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ROLE OF APRIVTE HOSPITALS IN KERALA: AN EXPLORATION

T.R. Dilip

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ABSTRACT

This is an attempt to understand the characteristics of private hospitals and the equity in accessing their services, using secondary data available for the period 1986-2004. The data indicates that private hospitals did not expand in numbers but a strong consolidation by large hospitals has taken place. Public policy favouring increased private sector participation in medical education coupled with opening of super specialty hospitals has led to a situation where small hospitals or nursing homes are losing their significance and a large number of them have been phased out. The regional variation in availability of private hospitals is sizeable. The presence of private hospitals is comparatively limited in northern districts of Palakkad, Kozhikode, Malappuram and Kasargod.

Annual hospitalisation rates show a rise in demand for hospital facilities across this time period. Rich-poor divide in potential to seek care from private hospitals highest during 1995-96, but declined marginally in 2004. Though the quantum of utilization of private hospitals among poor is similar as rich, it taxes them severely. Overall economic marginalisation of low social groups has further restricted their access to private hospitals.

Analysis also shows that the duration of hospitalisation is lesser if treated in a private hospital than in a government hospital and that the charity component in the so called “charitable hospitals” is disappearing.
Key Words: Private hospitals, health system, equity, Kerala.

JEL Classification: I11, I18, I19, J18

India is one of the countries with the highest private sector participation in delivery of health care services. Health services utilisation statistics indicate that around 60 percent of inpatient care services, and 80 percent of outpatient care services, are obtained from private health care sector (NSSO 2006a). Consequently, private spending for health care by the population is very high. The National Health Accounts estimate that about 77 percent of total health expenditure in the country is incurred in the private sector (MOHFW 2006). Utilisation of health care services in private health care sector is mainly determined by the beneficiary's potential to pay for needed services. The presence of voluntary/charitable sector is limited as the proportion using this facility is only about 4 percent for inpatient care and less than 1 percent for outpatient care (NSSO 1998). Despite the increasing private sector participation, it has not received its due attention, and attempts to involve this sector in health planning process are limited (Bhat 1993). The nature of public-private divide in utilisation of health care services in Kerala is broadly similar to the national scenario. A specific divergence in Kerala is that the private sector participation in provision of inpatient care is above the national average, but the same is below the all India average in provision of outpatient care.

The characteristics of the 'for-profit' private providers of health care services are largely unexplored due to paucity of data (Baru 1998; Nandraj et al 2001). Collection of reliable data from these unregulated providers spread across the country is an enormous task and is so far not attempted on a large-scale basis. The only major source of information on private providers is the national level household surveys on utilisation of health care services. All these national level surveys indicate that

majority of inpatient and outpatient treatment in India and in Kerala are provided by the private health care sector (NSSO, 1992; NCAER, 1992; Sundar 1995; NSSO 1998; NSSO 2006a). In fact, all these survey reports document the class differentials in utilisation of health care services from public/private sector. Further these studies point out that the average out-of-pocket expenditure is higher for services in private sector than in public sector and that the rich/poor divide in utilisation of health care services from private health care sector is often attributed to this.

Kerala, as is generally known, has one of the most equitable health systems in India (Krishnan 2000; Peters et al 2002; Mahal et al 2002). Additionally, distinct from other Indian states, Kerala is in a unique position owing to availability of large scale state specific health surveys on morbidity and utilisation of health care services. These include the three surveys undertaken in rural Kerala by the Kerala Shastra Sahitya Parishad (KSSP) (Kannan et al 1991; Aravindan and Kunhikannan 2000 and KSSP 2006) and a health survey by the Centre for Development Studies (Navaneetham and Kabir 2006). As noted in the national level surveys, these state specific health surveys also bring out the rich/poor divide in access to private health care facilities and attribute the same to differentials in out of pocket expenditure between these two sources of treatment. But the information on the role of private health care sector in the state has not been probed beyond this valid point. Levesque *et al* (2007a), while acknowledging the vital role played by private sector in delivery of health care services, caution about its capacity in serving the poorer sections and under-developed regions in Kerala. At this juncture the issue is that private health care sector has grown on its own and is already the major provider of health care in Kerala; and it is time for policy planners to take a serious note of practices of private health system and its capacity in serving all sections of the society.

There are a number of studies that try to examine out of pocket expenditure on health in comparison to overall expenditure of the

household (Peters *et al.* 2002; Charu and Karan 2005 and Levesque *et* al 2007b). However the role of private sector was not a focal issue in such analysis. In this background, this study attempts to narrow down the information gap on the role private health care sector in the state. Even though the private hospitals are providing both inpatient and outpatient treatments, the recent data (NSSO 2006a) does not give information separately on proportion seeking outpatient care from private hospitals. Due to this data constraint, the present analysis is restricted to provisioning of inpatient treatment in private hospitals.

Health researchers are highly sceptical about the quality of care, efficiency of care and social responsibility of medical professionals in private health care system in the country (Baru 1998, Nandraj et al 2001). Most of the existing studies highlight the poor physical standards (Nandraj and Duggal 1996, Yesudian 1994) and unethical profit motivated practices in private health care sector (Phadke 1998, Thankappan 1999, Mishra and Ramanathan 2002). Can this issue be generalised and affirmed to be similarly applicable in case of all private providers in a State like Kerala? If universal literacy and a strong public health system (Panikkar 1999) are responsible for creating a demand for modern medical care, it might also have set standards for provisioning of health care services in the state. Consequently, the expectation about health status and health care are higher in Kerala. The morbidity surveys and consumer expenditure survey (NSSO 2006b) too portrays a higher health care consumption in the state. Further the Kerala population is rapidly aging, and the demand for health care among the elderly population is very high. Hence, the conditions are favourable for an increase in demand for health care over time in the state. The private health care sector seems to have benefited from this demand/scenario. According to Raman Kutty (1989) the utilisation of private medical care in Kerala state is primarily determined by 'money prices' as 'travel time' and 'waiting time' are relatively lower in private sector. The recent KSSP (2006) study finds that better facilities is the reason for preference of private sector, while

economic considerations is the major reason for seeking care from a government hospital.

The development of health care facilities in Kerala between 1980's and mid 1990's is well documented (Kutty 2000). According to the author, rising disposable incomes and lack of barriers in establishing private hospitals has led to a surprising growth of the private health care sector. The private hospitals are better equipped in terms of technical resources and are reported to be encashing on the long term illnesses in the state. However a glance at the statistics on private medical institutions released by the Directorate of Economics and Statistics makes us suspect whether Kerala has more number of hospital beds than it actually requires. Therefore the issue is how long can this unregulated expansion of private sector would continue, and how it is sustaining itself? It is in this context that the present paper attempts to document the growth and distribution of private health care facilities in Kerala, its capacity to reach the poor and also selected characteristics specific to this sector.

Data

Present analysis is based on data from two sources (1) Directorate of Economics and Statistics (DES), Government of Kerala and (2) National Sample Survey Organisation (NSSO), Government of India. The DES has undertaken censuses of private medical institutions in the state during the years 1986, 1995 and 2004. Reports based on each of this census give information on size, location, ownership, and facilities in the private medical institutions in Kerala. Data on utilisation of private hospitals and its implications is indirectly captured from the NSSO household surveys on morbidity and utilisation of health care services carried out during 1986-87 (42nd round), 1995-96 (52nd round) and 2004 (60th round). The sample size for NSSO, Kerala was 2471, 4928 and 2829 households respectively for this topic of enquiry during 1986-87, 1995-96 and 2004. These surveys provide information on instances of hospitalisation and treatment details for a household member, who was

hospitalised during the last 365 days prior to the survey date. Rural and urban samples were pooled to get state level estimates. Sample size details (un-weighted N) are presented in respective tables. Due to limitations in collecting reliable income data through household surveys, the NSSO collects data on consumption expenditure in its surveys. The monthly per-capita consumer expenditure (MPCE) information thus available for each sample household is used as a proxy for the household's income level.

The extent to which one can use household survey data for understanding private health system practices is suspect. Overcoming the paucity of collected data from private health care providers offers a valid basis for using them. There are other advantages in using this type of data to understand the role of private health care sector in the state. They include cost effectiveness, feasibility and larger reliability of 'user reported' data over 'provider reported' data. Here, one should note that this type of data sets account for residents of Kerala seeking health care from outside the state, but does not take into account the cases of non-residents including foreign nationals (medical tourist) seeking treatment from hospitals inside Kerala boundary.

Changes in Ssize of Private Hospitals

The trends in availability of private hospitals during the study period are presented in Table 1. The study period witnessed an actual decline in number of private medical institutions having inpatient facilities. Number of such institutions increased from 2042 in the year 1986 to 2274 by the year 1995, and then declined to 1942 in 2004. The same is true for hospitals under the allopathic system of medicine. However more number of private institutions under the 'other systems of medicines' are noted to be venturing into provisioning of inpatient treatment. These other systems of medicine are mostly Ayurvedic and Homeopathic hospitals.

Table 1: Private hospitals and hospital beds facilities in Kerala, 1986, 1995 & 2004

	1986	1995	2004
Number of private hospitals/ nursing homes			
All systems of medicine	2042	2274	1942
Allopathic system of medicine	1864	1958	1405
Other system of medicine	178	316	537
Total number of hospital beds in			
Public sector (Govt. hosp/ CHC/PHC)[1]	36258	41164	44193
Private sector (Private hospital/ nursing homes)	50766	70924	64491
Total	8702	112088	108684
Population served per hospital bed in			
Public sector	735	746	740
Private sector	525	433	507
Total	306	274	301
Avg. no of beds per pvt hospital (Allopathic system)	26	34	41
% hospital beds in private sector	58.3	63.3	59.3
% of private hospital beds in allopathic system	96.6	95.2	88.5

Source: Bureau of Economics and Statistics, Government of Kerala, Report on Private Medical Institutions in Kerala (for the years 1986, 1995, 2004)

1 Data for number of hospital beds in government hospitals are from Economic Review, published by the State Planning Board (respective years) Figure varies from the number given in Economic Review because non government institutions receiving grant in aid from government are excluded

The trends were almost similar in the case of bed availability under the private sector. There was a rapid increase in number of beds in private sector between 1986 and 1995. Thereafter a slight decline in total number of beds from 112,088 in 1995 to 108,684 in 2004 is noticed. About 59 percent of total hospital beds are in private sector in 2004. The noted decline in proportion of private hospital beds under allopathic system out of total beds in private sector underlines increasing role of private hospitals under the non- allopathic system of medicine. For comparison purposes, the bed availability in public hospitals is also presented. In fact, there is an absolute increase in number of beds available in public sector, with population served per bed keeping pace with population growth.

Average number of beds per private hospital is presented to indicate an approximate idea of the size of private hospitals in the state. Increase in this ratio despite an overall decline in private institutions with inpatient facility indicates that the large hospitals with more number of beds are increasing, while the smaller hospitals and nursing homes are either being closed down or getting transformed into larger hospitals. We have already seen that there is a decline in number of allopathic hospitals in private sector. However, an increase in the average number of beds per hospital from 26 in 1986 to 41 in 2004 indicates a consolidation of larger hospitals in the state. One reason for this type of consolidation is public policy on privatisation of medical education that facilitated opening up of a number of private medical colleges. For example, until the year 1994 there were only 5 government owned medical colleges in the state under the allopathic system of medicine. Since then, 13 more new private sector self financing medical colleges have been started in the state. In addition, 5 Ayurvedic medical colleges, 13 Dental colleges and 2 Homeopathic colleges have also been started in the self financing category in the private sector during this period.

Public policy favouring increased private sector participation in medical education, coupled with opening of super-speciality hospitals,

has led to a situation where small hospitals/ nursing homes are losing their significance and a large number of them have been phased out.

Considering the age structural transition induced epidemiological profile of Kerala, the demand for long term nursing care as well as rehabilitative care for chronic illness is likely to enlarge in future. Adding to this is the absence of care takers of sick persons within the household, which arise out migration of working population and shift from nuclear to joint family system, in the state. The large speciality hospitals and private medical college hospitals may not be able to cater to this demand for long term nursing/rehabilitative care in a cost effective manner. Therefore, the consolidation described above is expected to be a temporary phenomenon and visibility of small hospitals and nursing homes may improve in the near future. To capitalise on this inherent demand, small hospitals and nursing homes might have to focus on rehabilitative care and long term nursing care rather than on provisioning of highly expensive treatment procedures involving heavy and updated use of medical technology.

Table 2: Number of beds per 10000 population by system of medicine, Kerala 1986 & 2004

System of medicine	Beds per 10,000 population					
	1986			2004		
	Public	Private	Total	Public	Private	Total
Allopathic	12.7	18.4	31.1	11.9	17.4	29.4
Ayurvedic	0.6	0.5	1.1	1.2	1.7	2.9
Homeopathy	0.3	0.1	0.4	0.4	0.2	0.6
Others	0.0	0.1	0.1	0.0	0.3	0.3
All Systems	13.6	19.1	32.7	13.5	19.7	33.2
(N)	(36278)	(50766)	(87024)	(44192)	(64491)	(108683)

Figures in brackets denote the number of beds in each sector
Source: Data on private bed from Directorate of Economics and Statistics (1989 & 2006),
Data on public beds from State Planning Board (1986 & 2005)

In 2004, there were nearly 33 beds per 10,000 population in the state, which corresponded to that found in the US and many other developed regions. Only countries like Japan, Germany and UK had a bed-population ratio higher than that prevailing in Kerala. Between 1986 and 2004, there had been a marginal decline in number of allopathic hospital beds per 10,000 population. Marginal improvement in the overall bed population ratio was due to opening up of new inpatient care units under the non-allopathic systems, especially under Ayurvedic system of medicine.

Regional Variation in Availability of Private Hospitals

The regional variation in availability of private hospitals is sizeable. Chart 1 presents the population served per private hospital bed across districts over three time periods 1986, 1995 and 2004. The existence of private sector is comparatively lesser in northern districts of Palakkad, Kozhikode, Malappuram and Kasargod. Private sector participation is relatively higher in other districts of the state i.e. Idukki, Pathanamthitta, Ernakulam and Kottayam. Presence of private hospitals is relatively less in Thiruvananthapuram district which has a huge concentration of public hospitals. Ernakulam, Thrissur, Pathanamthitta, Kottayam, Malappuram and Kozhikode are districts where there has been an unexplained increase in access to private hospital beds between 1986 and 1996 and where there has been a decline in bed population ratio between 1996 & 2004. Incidentally these are the districts, which have benefited considerably from remittances from Keralite emigrants to Gulf Countries (Zachariah and Rajan 2007), which may be a reason for sudden variations in population served per bed in the profit driven private sector.

Chart 1: Population served per private hospital bed acoss districts, Kerala 1986, 1995 & 2004

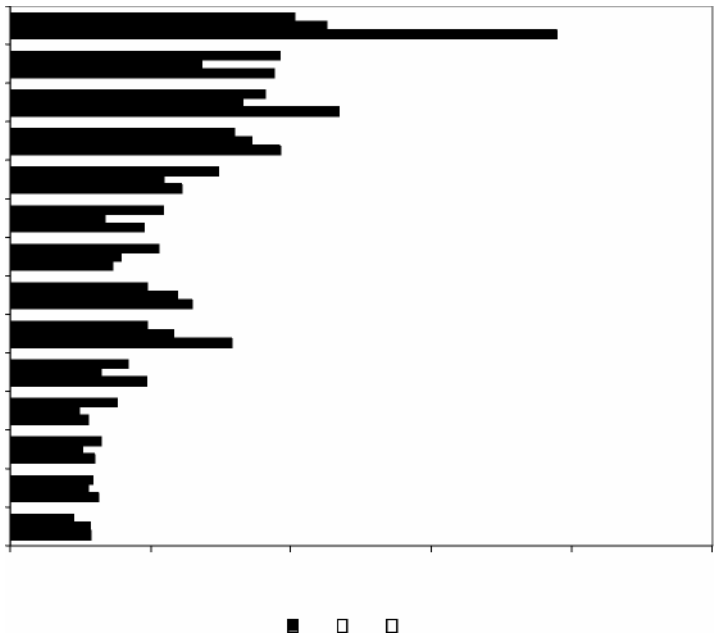
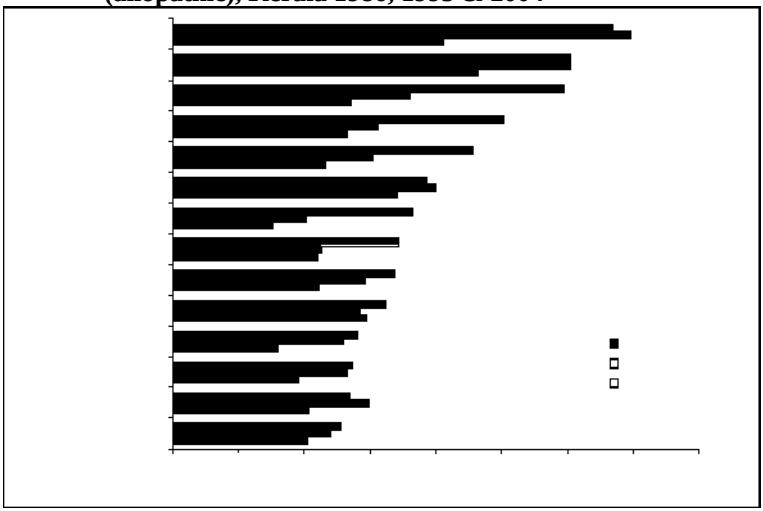


Chart 2 presents the change in size of private hospitals over three time periods 1986, 1995 and 2004. Ernakulam and Thrissur were the two districts that have a concentration of large private hospitals in the state. The chart indicates that Alapuzha, Kollam, Malappuram and Palakkad have small or medium sized hospitals. Consolidation of large private hospitals (or the phenomenon of expansion of large hospitals and marginalisation of smaller hospitals and nursing homes) was largely found in Thiruvananthapuram, Kannur, Pathanamthitta, Idukki and Kasaragod districts. One reason for the underestimation noted in the level of consolidation in districts with better private health facilities like Ernakulam, Thrissur and Kottayam is data limitation.

Chart 2: Changes in average number of beds per private hospital (allopathic), Kerala 1986, 1995 & 2004



Inpatient and Outpatient Treatment in Private Hospitals

Private hospitals provide both inpatient and outpatient care services. As is known from the National Health Accounts data (MOHFW 2006), the market size of outpatient care is several times higher than that in the case of inpatient care. Hence it is of interest to understand the overall case load in private hospitals in the state in terms of inpatient and outpatient users.

Table 3: Inpatient and outpatient care wise breakup of episodes of illness treated in private hospitals in an year, Kerala 1986-87, 1995-96 & 2004

	No. of episodes treated[@]		Share of Inpatient cases (%)
	Inpatient cases	Outpatient cases	
1986-87	1,025,484	18,831,488	5.7
1995-96	1,588,236	32,206,926	5.1
2004	2,654,438	NA	—

Source: Estimates using unit level data from NSS surveys for respective years

@ Inpatient/ outpatient episodes relating to maternity care and immunisation are not included in this analysis.

The private hospitals are clearly perceived to be focussed on generating revenue from outpatient care services also. Inpatient episodes account for only around 5 percent of total episodes of treatment in private hospitals. Such a scenario is expected, as the risk of having an ailment requiring medical treatment from outpatient facility is several times higher than the risk of having an ailment requiring hospitalisation. Further the outpatient care units in private hospitals are often considered as feeder units for getting/identifying patients to be admitted in respective hospitals.

Demand for Inpatient Care Services

We examine below the nature of increase in demand for inpatient care services over time. Factors such as population ageing and shifting disease pattern from communicable to chronic degenerative diseases could increase the demand for inpatient care services. At the same time, improvements in medical technology could neutralise such demand. With improvements in medical technology, diseases that required hospitalisation in the past can now be cured through procedures, which do not require it or with lesser days of stay in a hospital. Annual hospitalisation rate is the ratio of total estimated number of hospitalisations in a year to the corresponding mid-year population.

Table 4: Trends in annual hospitalization rates by MPCE quintile, Kerala 1986-87, 1995-96 & 2004

MPCE Quintile	Number hospitalised per 1000 persons*		
	1986-87	1995-96	2004
0-20	76	69	112
20-40	71	65	136
40-60	71	84	126
60-80	55	84	118
80-100	70	115	141
Total	69	81	126

Source: Estimated using NSSO Unit level data for respective years

* Hopitalisations relating to pregnancy and child birth are excluded

Table 4 above shows a consistent increase in annual hospitalistion rates from 69 per 1000 population 1986-87 to 81 in 1995-96, and further to 126 in 2004. Differentials by MPCE quintile were only marginal in 2004, while same was highest during 1995-96. Perhaps the poorer sections had avoided hospitalisations during this period to avoid catastrophic payments, which requires further investigation. Risk of hospitalisation was highest among richest quintile and lowest among the poorest quintile. However such differentials were only marginal in the year 1986-87.

Utilisation of Inpatient Care Services from Private Hospitals

The national sample survey data provides information on source of treatment for persons who had undergone hospitalisation during the one year prior to the survey period. Based on source of treatment, the inpatients were classified into (1) those who had undergone treatment in a public/government hospital and (2) those who had undergone treatment in private institutions. The proportion of the illness episodes involving hospitalisation, where treatment was sought from private hospital, is presented in Table 5.

Table 5: Percentage of inpatient episodes treated in private hospitals by MPCE quintiles, Kerala 1986-87, 1995-96 & 2004

MPCE Quintile	1986-87	1995-96	2004
0-20	53.5	45.5	54.8
20-40	50.3	57.7	60.7
40-60	53.3	63.6	63.7
60-80	58.5	63.5	66.6
80-100	68.9	72.2	82.5
Total	55.4	60.3	64.6

Source: NSSO Unit level data for respective years

Note: proportion not seeking care from government facility are shown here as seeking treatment from private hospitals

Majority are seeking inpatient treatment (65 percent in 2004) from private hospitals. There had been a periodic increase in proportion seeking care from private hospitals between 1986-87 and 2004. The well-recognised rich/poor divide in access to private hospitals was high in 2004 and 1995-96 and was lowest during 1986-87. Table also highlights that the relative preference for private hospitals among the poorest quintile had declined from 55 percent in 1986-97 to 46 percent during 1995-96, which returned back to 55 percent by the year 2004. This indicates that it is the poor who revert back to public hospitals during a period when inequality in access to health care is highest.

Class Distribution of Inpatient Care Users in Public and Private Hospitals

Conventional analysis of the type above does not permit us to appreciate the class differences in quantum of use of inpatient treatment from private hospitals. This quantum depends on (1) the distribution of population across MPCE quintile of the household (Since average household size is always higher in households falling under low MPCE category than those in high MPCE category, proportion of population in low MPCE households is highest), (2) MPCE wise differentials in annual hospitalisation rate and (3) proportion seeking inpatient care services from private hospitals. A distributive analysis that accounts for the three above mentioned aspects portrays who are all actually depending on public/private hospitals. The results are presented for both public and private hospitals separately in Table 6.

One can easily note that the overall level of utilisation of inpatient care services is marginally higher among the lower MPCE quintiles than in higher MPCE quintiles. The distribution is more skewed towards the poor in the case of public hospitals for all the three time periods. In the case of private hospitals, such type of skewed distribution was noted only in the year 1986-87, a period when inequalities in access to private hospitals was lowest. Private hospital use was more skewed towards the

Table 6: Distribution of hospitalisation episodes in public and private hospitals across MPCE Quintiles, Kerala 1986-87, 1995-96 & 2004

MPCE Quintile	1986-87			1995-96			2004		
	Public hospital	Private hospital	Total	Public hospital	Private hospital	Total	Public hospital	Private hospital	Total
0-20	30.4	28.2	29.2	29.9	16.4	21.8	28.8	19.1	22.6
20-40	25.9	21.4	23.4	19.6	17.6	18.4	27.1	22.9	24.3
40-60	21.3	19.5	20.3	19.0	21.9	20.8	20.2	19.4	19.7
60-80	12.8	14.2	13.6	17.2	19.7	18.7	15.5	17.0	16.5
80-100	9.1	16.3	13.1	14.2	24.4	20.3	8.4	21.6	16.9
All Quintiles	100	100	100	100	100	100	100	100	100

Source: NSSO Unit level data for respective years

Table 7: Distribution of hospitalisation days in public and private hospitals across MPCE quintiles, Kerala 1986-87, 1995-96 & 2004

MPCE Quintile	Percentage of hospitalisation days in each type of hospital								
	1986-87			1995-96			2004		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
0-20	28.6	21.5	25.5	24.3	15.1	19.5	33.9	19.7	26.7
20-40	29.5	22.0	26.3	18.4	12.2	15.5	27.6	22.6	25.1
40-60	18.0	23.8	20.5	18.8	23.4	21.2	21.3	17.7	19.4
60-80	11.0	13.8	12.2	19.2	21.6	20.3	10.8	17.4	14.2
80-100	12.8	18.8	15.4	19.4	27.7	23.5	6.5	22.5	14.6
All Quintiles	100	100	100	100	100	100	100	100	100

Source : NSSO Unit level data for respective years

rich in the year 1995-96, a period when the inequalities were maximum. By the year 2004 it can be seen that there is hardly any differential in intensity of utilisation of private hospitals across MPCE quintiles. This analysis clearly indicates that the poor also depended on private health care sector for inpatient treatment as the rich.

Distribution of total number of hospitalisation days across MPCE quintiles is presented in Table 7. In the year 1986-87, it was the poorer quintiles which accounted for a larger share of hospitalisation days in both types of hospitals. Since then, a new trend has emerged with poorest quintile taking highest share in inpatient days in public hospitals and richest quintile taking the highest share in private hospitals. This table further underlines our argument that the poor too, extensively utilise private hospitals. There is a possibility for the hospitals used by the poor to be qualitatively different from the ones used by the rich. However, limitation in available data does not permit us to explore this particular issue further.

Private Hospitals and Demand for Specific Care

Private sector is often critiqued for being very selective in providing health care services. Here we examine whether the priority of private sector is in harmony with the requirements of the general health system by comparing the composition of ailments treated in public and private hospitals during 2004.

Fevers are the main cause of hospitalisation in the state for both public and private hospitals. For private hospitals, this is followed by other causes such as accidents/burns/ poisoning, heart diseases and respiratory infections in that order. There is a general preference for private hospital for treatment of diarrhoea/ dysentery, where the expected treatment costs are relatively lower. Similarly, there is a lesser preference for private hospitals than public hospitals for treatment of cancer and other tumours', where the expected treatments costs are relatively higher. Overall this limited analysis indicates only marginal differences for other causes of hospitalisation between the two types of hospitals.

Table 8: Ten leading ailments for which inpatient treatment was sought from public and private hospitals, Kerala 2004

Major causes of hospitalisation	Rank as per case load		Share out of total episodes treated (%)	
	Public hospital	Private hospital	Public hospital	Private hospital
Fever	1	1	15.2	18.8
Accidents/Injuries, Burns/Poisoning	3	2	6.7	10.3
Heart Disease	5	3	5.4	7.0
Respiratory including ear nose throat infections	2	4	6.9	5.3
Diarrhea /Dysentery	11	5	2.7	5.1
Bronchial asthma	7	6	4.4	4.4
Disorders of bones/joint	6	7	4.6	4.3
Diabetes	8	8	4.1	3.8
Hypertension	10	9	2.8	3.7
Diseases of kidney/urinary system	12	10	2.5	3.0
Gynecological disorders	9	11	3.7	3.0
Cancer and other tumors	4	12	5.6	2.6

Source: 60th round NSSO data

Duration of Stay

Even though there has been an increase in the annual hospitalisation rate (Table 4) and in the number of beds, the average duration of hospitalisation has declined. This decline is more evident between 1995-96 and 2004. Though the reasons for this decline in hospitalisation rate are unexplored, it can be observed that the increase in demand for inpatient treatment might not have been met with the existing facilities, if this decline in duration of stay in a hospital had not materialised.

Table 9: Mean duration of stay in public/ private hospital, Kerala 1986-87, 1995-96 & 2004

Year	Type of hospital	Duration (in days)		No of Cases
		Mean	Median	
1986-87	Public hospital	16	9	632
	Private hospital	10	7	715
	Combined	13	7	1347
1995-96	Public hospital	16	8	640
	Private hospital	11	6	1119
	Combined	13	7	1759
2004	Public hospital	12	7	651
	Private hospital	7	5	1218
	Combined	9	6	1869

Source: NSSO data respective years

As seen from this data, the duration of stay for treatment is higher in government hospitals than in private hospitals for all three time periods. This data set does not help to explore the reasons for this - including whether it is due to less severe cases being taken to private hospitals or whether it is due to adaptation of modern medical technologies in these private hospitals, resulting in reduction in number of days of hospitalisation.

Table 10: Variation in duration of hospitalisation between public and private hospitals by major causes, Kerala 2004

Cause for hospitalisation	Public hospital			Private hospital		
	Duration (in days)		No of Cases	Duration (in days)		No of cases
	Mean	Median		Mean	Median	
1. Fevers of unknown origin	8.2	7	91	5.7	5	289
2. Accidents/injuries/poisoning	27.8	8	49	7.9	5	120
3. Heart Disease	12.5	8	35	9.0	5	92
4. Respiratory including ear/ nose/throat ailments	9.8	7	46	5.2	6	67
5. Bronchial Asthma	12.1	8	31	5.6	4	58
All hospitalizations	12.3	7	650	7.0	5	1218

Source: NSSO unit level data (60^{th} round)

In Table 10, the issue of shorter duration of stay in a private hospital than in public hospital is further examined. The mean duration of hospitalisation is computed for 5 most common causes of hospitalisation, in these two types of hospitals. This analysis also confirms that the average duration of hospitalisation is lower in the private hospitals than in public hospitals for all the causes examined.

Correlates of Utilisation of Inpatient Treatment from Private Hospitals

We have already noted that there is an increase in proportion of persons seeking inpatient care from private hospitals. An attempt is made to understand the trends in nature of gender, rural-urban, caste and class-wise differentials in access to private hospitals in Table 11. The bi-variate table for variables used in logistic regression is presented in Appendix III.

In view of the fact that dependent variable and most of the independent variables identified are categorical in nature, logistic regression analysis has been performed to study the trends and determinants of utilisation of inpatient care services in the private sector. Here the dependent variable "type of hospital for inpatient treatment" is coded as 1, if it is a private hospital, and as 0 if it is a public hospital. The same set of independent variables have been used for the periods 1986-87, 1995-96 and 2004; and the relative importance of each variable is understood from the changes in odds ratio [exp (b)] itself. Since variations in household size and duration of stay at the hospital could be confounders, these variables - household size and duration of stay (as proxy for seriousness of ailment) have been used as covariates in the model.

The odds ratio presented in Table 11 indicate the variation in likelihood of seeking inpatient care from a private hospital, when the effect of all other independent variables in the model was kept constant. For the period 1986-87, the variables; sex, residence, caste and MPCE category were significant. During this period, it could be seen that odds

Table 11: Odds ratio from logistics regression analysis for use of inpatient care from private hospitals, Kerala 1986-87, 1995-96 & 2004

	1986-87		1995-96		2004	
	S.E. (B)	Odds Ratio Exp(B)	S.E. (B)	Odds Ratio Exp(B)	S.E. (B)	Odds Ratio Exp(B)
Age (Reference = 60+)						
0-14	0.183	0.762	0.166	1.680**	0.153	1.079
15-59	0.147	0.928	0.124	1.03	0.123	0.987
Sex (Ref =Male)						
Female	0.114	1.260*	0.102	0.862	0.103	0.869
Residence (Ref = Rural)						
Urban	0.189	0.566**	0.232	0.798	0.122	1.084
Caste (Ref = SC/ST)						
Non-SC/ST	0.185	1.752**	0.162	2.294**	0.165	2.635**
MPCE (Ref =0-20 quintile)						
20-40	0.161	0.853	0.159	1.962**	0.146	1.185
40-60	0.168	0.947	0.157	2.542**	0.156	1.408*
60-80	0.192	1.177	0.165	2.495**	0.168	1.550**
80-100	0.217	2.005**	0.176	4.268**	0.196	3.828**
Region (Ref = North Kerala)						
South Kerala	0.13	1.467**	0.255	1.518	0.115	1.031
Household size@	0.021	1.018	0.027	1.117**	0.024	1.084**
Duration of stay@	0.005	0.974**	0.003	0.992**	0.007	0.959**
Constant	0.314	0.693	0.271	0.202	0.273	0.508
(N)	(1336)		(1755)		(1860)	

* p< 0.05, ** p < 0.01S.E. -Standard error

@ used as covariates in the model

of using inpatient care from a private hospital was significantly higher for females than males. Results indicate that odds of seeking care from private hospital were significantly higher in rural areas than in urban areas, where majority of the specialised hospitals in the public sector were located. For a person from non-SC/ST household, the odds of seeking treatment from private hospitals were 1.8 times higher when compared to a person from SC/ST household. It is to be noted that

household income/MPCE wise variation in access to private hospitals was significant only in the case of the richest quintile.

Analysis for the period 1995-96 showed that the variables; sex, caste and MPCE background of the hospitalised person were having significant impact in selection of a private hospital for inpatient treatment. Private hospitals were preferred for treatment of children than for those in other age groups. Odds of seeking inpatient care from a private hospital were 2.3 times higher for a person from 'non SC/ST' category than for a person from 'SC/ST' subgroup. The positive relationship between economic background and use of inpatient care from a private hospital was highly significant. As compared to a person in a poorest quintile, persons in 80-100, 60-80, 40-60 and 20-40 quintiles respectively were 4.3 times, 2.5 times and 2.5 times and 2 times likely to seek care from a private hospital,

By the year 2004, only variables - caste and economic background of the ailing person - were having a significant impact on selection of source for treatment involving hospitalisation. It appears that the poor social groups were increasingly getting alienated from the private hospitals. When compared to a patient of the SC/ST denomination, a patient from a 'non SC/ST' category was 2.6 times more likely to seek inpatient care from a private hospital. The relationship between MPCE and selection of source of treatment remained the same as in 1995-96, but there was a marginal decline in this inequality in access to private hospital between these two time periods.

This analysis is indicative that the economic background of the patient is gradually becoming the single most important predictor of use of inpatient care services from private hospitals. The effect of physical access related variables (regional or rural/urban) are becoming insignificant. This could be due to the improvements in geographical spread of private hospitals and in road and transport facilities. The reason for the increasing isolation of the 'SC/ST' from private hospitals even

after controlling for their economic background is still unexplained. Perhaps this decline in access to private hospitals among the low social groups could be due to their relative backwardness in attaining better standards of living over time.

Free inpatient care in non government hospitals

Free inpatient care from 'for profit' private health care sector is not expected. However the role of non governmental institutions, especially religion-based institutions, is often quoted as one of the reasons for educational uplift and other similar social changes in Kerala. Here an additional attempt is made to understand the significance of such initiatives in provision of hospitalisation care services. According to the latest "Report on Private Medical Institutions in Kerala" (DES, 2006) there are about 413 medical institutions (mainly hospitals), which are registered under "Charitable trusteeship" acts. Again the Economic Review (GoK 2006) shows that over 145 institutions (with a total capacity of 4641 hospitals beds) are receiving grant in aid from government of Kerala for providing various medical services. Obviously we expect provisioning of certain amount of free care or at least free ward facility in these charitable hospitals.

The NSSO survey gives information on the type of the ward where the inpatient was admitted. As per that survey, there are three types of wards (1) free (2) paying general and (3) paying special. A paying ward with a number of beds is treated as a paying general ward. A cabin (generally with one or two beds) is treated as a paying special ward. When a patient is reported to have stayed in more than one type of ward, the ward where he/she had stayed for the longest duration was recorded in the survey.

Table 12 presents the percentage of inpatients who received free ward facilities in the private sector. Only around 2 percent of inpatient episodes were treated in free wards in 2004. This underlines the fact that

Table 12: Distribution of inpatient episodes treated in private hospitals by type of ward facility availed across MPCE groups, Kerala 1986-87, 1995-96, 2004

Year	Free/Pay ward	Percentage availing in each quintile						No of cases
		0-20	20-40	40-60	60-80	80-100	All Quintiles	
1986-87	Free	5.1	7.6	7.6	8.5	3.9	6.4	45
	Paying General	84.5	80.6	68.3	52.7	63.8	72.6	497
	Paying Special	10.4	11.7	24.1	38.8	32.3	21.0	171
	Total	100	100	100	100	100	100	713
1995-96	free	4.6	6.8	3.3	2.9	0.7	3.4	35
	Paying General	76.5	75.9	75.1	58.2	54.7	67.2	704
	Paying Special	18.9	17.3	21.6	38.9	44.6	29.4	380
	Total	100	100	100	100	100	100	1119
2004	Free	4.5	2.8	1.7	2.7	0.0	2.3	29
	Paying General	71.5	71.6	64.2	47.8	43.9	60.1	703
	Paying Special	24.0	25.5	34.1	49.4	56.1	37.6	486
	Total	100	100	100	100	100	100	1218

Source: NSSO Unit level data for respective years

free delivery of inpatient care services in so-called 'charitable institutions' is negligible. In fact there is a sizeable decline in proportion receiving treatment from free wards. Further, one can also see that the poorer quintiles are the major beneficiaries of whatever 'free ward' facilities are available in the private sector. Data shows such opportunities are dwindling over time. A majority are using the 'paying general' facility. As can be expected, the rich-poor differentials in the proportion of patients seeking inpatient care from 'paying special" ward is sizeable. This again indicates that though the rich and poor are utilising facilities in private hospitals, the nature of amenities used is likely to vary across MPCE subgroups.

Relative expenditure on inpatient care between private and public hospitals

Presently, 'out of pocket' expenditure (OOP) is unavoidable in most of the episodes of hospitalisation in either public or private hospital. Further it is known that 'out of pocket' expenditure in a private hospital is more than that in a public hospital. So the issue is: what is the additional economic burden involved, when a person decides to seek care from a private hospital instead of a public hospital? For the year 2004, the average OOP medical expenditure per episode of hospitalisation is rupees 2271 in a public hospital and rupees 4950 in a private hospital. (see Appendix IV for more details). The difference in average OOP between episodes treated in public hospital and private hospital were comparatively lesser in 1995-96 and further low in 1986-87.

Ideally this type of analysis should be undertaken for each type of ailment/disease. However the sample size does not permit such type of disaggregated analysis. It is well known that the cost of treatment depends on the nature of ailment. There is a definitive age pattern in prevalence ailment, with prevalence of chronic illness involving longer duration of treatment being more in older ages than in younger ages (Dilip 2002, Dilip 2007, Navaneetham and Kabir, 2006). Duration of hospitalisation to a large extent represents the severity of illness. Hence, in this analysis,

Table 13: Adjusted and unadjusted mean 'out of pocket' expenditure per episode of inpatient treatment in public and private hospital, Kerala 1986-87, 1995-96 & 2004

Year	Unadjusted mean (in Rs)/ ratio				Adjusted mean (in Rs)/ ratio		
	MPCE Quintile	Public hospital	Private hospital	Private-public ratio	Public hospital	Private hospital	Private-public ratio
1986-87	0-20	176	466	2.6	129	507	3.9
	20-40	200	362	1.8	186	377	2.0
	40-60	734	470	0.6	661	533	0.8
	60-80	241	715	3.0	148	783	5.3
	80-100	200	719	3.6	65	777	12.0
	All Quintiles	309	528	1.7	252	574	2.3
1995-96	0-20	499	905	1.8	474	935	2.0
	20-40	842	1026	1.2	750	1094	1.5
	40-60	995	1452	1.5	972	1462	1.5
	60-80	1148	1954	1.7	1045	2015	1.9
	80-100	4042	6218	1.5	2009	7001	3.5
	All Quintiles	1278	2548	2.0	1102	2664	2.4
2004	0-20	1788	3794	2.1	1217	4244	3.5
	20-40	2171	3669	1.7	1629	4021	2.5
	40-60	2906	4392	1.5	2305	4750	2.1
	60-80	2352	7083	3.0	2071	7281	3.5
	80-100	2521	6188	2.5	1634	6444	3.9
	All Quintiles	2271	4950	2.2	1644	5310	3.2

Sources: Computed from NSS data sets for respective years.

Adjusted means are obtained through multiple classification analysis with out of pocket expenditure as dependent variable, source of treatment as independent variable and age of patient and duration of stay in the hospital as covariates

the age of the patient and duration of stay in a hospital are employed as proxy variables to account for the effect of nature of ailment-dependent selection of source for inpatient treatment.

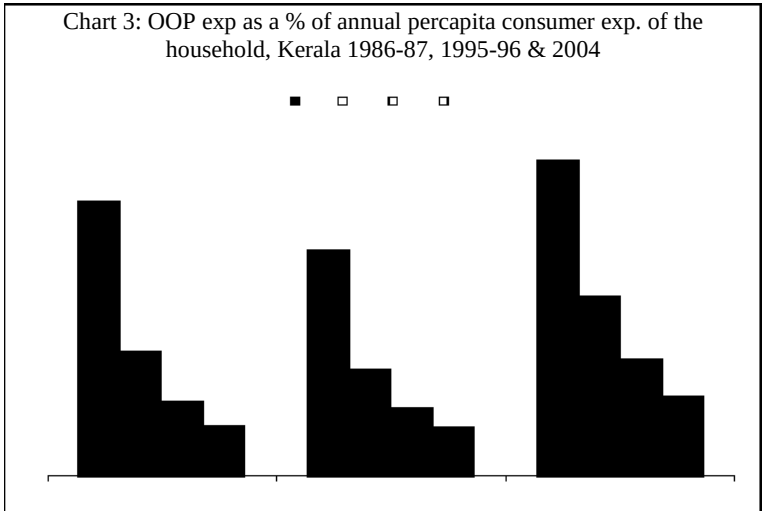
The unadjusted mean 'out of pocket' expenditure are simple averages without accounting for severity of illness. The adjusted means, on other hand, controls the 'out of pocket' expenditure for severity of illness. As a consequence the 'out of pocket' expenditure differentials between public and private hospitals widens considerably, when we adjust for severity of illness.

Adjusted ratios indicate that the differentials in out of pocket expenditure between public and private hospitals have increased considerably during the study period. The adjusted 'out of pocket' expenditure in a private hospital is 2.3 times than in a public hospital in 1986-87, which increased up to 3.2 times by the year 2004. The 'out of pocket' expenditure is positively related to the MPCE background of hospitalized person. However, no particular differential in public-private ratio is noted across MPCE quintiles. This can be due to the bias in payments made in health system with out of pocket expenditure incurred on hospitalisation being more in tune with the economic condition of the ailing person's family rather than to his or her illness.

Economic Burden of Treatment from Private Hospitals

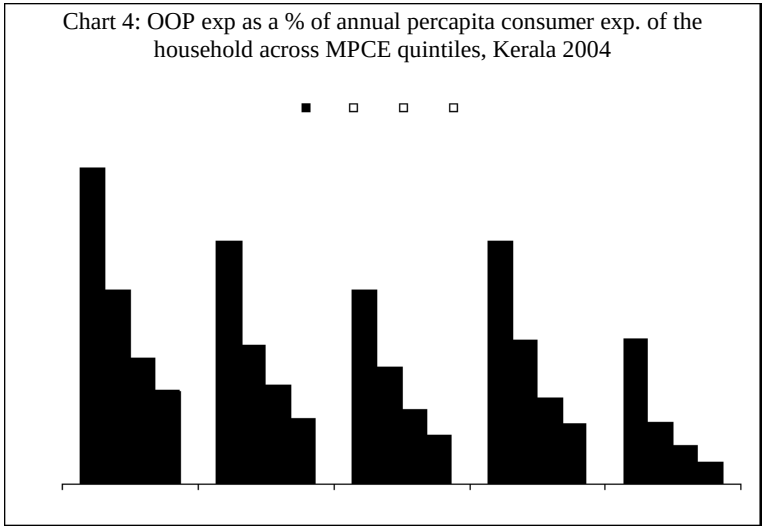
There has been an increase in annual hospitalisation rates, in the proportion seeking inpatient care from private hospitals and in the gap in average 'out of pocket' expenditure incurred between public and private hospitals. In this context, the trend in economic burden of treatment from private hospitals is examined across income quintiles. The economic burden is assessed as the ratio of 'out of pocket' expenditure per episode of hospitalisation to total annual percapita consumer expenditure of the ailing person's household. The proportion of episodes where 'out of pocket' expenditure accounts for more than 25 percent, more than 50 percent, more than 75 percent and more than 100 percent of annual per-capita expenditure of the household is shown separately.

Chart 3: OOP exp as a % of annual percapita consumer exp. of the household, Kerala 1986-87, 1995-96 & 2004



(Note: detailed data in table 14; OOP exp-Out of Pocket Expenditure)

Chart 4: OOP exp as a % of annual percapita consumer exp. of the household across MPCE quintiles, Kerala 2004



(Note: detailed data in table 14; OOP exp-Out of Pocket Expenditure)

Table 14: Out of pocket exp. per episode of treatment in a private hospital as a percentage of average annual per capita consumer expenditure of household by MPCE quintiles, Kerala 1986-87, 1995-96 & 2004

Year	MPCE quintile	Hospitalisation exp as a % of per capita consumer exp. of household				No of cases
		> 25 %	> 50 %	> 75 %	> 100 %	
1986-87	0-20	50.2	24.2	16.7	12.1	193
	20-40	37.0	15.0	8.6	5.4	158
	40-60	32.7	15.6	5.9	4.2	124
	60-80	38.9	15.9	11.9	9.1	116
	80-100	26.7	12.5	6.5	2.4	109
	All Quintiles	38.4	17.4	10.5	7.1	700
1995-96	0-20	32.0	15.3	7.4	5.5	195
	20-40	25.6	10.9	5.9	4.2	214
	40-60	32.2	12.8	8.0	4.6	249
	60-80	29.7	15.8	8.9	7.1	203
	80-100	36.8	19.2	16.1	11.5	258
	All Quintiles	31.6	15.0	9.7	6.9	1119
2004	0-20	61.7	37.9	24.5	18.3	239
	20-40	47.2	27.0	19.4	12.8	258
	40-60	38.0	22.8	14.5	9.7	229
	60-80	47.3	28.2	16.9	11.8	206
	80-100	28.4	12.2	7.6	4.4	236
	All Quintiles	44.2	25.3	16.5	11.3	1168

Source: NSS unit level data respective years

The inpatient treatments from private hospitals have become more costly over time. Proportion of cases where 'out of pocket' expenditure on inpatient care is more than 25 percent of annual percapita consumer

expenditure of household increased from 38 percent in 1986-87 to 44 percent in 2004. Similar increase was noted for the three other cut off points presented in Chart 3 and Table 14. This burden was relatively less in the period 1995-96, when rich/poor divide in utilisation of private hospitals was highest and during a time when selection of source of treatment was increasingly dependent of capacity to raise finance resources. Table 14 indirectly shows that such type of self regulation in selection of source of treatment may not be rampant in 2004. Due to this rich-poor divide in economic burden has reappeared. The observation remains the same for three other health expenditure levels presented.

MPCE quintile-wise ratios for the year 2004 reveal that the treatment from private hospitals is much more taxing for poorer sections than to richer sections (Table 14 & Chart 4). The proportion who spent more than 100 percent of their annual percapita income of household is 18 percent among poorest quintile and only 4 percent in the richest quintile. Though the poor are using private hospitals as intensively as the rich, the financial implication of the decision to choose health care from a private hospital is more for the poor and its impact is likely to last for a longer period of time on them. All these indicate that though poor are increasingly using inpatient care services in private hospitals, the real burden of 'out of pocket' expenditure on hospitalisation has increased over time for them also.

Conclusion

Data brings out the significant role played by private health care sector in terms of provisioning of inpatient services. The positive features observed are that persons belonging to all quintiles consume this sector's services and that duration of treatment is lesser in this sector. However government hospitals are preferred over private hospitals for treatment of diseases like cancer and other tumours which are expensive. But the analysis also gives rise to some apprehensions about the profit motivated

private health sector's participation in delivery of health care services. The study period has witnessed closure and opening up of private hospitals at regular intervals for profit related reasons. This underlines the uncertainty associated with private sector provisioning of health care services. The general demand for hospitalisation care, long term nursing care as well as rehabilitative care is likely to increase in future. The large private hospitals may not be able to cater to this demand for long term nursing/rehabilitative care in a cost effective manner. Therefore, the so called "consolidation" of large private hospitals is expected to be a temporary phenomenon and demand for small hospitals and nursing homes is likely to improve in the near future. Public policy aimed at promoting these types of institutions will be helpful in reducing the overall 'out of pocket' spending on health care.

Utilisation of inpatient treatment from private hospitals is as frequent among poor as among the rich. However the deprived social groups comprising of 'SC/ST's are increasingly getting alienated from the private hospitals. This could be due to their marginalisation over time in terms of achieving better standard of living. Further, there has been a steady increase in proportion seeking inpatient care from private hospitals, during a period that also witnessed a widening of out of pocket expenditure differentials between public and private systems. Another notable observation is that the 'out of pocket' expenditure on hospitalisation as a percentage of household consumer expenditure has increased. Whether these two observations is an outcome of rise in purchasing power parity is to be investigated. The role of charitable institutions in providing inpatient care is shrinking and they are mostly turning themselves into self sustaining institutions, with user charges as a major source of revenue, in addition to the grant-in-aid they receive from government and other external sources. Hence the policy makers have to more cautious while identifying voluntary organisations for delivering public health programmes with grant in aid from the government.

It is confirmed that while private sector is indeed providing a significant proportion of in-patient care to the poor, it taxes them severely. Also the over-whelming dominance of the private sector across time has resulted in marginalised groups getting more and more restricted access. If this continues for a while, there can be situations where the socially marginalised are less likely to avail health care when needed; and when compelled to opt for health care they also might opt for private facilities; and this utilisation taxes them severely.

T R Dilip *is Lecturer at the Centre for Development Studies, Trivandrum, Kerala. His research interests include Morbidity Analysis, Health Financing and Human Development.*

E mail: dilip@cds.ac.in

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Appendix I: Number of hospital beds in public and private sector, Kerala 1986-87, 1995-96, 2004

	1986/1986-87			1995 / 1995-96			2004/ 2004-05		
District	Public	Private	Total	Public	Private	Total	Public	Private	Total
Thiruvananthapuram	6682	4198	10880	7050	5225	12275	8245	6811	15056
Kollam	2018	4787	6805	2345	7519	9864	2129	4886	7015
Pathanamthitta	3573	3745	7318	4105	4496	8601	681	4323	5004
Alapuzha	1132	3203	4335	1196	3847	5043	3827	2922	6749
Kottayam	3155	6382	9537	3583	7888	11471	3075	5285	8360
Idukki	619	3535	4154	1003	4004	5007	1238	5149	6387
Ernakulam	3558	8796	12354	4083	11602	15685	4144	9850	13994
Thrissur	4096	5259	9355	4341	8893	13234	4795	7272	12067
Palakkad	1768	1099	2867	2214	2231	4445	2486	2653	5139
Malappuram	1556	2150	3706	2355	3948	6303	2870	4108	6978
Kozhikode	4339	2497	6836	4553	4053	8606	5432	3081	8513
Wayanad	625	1594	2219	933	1806	2739	1108	1521	2629
Kannur	2439	2570	5009	2571	4099	6670	3133	5081	8214
Kasaragode	698	951	1649	832	1313	2145	1030	1549	2579
Kerala	36258	50766	87024	41164	70924	112088	44193	64491	108684

Source: (1) Private Beds from Survey of Private Medical Institutions in Kerala, Bureau of Economics and Statistics and (2) Public Beds from Economic Review, State Planning Board (respective years)

Appendix II: Number of institutions and total number of beds under Allopathic System of Medicine Kerala, 1986, 1995, 2004

District	1986		1995		2004	
	Institutions	Beds	Institutions	Beds	Institutions	Beds
Thiruvananthapuram	246	3744	236	4807	157	5728
Kollam	218	4504	240	7194	158	4236
Pathanamthitta	137	3720	122	4391	64	3801
Alapuzha	154	3157	151	3633	92	2342
Kottayam	182	6189	191	7642	126	4873
Idukki	152	3521	130	3944	109	4973
Ernakulam	186	8646	189	11418	145	8770
Thrissur	124	5101	120	8345	99	6612
Palakkad	63	1013	81	2105	78	2192
Malappuram	101	1931	125	3313	110	3000
Kozhikode	108	2411	127	3714	86	2908
Wayanad	54	1594	62	1769	44	1429
Kannur	96	2550	127	3952	95	4766
Kasaragode	43	949	57	1290	42	1441
Total	1864	49030	1958	67517	1405	57071

Source: (1) Private Beds from Survey of Private Medical Institutions in Kerala, Bureau of Economics and Statistics (respective years)

Appendix III: Source for inpatient treatment, Kerala 1986-87, 1995-96 & 2004

	1986-87			1995-96			2004		
	public	private	Total	public	private	Total	public	private	Total
Age group									
0-14	46.9	53.1	100	30.9	69.1	100	31.1	68.9	100
15-59	43.8	56.2	100	41.4	58.6	100	37.3	62.7	100
60+	44.7	55.3	100	42.0	58.0	100	35.6	64.4	100
Sex									
Male	47.4	52.6	100	38.1	61.9	100	34.0	66.0	100
Female	41.8	58.2	100	41.3	58.7	100	36.8	63.2	100
Place of residence									
Rural	43.3	56.7	100	40.1	59.9	100	35.6	64.4	100
Urban	55.7	44.3	100	38.4	61.6	100	34.6	65.4	100
Social Group									
SC/ST	57.6	42.4	100	60.3	39.7	100	62.8	37.2	100
Non-SC/ST	43.0	57.0	100	37.2	62.8	100	32.2	67.8	100
MPCE Quintile									
0-20	46.5	53.5	100	54.5	45.5	100	45.2	54.8	100
20-40	49.7	50.3	100	42.3	57.7	100	39.3	60.7	100
40-60	46.7	53.3	100	36.4	63.6	100	36.3	63.7	100
60-80	41.5	58.5	100	36.5	63.5	100	33.4	66.6	100
80-100	31.1	68.9	100	27.8	72.2	100	17.5	82.5	100
Region									
Northern Kerala	48.9	51.1	100	40.4	59.6	100	37.0	63.0	100
Southern Kerala	42.8	57.2	100	36.4	63.6	100	34.7	65.3	100
Total	44.6	55.4	100	39.7	60.3	100	35.4	64.6	100
N # i	629	712	1341	640	1119	1806#	651	1218	1869

formation on source not available in 47 cases Source:
NSSO Data respective years

Appendix IV : Average medical expenditure by source for inpatient treatment, Kerala 1986-87, 1995-96 & 2004

	1986-87			1995-96			2004		
	public	private	Total	public	private	Total	public	private	Total
Age group									
0-14	204	256.63	231.89	668	860	789	1470	1732	1651
15-59	377	576	489	1493	2784	2219	2784	5383	4411
60+	224	624	443	1081	3449	2382	1760	6977	5178
Sex									
Male	408	548	481	1225	2603	2063	2494	5147	4244
Female	197	510	380	1323	2489	1955	2046	4729	3753
Place of residence									
Rural	315	514	428	1248	2670	2068	2174	4565	3717
Urban	269	677	452	1379	2138	1802	2600	6179	4954
Social Group									
SC/ST	153	354	237	912	3011	1726	1299	2384	1730
Non-SC/ST	335	543	454	1350	2510	2042	2478	5122	4268
MPCE Quintile									
0-20	176	466	330	499	905	676	1788	3794	2910
20-40	200	363	282	842	1026	943	2171	3669	3079
40-60	735	470	592	995	1452	1257	2906	4392	3851
60-80	241	715	515	1148	1954	1605	2352	7083	5496
80-100	200	719	563	4042	6218	5523	2521	6188	5550
Region									
Northern Kerala	203	583	395	1248	2628	2033	2129	7559	5541
Southern Kerala	361	507	445	1426	2193	1889	2338	3883	3352
Total	309	528	430	1277	2547	2007	2272	4950	4008
N[#]	616	702	1318	640	1119	1759	621	1168	1789

Source: NSSO data sets for respective years

[#]Excludes cases where treatment was provided freely by their employers to employees and their dependents

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