

Models of Development and Demographic Change A Case Study of Kerala

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Introduction

The traditional theory of demographic transition developed by Professor F.W. Notestein and his colleagues has occupied the center stage in the demographic literature for quite a long time. This theory was developed on the basis of the demographic experience of the developed world. The essence of the theory is that the demographic parameters of a country follow a set pattern of trend as a consequence of social and economic changes.

Until the 1950s, the developing countries experienced very little demographic transition and, therefore, they made very little contribution towards the theory of demographic transition. The biological factors determined the fertility level and the public health factors and food supply determined the mortality level. But after World War II, when the developing countries started experiencing mortality and fertility changes it became clear that the demographic experiences of developing countries will not be entirely similar to those of the developed countries. It became necessary to question the exact applicability of the traditional theory to developing countries. For one thing, the transition was much faster. What the developed countries took more than fifty years to achieve, the developing countries took less than a generation. Among the developing countries themselves, there were considerable differences in the speed of transition and the factors affecting it. Newer and newer factors came into operation in determining the demographic trends of the developing countries.

Kerala state's demographic transition began earlier than in the other states of India, but later than in several of the East Asian developing countries. "Kerala model of demographic transition" was not a replica of that of the developed countries. Nor was it exactly similar to the transition in the East Asian countries such as Taiwan, Korea, Singapore, Hong Kong, etc. There are significant differences between Kerala's experience and that of other states in India such as Tamil Nadu, or Andhra Pradesh, which have experienced fertility transition to near replacement level a few years after

Kerala had reached that stage. Thus, even within India, Kerala's experience of demographic transition, the factors which contributed to the transition, have their own special features. This paper is concerned with the Kerala model of demographic transition. It includes brief discussions of the demographic changes in Kerala since 1947, the principal socioeconomic changes in the State during the period and an analysis of the impact of socioeconomic factors and programme factors on the demographic transition in Kerala.

Demographic Changes in Kerala Since 1947

Population Growth

At the time of Indian independence, Kerala's population was about 12.5 million and growing at a rate of about 2.2 percent per year. Fifty years later, in 1997, the population of Kerala has grown to a little under 31 million. It is now growing at a very much-reduced rate of under 1 per cent per year. In between, the growth rate had reached its peak level of 2.3 per cent per year during 1961-71. Until 1971, the rate of population growth in Kerala was higher than that of the country as a whole, but from 1971 onwards, Kerala's growth has become progressively slower (Table 1).

Table 1: Population Growth in Kerala 1951-91

Year	Population (000s)	Sex Ratio (M/1000F)	Decade GR (% per year)	Density (Per sq. Km)	% Urban
1951	13,549	973	2.06	349	13.48
1961	16,904	979	2.21	435	15.11
1971	21,347	984	2.31	549	16.24
1981	25,454	967	1.75	655	18.74
1991	29,011	962	1.31	747	26.44

Some of the distinguishing features of Kerala's population are its high density, its unique (in India) pattern of population distribution by localities, and the persistent excess of females over males. Kerala is one of the most densely populated states in

India, next only to West Bengal. The density in Kerala was more than twice that in India even in the beginning of the century. Despite significant out-migration, the density in 1991 was nearly 750 persons per square kilometer, nearly thrice the all India average of 267 persons.

The state is not highly urbanized, only 26 per cent of its population live in urban areas. In this respect, Kerala is at par with India. There is no city in the state with more than a million persons.

Kerala's sex ratio is unique among the Indian states in as much as it is the only one with an excess of females and the only one where this excess has grown consistently during the past century.

Kerala does not have a village system as is common in other states of India. Villages in Kerala are administrative division only, and they have, on an average, large populations. More than 90 percent of the "villages" have population larger than 10,000.

Birth Rate

Kerala's birth rate was perhaps about 45 per 1000 population in 1947. The rate started declining by the middle of the 1950s mainly as a consequence of the increase in age at marriage. The rate of decline gained momentum in the late 60s and the decline continued till the early 1990s. By 1993, the birth rate has reached an all time low of about 17 births per 1000 population. Since then, the rate has not shown any tendency to decline, and as a result, in 1997, the birth rate remained at a level of about 17-18. If this trend persists, the population of the state will stabilize after about 30-40 years and will eventually decline. In this case, the total population of Kerala may not exceed 35-36 million at any time.

Table 2: Demographic Indicators of Kerala, 1951-91

Year	Birth Rate	Death Rate	Migration Rate	IMR	Life Expectancy		CPR %
					M	F	
1951			-0.11	153			
1961	43.9	19.7	-0.20	128	44.3	45.3	0.9

1971	37.1	12.2	-0.16	66	54.1	57.4	15.1
1981	28.1	8.6	-0.22	48	60.6	82.6	36.8
1991	22.6	6.2	-0.30	28	67.7	72.9	72.2

Fertility Trend

Kerala had one of the highest marital fertility in the country before family planning became popular in the state. However, because of the high age at marriage and the relatively low proportion of married women in the young reproductive ages, the actual fertility (TFR) of women in Kerala was not very high, about 5.6-6.0 in 1947. From this level of about 6 children per woman, the TFR has declined to 1.7 by 1993 and it remains more or less at the same level now. Fertility transition in Kerala took just about a generation to reach a level significantly below the replacement. This makes the fertility transition in Kerala a unique event in the demographic history of the sub-continent.

Fertility transition in Kerala involved a number of features, which were in a way a reflection of the factors underlying the transition. First of all, the rate of decline in fertility was relatively constant after 1970. According to the two studies conducted by Zachariah at an interval of ten years, the rate of fertility decline in the survey districts had remained more or less constant over time and across regions (Zachariah 1984 and Zachariah et al. 1994). The official state level data indicate a 25 per cent decline in both the 1971-80 and 1981-90 decades confirming the constancy of the decline. This is perhaps an indication that a major factor in the fertility decline was the family planning programme, which was implemented uniformly across the state and during much of the 1970s and 1980s.

Secondly, cohort fertility rates of women who were married after the introduction of land reforms and other redistribution policies, which coincided with the introduction of the strengthened family planning programme were markedly lower than the cohort fertility rates of those who were married before this period. This could also be taken as an indication of the crucial role which land reforms and family planning programmes played in the fertility transition in the state.

Thirdly, during the course of the transition, fertility underwent several structural changes sharp declines in the parity progression ratios, shrinking of the effective fertile ages to just the 15 year span of 20-34 years, etc.

Fourthly, fertility differentials also underwent significant transitions. In the beginning, when fertility rates were determined by biological factors, socioeconomic differentials were not very marked and whatever differences, which existed, could be explained by health related factors. In the 1960s and 1970s socioeconomic differentials became very marked. Considerable differentials emerged not only in the fertility level but also in the rate of decline in fertility. Fertility declines were larger among the middle level socioeconomic groups. For example, fertility decline was highest among neither the most, nor the least educated but among women with 1 to 4 years of schooling. This was a reflection of the differentials in the acceptance of sterilization as a family planning method. By early 1990s, when fertility level had reached near replacement level, socioeconomic differentials in most of the southern districts of Kerala have practically disappeared, an indication of the universal acceptance of family planning in these districts.

Fifth, the relative contribution of the two principal proximate determinants also underwent a major transition. In the beginning, much of the fertility decline was caused by the increase in age at marriage, but in the 1980s and 1990s fertility declines were caused very much more (80-90 per cent of the total decline) by the family planning programme than through increase in the age at marriage.

Mortality

From about 25 in 1947, the crude death rate of Kerala had declined to about 6 deaths per 1 000 persons in 1997. The infant mortality rate (IMR) has decreased from over 1 50 in 1947 to about 13 infant deaths per 1000 births in 1997 (compared to 72 for the whole of India). Life expectancy in Kerala has increased from about 40 years to 73 during the same period.

Kerala's advantage in mortality situation over India is not of recent origin. Although reliable data are not available, it is most likely that, because of the favourable climatic conditions, food availability, settlement pattern, etc., mortality conditions in Kerala were always better than those in India.

In sharp contrast to conditions in the other parts of India, where until very recently mortality among females was higher than among males, sex differences in mortality have always favoured females in Kerala. An excess mortality among males is partly responsible for their smaller size in the general population.

Infant and child mortality has fallen very significantly in all sections of Kerala society. However, sharp differences in mortality among the various socioeconomic groups persist even today with the weaker sections having mortality rates twice that of the privileged classes. One of the strongest determinants of infant and child mortality in Kerala has been the educational level of the mother, especially educational levels above 4 years of schooling.

Migration

Until the Second World War, Kerala was a net in-migrating state; in-migrants, especially those from Tamil Nadu, outnumbered the out-migrants from Kerala to the other states of India. The number of out-migrants from Kerala increased considerably after World War II. This trend continues even today.

The change in the direction of net migration, from net-in migration to net-out migration coincided with the increase in the rate of natural increase in the state. In a way, it was a consequence of the widening of the gap between the birth rate and death rate. But once migration became a way of life, the decrease in the natural increase has not succeeded in reversing the migration habit.

As a consequence of the land reforms in Kerala, a large number of peasants from the erstwhile Travancore State found themselves in a very tight position to get for themselves a house site and suitable work. As a result, a fairly large number of them moved to the Malabar districts of the state which used to have plenty of vacant land. This internal movement had significant effects on the demography and the economy of the Malabar region of the state (Joseph, 1988).

The oil boom of the 1970s brought about a new chapter in the history of migration from the state. Large number of migrants from the state began to migrate to the Gulf countries. Around 1975, the estimated number of migrants from India in the Gulf countries was 150,000, majority of whom being from Kerala. A study conducted by the Kerala Government placed the total emigrants and out-migrants from Kerala at 680,000 of whom 301,000 were in Gulf countries. According to Zachariah et al. (1994) about 10 per cent of the Kerala families had one or more migrants in the Gulf countries. One peculiarity of unskilled and semi-skilled workers profoundly affecting the social system in the state.

Migration from Kerala was never a very significant component of population growth in the state. The maximum effect was in the 1981-91 decade when net migration rate was - 0.30 per cent, compared with a natural increase rate of 1.63 per cent per year.

Family Planning

Family planning, as it is known today, was virtually unknown in Kerala before the 1950s with only a very insignificant proportion of the couples resorting to any conscious effort to regulate the number of children. Those who did try to control fertility could have been adopting abstinence or withdrawal or some other inefficient methods. The official family planning programme in Kerala, as in the rest of India, was introduced only by the middle of the fifty's. From a level of near zero, the ever-use of family planning methods in Kerala has now reached a level as high as 75 per cent. Almost all women who need protection are indeed protected. This is a stupendous achievement in the span of about a generation.

As in the other states of India, family planning in Kerala was virtually a sterilization programme with vasectomy dominating in the beginning and tubectomy receiving the prime position after 1973. In recent years, there has been a slight upward trend in the proportion of couples who resort to temporary methods of family planning.

More than 30 per cent of the sterilization operations in Kerala were done in private hospitals, indicating that in Kerala, private hospitals and clinics have played an important role in the implementation of family planning programme.

Conventional family planning methods were practiced by the well-to-do and the educated couple. The correlation between the use of temporary methods and the level of education was highly positive. On the other hand, propensity to get sterilized was negatively correlated with educational achievement. However, the impact of socioeconomic factors on who gets sterilized or who uses a temporary method is getting diminished. What matters now is the woman's demographic characteristics-age, parity, etc.

Age at Marriage

Kerala has always enjoyed a relatively high age at marriage. In 1947, although the mean age at marriage of girls in Kerala, about 15-16 years, was high compared to that in the

other states of India, it was not high enough to affect the TFR of the state in any significant manner. By 1997, the mean age at marriage of girls has increased to about 22-23 years affecting the fertility rate of women in the 15-24 age group very significantly. According to the 1991 census, the proportion of married women in the 15-24 age group was 34 per cent compared to 51 percent in 1951. Other things being equal, this 17 percentage point decline would have made a similar contribution to the fertility decline during the period.

Age at marriage of women differs very significantly by the socioeconomic characteristics of the women and her husband. Education is the principal differentiating factor, the more a woman is educated the higher is her age at marriage. However, the relationship is not linear; increase in age at marriage is higher at higher levels of education.

At present, the interval between the age at puberty and the age at marriage is about 10 years in Kerala. Thirty years ago, the interval was only about 3 years. As marriages are delayed more and more, the interval also gets extended. Such extension has its positive effect on fertility reduction and the girl's educational attainment. But in many Kerala families, the waiting period is getting too long, bringing with it many social and psychological problems.

Kerala's Development Experience Since 1947

Kerala's development experience since independence in 1947 may be characterized very briefly as one of stagnancy in the productive sectors and in employment creating schemes, and rapid developments in the social sectors. Kerala has a dismal record in the industrial and agricultural sectors at a time when the state did remarkably well in most social sectors-- education, health, family planning, etc. It has also done very well in social welfare schemes directed at the weaker segments of the population, land reforms and other income distribution schemes. But public policies proved to be inadequate to tackle the grave unemployment problem in the state and to accelerating the productive sectors.

Table 3: Social Indicators, Kerala, 1951-91

Year	Percent Literate		Mean Age At Marriage	
	M	F	M	F

1951	49.8	31.4	26.3	19.8
1961	55.0	38.9	26.8	20.0
1971	66.4	54.3	26.3	20.8
1981	75.3	65.7	27.2	21.9
1991	94.5	86.9	27.9	22.3

State Domestic Product

During the 30 year period 1960-90, the State Domestic Product (SDP) of Kerala showed an average annual growth rate of about 2.7 percent per year (barely exceeding the average population growth rate of about 1.8 percent per year during the same period), but over this period the rate has declined from 3.3 percent in the first half of the period to about 2.0 percent in the second half.

The primary sector experiences the steepest downward trend. Its growth rate has declined from 2.7 percent during 1960-75 to -0.6 during 1976-90. During the same period, the secondary sector's growth rate has declined from about 4.5 percent in the first half to 2.8 percent in the second half. Only the tertiary sector of the economy has shown a respectable growth rate. The rate has increased from 3.6 to 4.4 percent (Table 4) (Kannan, 1995).

Table 4: Percent Growth of State Domestic Product, Kerala 1960-90*

Sector	1960-75	1976-90	1960-90
Primary	2.71	-0.64	1.21
Secondary	4.51	2.78	3.74
Tertiary	3.61	4.37	3.95
Total	3.28	1.96	2.69

* 1970-71 prices

Source: Kannan 1995

The situation with respect to the social sector, especially in the field of education, health and family planning, is altogether different. Even in 1947, Kerala was better off in social sector compared to other parts of India. The difference between Kerala and the country as a whole has only widened in the last 50 years.

Education

Kerala's development experience has received international and national attention, mostly because of the state's high literacy rate and the very high level of education of the female population. Even by 1951, nearly half the population of Kerala were literate. By 1991, Kerala was declared a 100 percent literate state.

The development of education in the state owes much to the importance given to it in the Kerala culture, and to the efforts of the European missionaries, who finding that Kerala had already a high proportion of Christians, turned their attention to education and health.

Historically, education was provided to the masses by using temples as centers, with non-formal lessons imparted through religious stories. More recently, the rulers of Travancore and Cochin States gave considerable leadership in education and health. All official efforts were supplemented by private efforts, which began with the establishment of church managed schools and colleges. As a result of these efforts, the literacy rate among females in Kerala increased from 31 percent in 1951 to 87 per cent in 1991. In this respect, the gap between Kerala and India has increased considerably during this period.

Two aspects of the educational development are particularly relevant to the demographic transition. First, education is so widespread that there are practically no illiterate men or women in the prime reproductive ages. Second, the supply of educated personnel has been far in excess of demand so that the problems of the educated unemployment has become progressively worse. This imbalance in the supply and demand of the educated has led to the large-scale migration from Kerala and to a greater acceptance of small family norms.

One very significant development in Kerala in recent years has been its achievement of universal literacy. The state claimed 100 per cent literacy (in the 5 - 59 years' age group) by the end of 1990. The Total Literacy Programme (TLP) did not increase literacy rate in the state very much as the rate was already high, but the programme was able to change the attitude of population regarding the need to be educated.

Health

Kerala has always been a relatively healthy place for human habitation. The state has a long tradition of medical and health treatment. The rulers of the state have always taken a keen interest in health matters and provided funds for curative and preventive medicine. This good tradition was continued and strengthened by the European missionaries who established a chain of private hospitals and trained the personnel needed to man them.

Hospitals in Kerala are evenly distributed throughout the state. The easy access to medical facilities, the relatively low cost of medical services and the high demand for them are important reasons for the better health conditions in Kerala than in other states of India. The high density of population and the even settlement pattern has made the health services easily available to most of the people in the state.

Surprisingly, Kerala is not so better off with respect to reported morbidity. The reported morbidity rates in Kerala are several times higher compared to those in the other states of India. One reason for the higher rate in Kerala could be the high humidity conditions and the long rainy season in the state. Another reason could be the much higher awareness and demand for medical treatment among the population. Easy access to hospitals, government and private, is a third factor. The relatively older population and the success of the doctors to postpone deaths by several years are additional factors in this regard.

Along with the drastic decline in mortality rate there was also considerable transition in the pattern of diseases and causes of death. The transition in the causes of death consists of a passage from infectious diseases to acute degenerative diseases. In recent years, circulatory disorders have shown a marked increase in their incidences. Among disorders of the circulatory System heart attack accounted for nearly 80 per cent of the deaths. Cancer and diabetes accounted for most of the deaths in the category "other clear symptoms". The two other major killers in Kerala are coughs and disorders of the central nervous system (Irudaya Rajan and James, 1993)

The universal immunization programme (UIP) was launched in the state in 1985. Under this scheme every child in the state was to be given three doses each of DPT and OPV, one dose of BCG, one dose of measles vaccine before the first birthday of the child. Pregnant women were to be given two doses of tetanus toxoid early in their pregnancy. The programme was quite successful in Kerala. According to Zachariah (1994) about two-thirds of the mothers were given tetanus injection during pregnancy, more than 60 per cent of births took place in hospitals or nursing homes, more than 50 per cent of children were immunized against the common childhood diseases. More recent official data for the state as a whole indicate a much higher proportion of mothers and children protected by the immunization programmes.

Land Reform and Other Redistribution Policies

Undoubtedly one very significant development in recent political economy of the state was the shift in the political power from the rich to the poor. Along with this shift, and as a consequence of it, there has been considerable transfer of wealth and income to the lower strata of the society. These changes have been brought about through universal adult franchise, land reforms, job reservation, enforcement of minimum wages, extending pension benefits to socially vulnerable sections of the population, reservation in educational institutions, government and other public offices for economically and socially backward groups.

The first land reform legislation after independence was adopted by the State Assembly in 1957. It sought to give permanent tenure to all tenants, to establish the right of tenants to purchase the land they tilled, and to put a ceiling on the total area of land a primary family unit could own. But before the legislation could be enforced the government fell and the Land Reform Act was finally passed only in 1963. The actual implementation took several more years. By 1969, tenancy was completely eliminated and rental income from land was completely abolished throughout the state. The 1969 amendment of the 1963 Land Reform Act lowered the ceiling on the land holdings to 10 acres, removed some of the exception from the ceiling and gave the hutment dwellers the right to purchase about one-tenth of an acre per household at a nominal price.

Kerala's land reform is judged a success compared to similar efforts in the other states of India, but even in Kerala the impact on land distribution has not been that large. Most of the households with excess land had distributed the excess land among family members much before the enforcement of the Act.

Development Experience and Population Growth

Over the last decade, there seems to have emerged a sort of consensus about the major determinants of demographic transition in Kerala. It is now generally accepted that programme factors played a major role in the accelerated demographic transition in the state. Programme factors acted not only as a means of fertility and mortality declines but also as causes of the decline. At the same, it is widely acknowledged that, the programme factors alone could not have caused the demographic, changes in the state with the speed with which it occurred without the changes in the attitude concerning the number of children a couple should have, and the quality of children one would like to have. The socioeconomic changes initiated the transition and created the necessary milieu in which family planning and MCH programmes became not only desirable but also necessary and essential. They created the initial demand, and the programme factors created additional demand and also provided the means by which fertility and mortality could be reduced.

Level of Living

Several elements of Kerala's development experience have been identified as causal factors in the rapid decline in fertility and mortality in the state. They include income or level of living, education and low mortality, etc. Similarly, several of the programme factors such as land reforms, the universal literacy programme (TLP), the universal immunization programme (UIP), the maternal and child health programme (MCH), family planning programme, etc., have played decisive roles in the transition.

Some of the earlier studies on determinants of fertility decline in Kerala have identified level of living as a factor in fertility transition in Kerala. But the evidence now available do not support this thesis. At the macro level much of the fertility decline in Kerala took place at a time when the state's domestic product (SDP) was relatively low and was growing at a declining rate of growth. If a high level of income was a prerequisite, then Kerala would not have experienced the kind of demographic transition it did. What Kerala experience has shown was just the opposite; that even at low levels of economic development, public policies and programmes could greatly influence demographic trends. At the micro level also, there are difficulties with subscribing to the thesis that as income levels rise, fertility and mortality will decline. Most of the empirical data that are available now have not indicated any significant association between income and fertility decline when other factors such as education, etc., are controlled.

If fertility transition in Kerala was not caused by a rise in the level of living, was it induced by poverty? (Mencher 1980, Basu 1986). The significant negative relation between sterilization rate and educational level and other socioeconomic variables observed repeatedly in demographic surveys conducted in the 1980s was the main basis of this conclusion. The argument is that the poor in Kerala were pushed so much against the wall that the easy option left to them was to reduce the number of their dependents.

Although it may not be quite correct to conclude that fertility transition in Kerala was poverty induced, the poverty factor in fertility decline among the poor in Kerala cannot be ignored altogether. By all accounts, incentives seem to have played a major role among the poor couple's decision to avail of sterilization method. And incentives were more attractive to the poor than to the rich. The large amount of data on socioeconomic differentials of per cent sterilized collected in recent years point to the conclusion that poverty is one of the factors favouring acceptance of sterilization.

Whether poverty is a determinant of fertility is something on which one can have genuine difference of opinion. The association between poverty and high sterilization rate was perhaps due to an intervening variable, namely, incentives. If at all there is a causal factor, it should be the incentives and not poverty. And incentives are part of the programme. Therefore, it is not the socioeconomic factor-poverty-but the programme component-incentives-which caused the demand for sterilization. (Zachariah, 1995).

Diffusion Theory

After a very thorough analysis of the determinants of fertility in Kerala, Bhat and Rajan came to the conclusion that fertility transition in Kerala adheres more closely to the diffusion theory than to structural change theory (Bhat and Rajan, 1977). Most people will agree with their conclusion, but the question is: what is diffused and who diffused them? In the matter of the analysis of the determinants to fertility decline, should we not give greater importance to the content and agent of diffusion than to the process itself. Once that is done, their reading of the determinants of fertility in Kerala coincides with Zachariah's who has identified policies and programmes as major determinants of the transition in Kerala.

Policies and Programmes as Factors in Demographic Transition

In this analysis, Zachariah gave considerable importance to policies and programmes as determinant of fertility and mortality transition in Kerala (Zachariah 1984, 1994, 1995, 1997). In Kerala, policies and programmes were not merely means of fertility decline, but they also played a major role in creating demand for family planning and maternal and child health.

It is, however, doubtful whether the recent sharp decline in marital fertility and infant mortality, which has embraced all socioeconomic groups, was caused solely by these long-term changes in attitude concerning the need for quality children. More likely, it was precipitated by more recent policy interventions (land reforms, agrarian reforms, the UIP, TLC, and the (universal) family planning programme, and the accelerated migration to the Gulf (Zachariah, 1997: 106).

The official programme was not merely a means for providing contraceptive services, it has also been an independent causal factor in changing family size norms, and in creating and strengthening demand for family planning. In Kerala, it went one step further. As a result of the economic incentives offered to officials and acceptors, the programme was able to create demand even where it did not exist earlier. Thus Kerala's family planning services provide services where demand existed, strengthened demand where it was weak, and created demand, especially among the poor, where no demand existed previously.

The official programmes of family planning and MCH became effective in reducing fertility and mortality only because the information reached a critical mass of the population. This happened through the IEC (information, education, and communication) components of the family planning programme, the MCH programme and the UIP. The programmes deserve identification as major causal factors in the fertility and mortality transition.

Would the diffusion have worked as well in Kerala without some of the earlier socio-economic changes which preceded intensification of the family planning programme and the structural changes brought about by the redistribution policies and programmes of the state government in the early seventy's? Without some of the structural changes, policies and programmes in family planning and MCH would not have worked as well as it did in Kerala.

Land Reform as a Factor in Fertility Decline

There are reasons to believe that Kerala's land reform and other redistribution policies played a major role in creating desire for a small family. In the World Bank Fertility Survey (Zachariah, 1984) it was found that the cohort of women who got married after the implementation of land reform and intensification of the family planning programme in Kerala had a distinctly lower fertility level than women who were married before that period.

In an analysis of the impact of land reforms on fertility using the World Bank Fertility Study data, Zachariah (1983) concluded that the amount of land owned by a household or the amount of land a household gained or lost through the land reforms had very little association with the fertility level of women in the household. Nevertheless, Zachariah maintained that it was premature to conclude that the land reforms had no effect on fertility decline in Kerala. According to him, much of the effect lies in the future.

First of all, the hutment dwellers who gained a small plot of land under the land reform schemes modified their family building habits. Faced with increasing difficulty in finding new house sites, their children are likely to marry at an older age and get sterilized more often than in the past. The land reforms had played a part in the changed attitude of the hutment dwellers in their family building habits.

Even a more fundamental change in the desired family size has come about, not through land transfers under the aegis of the land reforms, but through a change in the value system of the society. Land reform and the related redistribution policies of the successive governments of Kerala have fundamentally altered the attitude of the population towards landed property as source of economic security. In the past, land was the principal means of income of a household and its most trusted economic asset. A person's economic worth is measured by how much land he or she owns. Land reform changed all that.

The place of land as economic asset was replaced by acquired personal attributes such as education and health. This basic change in the value system has had a deeper and more lasting impact on the demand for fertility control than has the physical redistribution of land brought about by the land reforms. In this respect, land reform played a significant role in the diffusion of birth control ideas among the population of Kerala.

Education as a Factor in Fertility and Mortality Decline

In almost all studies related to determinants of fertility decline in Kerala, the state's high educational level and low mortality have received prime importance. Significant negative correlation between educational level on the one hand and fertility and mortality levels on the other was evident in all studies on fertility and mortality in Kerala.

The effect of education on fertility and mortality takes place through more than one channel. Educated women marry late and this could be a factor in their lower fertility. In fact, the early decline in fertility was associated with increase in age at marriage, which in turn was associated with the increase in the educational attainment of girls.

Educated women will have better knowledge of and easier access to family planning method and they will be in a position to use them more effectively. This is the diffusion point of view.

Educated women will also have wider choice in their economic and social pursuits, which will come in conflict with child bearing. They will face higher opportunity costs by having children. This is the opportunity cost point of view.

The educational levels of the Kerala women were relatively high (compared to the all-India situation) even before the onset of rapid fertility decline. In the early 60s, the enrollment ratio in primary schools was over 100 per cent. Nearly three-fourths of the children in the 10-14 age group were literate. Thus, there is no reason to believe that the sharper fertility decline in the 70s was triggered by any significant increase in population. However, there are reasons to believe that education achieved greater importance as a factor in fertility decline since the late 1960s.

The land reforms and the other redistribution policies of the government in Kerala were legislated in this period. This brought about considerable fear among the landed class and doubts about investments in land holdings. As land lost its prime significance in the investment calculation of the average Kerala family, something else has to come in its place. This something else was human resource development, education and health in particular. Between 1971 and 1991, the literacy rate in Kerala had improved by 28 percentage points among males and 33 percentage points among females.

In the changed economic perspective, children of higher quality became not merely desirable, but they became essential for upward social mobility and even for the sheer economic survival, both for the well-to-do and for the poor. Formerly, the rich could fall back on the family's land, caste and religious affiliations or other connections to make a respectable living and maintain their status in the society. This was no longer possible in the changed circumstances under the land reform and other redistribution policies of the government. Without adequate education and physical and mental health, a person could not make a living on the basis of his caste or religion or from land alone. For the poor and those in the lower strata of the society, education offered the only hope of getting out of the circle of illiteracy, poor health and poverty. With the emerging political changes and with all the social and economic reforms favouring them, the poor saw a chance to improve their lives. Education and good health were prerequisites.

An additional factor was the Gulf migration. Starting with the oil boom of the early 70s a large number of persons went to the Gulf countries to make a living. Migration has helped them not only to make a living but also for some of them to catapult themselves from the near bottom of the society to the near top. Here, also the prerequisites were the type of skills, which are in demand in the host countries: education and good health.

Education has become cheaper in some respect and expensive in some other respects. Public education has become cheaper as there is hardly any fee up to secondary level in government schools. However, if you ask any parent now, she or he will tell you that education is becoming more and more expensive each day. An increasing proportion of parents send their children to "English medium" schools where the fees are high. Other expenses connected with sending children to schools have also increased enormously.

Demand for higher education has increased enormously, partly because there is no employment opportunities open to the children at secondary school level and partly because the opening up of employment opportunities in the Gulf countries for persons educated at post matriculation level. Education at these levels, whether job oriented such as computer training or even regular college course are expensive. Thus although education has become cheaper in certain areas, on the whole the demand for schooling in English medium private schools and for higher and technical education has definitely lead to cost escalation for education at the household level.

On the benefit side of education, a distinction has to be made between short-term and long-term benefits. Child labour was never very common in Kerala. As children began spending longer and longer periods in schools, their economic contribution to the family became less and less. Even without taking increased schooling into

consideration, the short- term economic benefits of children has shrunk as the tight employment situation has reduced their chance to obtain paid work outside home.

On the other hand, there is every reason to believe that the long-term benefits have increased, even after making allowance for the lag between the time when the costs are incurred and the time when benefits are reaped. But these benefits come only if the necessary initial investments are made in children's education. With the increase in the cost per child and the number of surviving children, most families in Kerala did not have the resources to make this initial investment too often. They, therefore, opted for a well-endowed small family over an ill-endowed large one.

Thus, education has been a factor in the state's demographic transition in more than one way. It has certainly helped the diffusion of the family planning message among the masses. It has also worked through an increase in the opportunity cost of women in all strata of the society. Higher education became an economic necessity as investment opportunities in land became highly uncertain. And the costs of higher education has increased and few could afford to educate more than one or two children. The idea of a small well-equipped family became an accepted norm.

Health Programmes as a Factor in Mortality and Fertility Decline

That mortality decline has an effect on fertility trend is well established. The channels through which mortality decline induces fertility decline are also well documented.

The declining mortality conditions in Kerala has been recognized as one of the factors in the decline in fertility in the state. In the parent's calculation what is relevant is not the number of children born but the number of children surviving. As mortality falls the number of surviving children increase and, therefore, women become more susceptible to the acceptance of family planning methods. It is, however, difficult to demonstrate the exact contribution of mortality decline on fertility decline as the two factors are interrelated: mortality affects fertility and in turn is affected by fertility.

There is one piece of evidence, which points towards the conclusion that health programmes did have a favourable impact on fertility decline in Kerala. It is the unexpectedly large fertility decline in Kerala since the strengthening of the MCH programme and the introduction of the UIP in the state in the 1980s.

By 1985, the birth rate in Kerala was relatively very low, about 23-24 births per 1000 population, very close to the replacement level. Most of the women who wanted to control their fertility were already in the programme. Further decline in the birth rate was thought to be difficult to come by; the rate of decline was expected to be very low. But the actual decline during 1985-90 was larger than the decline in the previous five-year period. One of the reasons for the unexpected acceleration in the decline in the birth rate could be the strengthened MCH and the UIP programmes. These programmes brought the women in the reproductive age's closer to the health system, which also delivered family planning. The proportion of women using a government hospital or private nursing home for delivery had increased to nearly 70 percent. Those who came for the health related programmes- antenatal care; deliveries and immunization-also availed of the family planning programmes.

On its turn, the accelerated fertility decline resulted in fewer unwanted births and births to mothers under 20 years and over 35 years, thus reducing the infant mortality.

Kerala's Fertility Transition in the Context of International Experience

At one time, Kerala's fertility transition was thought to be an anomaly as it took place in conditions different from those usually associated with demographic transition in the West. But today it is not considered to be an anomaly any longer. It is now well accepted that Kerala's experience is only one in the various stages in the demographic transition of the developing countries.

In the beginning of this half a century, a very tight relationship was assumed between demographic transition and transitions in industrialization, urbanization, social mobility, status of women, etc. The Indian data of the 1950s or the Kerala data of the same period demonstrated the same type of close relationship between demographic transition and economic and social changes. In the case of Kerala, education occupied a significant position among the socioeconomic factors affecting fertility and mortality. In this early period changes in fertility took place mainly through increases in age at marriage, which in turn was affected mainly by increases in the years of schooling. As a result, marital fertility remained fairly stable.

A new stage in fertility transition came when governments entered the field of population planning. Socio-economic factors began to lose some of their importance and government policies in family planning began gaining importance. Of course, family planning has always been a proximate determinant through which fertility changes took place. But it was only when the government initiated efforts at population

planning that family planning programme became a cause of fertility decline in Kerala. The official family planning programme served to inform the population about the need for family planning communicated information about the various methods of family planning and about the various options available (IEC services of the family welfare department). This large scale transmission or diffusion of family planning information by the usual channel, that is from the higher classes of the society to the lower classes, normally would have taken several more decades. The government efforts cut down the time period required for this transmission to less than a generations.

An element in Kerala's family planning programme (also in other states in India) not usually found in earlier programmes in other countries was the cost-free nature of the family planning services and the financial incentives given to the acceptors and the providers of the services. Kerala's family planning programme provided services where there- was demand for them, strengthened the desire for fertility control (through IEC component) where the motivations were weak, and created motivations where it did riot exist through its incentive programme.

In the background of the official policies and programmes, were the socioeconomic conditions favouring the acceptance of a small family size. The impact of the family planning programmes as a demand creating factor would have been much smaller and more temporary, if Kerala did not experience the type of socioeconomic transition it experienced prior to the introduction of strengthened family planning programme.

In the light of Kerala experience, one might question the traditional view that fertility transition in the developed countries took place as a consequence of industrialization, urbanization, etc. In the developed world, growth in the economic sector and that in the social sector took place more or less simultaneously. There were not many examples in which significant growth in social sector took place without any similar growth in the reproductive sector. Therefore, it was not possible to separate out the demographic effect of the development in the economic sector from that in the social sector. It is just possible that, even in the developed countries, the factors underneath the demographic transition could be the development in the social sector rather than that in the economic sector.

Kerala's experience in the determinants of fertility transition is not the final chapter in the story of fertility transitions in India or other developing countries. The experience of Tamil Nadu, Andhra Pradesh, Karnataka, etc., which have reached below, or near replacement level fertility in recent years is not a repeat of the Kerala experience. In Kerala, family planning worked because of the state's good performance in education

and health, a relatively efficient administrative set up and a family planning programme with incentives. In Tamil Nadu, family planning worked in spite of its poor performance in health and education. This state could bring about the desired changes in fertility through an effective and committed administrative machinery supported by political will, innovative social welfare schemes which were not affected by the party in power, social reform movements initiated by Periyar and a holistic approach to family planning programme well integrated with other women-centred programmes. In Andhra Pradesh the principal factor could be abortion or some other component in the overall programme.

Fertility transition to near replacement level has been achieved in only the south Indian states. Sooner or later the other states will follow suit. When their story of transition is also unfolded, other "top down" factors would have played major roles. When their stories are fully analyzed, Indian experience would have made a major contribution to the understanding of fertility transition in the developing world.

Relevance of the Kerala Experience for other States of India

Kerala has experienced one of the sharpest fertility decline among the Indian states. It completed fertility transition in just about a generation. The factor underlining the transition is now fairly well established. Kerala experience has demonstrated that a rapid growth in income and the general level of living is not a necessary condition for fertility transition to take place. A government sponsored family planning programme can indeed make a substantial dent in fertility rates not only among the higher income groups but more so among the poorer people. The normal positive association between socioeconomic status and family planning acceptance can be broken by a good family planning delivery system. The programme in other states should be able to produce comparable results.

The success in Kerala was not due to greater family planning inputs. It was likely due to more efficient delivery of services and a higher spin-off effect. The same level of family planning services has been more effective in Kerala because of the different socioeconomic conditions, especially lower mortality and higher female literacy. One lesson from the Kerala experience is that the sequence in which policies affecting the determinants of fertility are implemented is as important as the policies themselves. In Kerala the steps came in the right order—a reduction in infant mortality and child mortality accompanied or followed by an increase in female education, followed by redistribution policies and finally family planning programme. The impact of Kerala's family planning programme would have been much smaller and more temporary had

the programme been introduced prior to a substantial reduction in IMR and substantial improvement in female education. In states where the IMR is still high and where female literacy is still low, high priority should be given to improvements health and education.

Kerala's experience in fertility and mortality reduction in the 1980s is a good demonstration of how a good MCH programme can help reduce both fertility and mortality simultaneously. By the end of the 1970s, Kerala's infant mortality rate had already declined to about 40; the TFR had declined to about 3.4. At this level, further declines were predicted to be slower, but the facts proved otherwise. In the 1980s, the IMR declined faster than it did in the 1970s, and fertility continued to decline more or less at the same rate. A good deal of the credit for this should go to the strengthened MCH programme of the 1980s. A well executed MCH programme can go a long way in reducing fertility, in other states of India also; and, in fact, should be a first priority in any long-term strategy to reduce fertility and mortality in these states to replacement level.

Since Kerala's fertility and mortality were due as much to historical factors as recent policy interventions, the other states in India cannot follow Kerala's path in total. While they can learn many things in the area of effective programmes and their implementation methods, they have to devise other methods to diffuse the policies and programmes taking into consideration the special situation in their respective states. This is what Tamil Nadu did and this is what Andhra Pradesh did. Each state, taking their culture and historical background in socio-economic development into consideration, must devise their own strategy to accelerate the process of diffusion of family planning and maternal and child health programme ideas.

Conclusion

Within the course of a generation, Kerala's fertility has declined from one of the highest in the country to one of the lowest. The State was the first to reach the national goal of $NRR=1$, but it is not the only one now. Kerala's achievement in demographic transition remains unique in the country in the sense that it reached replacement level fertility when its IMR was 13, a rate which is comparable to some of the best in the world. When other states reached replacement level fertility, their IMRs were several times higher (for example 40 in Tamil Nadu).

The factors underlying the unique demographic transition in Kerala are several. Policies and programmes, those formulated at the national level, as well as those developed at

the state level, have played major roles in the demographic transition in the state. Some of these policies and programmes, especially those formulated at the national level, were implemented with the specific objective of moderating fertility and mortality rates. They include the family planning programme, the maternal and child health programme, the universal immunization programme, etc. What Kerala did was to implement them more efficiently than in the other states.

There were state-level programmes formulated and implemented with other social, economic and political objectives. Their demographic effect was unintentional. Nonetheless, their long-term demographic consequences were very far-reaching. Foremost among these programmes were Kerala's land reform and other redistribution programmes and the universal literacy programme.

The national level programmes—the family planning programme, the MCH programme, the UIP—acted not only as a means of fertility and mortality declines (as proximate determinants) but also as causes of the decline. The IEC components in these programmes, and the incentives given to the acceptors and providers, served to increase greatly the demand for these services.

At the same, the national level programmes alone could not have caused the demographic changes in the state with the speed with which it occurred without additional changes in the attitude concerning the number of children a couple should have and the quality of children one would like to have. The socioeconomic changes, especially the state's historic achievements in the field of education and health, served to reduce Kerala's fertility through increase in marriage age. Subsequently, the more recent state-level policies and programmes (the land reform and the total literacy campaign) created additional demand and created the necessary milieu in which family planning and MCH programmes became not only desirable but also necessary and essential. The historic factors created the initial demand, and the programme factors created additional demand for themselves and also provided the means by which fertility and mortality could be reduced. Kerala's family planning and MCH services provided services where demand existed, strengthened demand where it was weak, and created demand, especially among the poor, where no demand existed previously.

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