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Historical analysis of the development of health care facilities in Kerala State, India

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Kerala's development experience has been distinguished by the primacy of the social sectors. Traditionally, education and health accounted for the greatest shares of the state government's expenditure. Health sector spending continued to grow even after 1980 when generally the fiscal deficit in the state budget was growing and government was looking for ways to control expenditure. But growth in the number of beds and institutions in the public sector had slowed down by the mid-1980s. From 1986–1996, growth in the private sector surpassed that in the public sector by a wide margin.

Public sector spending reveals that in recent years, expansion has been limited to revenue expenditure rather than capital, and salaries at the cost of supplies. Many developments outside health, such as growing literacy, increasing household incomes and population ageing (leading to increased numbers of people with chronic afflictions), probably fuelled the demand for health care already created by the increased access to health facilities. Since the government institutions could not grow in number and quality at a rate that would have satisfied this demand, health sector development in Kerala after the mid–1980s has been dominated by the private sector.

Expansion in private facilities in health has been closely linked to developments in the government health sector. Public institutions play by far the dominant role in training personnel. They have also sensitized people to the need for timely health interventions and thus helped to create demand. At this point in time, the government must take the lead in quality maintenance and setting of standards. Current legislation, which has brought government health institutions under local government control, can perhaps facilitate this change by helping to improve standards in public institutions.

Introduction

Though poor by standards of per capita income, industrialization or agricultural production, the Indian state of Kerala has shown that these constraints need not hinder the development of social sectors. The state has achieved near universal literacy for both males and females and the health care indices are comparable to countries with more advanced economies (Table 1). This 'health development' is generally attributed to inter-sectoral factors such as the spread of education, political awareness, development of road networks and transportation, and social movements. However, the role of the health care sector itself cannot be ignored.

Table 1. Literacy, sex ratio, crude birth rate (CBR), crude death rate (CDR) and infant mortality rate (IMR) for India and Kerala

Indicator	India	Kerala
Literacy % (males)[a]	64.13	93.62
Literacy % (females)[a]	39.29	86.17
Sex ratio[a] (females/1000 males)	927	1036
CBR (per 1000 population)	28.5	17.3
CDR (per 1000 population)	9.2	6.0
IMR (per 1000 live births)	74	13

[a] Refers to year 1991. Other data are 1993.
Source: Health Monitor. Ahmedabad: Foundation for Research in Health Systems, 1994.

Investment in education and health infrastructure has been a consistent policy of all elected governments in Kerala, whatever their political leaning. The tradition of government support for health development has been a catalyst for the advancement of health care in the state. In recent years, there has also been considerable growth in private health facilities, so much so that these now outstrip government facilities in number. There may be a number of reasons behind this growth, including changes in social and economic factors such as increasing per capita income and the spread of literacy. So far, there has been no attempt to describe the growth of the state's health sector, the pattern of distribution of public and private facilities, and the circumstances contributing to this pattern.

Objective

This paper seeks to describe the growth of health care facilities in Kerala, with respect to: the increase in the number of public institutions and beds, and the trends in government

expenditure on health; the current pattern of distribution of health care facilities in the public and private sectors; and the implications arising from these for the state's future health development. The paper is divided into four sections: (1) a summary of the historical milestones in the growth of modern medical care in Kerala; (2) health sector growth in Kerala after the state's formation in 1956; (3) current patterns of distribution of health care facilities in the public and private sectors; and (4) the policy concerns arising out of these.

History of western medical care in Kerala

Kerala has a long history of organized health care. Before the advent of European medicine, families of practitioners of indigenous systems like Ayurveda handed their traditions from generation to generation. People were accustomed to approaching caregivers when they were sick, rather than turning to self-treatment. When the colonial powers established their presence in the region, they brought their medical system with them. In the 19th century, the princely rulers of the erstwhile states of Travancore and Cochin (which later were integrated into the state of Kerala along with the Malabar district of the Madras presidency in British India) took the initiative in making the western system of care available to their subjects. A royal proclamation of 1879 made vaccination compulsory for public servants, prisoners and students.[1]

All heads of public departments were instructed to see that those under their care and control were vaccinated. Administrative reports indicate that public health authorities were also concerned about the spread of cholera during fairs and festivals, and initiated measures of containment.[1] In 1928, under the auspices of the Travancore government and with the help of the Rockefeller foundation, parasite surverys were conducted in Travancore which led to measures to control hookworm and filariasis. A health unit incorporating many of the concepts of primary health care was also started in a rural area.

Development of health services was not confined to the provision of preventive care – the general hospitals in Trivandrum and Cochin are about 150 years old. Initiatives were also taken to get members of the respective states who were trained in western medicine into key posts in the government service. The appointment of Dr Mary Punnen Lukose as the surgeon-general of Travancore in the early years of the 20th century is a case in point. A doctor trained in England, she was the first woman to be appointed surgeon-general in an Indian state, at a time when women doctors were still a rarity in Europe and America.

Development of health services was complemented by other parallel events: initiatives to provide safe drinking water (in the capital city of Trivandrum initially) and the provision of state supported primary education, including education for women. Though schooling had not reached today's levels of coverage, the first steps were taken. Another important factor was the establishment of mission hospitals in remote areas under the auspices of Christian churches. Young girls from the Christian community in Kerala were keen to take up nursing as a career.

Health sector development in Kerala

At the time of formation of the present Kerala state on 1 November 1956, the foundation for a medical care system accessible to all citizens was already laid. One indicator of the government's commitment to health services provision is the proportion of government expenditure set apart for health. From the time of the state's formation, the government's budget allocation for health was considerable. Social sectors, mainly comprising education and health, accounted for a large share of the government development expenditure. The period from state formation to the early 1980s was characterized by great growth and expansion of the government health services. Figures show the annual compound growth rate of government health care expenditure for the period at 13.04% (at current prices, without deflation), outstripping both the annual compound growth rate of total government expenditure at 12.45% and the annual compound growth rate of the state domestic product at 9.81%.[2]

From 1961 to 1986, the state greatly expanded its government health facilities. The number of beds and institutions increased sharply. The total number of beds in government hospitals in the western medical sector increased from around 13 000 in 1960–61 to 20 000 in 1970–71, and 29 000 in 1980–81. By 1986, the total was 36 000. Estimates in 1996 put the number at 38 000.[3,4] Thus the major growth phase of facilities in the government sector was before 1986, after which it slowed considerably.

Fiscal crisis in the government and its effect on health services

The period from the mid-1970s to the early 1990s has been termed a period of 'fiscal crisis' for the state government. There was unprecedented growth in revenue deficits – the excess of government expenditure over revenue – which has been well documented in recent studies.[5] Though budgetary deficit has become a common feature for all states in India, the magnitude of the deficit in Kerala has been steadily growing and is substantively higher than the All-States average in India as a whole. During this time, expenditure on health shows that after an initial slowing down of the growth of average annual total expenditure in real terms from 1975–79 to 1980–84 (Figure 1), growth recovered from 1985–89 through 1990–94. Plan expenditure, which is supported by grants from central government, did not contribute to the initial setback; in fact, plan expenditure grew from 1975–79 to 1980–84. Plan expenditure consists mainly of expenditure on central government schemes such as national disease control programmes. As such, the component of capital expenditure is larger in plan expenditure. Non-plan expenditure is the major chunk of government expenditure on health and is contributed by the state government. Revenue expenditure, which includes a large component of salaries, constitutes the larger share of non-plan expenditure. By 1990–94 the central government severely curtailed spending on health as a natural consequence of its own policies; this is reflected in the reduced plan expenditure in Kerala.

Examining government health expenditure under its different

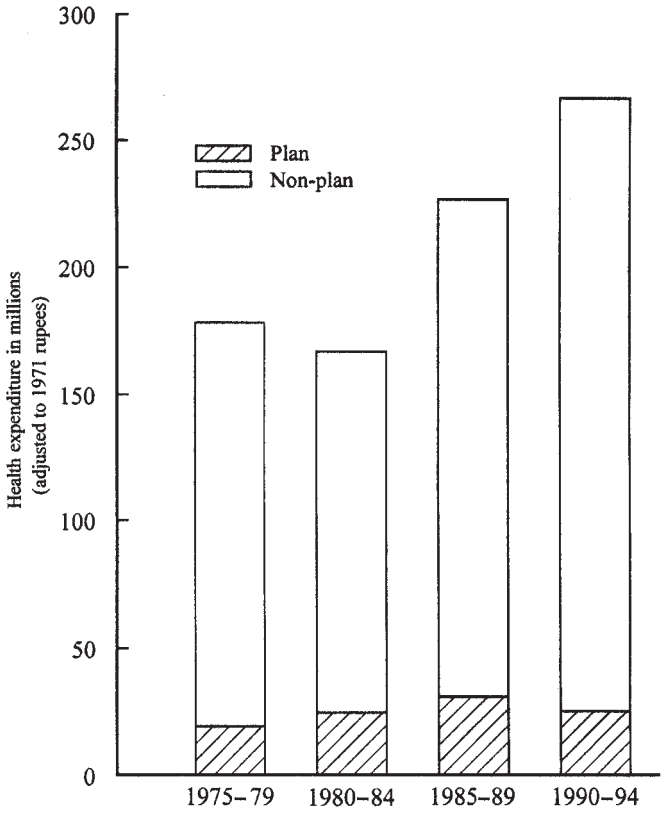

Figure 1. Average annual expenditure on health in Kerala under plan and non-plan sectors in the periods 1975–79, 1980–84, 1985–89 and 1990–94, adjusted to the rupee value in 1970
Source: Government of Kerala. Economic review 1997[11]

categories reveals the impact of the fiscal crisis. During 1985–86 to 1995–96 the proportion of government expenditure on health was maintained in spite of a large fiscal deficit (Table 2). However, adjustments were made in reaction to the fiscal situation. Analysis shows that capital spending (buildings and infrastructure) stagnated by the mid-1980s before declining rapidly, whereas revenue spending (salaries and consumables) continued to grow into the 1990s.[6] This is due to the salary component in revenue expenditure, which showed no sign of diminishing during most of this period. In view of the state's socio-political environment, characterized by a high awareness of their political rights by the organized labour force, including government employees, this is not surprising.

Successive governments, being committed to growing expenditure on salaries because of increases both in jobs created and in pay, resorted to cutting back supplies when faced with growing fiscal difficulty. Spending on supplies shows a definite downturn by the latter half of the 1980s (in state government accounting, 'supplies' includes drugs and other consumables such as linen, minor equipment, suture materials, etc). This had a major affect on the secondary sector, consisting of the district and *taluk* (sub-unit or district) hospitals, and the primary sector, consisting of primary health centres (Table 3). Since these accounted for a majority of beds in the health services most accessible to the common people, the quality of medical care in the government hospitals must have been affected. We can only arrive at this conclusion from indirect evidence. An extensive survey of 10 000 households by a voluntary organization in 1987 found that overall only 23% of households regularly utilized the government health services. Even in the poorest stratum this share was as low as 33%, declining steadily to 8% among the most affluent households. The reasons stated for not using government institutions included 'non-availability of drugs in the government hospitals', 'lack of proper attention' and 'better behaviour in private insitutions'.[7]

The government has been well aware of the increasing scarcity of funds in the health sector. In government hospitals in Kerala, only households with incomes below a certain level are entitled to free services. The government has fixed user charges for all others, and these have existed for a long time. In spirit, this law ensures that the benefit of subsidy goes to

Table 2. Total revenue expenditure, expenditure on health and revenue deficit as a proportion of total revenue expenditure in Kerala from 1985–86 to 1995–96

Year	Total revenue expenditure (million rupees)	Expenditure on health including family welfare (million rupees)	Health expenditure as % of total revenue expenditure (col. 3 as % of col. 2)	Revenue deficit as % of total revenue expenditure
1985–86	14 453.4	1268.1	8.8	5.1
1986–87	16 547.7	1450.7	8.8	9.2
1987–88	17 806.5	1510.4	8.5	10.9
1988–89	20 610.0	1636.8	7.9	8.0
1989–90	22 930.9	1923.0	8.4	10.9
1990–91	28 249.5	2219.9	7.9	14.9
1991–92	32 164.6	2318.1	7.2	11.3
1992–93	36 561.4	2392.3	6.5	9.2
1993–94	42 933.6	2984.5	7.0	8.7
1994–95	50 663.0	3566.1	7.0	7.9
1995–96	58 363.7	4178.8	7.2	6.9

Source: Government of Kerala, Economic Review 1997.[11]

Table 3. Average annual expenditure by government on health supplies in Kerala, in constant rupees (millions), under primary, secondary and tertiary sectors, and growth of expenditure in these sectors

Period	Primary sector	Secondary sector	Tertiary sector
(i) 1977–78 to 1979–80	24.58	86.63	37.05
(ii) 1980–81 to 1984–85	26.16	104.39	41.87
% change from (i) to (ii)	*6.4*	*20.5*	*13.0*
(iii) 1985–86 to 1989–90	25.71	113.22	57.41
% change from (ii) to (iii)	*–1.7*	*8.5*	*37.1*
(iv) 1990–91 to 1992–93	21.52	101.02	56.7
% change from (iii) to (iv)	*–16.3*	*–10.8*	*–1.2*

Source: computed from various budget documents, Government of Kerala.

the poorest households. However, in practice this rule is systematically breached. There is no mechanism to verify the self-declared income of patients. Moreover, even those who are willing to declare their true income and pay for services are discouraged from doing so because of administrative delays consequent on such declaration. Most people therefore prefer to understate their incomes when seeking services in the public sector. This has resulted in very low cost-recovery in government hospitals, under 5% (Table 4). The Resources Commission, which was appointed by the state government to look into the reasons for the fiscal problems and to suggest ways out of them, did recommend enforcing the collection of user charges more actively. But successive governments have been unable to implement the suggestion fully because of politically motivated popular resistance.

Growth and distribution of private facilities in health care

Private hospitals now surpass government facilities in the density of beds and employment of personnel. The number of beds in government institutions grew from around 36 000 to 38 000 in the 10 year period from 1986 to 1996; in the same period, beds in private institutions grew from 49 000 to 67 500 (Table 5).[8] This amounts to nearly 40% growth in private sector beds compared to only 5.5% growth in the government sector. More significantly, private hospitals have far outpaced government facilities in the provision of hi-tech methods of diagnosis and therapy, such as computerized tomography (CT) scans, endoscopy units, magnetic resonance imaging (MRI), neonatal care units, coronary units, etc. According to one estimate, 22 out of 26 CT scan centres in Kerala were in the private sector in 1995.[9]

Many factors outside the health sector could have facilitated the growth in the private sector. Two of the most important are rising disposable incomes and the lack of barriers to opening a private hospital. While on the one hand the state government was under the pressure of fiscal difficulties, there is some evidence that household disposable income was rising steadily. Calculations based on data from household consumer expenditure surveys in 1977 and 1993 show that while in 1977, 50% of the population accounted for just over 20% of the state's total consumer expenditure, their share increased to over 30% in 1993 (Figure 2). Greater disposable incomes for the lower income groups could have encouraged more and more of these people to seek health care services in the paying private sector. The absence of government legislation relating to hospital start-up, running and profit generation was a feature Kerala shared with most states in India, but the high demand for health care in Kerala probably provided the impetus for the growth in its private health sector.

Another important demographic phenomenon taking place in Kerala during the same period also influenced the demand for health care: the ageing of the population. Life expectancy for men during the decade 1971–81 was 60.6 years; for women it was 62.6 years. For the period 1991–96, these figures rose to 70 and 76 years, respectively.[10] The contribution of the growing numbers of elderly to the demand for health care is reflected in the higher proportion of chronic diseases among them and their higher spending on health care (Table 6).

All these factors, the growing number of people with long-standing illnesses and the growth in disposable incomes, meant that an ever greater number of people were prepared to pay money for health care. The private health sector possibly exploited this demand in its growth.

The pattern of distribution of facilities in the private as well as the government sector in health in Kerala provides some insights into the dynamics of the growth. Though comprehensive statistics are not available on all aspects of health care, some of the broad indicators computed from available data are reproduced in Table 7. One variable which can function as a proxy for available facilities is the density of beds (number of beds per 100 000 population) in each sector by district. There are more than 300 hospital beds per 100 000 population in Kerala, which is probably one of the highest ratios in the developing world. The average density of beds in the private sector is almost twice that in the government sector,

Table 4. Cost of medical and public health services in Kerala and percentage of subsidies involved, 1977–78 and 1989–90 (million rupees)

Year	Cost of public services	Cost recovery	Cost recovery as % of cost of public services	Subsidy %
1977–78	327.60	8.20	2.5	97.5
1989–90	1760.60	31.70	1.84	99.16

Source: Kutty and Panikar.[6]

Table 5. Growth of private medical facilities in the western medical sector in Kerala, 1986–95

	1986 (n)	1995 (n)	growth (%)
(1) Institutions with beds	1864	1958	5.0
(2) Number of beds	49 030	67 517	37.7
(3) Institutions without beds	1701	2330	37.0
(4) Doctors	6345	10 388	63.7
(5) Paramedics	13 921	25 256	81.4

Source: Government of Kerala.[8]

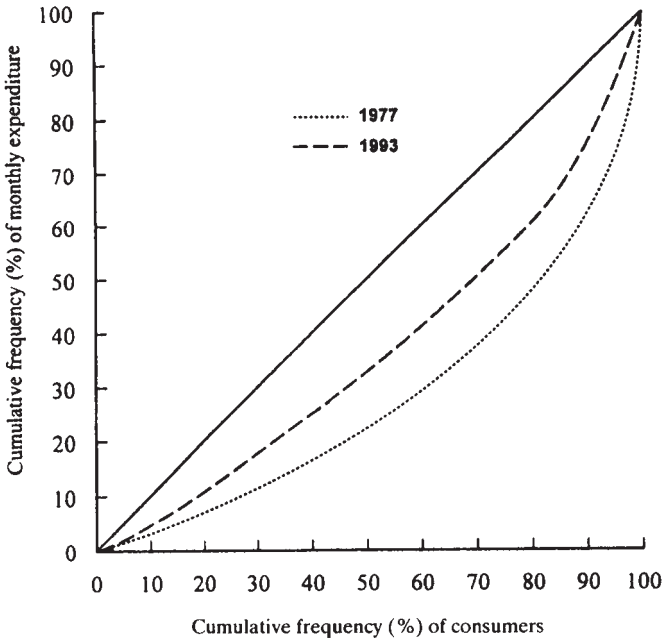

Figure 2. Distribution curve of monthly per capita consumer expenditure in the years 1977 and 1993 in Kerala
Sources: Government of Kerala, Statistics for Planning 1980;[12] Government of Kerala, Statistics for Planning 1988;[13] 'Sarvekshana' Journal of the National Sample Survey Organization 1996

indicating the proliferation of facilities in the private sector. Density of beds in the private sector has a high correlation with literacy (Spearman $r = 0.64$, $p < 0.05$) and with per capita income in the district (Spearman $r = 0.60$, $p < 0.05$). This is not surprising since both these variables are known to be associated with growth of demand for health care.

All told, there are around 1.5 insitutions per 10 km^2 in the modern medical sector. Geographical density of private hospitals (hospitals/10 km^2) in the districts is highly correlated with both literacy (Spearman $r = 0.79$, $p < 0.01$) and geographical density of government hospitals (Spearman $r = 0.85$, $p < 0.01$). The latter correlation is not surprising since both government and private hospitals tend to congregate in areas of high population density. Geographical density of private hospitals is also correlated with density of beds (number per 100 000 population) in the government sector (Spearman $r = 0.73$, $p < 0.01$). Thus private hospitals have been established in districts with high investment in the public sector.

Many factors in the social milieu of Kerala were conducive to the high growth of demand for health care (Table 8). The high level of education, especially female education, ensured that people were easily sensitized to the newer developments in treatment. The settlement pattern in Kerala, with comparatively easy accessibility to the towns and other centres where medical institutions were situated, was another contributory factor. The rapid proliferation of health facilities in the government sector during the 1960s and 1970s ensured a growing awareness of modern methods of medical care, which people then became used to. The change in income distribution in the state, reflected in the increasing consumer expenditure of lower income households, could also have fuelled the growing demand for private health care. This is borne out by data from primary surveys: the proportion of births taking place in private hospitals increased from 42% in a 1987 survey[7] to 63% in a re-survey in 1996 (unpublished observation).

Policy lessons

The growth of health facilities in Kerala offers many lessons in development. The active role of the state government has been a key factor in the expansion of health care facilities. The initial period of rapid growth in health facilities was dominated by the public sector, up to the 1980s. By the mid-1980s, because of fiscal and other problems, there was a slowdown in the growth of government health institutions. This affected not only the growth in absolute number of beds, but probably the maintenance of quality as well. However, by this time, the private sector was poised for growth and it took the lead in the growth of health care facilities in Kerala. The growth of the private sector in Kerala should not be seen as an independent phenomenon. The public sector paved the way for its development by sensitizing the population to the

Table 6. Acute illness reported in the last 14 days (episodes per 100 persons), chronic illness lasting >3 months (persons affected per 100) and average per capita health expenditure in the preceding 14 days in rupees, in a household health survey in Kerala, 1993–94

	All persons	Subjects >60 years old
Acute illness in the last 14 days (per 100 persons)	5.96	9.40
Chronic illness lasting >3 months (per 100 persons)	5.55	22.38
Average medical care expenditure per affected person in the last 14 days (rupees)	102.47	165.78

Unpublished data courtesy of Professor P G K Panikar.

Table 7. Distribution of government and private health care facilities by district, Kerala

District	Population density (per km^2)	Literacy (%)	Income per capita (rupees)	Private beds per 100 000 population	Private hospitals per 10 km^2	Government beds per 100 000 pop.	Government hospitals per 10 km^2
Thiruvananthapuram	1437	89.22	8147	153	1.97	220	0.52
Kollam	1019	90.47	7831	283	1.48	81	0.35
Pathanamthitta	463	94.86	8094	359	0.97	77	0.23
Alapuzha	1468	93.87	7026	175	2.60	193	0.64
Kottayam	862	95.72	7429	402	2.15	177	0.38
Idukki	227	86.94	9586	346	0.48	74	0.13
Emakulam	1237	92.35	12 665	383	2.25	131	0.47
Thrissur	959	90.13	8126	287	0.95	141	0.40
Palakkad	577	81.27	6943	81	0.40	80	0.24
Malappuram	1006	87.94	4933	93	0.67	60	0.34
Kozhikode	1214	91.10	7768	130	1.59	154	0.40
Wynad	350	82.73	9875	237	0.52	109	0.18
Kannur	824	91.48	7940	162	0.89	86	0.34
Kasergode	602	82.51	7321	108	0.79	56	0.30
State	806	89.81	8007	216	1.10	122	0.32

Computed from: Government of Kerala.[4,8,14]

Table 8. Factors affecting the growth of health services in the government and private sectors, Kerala

Factors affecting demand	Factors affecting supply
(1) Growth of education, especially female education and awareness about health related matters (2) Settlement patterns and growth of roads and communication favouring easy accessibility (3) Government provided facilities sensitizing the public to the need for sophisticated care (4) Enhancement of income for a good proportion of households	(1) Tradition of government-provided health care services (2) Government policy that continued to fund health sector even during times of financial stress (3) Subsidized medical and nursing education supplying a steady stream of personnel (4) Comparative lack of regulation that made health sector attractive as an investment opportunity (5) Access to funds for investment: foreign charities, repatriation from gulf countries, and industrial credit

need for sophisticated care and creating demand. The government continues to play a leadership role in the training of all strata of health professionals, who are then largely absorbed by the private sector. Factors outside the health field, such as growing incomes, improvement of literacy and population ageing, all contributed to this trend.

The present appears to be the right time to reassess the role of the government in the health sector in Kerala. It need not, and perhaps cannot, contribute greatly to the growth in infrastructure from now on. However, it needs to take on the mantle of the guardian of standards in health care. It can do this only if it concentrates on providing top quality care at government institutions. The government must also continue to play a leadership role in the training of health personnel. By maintaining high standards in medical and other professional training, it can contribute greatly to quality in health care.

Quality maintenance should also depend on agencies other than the government. Other players with a stake in this are the Indian Medical Council (IMC), the Indian Medical Association (IMA) and the legal machinery through the consumer protection act (COPRA). More and more cases of alleged malpractice or negligence are coming before the consumer courts. This is perhaps a reflection of the failure of professional and statutory organizations like the IMC and the IMA to maintain standards of practice. As a reaction to this trend, there is some indication that the professional bodies have become more vigilant. Recently, the IMA strongly indicted doctors who were receiving commissions from scanning centres under the euphemism of 'referral fees'. This is a welcome development. The Indian government must set the example by weeding out such practices from its hospitals and raising the standards of care.

The state government must also take the lead in setting priorities and framing policies which ensure that these goals are met. So far its attitude in policy making has been rather passive. A recent development in Kerala which may facilitate a more active role for government is the transfer of more powers to the local councils at the panchayat and district levels, with the recognition that health is one area where such local control can work most effectively. The outcome of this social experiment must be closely monitored.

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Biography

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