairly reliable direct estimates of fertility from the Sample Registration System are available since the 1970s allowing a detailed assessment of trends. The decade of 1970s saw perceptible fall in fertility, the CBR fell below 40 and the TFR below 5. While some under-registration cannot be ruled during the early phase of the SRS, as the census based estimates for this period are higher than the direct SRS estimates, the decline was clearly established. Fertility stagnated in the early 80s, but the decline resumed soon with the TFR falling below 4 points by the end of the decade. The decline was quite substantial throughout the country; the TFR fell by one full point and the CBR by five points between 1984 and 1993, the steepest decline seen in any ten-year period. Steady decline has continued ever since, with the CBR falling to 22.6 and the TFR to 2.6 in 2009.

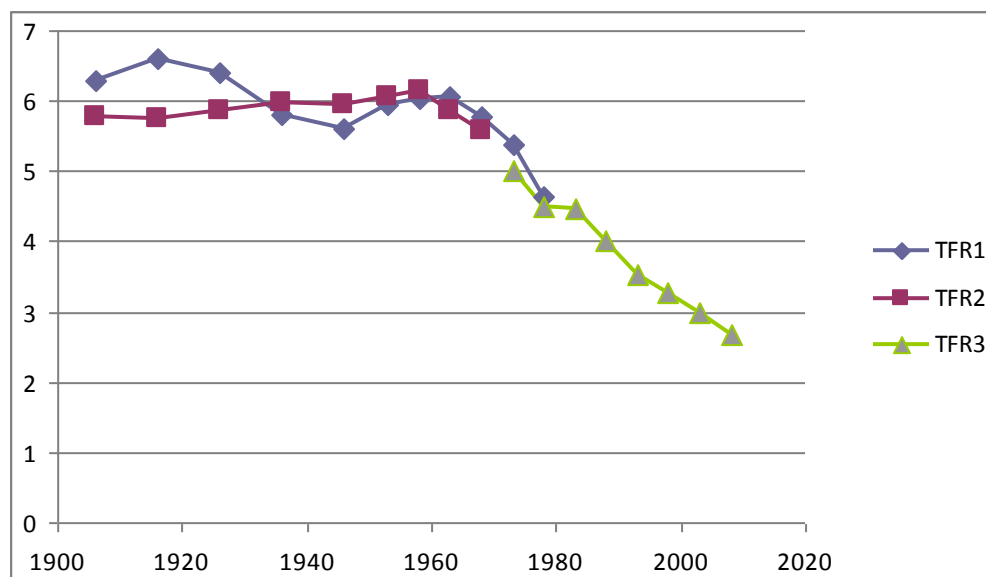


Fig. 2: Trends in Total Fertility Rate, India: 1901-2009.

TFR1: Rele's method Census based; TFR2: Variable-r method; TFR3: SRS based.
Source: Table 1.

Contribution to fertility decline came from both a rise in age at marriage and fall in marital fertility. But the latter has made a greater impact on fertility than the former. Between 1971 and 2009, TFR fell by 2.55 points, of which 0.58 points or only 23 percent may be attributed to the fall in proportions married and 1.97 points to fall in marital fertility. Age at marriage rose gradually, with the singulate mean age at marriage for females going up from 15.9 years in 1961 to 17.2 in 1971, 18.3 in 1981, 19.3 in 1991, and 20.2 in 2001 (Goyal, 1988; India, Registrar General, 2008). As fertility takes place mostly within marriages, the effect was felt primarily in lowering fertility in the 15-19 age group; percentage females never married in this age group rose from 29 in 1961 to 75 in 2001.

Marital fertility declined as contraceptive use increased. In the 1950s, contraceptive practice was negligible in India. Some of the early surveys, in Western Maharashtra (Sovani and Dandekar, 1953) and in the Mysore State (United Nations, 1961), revealed hardly any use of contraception. The family planning programme was introduced in India in 1951 and provided free contraception but acceptance was uncommon. The programme was strengthened in the 1960s, with the introduction of the extension approach, sterilization camps, incentives for contraceptive acceptance, and enhanced availability of contraceptive services through a large network of health centres. Yet, in 1970, only about 10 percent of couples of reproductive age used any contraception (ORG, 1971). The programme intensified during 1976, coinciding with the national emergency, and the acceptance increased. This raised contraceptive prevalence to over 20 percent. However, the backlash due to the emergency period excesses in family planning caused stagnation

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in contraceptive prevalence for some time. But after the mid-1980s, the upward trend in contraceptive prevalence resumed. Though the programme estimates show a plateau after the mid-1990s, independent estimates from surveys show quite clearly that the rising trend has continued. According to the three rounds of the National Family Health Survey (NFHS-1, NFHS-2 and NFHS-3) the prevalence of modern contraception rose from 37 percent in 1992-93, to 43 in 1998-99, and 49 in 2005-06 (IIPS, 1995; IIPS and ORC Macro, 2000; IIPS and Macro International, 2007). The contraceptive use has been dominated by sterilization.

CHANGE IN THE AGE PATTERN

During the course of the transition, the age pattern of fertility has changed substantially. First, an impressive fall has been seen in the young ages, especially 15-19. The ASFR for this age group declined from 101 per thousand in 1971 to 38 in 2009, that is, by 62 percent. This was entirely on account of rise in the age at marriage; the Age-Specific Marital Fertility Rate (ASMFR) remained almost constant through most of the period. Only a modest fall of 18 percent was seen in the 20-24 age group, mostly attributable to rise in the age at marriage. Large decline was seen in the 25-29 age group, nearly 40 percent and this was due to corresponding decline in marital fertility. Fertility at ages beyond 30 years of age fell sharply, by over 60 percent, and beyond 40 years, by over 80 percent. As a result, fertility is now highly concentrated in the 20s (Fig. 3).

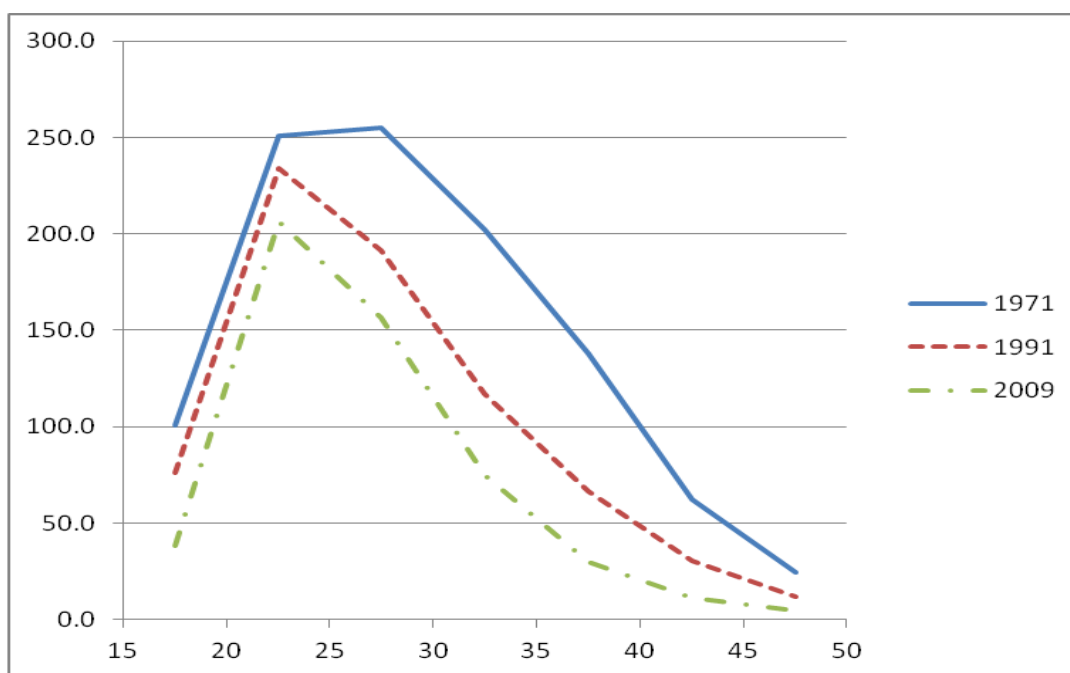


Fig.3: Change in the Age Pattern of India's Fertility: 1971 to 2009.

Source: Prepared from SRS estimates given in India, Registrar General (2010a, 2011b).

RURAL-URBAN DIFFERENCES

The 1950s showed falling fertility in urban areas but mainly due to a rise in age at marriage. The National Sample Surveys of 1951 and 1952 did not show much difference between rural and urban marital fertility; the NSS report on Couple Fertility noted: “It thus appears that there is little rural-urban difference in fertility, excepting the part arising out of premature marriages in the rural sector” (Das Gupta *et al.*, 1955: 38). Some studies in Maharashtra in the early 1950s (Dandekar and Dandekar, 1953 and Sovani and Dandekar, 1955) also did not find clear rural-urban differences in marital fertility but overall fertility was lower in urban areas than rural, on account of the higher age at marriage in urban areas. About the same time, the Mysore Population Study showed the marital fertility in Bangalore City to be much lower than in rural areas and towns (United Nations, 1961). Since the 1970s, according to the annual series by the Sample Registration System urban fertility was clearly lower than rural, generally by over one point of TFR. In 1971 the TFR in rural India was 5.4 and in urban India 4.1 (India, Registrar General, 2010a). The gap has narrowed somewhat; in 2009 the values were 2.9 and 2.0 respectively (India, Registrar General, 2011b). The rural-urban gap in the Total Marital Fertility Rate (TMFR) is narrower but not negligible; 0.6 in the 1972 SRS special survey (TMFR of 6.8 in rural and 6.0 in urban areas) and around 0.7 through 1984-2009 (India, Registrar General, 1976, 2010a, 2011b).

SPATIAL VARIATIONS

Given India’s proverbial diversity, it is not surprising that fertility too varied across regions of the country. Even during the pre-transition period, the southern states had lower fertility (TFR below 6) than the northern. In particular, TFR in Tamil Nadu was around 5 for some time even before 1950 (Guilmoto, 1992; Ram and Ram, 2009). The track of fertility differed substantially across states. Transition began early in some states, in the 1960s and in some in the 1970s. The pace also differed spatially. If we accept 10 percent decline from a plateau and continuing decline for some time thereafter as fertility transition, some states entered the phase as early as 1961-66, these are Gujarat, Punjab and West Bengal and had pre-transition TFR of 6 or higher; the change is assessed on the basis of the estimates up to 1981 by Rele (1987) and after 1981 from the SRS (2010a). Kerala followed during 1966-71 and Haryana, Karnataka, Maharashtra and Tamil Nadu during 1971-76. But since the initial level differed as did the pace of decline, some of the late entrants completed transition to low fertility much before the others. Among large states, Kerala has been the leader reaching a TFR of 2.4 in 1984 (and 2.1 by 1988) followed by Tamil Nadu (TFR of 2.4 in 1990 and 2.1 in 1993); generally TFR of 2.1 is considered as equivalent to replacement level fertility in low mortality situations but here TFR of 2.4 is treated as ‘replacement level low fertility’ since given the current level of mortality, this value of TFR yields a net reproduction rate close to 1 for most states of India. The bunch of Himachal Pradesh (1997), Andhra Pradesh and West Bengal (1998),

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Karnataka and Punjab (2000), Maharashtra (2001), and Jammu and Kashmir (2002) reached the TFR of 2.4 around the turn of the century and Odisha joined the league in 2007. Some of the north-eastern states have also reached low fertility as have Chandigarh and Pondicherry. For small states and union territories, the SRS estimates are sometimes not reliable. But the NFHS data indicate that Goa reached low level replacement fertility before 1992-93 and Delhi around 1998-1999 (IIPS, 1995; IIPS and ORC Macro, 2000; IIPS and Macro International, 2007). These states and union territories together constitute about half of India's population. In many of these fertility has now fallen below low replacement level. On the other hand, in 2009, Bihar (3.9), Uttar Pradesh (3.7), Madhya Pradesh and Rajasthan (3.3), Jharkhand (3.2), Chhattisgarh (3.0), Assam (2.6), Gujarat and Haryana (2.5) as well as some small states and union territories were yet to break the barrier of 2.4 (India, Registrar General, 2011b). Assam, Gujarat and Haryana are very close to it but Uttar Pradesh and Bihar have a long way to go. Yet even in the latter states fertility has declined and the decline is continuing. There are variations within states as well; a disaggregated analysis of trends in the spatial pattern can be seen in the paper by Guilmoto and Rajan (2002).

WHAT CAUSED THE DECLINE?

Explanations of fertility behavior and particularly of fertility regulation and decline have long been discussed in literature. While some of the biological explanations put forth earlier are no longer taken seriously, the social, cultural, economic, and political factors have been extensively debated. This paper does not seek to review the various theories on fertility, this is too onerous and challenging a task. Instead, an effort is made to see whether one or a combination of these explanations applies to the Indian fertility transition.

The discussion here is based on the three essential conditions for fertility decline specified by Coale (1973). These are: "(1). fertility must be within the calculus of conscious choice; ... (2). reduced family size must be advantageous; (3). efficient techniques of fertility regulation must be available" (p.65). We take up these one by one.

Fertility within the calculus of conscious choice

First, the matter of conscious choice comes in because in the past childbearing was taken as natural, for believers it was given or granted (or blessed) by God and for others something that was not up to one's choice. In some surveys of early 1950s in parts of India, questions that tried to elicit family size desires were not answered or no specific number was stated by many (U.N., 1961; Sovani and Dandekar, 1955). But recent surveys show that specific response to such questions has become nearly universal. Numerical answers on ideal family size were given by 90, 93 and 98 percent of women of reproductive ages in the three rounds of the NFHS, carried out in 1992-93, 1998-99, and 2005-06 respectively (IIPS, 1995; IIPS and ORC Macro, 2000, IIPS and Macro International, 2007). Over time, awareness of contraception has become universal; 96, 99, 99 percent in the three successive rounds of the NFHS respectively. Contrary to the

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perception of the Indian society as traditional, the matter of fertility regulation has for some time been openly discussed in community. One must give credit to the campaigns of the family planning programme that began in the 1950s, and adopted various channels of communication of the idea of family planning; these included posters, public meetings, door-to-door canvassing, radio and later television. Family planning and by implication fertility regulation no longer remained a matter for private and whispered conversation but something that began to be talked about frankly by programme workers, local leaders, and society in general. The openness was extended to means of contraception as well with posters and films publicizing and displaying various contraceptives at a time such displays were rarely seen even in modern western societies. The fact that the intensification of the programme in 1976 became a major issue in the general elections of 1977 itself shows that there was awareness of the programme and by implication of the matter of fertility regulation, regardless of whether it was liked or disliked.

Reduced family size considered to be advantageous

But for regulated fertility to be low, it is essential that the desired family size is small unless there is compulsion. Davis (1963) listed lowering of fertility as one of the (multiphasic) responses to rise in child survival. More recently, Dyson (2010) has also emphasized on fall in child mortality as the prime factor behind fertility decline. He further argues that lowering fertility amounts to restoring the number of surviving children in the changed circumstances of improved child survival. In conditions of high child mortality, though fertility *per se* was high, the average number of surviving children was low. Child mortality, especially the under-five mortality rate, has fallen impressively in India over the years. Direct estimates for the past are not available. But indirect estimates suggest that under-five mortality rate was very high, nearly 400 per thousand a century ago (Bhat, 1998), had fallen to about 200 in the early 1970s and reached 64 in 2009 (India, Registrar General, 2011b). There is no doubt that with awareness of rise in child survival, couples would have stopped childbearing at a stage earlier than in the past, as the need to have a large number of births to ensure a sufficient number surviving would no longer be there. But does this imply that the *desired family size* was low, say as low as two or three, in the past? The low average of surviving children was based on many who had a large number of living children and many who had none surviving. But there is hardly any evidence that couples who had a large number of children desired only a few. In fact, surveys in the past have shown that desired family size was well above two; questions in surveys were implicitly on the number of surviving children, that is, the C_d term in Easterlin's notation (Easterlin, 1975). In Easterlin's model this value falls with modernization.

Empirical evidence supports the contention that the desired family size has declined in India as well. A number of surveys in Karnataka over the years show this quite clearly. The Mysore Population Study carried out in 1951 showed that the ideal family size was 4.7 in rural plains of the Mysore study area (in southern Karnataka) and 3.7 in Bangalore City (United Nations, 1961). In 1975 (the Bangalore Population Study), the mean ideal size was 3.7 in Bangalore city, the same as noted earlier, but had fallen to 4.2 in rural areas (Srinivasan *et al.*, 1977). By 1980, in rural parts of three districts of Karnataka the mean varied between 3.0 and 3.9 (Rao *et al.*, 1986). A survey of Greater Bombay in the

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1960s found the mean to be just below 4 (Rele and Kanitkar, 1980) and it was well below four in rural Maharashtra in the early 1980s (Jejeebhoy and Kulkarni, 1989). In inferring about the trend, some allowance must be made for the wording of the questions in the surveys not being identical, but the overall declining trend is clear. At the all-India level, the mean size has come down, from 2.9 in NFHS-1 to 2.6 in NFHS-2, and 2.4 in NFHS-3.

Why did the ideal family size fall over time? Becker's early work looked at competition for resources between parental consumption and cost of children. This theorization came in for much criticism. But the reformulation by Becker and Lewis (1974) brought in the matter of quality of children and quantity-quality interaction. Some couples desire to have children of higher quality thereby raising the cost of rearing children which then reduces the number of children they can afford given the income constraint resulting in the quantity-quality trade-off. Couples desire children of higher quality because they have high aspirations *about children*. Easterlin (1976) states "An alternative suggested by scholars ranging from Leplay to Kingsley Davis is a variant of the aspirations versus resources view, a variant because in this case the pertinent aspirations are not for oneself, but for one's children" (p.422).

But does the tendency to demand higher quality rise with factors such as income and education of households and women or at the macro-level with development as such? Analyses of various surveys have shown that this does indeed happen, and, in particular, fertility falls with rise in education, especially of women. But comparative analysis of the Demographic and Health Survey (DHS) data presented by Rutstein (2002) reveals that the educational differentials in fertility in India are not as high as seen in many countries (Fig. 4). A few other countries, notably Indonesia and Vietnam, also show narrow differentials but many others, especially the Latin American populations show wide differences. In fact, in India, Fertility has declined even among the illiterate population.

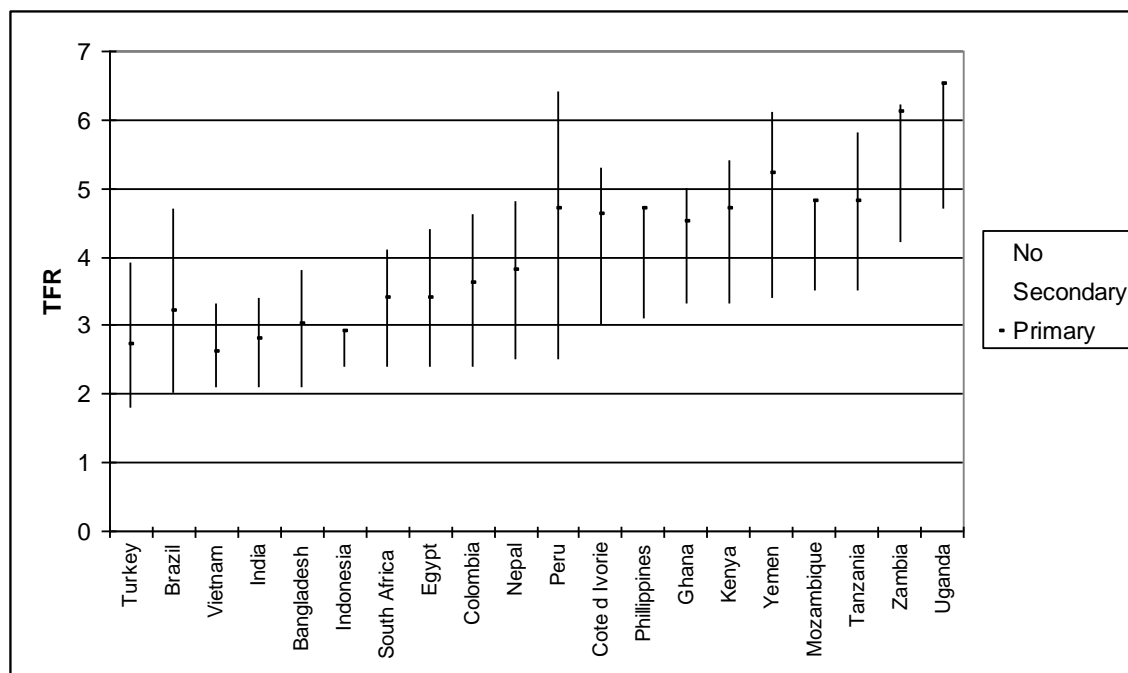


Fig. 4: Education Differentials in TFR, various Countries with population above 20 million, based on DHS rounds of the 1990s.

Source: Prepared from estimates given by Rutstein (2002).

Similarly, now the poor in many parts of India also have low fertility in contrast to the cliché 'the poor breed more'. It has been argued that the low fertility among the poor could be poverty-induced (Basu, 1986, Savitri, 1994, Kishor, 1994). But the evidence does not favour this explanation. First, if the poor have lower fertility than the non-poor, one could attribute it to the pure income effect that would fit into the early Beckerian mould. However, surveys reveal that though fertility among the poor has become moderate or low in India in the recent years, it is *not lower* than that of the non-poor in general. That the poor have low or moderate level fertility does not mean that this is so *because of poverty*. In fact, one could say that this is so *in spite of poverty*.

Rural-urban differences are also narrower in India than in most other populations (Fig. 5). In the past, urban fertility was much lower than rural. There is some gross rural-urban difference in India but analysis has shown that much of the rural-urban difference is on account of lower level of education in rural areas than urban. Controlled for education, there is hardly any net differential. Besides, the gap has narrowed in the recent period. Similarly, family size desire has become low among all caste and religion groups. Some differentials are seen but these are not large.

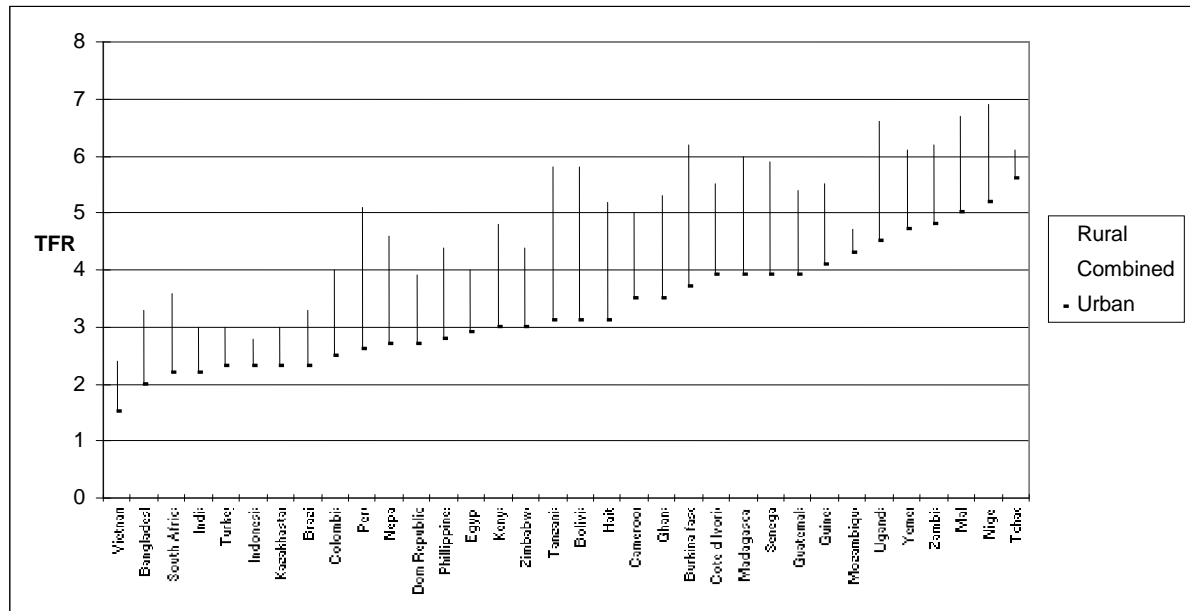


Fig.5: Rural-Urban Differences in TFR, various countries with population above 20 million, DHS rounds of the 1990s.

Source: Prepared from estimates given by Rutstein (2002).

To say that for fertility in a population to be low it is essential that fertility in all large sections of population be low is tautological. But low level of fertility in groups that are least expected to have it serves as a test for a population's reaching low fertility. Fertility decline among the educated and upper classes is well dealt with by many theories in depth and is widely accepted. Therefore, to explain fertility transition in a population, one must essentially explain transition among sections such as poor and less educated. This brings in the diffusion-innovation hypothesis. In a society the elite or upper classes accept an innovation, small family in this case, and the rest of the population, the non-elite, adopts this. This hypothesis has been around for long, and was an important rationale for the extension approach adopted by many family planning programmes. The frequently cited paper of Cleland and Wilson (1987) gave much credence to ideational changes and the diffusion-innovation explanation (also see the recent paper by Charbit and Petit, 2011). If the cost-benefit considerations of the elite call for a small family as the best option and practice family planning to regulate fertility, or accept family planning purely as an innovation, the poor would also adopt it. But what if the cost-benefit considerations of the poor do not necessarily call for small family and on the other hand the poor feel that a large family is beneficial? This has long been advanced as rational behaviour and thus an explanation of high fertility of the poor. Would the non-elite still adopt fertility regulation simply because the elite did? Retherford (1985) noted that the higher social strata first adopt birth control and there would be rapid diffusion to other sections if there is a high degree of social integration. Further, '...rapid diffusion of birth control and fertility decline often precede rather than follow rapid declines in desired family size' (p. 261). This implies that the lower strata would adopt birth control even before their family size desires have fallen. Has this happened in India?

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It is commonly stated that the poor do feel, on the basis of perceived cost and benefits, that they need large families. A factor prominently mentioned is that child labour is valuable to the poor. Without material resources, family labour is the only resource for the poor and they would want more of it. More hands to work means higher incomes for the household. Moreover, for those without assets, children are the only means of support in old age. Besides, as children are brought into labour force early, not much is required to be spent on them as they become net earners; the issue of costs of children then becomes less weighty. Even the non-poor generally emphasized the value of children and did not consider costs to be prohibitive. But recent evidence reveals that the poor in India no longer seem to expect children to work for wages or substantially on family farms during childhood. The kind of responses reported a generation ago, for example in the much cited work of Mamdani (1972), on how one wished to have many children expecting them to contribute to households are rarely heard now; a survey in 1980s in the same area yielded quite different results (Das Gupta, 1995). True, Indian parents continue to look up to children as primary source of old age support. But expectations of child labour contribution are hardly mentioned in recent investigations. This is not surprising given that work participation during childhood is extremely low. According to the 64th round of the National Sample Survey, 4.4 percent of boys and 2.8 percent of girls in the age group 10-14 worked in rural areas during 2007-08; the participation in urban areas was even less (NSSO, 2010).

On the other hand, in various surveys queries on parental aspirations about children revealed that the poor, including rural poor and illiterate poor, clearly express high aspirations about children. Therefore, parents do feel the need to spend on children's schooling and the costs of childbearing rise. On an ordinal scale, the aspirations of the poor and illiterate are generally lower than those of the non-poor and educated, but for poor parents, the costs of trying to achieve these aspirations are quite high and consequently, quantity-quality trade-off occurs. How did the poor acquire high aspirations? One could find some diffusion effect here. As the poor and the illiterate see children of the others getting educated and finding good jobs or vocations, their aspirations also rise. Similarly, there are aspirations about other material aspects, clothing, marriage functions, and so on for children that raise cost of child rearing. There seems to be diffusion of aspirations that, in turn, lowers the desired family size via the quantity-quality trade-off route.

The issue of couples' preferences for family size becomes irrelevant if there is compulsion by the state or the society in the matter of fertility. In the past, high fertility was expected by the society and the family and couples were pressurized to adopt it. On the other hand, fertility outside marriage was socially disapproved in many societies and continues to be so in India. Similarly, in the neo-Malthusian atmosphere of the 1960s and the 1970s, some compulsion in birth control was suggested. China did adopt this route after 1970 and it was contemplated in the Indian programme as well though not actually introduced. Yet there have been pressures on couples to adopt birth control. In the regime of contraceptive targets, the family planning workers were given quotas of acceptors to be achieved and the workers in turn pressurized couples to adopt birth control, often

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sterilization; this practice culminated in the emergency period intensification. But after the resultant backlash, policy makers and workers have been wary of such steps. Not that some element of pressure is applied, but overall this has not been strong after 1977. Further, with abandoning of the target strategy by the Indian programme, such pressures have eased. The decisions of couples, thus, are primarily their own. Some influences of parents and elderly do persist but with greater nucleation, these have weakened. Over time, fertility behaviour moves from social and family controls to 'deliberate individual control' as noted by Srinivasan (1972).

Efficient techniques of contraception to be available

Coale's third point relates to the availability of efficient means of contraception. This condition is met quite well in India thanks to the programme. The family planning programme made contraceptives available from many outlets, publicity was given to these and the supply to couples has been free. The number of methods available in the programme has increased over the years. Induced abortion has long been permitted in India on a number of grounds and is easily available in government and other outlets though this is not promoted as a method of birth control as such. In principle, there is wide choice though in practice some methods may be more easily available than others. Surgical sterilization has been the most commonly used method, vasectomy was the dominant one until 1977 and female sterilization after that. In addition to the programme, contraceptives are available in the private sector at cost. Many innovations have been tried out in the Indian programmes: the sterilization camps, social marketing of condoms, and cash incentives (or compensation for lost wages) for acceptors. Implants and injectables are not provided in the Indian programme, but there is wide choice nonetheless.

The discussion does indicate that all the three conditions specified by Coale are met in India. The first and the third were satisfied rather early and the second at least in the recent years. At the same time, India as a whole is yet to be at a low fertility level. It is well recognised that there are large regional or inter-state variations and while many parts, comprising about half the country, have achieved low fertility and can be said to have completed transition, the rest are at different stages of it. Some regional level factors seem to be operating. A number of research investigations have addressed the changes in various states and regions and these give us some clues.

Why regional variations?

During the initial phase of fertility transition in India, 1970s and 80s, Kerala was prominently noted as the state that achieved near replacement level fertility. This naturally pointed towards the education (or literacy) factor. Maharashtra, Punjab, Tamil Nadu and West Bengal in which fertility decline has been achieved show relatively high level of development. However, Andhra Pradesh and more recently, Odisha, which have also achieved low fertility, do not have high literacy. In order to see how strongly fertility transition is linked to literacy, the level of female literacy at the time the state achieved low fertility is shown in Fig. 6. It can be seen that the level of female literacy at which

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TFR fell to 2.4 varies over a wide spectrum, from 40 percent to 80 percent. The threshold is quite low. Kerala achieved fertility transition early but at a fairly high literacy level. Other states did so later but at lower levels. But there is no clear trend of threshold falling (as suggested by Kulkarni and Rani, 1995; Bongaarts and Watkins, 1996). The states that are yet to achieve low fertility also have literacy in the same range during which the other states reached low fertility. To look for answers, one must go beyond the commonly recognised socioeconomic factors.

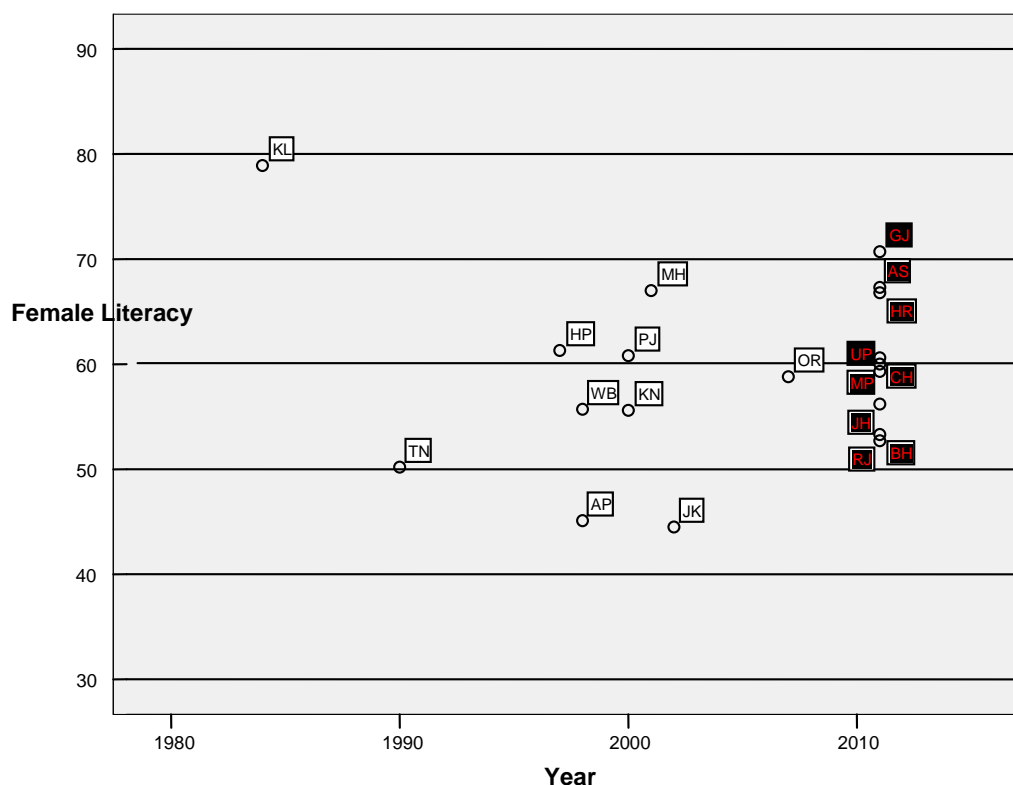


Fig. 6: Female literacy at the time the state reached TFR of 2.4 by year of attainment.

Note: States that had not reached TFR of 2.4 by 2009 are shown at 2011 and marked as solid boxes.

Source: Prepared on the basis of data on TFR from India, Registrar General (2010a, 2011b), and data on female literacy from India, Registrar General (1998, 2001, 2011a), interpolated where necessary.

The inter-state variations are only partly explained by inter-state differences in educational levels, incomes, or urbanization. In particular, while for women with a high level of education fertility is low in almost all the states, for the less educated, large inter-state variations are seen (Fig. 7). In other words, in states that have completed fertility transition, fertility among the illiterate is nearly as low as that of the more educated. The decline in fertility among the upper classes and the well educated is not a matter of much debate since this is to be expected. The question is why did fertility among the less educated fall? It has fallen in all parts of the country but much more so in some. Various analysts have advanced specific explanations.

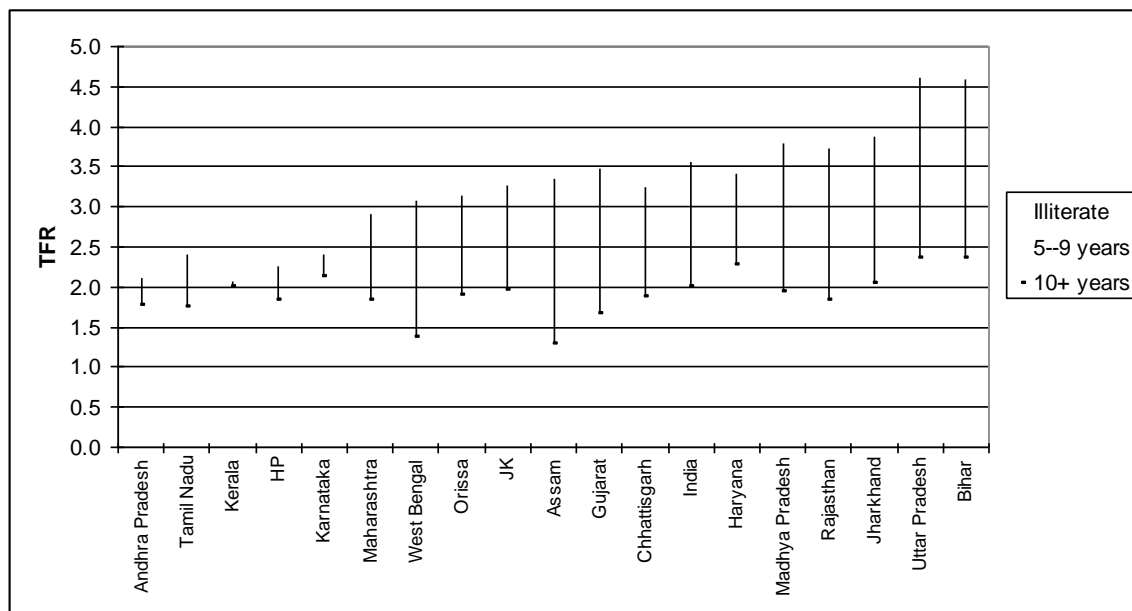


Fig. 7: Educational Differentials in TFR, Large States, India, NFHS-3, 2005-06

Source: Prepared from estimates provided in IIPS and Macro International (2007).

Kerala being the first large state to have shown notable fertility decline attracted the attention of a number of researchers. Two factors stand out for Kerala, early fall in mortality and high level of education including female education both of which obviously favourable to fertility transition. Goa also falls into this category and also experienced early fertility decline. Another factor noted for Kerala is land reforms that provided opportunity to the agriculture labour to own land (Zachariah, 1984). The high population density and communication facilitated speedy diffusion. In Kerala's cultural setting, female autonomy was high. Besides, new ideas could come as there were close contacts with the outside world. But the programme also played a role. Srinivasan (1995) has noted that while in Goa social changes were the dominant factor (mainly 'bottom-up' change), in Kerala there was a balance of both 'bottom up' and 'top down' (induced by the programme factors) pressures.

In the case of Tamil Nadu, the family planning programme was well executed in the state and provided contraceptive services (Antony, 1992). But what about family size desires? There is no doubt that the extension component of the programme was designed to create awareness about the need for family planning and motivate couples to adopt birth control. However, it must be acknowledged that couples would not have gone for fertility regulation unless they felt that it was in their interest, specifically, that small family was felt to be beneficial, the second condition of Coale. Srinivasan (1995) has argued forcefully that the social reform movement in the state was a major factor. The Dravidian movement led by Periyar propagated birth control and emphasized that women should not be treated as baby producing machines. The movement attacked the caste system and promoted equality among all communities. Therefore, people from traditionally

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backward social groups felt that they could achieve a higher level in society. Opportunities were opened by affirmative action in favour of backward classes who saw the possibility of upward social mobility. But this called for educating children and consequent costs. Later research in the state showed that couples did have high aspirations about their children and these had risen over time (Krishnamoorthy *et al.*, 2005). Parents desired that children be brought up in a manner better than what they had lived through, specifically, have good clothing and education. Dowries became widely prevalent raising the cost of marriages of girls. The classic quantity-quality trade-off operated lowering family size desires. The programme provided the means. The programme also should get some credit for the extension work but the principal thrust came from couples themselves. The direct campaign of the social reform did not seem to have registered but the change in the mindset and the feasibility of social mobility seems to have been crucial.

Karnataka, another southern state, was also a leader in fertility transition. Karnataka was not known for either high literacy or incomes or low mortality. Early studies did not show much fertility decline. Even the Bangalore Population Study of 1975 did not indicate much fall in marital fertility (Srinivasan *et al.* 1977); this was partly because some fall in fertility in later years of childbearing was compensated by a rise in fertility on account of modernization. But later field studies in the state showed that fertility desires had fallen even in rural and relatively less literate areas of Tumkur and Mandya as early as the late 1970s (Caldwell *et al.*, 1982; Rao *et al.*, 1985). Caldwell pointed towards monetization of the economy as an important cause. Of course, aspirations about children had risen. Parents desired to give a better life to children than the present and were ready to spend money for this purpose. This included expenses on education as well as on marriages of daughters to ensure a good groom. Again, quantity had to be sacrificed for quality. Further investigations showed high aspirations about children among all sections (Sekher and Raju, 2004). These relate to employment, education, marriages and overall living conditions. A fairly common aspiration is that children should get a government job. Some other studies also show that rural agricultural families strongly desire that their children get government (or organized sector) employment and not continue in family profession. Girls from agricultural families generally desired the groom to have a white collar job (Umamani, 1998).

The case of Andhra Pradesh is of special interest. This state in fact had higher mortality and lower literacy than the national average, yet reached low fertility quite early, in the early 1990s, much before most other states. The role of mass media, especially the high exposure to cinema has been cited here. This is not in the sense of family planning propaganda but for exposure to 'good living' as depicted in popular films (Bhat, 1996). Further research has pointed to the impact of poverty alleviation programmes and labour migration (James and Subramaniam, 2005). Some other contributing factors noted are: contact with outside world, consumerism, and cultural aspects. For the southern states as a whole, greater female autonomy than in the northern region has long been recognised as contributing to low fertility (Dyson and Moore, 1983).

In Punjab, Mamdani's famous study of early 1970s reported high value of children and rejection of family planning reported by many respondents, but fertility fell steeply soon after that and by the mid-1980s, had declined substantially (Das Gupta, 1995). Economic development, security of livelihoods, and outside economic contacts led first the cultivators to lower fertility and after a short time the landless followed suit. For West Bengal, role of the special cultural setting that was conducive to innovation has been noted in literature (Basu and Amin, 2000). But what about the poor, the less educated, and the rural population of the state? For some time, Rural West Bengal had lagged Urban West Bengal in fertility. But recent research shows that the rural parts have nearly caught up with urban West Bengal. Again, the poor also show high aspirations accompanied by low family size desires (Paul, 2009). Recent research in Odisha, a state with high infant mortality, high poverty, low literacy, and low urbanization, also revealed that aspirations are high among the poor and less educated (Sahoo, 2010).

A common thread seen in the findings of various studies is that the aspirations of all sections of the population about their children have risen over time. The poor, the less educated, and the rural population are no exception. Providing education to children gets priority. Employment in government or organized sector is strongly desired and this requires education. The poor see the good life enjoyed by the elite or upper classes and wish that even if they themselves are deprived of it at least their children should be able to enjoy it. This goes beyond mere education; parents want to provide their children good clothes, footwear, facilities for entertainment, and good marriages. Quality-quantity trade-off sets in and desired family size is lowered. In a way, there is diffusion of the aspirations for such life for children. But the pace of this diffusion has varied across regions. Certain conditions hastened the process in various regions. These conditions are not necessarily the same across regions. In Kerala, land reforms raised aspirations of the assetless parents and high literacy and density speeded up diffusion. In the atmosphere created by the Dravidian movement in Tamil Nadu, people felt that they can achieve social mobility breaking caste barriers. In Andhra Pradesh, exposure to films gave an idea of the good life. Pro-poor programmes made the achievement of high aspirations realistic. The rise in aspirations was rapid in these states. Monetization of the economy has been a common factor but more so in regions with industrialization, commercial crops, and market dependence. Maharashtra, Punjab, Himachal Pradesh have some or all of these benefits. Various channels of communication, transport, and later electronic media facilitated diffusion of ideas.

Did these changes not take place in other states, those that are lagging in the transition process? Some changes have actually occurred. Social reforms have reached all regions. In particular the *dalit* and backward caste movements have been prominent in many states now but the southern states, especially Tamil Nadu, Kerala, as well as Maharashtra, were forerunners. Land reforms have been introduced in all states but some have been more successful than others in implementation. The levels of urbanization and migration vary across states and by and large have not been rapid or on a large scale. Strong son preference has been an impediment in some regions, notably Maharashtra, delaying the completion of transition (Kulkarni, 1999). The implementation of the population programme has also varied considerably across states. This is seen from the very high

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levels of unmet need for family planning in some states, notably Uttar Pradesh, Bihar, and Jharkhand, in which over 20 percent of couples have an unmet need for family planning in contrast to less than 5 percent in Andhra Pradesh (IIPS and ORC Macro, 2007). This is not to say that addressing the unmet need by itself would achieve low replacement level fertility in these states. Analysis of the NFHS-3 data has shown that after meeting the unmet need, India would indeed reach TFR of 2.1, but Uttar Pradesh and Bihar would still have TFR close to 3 (Mohapatra, 2010). The matter of relatively high desired family size persists in these parts.

Conclusions

What does the experience tell us about India's fertility transition? First, the transition is in progress and at a fairly advanced stage. At the national level, the transition can be said to have begun in late 1960s-early 1970s and is nearing completion. But some parts entered this phase earlier and some have already completed it. About half the country has achieved the transition to low fertility and the rest of the regions are at different stages in it. Structurally, rise in female age at marriage has lowered fertility in young ages but overall the contribution of the marriage factor has not been large. Instead, contraceptive use that lowered marital fertility in middle and later years of childbearing has made a major impact.

A number of favourable developments have occurred. First, early childhood mortality declined. Though the level of infant mortality in India is still way above that in the developed world, the fall has been perceptible. There is, thus, the *change* in the sense of Kingsley Davis. The matter of family size entered public debates at all levels thanks to the persistent propaganda of the government programme. Over time, the knowledge that fertility is a matter of choice became universal. Means of fertility regulation became available to all including the rural, the poor, the illiterate, and the socially deprived sections. No direct cost was involved and the network of service outlets made access easy. The programme played a major role here.

But fertility would not have declined unless couples found small families to be beneficial. Aspirations about children rose, and since meeting these aspirations required children to be educated, costs on children increased. Other aspirations, about marriages and about living conditions also meant higher cost per child. This led to the classical quantity-quality trade-off and lower family size desires. The diffusion-innovation hypothesis has operated here but with a difference. It would be wrong to say that the poor and illiterate adopted the small family norm simply because the upper classes did. The poor and the less educated have clear notions on aspirations about children, of consequent costs, and implications for family size. The diffusion is that of the lifestyles of the upper classes. The less privileged aspired to have the lifestyles of the upper classes at least for their children if not for themselves, realised that costs are involved if these are to be achieved and this called for lowering family size via the quantity-quality route. With the decline in child labour, having a large number of children does no longer sound an attractive proposition. Some reciprocal effect is possible here; if children are to be sent to school, they cannot be engaged in work on full-time basis. Briefly, instead of diffusion of the

small family norm *per se*, there was diffusion of aspirations which in turn led to the adoption of the small family norm as rational choice.

Though these broad changes operated throughout the country, the pace of change has varied because of region-specific factors. Social reforms, female autonomy, land reforms, poverty alleviation programmes, access to mass media and in particular access to cinema and television operated at different levels across the country. Moreover, cultural settings make an impact. The government programme, though designed and financed at the national level, is implemented by state governments and the efficiency is not the same throughout the country. This is revealed by the large unmet need in some regions.

What about the future? Given past experience that most long-term population projections are proved wrong, demographers must be cautious here. But at least in the short term, one can say that the transition will proceed further in regions that are yet to complete it. The dominant parts of the process, improvements in child survival, rise in educational level, and rise in aspirations appear to be unstoppable, the programme support in contraceptive services may be presumed to continue and hence fertility would decline to low replacement level or even fall below it. But one would not venture into specifying the date when this would occur.

The explanation of India's fertility transition does seem quite complex. There is no simple one word or one line answer. But it is instructive to reproduce from Gille (1963): "So far as the causes of the fertility decline in the West are concerned, it has been generally agreed, I believe, that the decline was due to a number of interrelated causes, acting upon one another, which jointly brought about the change concerned. Attempts to prove that the decline was solely associated with one particular aspect such as, for example, urbanization, have generally been unsuccessful." (p.177). Clearly, for a change as profound as fertility transition, in a population of over one billion, known for high diversity, it would be vain to expect a simple explanation.

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