AVAILABILITY, DISTRIBUTION AND UTILISATION OF HEALTH CARE SERVICES IN KERALA

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1. Background

Kerala's development experience has drawn considerable interest and discussions from diverse fields and perspectives in the last four decades. Despite continuing debates on its determinants and sustenance, there is a fairly unanimous agreement that a strong public sector presence in the social sector including health was one of its main drivers.

A relatively well funded public health care sector that ensured the availability and the accessibility to a wide network of government health care facilities formed an integral element of the 'good health at low cost' model of the state.

However, a gradual shift in the growth and provision of health care services that happened in the State since the 1990s led to an inexorable growth and dominance of the private sector in healthcare. The period also had a cut down on government spending on health which led to a fall in investment particularly on medical supplies and capital building. Detailed analysis has clearly indicated that the public sector spending on health significantly reduced and private sector vastly outstripped the public sector in the late 1990s. The fundamental foundation of the concept of 'good health at low-cost model' that the state was famed for, was threatened and raised concerns about the issues of quality, access and exclusion in the health sector and a larger fear of a potential increase in health inequities. These concerns seemed justified when Kerala topped the nation in out-of-pocket expenditure on health across the socioeconomic strata with catastrophic health expenditure highly concentrated among the poor.

The people of the state are also known for their high health care seeking which is most likely due to the presence of a wide network of health care infrastructure and a strong culture of traditional and indigenous system of health care seeking.

Consequently, the focus of policy making for health in the state has lately shifted to major strategies and plans to ensure universal health coverage in the State. The stress is currently on improving the quality of services, strengthen the role of the government in the provision and regulation and financing of health care and the protection of the people from catastrophic health expenditures. The key underlying elements are that of ensuring equitable health access as a right and ensuring financial protection for health care to the poor. This resonates with the efforts that are currently on in Kerala, through the programmes of Aardram and specific health protection schemes to strengthen the health care systems at all levels of health care and deliver comprehensive health care for all. The aim is to revive the presence of the public sector in health to achieve 'population coverage, service coverage and cost/financial coverage' – the three dimensions of Universal Health Care as described by the World Health Organisation. Therefore, providing access to effective and affordable health care services of sufficient quality is the crux of any effort to move towards universal health coverage

1.1 Health care access and utilisation

World Health Organization's (WHO) definition of its priority goal of universal health coverage as *".... ensuring that all people have access to needed promotive, preventive, curative and rehabilitative health services, of sufficient quality to be effective, while also ensuring that people do not suffer financial hardship when paying for these services."* The core aim of health policy and planning, globally has been to provide their people equitable' access to health care resources.

The term 'access' to health care resources has more than one definition and is a complex concept with multiple dimensions; the four main dimensions being availability, accessibility

affordability and acceptability. Many have equated accessibility to physical or geographical access to health care, whereas others have defined it as one's ability to utilize health care when needed and some consider 'access' and 'use' as synonymous.

Access to health care is often presumed to naturally happen when health care services are made available. However, there is considerable literature relevant to South Asia indicating that the availability of health care services does not automatically translate to access for many sections of a population. The ability of individuals or groups who are affected by single or multiple axes of inequalities and deprivation could limit their access even if services are made available.

Access is a reality when people use the services when they need them and therefore utilisation of health care services is often considered a surrogate measure of the population's access to health care services. Making available health care services and ensuring access without exclusion involves the creation of structures and processes that are inclusive as well as enabling. A body of scholarship further theorize that health access is best understood as shaped by supply and demand side factors to tackle it more effectively. The conceptual differences around the definitions of health access and its measurements raise considerable challenges for health systems globally; to find appropriate interventions as well as indicators to measure their outcomes.

Health access is known to be heavily influenced by various factors that range from individual to larger political economy factors. Availability of health facilities is seen to positively impact on health care seeking among people. Even more than the quantum of facilities their pattern of distribution is more likely to influence people's health care utilization. Studies from several regions of the world substantiate the fact misdistribution of

facilities results in increased distances, time of travel and cost involved to seek care in times of need. These factors also account largely for the differentials in health care utilization between the rural and remote regions and urban areas. It is further complicated by the finding that geographical distribution indicating skewness in one particular dimension of access may not be deficient in another and highlights the risk of broad and incorrect categorizations of areas based on mapping related to any one dimension.

Considerable sections of the population do not seek care for their illnesses due to fact that those services are unaffordable for them. Lower social and economic entitlements are known correlates of lower access to health care. People from economically weaker sections of the society, lower caste and class have been consistently found to receive less health care compared to others across countries. Health facilities made available do not necessarily translate into functioning, effective and acceptable health care, due to insufficient human and other resources, poor skills and attitude of the providers, lack of accountability and poor quality of care. Perception of poor quality of services erodes people's confidence in these institutions and negatively impact on their health access.

In addition, utilization of health care services is a multifactorial outcome which is influenced not only by the four dimensions of access (availability, accessibility affordability and acceptability) related 'supply side' factors but also certain 'demand side' factors that shape people decisions to seek care. Demand for health care is thought to be dependent heavily on people's perception of diseases and their cure, the prevailing culture of illnesses and health care seeking in their environments; as well as the autonomy, freedom and the sense of entitlement that individuals and groups have to choose and seek care. Gendered differences in health care utilization especially in the developing countries, lower reported

rates of morbidity among the poor and the most marginalized sections are borne out of these differences.

It has been well documented that access to health care and utilisation rates have wide differentials within populations and several factors like geographic location of residence, racial and cultural differences, social and economic status and physical distances contributes to them. Differential utilisation of health care services in a society can be an effective pointer to the inequities in the provision and access of services and help identify pockets of exclusion

1.2 Health care access – the context and challenges in Kerala

The fame that Kerala has gained globally is an outcome of a long process of evolution of a society with several historical advantages of having a systematic indigenous health care system, traditional cultural practices, progressive rulers, early contact with foreign traders, missionaries and modern medical systems; catalyzed by progressive social, cultural and political movements to a position of comparative advantages already at the time of the independence. The dominant discourse of the cultural, social and political movements in the state from the late 19th century has been for transformative based on principles of social justice, human rights and inclusion. As a result, this formed the framework for policy making and governance by the democratically elected governments post-independence.

The indication for the commitment of the successive governments of Kerala in ensuring social equity according to scholars, is in the pattern of investments in social sectors particularly health, and education. As a result, a rapid growth in the educational and health facilities occurred in the state till the mid-1980s.

The State was always ahead of the rest of the country in terms of provision of health care to its population. More than 90% of the villages in Kerala had access to a health dispensary and

about half of the villages had a health centre within two kilometres and 78% of the villages had access to a hospital within five kilometres from the late 1970s. *(R W Franke & B H Chasin, Kerala: Radical Reform as Development in an Indian State).* Along with a strong social and public action it was the reasonably well distributed and well-functioning public health care institutions that enabled the state to deliver preventive and curative services effectively, reduce its mortality rates and attain impressive health indicators.

Despite the impressive achievements, there were concerns even from the late 1980s, about certain trends that could potentially derail the state's achievements. Studies from as early as 1984 brought to discussion the high prevalence of reported morbidity in the state despite the low mortality rates. *(P.G.K. Panikar and C.R. Soman, Health Status of Kerala: The Paradox of Economic Backwardness and Health Development. Centre for Development Studies, Trivandrum, 1985.).* In the decade from 1986-1996, the private sector has outstripped the public sector in its growth in terms of the number of facilities as well as beds as well as quality *(Kutty VR)* The demographic and epidemiologic transition that happened in the state, the consequent non-communicable disease burden, increased demand for care and expectations of people for quality of care were challenges that the public health care sector in Kerala were not prepared for.

The availability and the accessibility to a dominant and wide network of government health care facilities which was considered an integral element of the 'Kerala model' of development.[1] The gradual shift in the growth and provision of health care services in the state has been documented in the state since the 1990s with a steady growth and dominance of the private sector in health care provision. The stagnation in the public health care sector and the unregulated growth of the private sector and the escalation in the out-of-pocket

health care expenses that followed, raised concerns about the sustenance of the achievements that the state had made.

Studies indicated the that the decadal growth of hospital beds (1986-96) was only 5% in the government sector compared to almost 40% in the private sector and the difference was significantly marked in the availability of newer and advanced diagnostic and therapeutic facilities.[2]Around 82% of the hospitals, 86% of the doctors and almost 58% of hospital beds were in the private sector in the early 2000s.[3]

Evidence also indicate that the shift from the government to the private sector for outpatient care happened even among the poor sections of the population[4] . Factors like availability of health care services, accessibility and affordability were also found to create variations in morbidity and hospitalizations among population sub groups and regions within Kerala.[5] Kerala also tops the country in terms of reported morbidity as well as health care seeking. High literacy, low rural-urban differentiation, culturally habituation to traditional health care healing practices of the Ayurveda, notions of health, illnesses and cure borne out of it, high consciousness of their right to health etc. are some of the drivers of the demand for health care in the state. This has given rise to a challenging situation where high demand paralleled by a high growth of private sector in health care has escalated the cost of health care.

The consequence of such a high utilization of private health care has been an increase in the out-of-pocket health care expenditure in Kerala. Kerala topped the country in 2013-14 in terms of private per capita expenditure on health. A recent study revealed that Kerala has the highest per capita expenditure on health in India and households pay more than seventy five percent of those expenses. This increases the possibility of large proportions of the

population being impoverished due to catastrophic health expenditure. Around three fourths of all the health care expenses in the State was borne by households, while the government contribution was only about 20 percent.[6,7] The increase in health care spending in the state is also partly due to higher health care seeking behaviour and the demographic and epidemiologic transition in the state. The escalation of out-of- pocket expenditure and the high reliance on the private sector even for outpatient care are causes of concern because of the potential it has in creating inequities in access for the poorer and the marginalized sections of the population.[8] Health care expenditure has been documented as the reason for about 12 % of rural households and 8 % of urban household in Kerala to be pushed below the poverty line.[9]

The private sector continues to surpass the once dominant publicly funded health care facilities. Kerala has the highest density of health facilities in India; with the majority of doctors, hospitals and beds in the private sector. There also exists wide regional inequalities in terms of availability of facilities and coverage.

In the light of the above concerns, there has been a conscious effort on increasing the public spending on health; the government expenditure has increased from about 9 percent to 19 percent.[6] It has been estimated that the increased public spending has contributed to bringing down to out-of-pocket spending in Kerala by about 2 percent.[6]

A study carried out by the Kerala Sasthra Sahitya Parishad indicated that utilization of public health facilities has increased from around 25 percent to about 45 percent in the past few years. In this context, Government of Kerala has clearly stated in the 13th Five year plan its intention[10]"to restore the centrality of the public sphere in health and education, and to create people-friendly systems of health" In tune with this commitment, it has also launched

the 'Aardram' mission to transform the public health sector at the primary, secondary and tertiary levels.

Rationale for the study:

Although there exist conceptual differences in the definitions of health access and utilization, there is a dominant view that the 'rate of utilization of effective health care among the population' is a good indicator for a health system performance. Though there are important demand side factors that affect utilization of health care services, supply side factors like availability and quality of health care are also crucial for policy makers to remove such barriers.

The current study is proposed in this context to document the distribution of health facilities, patterns of utilization of health care in the modern medicine sector and identify key factors that influence their provider choices, in order to aid health care policy making.

Chapter 2

Methodology

2.1 Objectives

The objectives of the research were

1. To document the existing distribution and coverage of modern health care facilities[*] including public, private & community-based health facilities in Kerala

2. To study the patterns of health services utilization in the state and factors that influence the differential use of public and private services

[*]Health care facilities to include all public, private and other sectors in the modern system of medicine.

[*]Definition of health facilities: Health facilities include all public, private, non-governmental and community-based health facilities defined as a static facility (i.e., has a designated building) in which general health services are offered. Health posts can be counted as static facilities, but because they are generally small with minimal supplies, they may need to be disaggregated for interpretation purposes. The indicator does not include mobile service delivery points and non-formal services such as traditional healers. *(Source: WHO, 2010, monitoring the building blocks of health systems: a handbook of indicators and their measurement strategies, Geneva: WHO.)*

2.2 Methods

a) To document the existing distribution and coverage of health care facilities in the state

Secondary data analysis: Using all sources of publicly available secondary data sources including reports and from the relevant departments of health, medical education and economics and statistics and other sources.

b) <u>To study the patterns and correlates of health services utilization in the state</u>

Cross sectional survey:

The results of a Cross sectional survey among 1200 households selected using multi stage random sampling was used for this study

Sample size and sampling:

- A sample of around 1200 households; 200 households from six randomly selected districts using a multi stage stratified random sampling

- Districts were first ranked according to the ratio of the number of hospital beds per 100,000 in the public sector to that in the private sector and categorized into high, medium and low categories. Two districts were randomly selected each category totalling to six districts

- From each district, a total of one panchayat and one corporation/municipality were randomly selected

- From each panchayat/municipality, wards were selected using simple random

- sampling. The number of rural and urban wards selected was proportionate to the rural and urban population in the particular district

- From each ward, twenty households were selected for the survey. With the help of the panchayat members, a list of households in the selected ward was sought and was used to randomly identify the first household. Two data collectors in each ward were assigned two different households for the

purpose. From the assigned first household, each of them will visit every third house till ten households each are completed, thus completing a total of twenty households per ward

- One respondent from each household (head of the household or a willing adult who is knowledgeable and capable of answering about the members of the household) will be the respondent. Data required for the completion of the questionnaire was collected from her/him.

- The proportion of the rural and urban samples in each district was proportionate to the rural and urban population of the individual districts **(Table1. 1)**

Table 1.1. Sampling from the selected districts – rural and urban

District	Population Rural (%)	Population Urban (%)	Sample - Rural No. of wards * No of households	Sample -Urban	Total
Thiruvananthapuram	46	54	5 *20 =100	5*20 =100	200
Thrissur	33	67	3*20=60	7*20=140	200
Pathanamthitta	89	11	9*20=180	1*20=20	200
Alappuzha	46	54	5*20=100	5*20=100	200
Idukki	95	5	9*20=180	1*20=20	200
Kannur	35	65	3*20=60	7*20=140	200
Total					1200

Study Tool: The household survey was carried using a structured questionnaire that explored the health care seeking practices for tracer chronic and acute morbidity (e.g. hypertension/diabetes, fever in the previous two weeks, in patient stays in the last six months etc.). An adapted version of the questionnaire used in the NSSO 71st round of National Sample Survey Organisation related to social consumption including health was used for this study[11]

Chapter 3

Results from secondary data analysis

3.1 Results from the secondary data

Secondary data was collected and analysed to understand the availability and distribution of modern medical health care institutions in the state. Reports and studies from the directorate of health services, department of economics and statistics, govt of Kerala, reports from the state and central governments and smaller studies looking at utilisation of health care services in the state. The information collated from the different sources is collated in tables provided below.

The information regarding the infrastructure (no. of institutions, beds, facilities were sourced from various government departments, agencies and reports. However, the data regarding the exact number of private hospitals, beds, personnel etc were not available readily. This information was captured mainly from estimates made by various agencies and indirect sources.

The availability of medical institutions for health care in each district was assessed based on the data related to the medical institutions and beds published by the Directorate of Health services, data related to private medical facilities from the reports published by the Department of Economics and Statistics and the Government of India from time to time. Though statistics regarding the number of medical facilities are published regularly, it includes only the data related to the facilities and services under the Directorate of Health services.

According to the World Health Organisation (WHO) a hospital bed is "a bed that is regularly maintained and staffed for the accommodation and full-time care of a succession of inpatients and is situated in wards or a part of the hospital where continuous medical care for inpatients is provided." A sanctioned bed capacity is the bed capacity that is officially permitted whereas functional bed capacity reflects the actual functional status of them.

Medical institutions and bed capacity:

There is a total of 1280 institutions under the Directorate of Health Services with a total bed strength of 43183 according to the report published by the Health information cell of the Directorate of Health Services in 2018.

Table 3.1 Modern medicine institutions under the Directorate of Health Services 2016-17

Sl.no	Institutions	Number	Beds
1	General Hospitals	18	6920
2	District Hospitals	18	5167
3	Speciality Hospital	22	5557
4	Taluk Hospital	81	8438
5	Community Health Centers	232	6571
6(a)	Primary Health Centers 680		2034
(b)	24X7 Primary Health Centers 168		3145
	Total PHC [6 (a+b)]f	848	5179
7	T.B. Centers/Clinics	14	24
8	Other Institutions	47	148
	Total Govt. Modern Medicine Institutions	1280	34008
	Speciality Hospital Category wise		
1	W & C Hospitals	7	1639
2	Mental Health Center	3	1342
3	T.B.	4	622
4	Leprosy Hospital	3	1690
5	Others	5	264
	Total	22	5557
	Subcentres	5408	

Source: Health at a glance.2018, Health Information Cell. Directorate of health services.

As per the National Health Profile (NHP) 2018 for the reference period of 2017, the average population served by a government hospital in Kerala was 27873 and the average population served per government hospital bed was 939 (*The estimate of the NHP 2018 was based on the hospitals under the Directorate of health services only, since it was calculated with a total of 1280 hospitals, 38004 beds and a projected population of 3,56,77000 (mid-year population) for the reference period of 1/1/2017 from the Registrar General of India*)

Health facility density is an indicator that is recommended by the WHO to assess health care availability and it primarily indicates access to outpatient care; however, by definition health care facility is defined as including both public and private hospitals, health centres, district and rural hospitals specialized and teaching hospitals. Most figures published for Kerala at the state and national levels are based on facilities under the Directorate of health services and is an underestimate of the real scenario.

Table 3.2 Bed (under DHS) - Population Ratio – district wise in Kerala – 2016-17

Sl.No.	District	Population census 2011	No. of beds-modern medicine-Govt	Population to bed ratio	Hospital beds (DHS)/10,000 population
1	Wayanad	817420	1367	598	17
2	Pathanamthitta	1197412	1948	615	16
3	Alappuzha	2127789	3424	621	16
4	Thiruvananthapuram	3301427	4879	677	15
5	Kottayam	1974551	2817	701	14
6	Ernakulam	3282388	4544	722	14
7	Kannur	2523003	2990	844	12
8	Thrissur	3121200	3519	878	11
9	Idukki	1108974	1096	1012	10
10	Palakkad	2809934	2622	1072	9
11	Kozhikode	3086293	2820	1094	9
12	Kollam	2635375	2388	1104	9
13	Kasaragod	1307375	1087	1203	8
14	Malappuram	4112920	2503	1643	6
	State	33406061	38004	879	11.4

Source: Health at a glance.2018, Health Information Cell. Directorate of health services.

From the table above, there are inter district variations in the beds/10,000 population (beds in the institutions under the Directorate of health services.). The population to bed ratio provided above by the Directorate of Health Services, is based on the population of 2011 census. However, *if the projected population of the RGI as on 1/1/2017 (356,77,000) is used in for the calculation as, the <u>overall population to bed ratio in Kerala during the reference period is 939 and hospital beds (under the DHS)/10,000 population was 10.7</u>.*

While there is no global fixed norm for this indicator, comparative national level figures for India (5 in 2018) are Srilanka (35.1 in 2010), Sweden (24.4 in 2015) and Cuba (52.4 in 2017). The distribution of the number of the institutions (1280) and beds (38004) available per district is provided in Table 3.3

Table 3.3 Bed Strength– district wise in Kerala – under Directorate of Health Services

Sl.no	District	Rural Bed	Institutions (rural)	Urban Bed	Institutions (urban)
1	Thiruvananthapuram	1364	82	3515	36
2	Kollam	884	60	1504	28
3	Pathanamthitta	1059	62	889	5
4	Alappuzha	1679	82	1745	8
5	Kottayam	1575	76	1242	8
6	Idukki	922	60	174	3
7	Ernakulam	1630	89	2914	26
8	Thrissur	2094	99	1425	19
9	Palakkad	1418	104	1204	10
10	Malappuram	905	105	1598	19
11	Kozhikode	767	75	2053	17
12	Wayanad	560	33	807	9
13	Kannur	1075	85	1915	23
14	Kasaragod	433	51	654	6
		16365	1063	21639	217

Source: Health at a glance.2018. Health Information Cell. Directorate of Health Services

Doctor to bed ratio (Table 3.4) is another indicator provided by the Directorate of Health Services; where three districts fall far behind the other districts, namely Malappuram,

Kasaragod and Idukki. Palakkad, Kannur and Pathanamthitta also have a doctor bed ratio that is below the state average.

A better indicator of the health care services functioning would be the doctor – population ratio, since it can aid the policy makers to identify the maldistribution/ inefficient use of the human resources component and gauge regional disparities.

Table 3.4 Doctor Bed Ratio (Government - Modern Medicine) under the Department of Health Services (2017-2018)

Sl.No.	District	No. of Beds	No. of Doctors	Doctor bed ratio 2016-17
1	Ernakulam	4544	492	9.2
2	Alappuzha	3424	374	9.2
3	Thiruvananthapuram	4879	543	9.0
4	Kozhikode	2820	335	8.4
5	Thrissur	3519	429	8.2
6	Kollam	2388	307	7.8
7	Wayanad	1367	177	7.7
8	Kottayam	2817	367	7.7
9	Palakkad	2622	369	7.1
10	Kannur	2990	425	7.0
11	Pathanamthitta	1948	280	7.0
12	Malappuram	2503	452	5.5
13	Kasaragod	1087	198	5.5
14	Idukki	1096	219	5.0
	State	38004	4967	7.7

Source: Health at a glance.2018, Health Information Cell. Directorate of health services.

Most indicators for the state in terms of human resources, bed capacity, doctor population ratio is calculated based on the most regularly updated and updated information regarding the infrastructure and human resources under the Directorate of health services. These indicators would be underestimates of the real situation since services and human resources in the various medical colleges and dispensaries and hospitals under the State government ESI and ESI corporations are not collated.

From Table 3.4, there exists 33 medical colleges in Kerala; close to fifteen thousand beds available in the public and an almost similar number of beds in the private sector colleges. Only one third of the medical colleges in Kerala are in the government sector

Fig 3. 5 Medical colleges in the public and private sector in Kerala with bed capacity - 2018

		Public*	Public-beds	Private*	Private-beds	Total Colleges	Total Beds
1	Kannur	1	1200	1	750	2	1950
2	Ernakulam	1	700	3	2950	4	3650
3	Kottayam	1	910	0	0	1	910
4	Kozhikode	1	3080	2	915	3	3995
5	Malappuram	1	501	1	630	2	1131
6	Idukki	1	300	1	380	2	680
7	Kollam	1	500	2	1000	3	1500
8	Thrissur	1	2350	2	2190	3	4540
9	Palakkad	1	750	2	850	3	1600
10	Thiruvananthapuram	1	3250	4	1950	5	5200
11	Alleppey	1	1051	0	0	1	1051
12	Pathanamthitta	0	0	3	2000	3	2000
13	Wayanad	0	0	1	700	1	700
14	Kasaragod	0	0	0	0	0	0
	Kerala	11	**14592**	22	14315	**33**	**28907**

Public – does not include GMC, Konni and Private- does not include Kerala Medical College, Palakkad
Source: Based on National Health Profile 2019 and secondary data collected from several sources

Table 3. 6. Total beds in the government sector – Kerala - 2017

	No of hospitals	Beds
Directorate of Health Services	1280	38004
ESI Corporation	23	1240
Medical Colleges	22	14592
Grand Total	1325	53836

Source: National Health Profile 2019

From this table, the bed density (government sector) per 10000 population in Kerala considering a population of 35677000 is 15.1

In Kerala, under the Employees State Insurance Scheme of India medical facilities are provided through 4 ESI Corporation (GOI) and 9 state ESI hospitals, 1 ESI annexe at Government Chest disease sanatorium, Pulayanarkottah and 145 full time dispensaries

Doctor population ratio:

According to the figures reported by the National Health profile, 2019, the doctor population ratio (working in the government sector) for Kerala as on 1/1/2017 is presented below.

Table 3.7a Doctor to population ratio (Govt) – Kerala State- 2017

Doctors – Modern medicine	5239	Population (as on 1/1/2017)	Doctor/1000 population
Dental surgeons	172		
Total	5411	356,77,000	1.5

Source: National Health Profile 2019

Table 3.8 a Registered nurses, midwives and LHVs – Kerala State- as on January 31,2018

	Number
Auxillary nurse midwives	30530
Registered nurses and midwives	261,951
Lady Health Visitors	8507
Total	300,988

Source: National Health Profile 2019

Table 3.7a. Total numbers of doctors registered with the state medical council in Kerala as on January 31, 2018

	Number
Registered up to 2010	40007
Registered from 2011-18	59353
Total	99360

Source: National Health Profile 2019

Assuming 80% availability of doctors and 75% availability of nurses, as is usually estimated by the medical council, 79,488 doctors and 225,741 nursing personnel would be available for active services. This would equal to about 8.6 doctors, nurses and midwives per 1000 population in Kerala.

The density of private medical institutions under modern medicine per 100,000 is provided, in the table below. The data provided below is from a survey on private medical institutions done by the Department of Economics and Statistics, but does not specify whether medical colleges in the respective districts are included.

Table 3. 9. Number of private medical institutions providing modern medical care per 100,000 population – Kerala -2017-18

| District	No. of private hospitals providing modern medical care	Population	Density of private hospitals/100,000 population
Ernakulam	991	3282388	30.2
Idukki	278	1108974	25.1
Kottayam	464	1974551	23.5
Kozhikode	687	3086293	22.3
Pathanamthitta	257	1197412	21.5
Kasaragod	275	1307375	21
Kannur	519	2523003	20.6
Kollam	519	2635375	19.7
Malappuram	780	4112920	19
Thiruvananthapuram	628	3301427	19
Alappuzha	400	2127789	18.8
Wayanad	149	817420	18.2
Thrissur	569	3121200	18.2
Palakkad	404	2809934	14.4
Total	6920	33406061	20.7
Source: Report on Survey on Private Medical Institutions in Kerala: 2017-18. Department of Economics and Statistics			
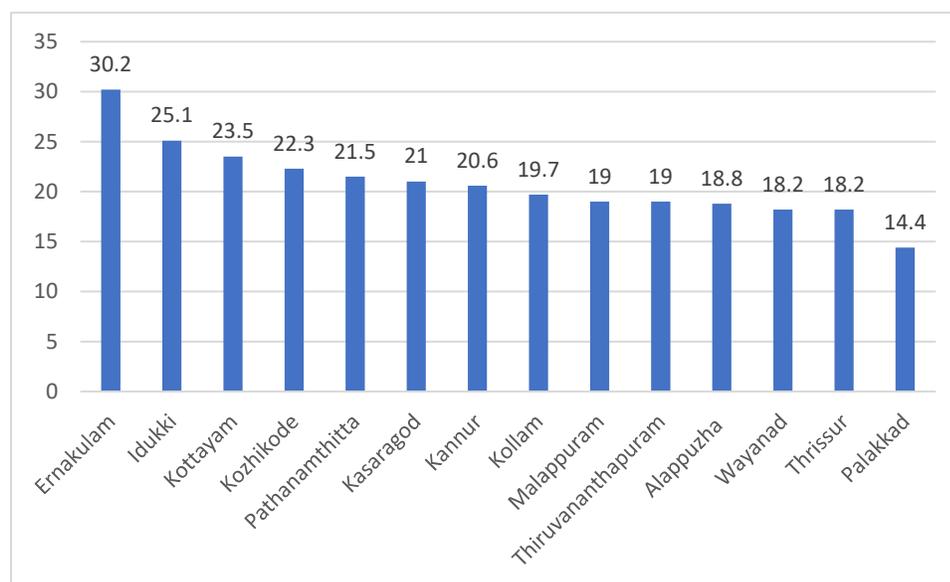
Fig 3.1 Private medical institutions (Modern Medicine) per 100,000 population -district wise
Source: Report on Survey on Private Medical Institutions in Kerala: 2017-18. Department of Economics and Statistics

According to the survey of private medical institutions conducted by the Department of Economics and Statistics during 2017-18, there were 12363 registered private medical institutions in Kerala, with some providing services of more than one system of medicine. Out of the 12363 institutions, 56% (6920) provide modern medicine services.

Table 3.10 Hospitals in the private and public sector – Kerala and India

	Number of hospitals in public sector	Number of hospitals in private sector	Total number of hospitals (public & private)
Hospitals	1280 (38.3%)	2062 (61.7%)	3342 (100%)
Beds	38004 (38.3%)	61223 (61.7%)	99227 (100%)

Source: Kapoor G, Sriram A, Joshi J, Nandi A, Laxminarayan R. Covid-19 in India: state-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators. Center For Disease Dynamics, Economics & Policy. 21 Apr 2020.
*The number of hospitals in the private sector is an estimated figure whereas that in the public sector are from primary data provided by State reports

The above data is from an estimate done to assess the infrastructure available to manage Covid 19 in India by the Center For Disease Dynamics, Economics & Policy, USA; in which the numbers in the public sector are from state reports and the private sector figures are estimated. The estimated figures indicate that more than 60% of the hospitals in Kerala are in the private sector. The state reports are based on only the institutions under the DHS (1280) whereas as per Table 3.6 it totals to 1325.

Fig: 3.2 Number of hospitals in the private and public sector – Indian states
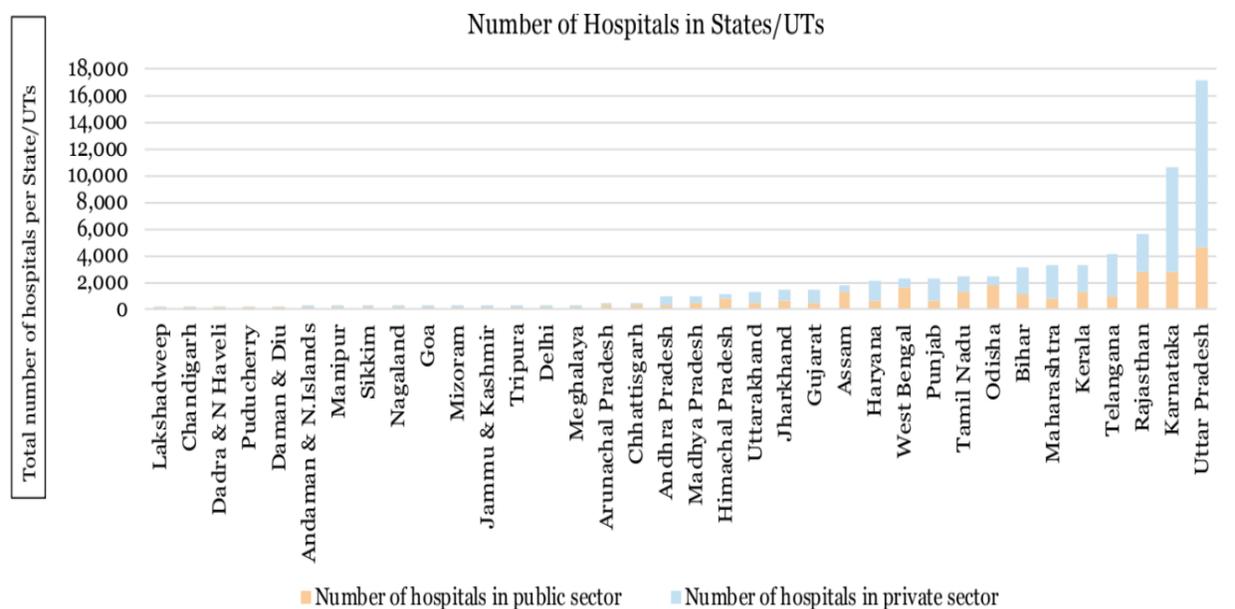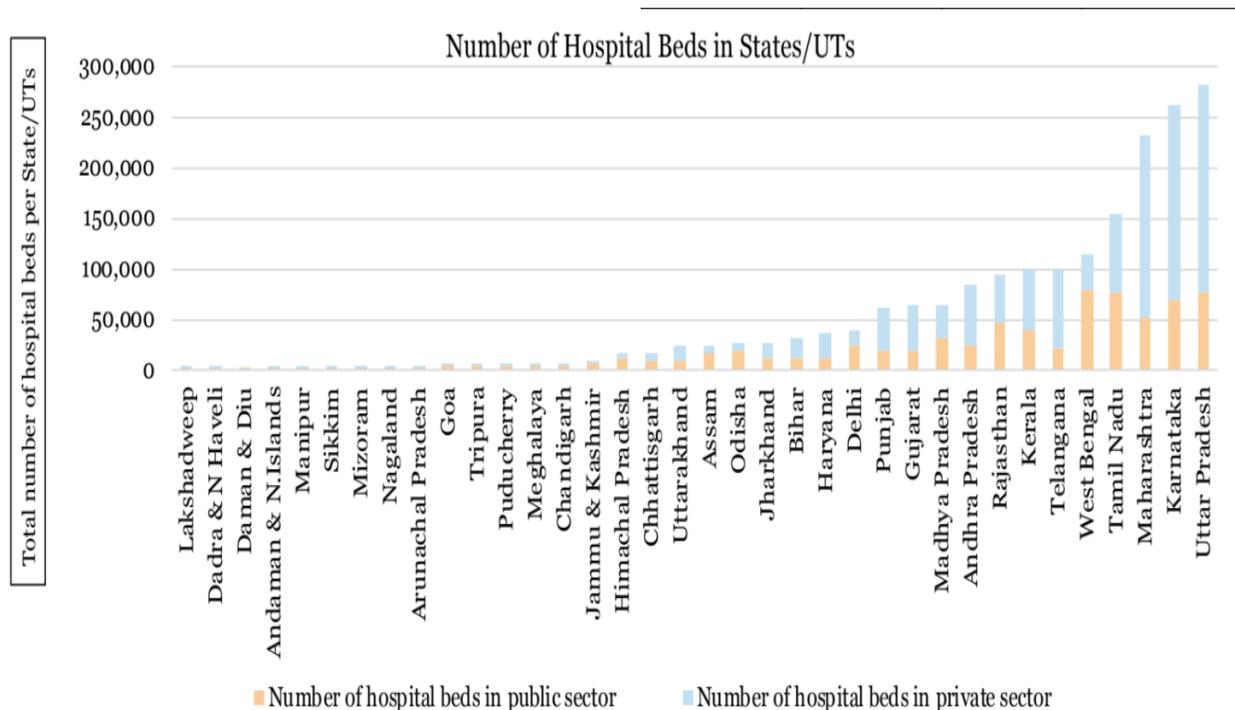
Fig: 3.3 Number of hospital beds in the private and public sector – Indian states

Source: Kapoor G, Sriram A, Joshi J, Nandi A, Laxminarayan R. Covid-19 in India: state-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators. Center For Disease Dynamics, Economics & Policy. 21 Apr 2020.
*The number of hospitals in the private sector is an estimated figure whereas that in the public sector are from primary data provided by State reports

Specialist services

Table 3.11. ICU beds in the private and public sector – Kerala and India

	Number of ICU beds in public sector	Number of ICU beds in private sector	Total number of ICU beds (public& private)
Kerala	1900 (38%)	3061 (62%)	4961 (100%)
India	35699	59262	94961

Source: Kapoor G, Sriram A, Joshi J, Nandi A, Laxminarayan R. Covid-19 in India: state-wise estimates of current hospital beds, intensive care unit (ICU) beds and ventilators. Center For Disease Dynamics, Economics & Policy. 21 Apr 2020.
*The number of hospitals in the private sector is an estimated figure whereas that in the public sector are from primary data provided by State reports

According to the State wise estimates done to assess the infrastructure available to manage

Covid 19 by CDDEP, USA; among the seven states where most of the beds and ventilators in

India were concentrated, Kerala figured as the seventh with 5.2% of the national facilities

Table 3.12. Deliveries by type of institution – Kerala – district wise – 2017-18

District	Public	Private	Home	Institutional delivery	Total deliveries	% Public	% Private
Thiruvananthapuram	20648	19804	17	40452	40469	51	49
Alleppey	7802	9237	16	17039	17055	45.8	54.2
Kozhikode	21604	31705	9	53309	53318	40.5	59.5
Kottayam	8288	14119	3	22407	22410	37	63
Kollam	8674	17091	22	25765	25787	33.7	66.3
Wayanad	4137	9469	135	13606	13741	30.4	69.6
Idukki	3295	7822	51	11117	11168	29.6	70.4
Pathanamthitta	3753	9900	14	13653	13667	27.5	72.5
Palakkad	8147	26854	49	35001	35050	23.3	76.7
Kannur	9497	31993	17	41490	41507	22.9	77.1
Thrissur	8098	32681	15	40779	40794	19.9	80.1
Kerala	45896	214075	336	259971	260307	17.7	82.3
Ernakulam	6545	31911	25	38456	38481	17	83
Kasaragod	3125	15960	22	19085	19107	16.4	83.6
Malappuram	10484	74676	208	85160	85368	12.3	87.7
Kerala	**169993**	**547297**	**939**	**717290**	**718229**	23.7	76.3

Source: Health at a Glance. Directorate of Health Services 2018

Data published by the Directorate of Health Services indicate a huge divide in the proportion of deliveries that happen in the government and private sector. It indicates that more than three fourths of the deliveries in the State happened in the private sector (76.3%) and less than a quarter happened in the public sector, in the year 2017-18. According to the reports from the Sample Registration System it was 45% and 55% in the public and private sectors respectively

Table 3.11 Percentage of live births by type of medical institution - Kerala

	Percentage of live births
Government sector	44.8 %
Private sector	54.8%

SRS statistical report 2017

Table 3. 13.Births delivered by caesarean section – Kerala – district wise- 2015-16

District	Births in private health facilities delivered by Csec (%)	Births in a public facility delivered by Csec (%)	Births delivered by Csec (%)
Thiruvananthapuram	53.6	28.6	41
Kollam	60.2	53.3	57
Pathanamthitta	51.4	52.9	52.1
Alappuzha	49.9	35.9	43.6
Kottayam	43.2	13	28.3

Idukki	45.8	48.7	47.1
Ernakulam	39.2	43.3	40
Thrissur	34.4	32.5	33.7
Palakkad	38.3	26.6	34.4
Malappuram	24.2	23.9	24
Kozhikode	40.6	25.7	33.8
Wayanad	21.9	23.9	22.8
Kannur	32.1	35.8	33.6
Kasaragod	28.4	21.1	26.3
Kerala	38.6	31.4	35.8

Source: Health at a Glance. Directorate of Health Services 2018 (data compiled from NFHS 2015-16)

According to the National Family Health Survey 2015-16, one thirds (36%) of births were delivered by Caesarean section. Emergency caesarean sections formed about 36% of them, accounting for about 13% of all births.

Table 3.14. Blood banks in Kerala – Govt and Private

	Number	Frequency
Govt blood banks (including defence, cooperative sector)	45	25.7
Private blood banks	130	74.3
Total	175	100

It is evident that the private sector dominates in the provision of blood bank services.

Table 3.15 Percutaneous Coronary Interventions (PCI) done during the year 2018

Type of institution	No. of PCIs done	Percentage
Private	27095	63%
Government	16073	36%
Co-operative	435	1%
Total	44413	

Source: Interventional Cardiology Council of Kerala

Among the more specialised procedures like the (previously termed angioplasty with stent), about 40% of the interventions are carried out in the government sector. (Table 3.14)

Table 3.16 Renal transplants done in Kerala- 2018 & 2019

Type of institution	2018	2019
Private	657 (89.6)	713 (91.6)
Government	76 (10.4)	65 (8.4)

Total	733 (100)	778 (100)

Table 3.17 Liver transplants done in Kerala – 2018 & 19

Type of institution	2018	2019
Private	169 (100%)	153 (100%)
Government	0	0
Total	169	153

Dialysis

In a study on an assessment of Out-Of-Pocket expenditure Incurred by dialysis patients and its impact, a major proportion of patients attended private facility (53.7 percent) and the rest were spread between public (35.8) and standalone facilities (10.5).

Among the 190 patients, 105 (55.3 percent) patients have had to change the facility since dialysis was started. Among those who had had to change the facility, 90.5 percent were initiated on dialysis at a private facility and at the time of interview, only 19.0 percent were undergoing the procedure at private facility. When need arose for hospital admissions for any illness since dialysis, 74.2 percent had required hospital admissions of which 98.5 percent sought care from a private facility

TB reporting: As per the RNTCP reports of 2017, out of a total of 14522 reported cases, 8232 (57%) were from the private sector

Emergency trauma services: A study on clustering of emergency trauma services in a buffer of 5 km around the Trivandrum city in 2017, 20 out of the 83 facilities were in the government sector and 63 were in the private facilities But mean distance from the road traffic accident (RTA) hotspot to nearest facility was almost the same for government facility (1.26 km) and private facility (1.23 km)

Health care seeking – Public and Private sector

Evidence from smaller studies

- In a study carried out in Kollam district on Diabetes and complementary and alternative medicine use (2015), close to sixty percent (59.3%) of the sample sought treatment. Around 60 percent exclusively modern medicine, 30% modern medicine and CAM and 9% exclusively CAM.

- A study done among elderly with fall, 67% of the elderly who had a fall in the previous year had approached a government facility for care, 29% sought care from a private hospital and four percent from the nearest general practitioner immediately after the fall

- Another study on self-reported Diabetes in Kozhikode (2016), among those who reported diabetes, 54% preferred private hospitals and clinics whereas around one fourth (n=26%) took treatment from a government facility

- A study on postpartum screening in mothers with gestational diabetes in Malappuram district in 2016, only 11% of the total deliveries in the district had happened in the public facilities and among those who had tested for their blood sugar post-partum, 50.4% had utilised private hospitals, 11.3% had utilised public hospitals and 34% directly approached the laboratories for testing

- A study that explored the breastfeeding pattern among mothers in Palakkad in 2016 found that 41.2% of the deliveries in the previous year had happened in a government hospital and 58.8% in a private hospital.

- A similar study on perinatal care in Kozhikode in 2015 found that 57.8% of the deliveries took place in private hospitals compared to the government facilities

- Study on gynaecological morbidity in perimenopausal women in Kollam in 2017, 52 percent of them sought treatment in private secondary or tertiary hospital. There were 268 participants among 420 who were reported to have at least one of the chronic medical conditions such as hypertension, diabetes mellitus, high cholesterol or other medical conditions including cancers and among them, 268 women of which 32.1 percent had sought care in private clinic.

Table 3.18. Karunya Arogya Suraksha Yojana – pre authorisations by public and private sectors in the financial year 2019-20

	Pre authorisations (number)	Pre authorisations (amount in INR)
Public	7,44,800 (76%)	547.5 crores (79%)
Private	2,35,200 (24%)	145.5 crores (21%
	9, 80,000(100%)	693 crores (100%)

The preauthorisations reflect the fact that roughly a quarter of the preauthorised claims were for treatments that were done in the private sector.

Among the number of preauthorisations, 72% were for medical purposes and 26% for surgical procedures. Similarly, among the preauthorised amounts, 60% were for surgical procedures.

Table 3.19. Percentage of deaths where medical attention was received at hospitals (Govt/Private)-2018

	Rural	Urban	Total
India	43.2	60.4	47.8
Kerala	**86.2**	**73**	**79.6**
Andhra Pradesh	43.9	60	47.2
Assam	33.9	46.6	35.6
Bihar	29.6	50.6	32.1

Chhattisgarh	35	61.2	40.1
Delhi	41.5	67.4	66.7
Gujarat	38.2	59	44.8
Haryana	36.3	40.1	37.3
Himachal Pradesh	66.7	69.3	66.8
Jammu & Kashmir	49.1	75.8	56.8
Jharkhand	30.7	60.2	34.8
Karnataka	44.7	66.8	50.8
Madhya Pradesh	51.1	73	55.9
Maharashtra	44.2	63	49.9
Odisha	46.4	56.2	47.7
Punjab	51.7	65.1	56.4
Rajasthan	47	55.6	49.1
Tamil Nadu	38	57	46.9
Telangana	39.8	57	44.9
Uttar Pradesh	48	56.3	49.8
Uttarakhand	54.4	57.1	55
West Bengal	38.8	59.3	45.6

Source: SRS Statistical Report 2018

The table above is another indication of the high health care seeking behaviour among the people in Kerala across the rural urban divide. Eighty percent of all people who had died in Kerala in a particular year had received medical attention in a hospital (government or private) before their death. Among the rural population, it was higher than eighty five percent.

Health system functioning- some indicators

Fig 3.4. Vacancy of medical officers at Primary health centres – Kerala and India

FIGURE 4.45 | Indicator 3.1.1c - Vacancy of Medical Officers at PHCs - Larger States
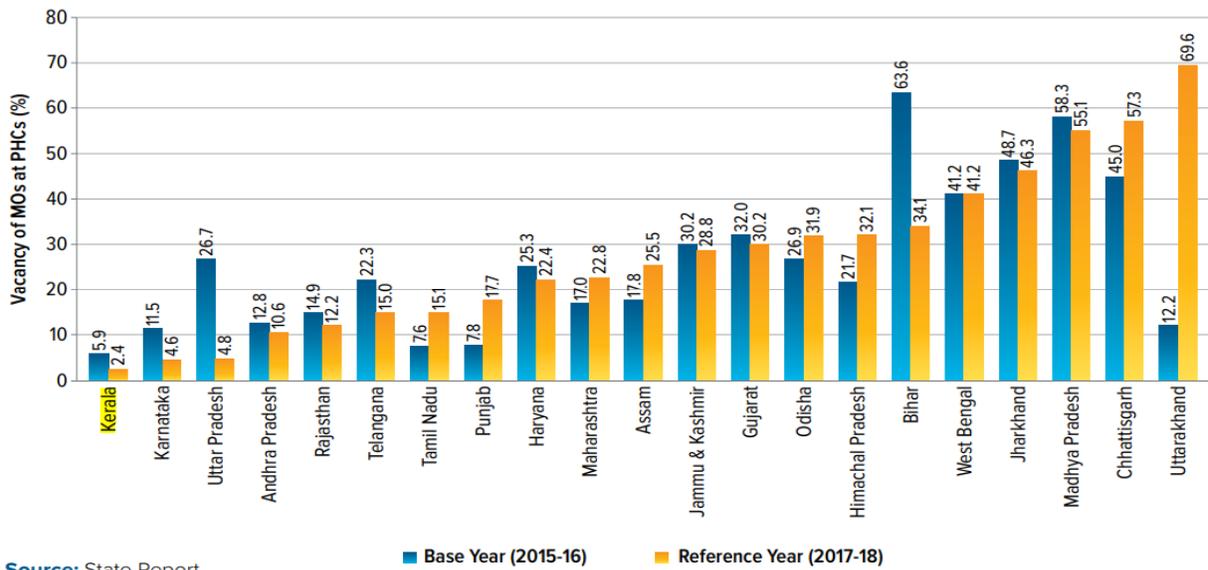
Source: Government of India. Healthy States Progressive India: Report on the Ranks of States and Union Territories,2019. NITI Aayog. Government of India

FIGURE 4.47 | Indicator 3.1.1d - Vacancy of Specialists at district hospitals - Larger States
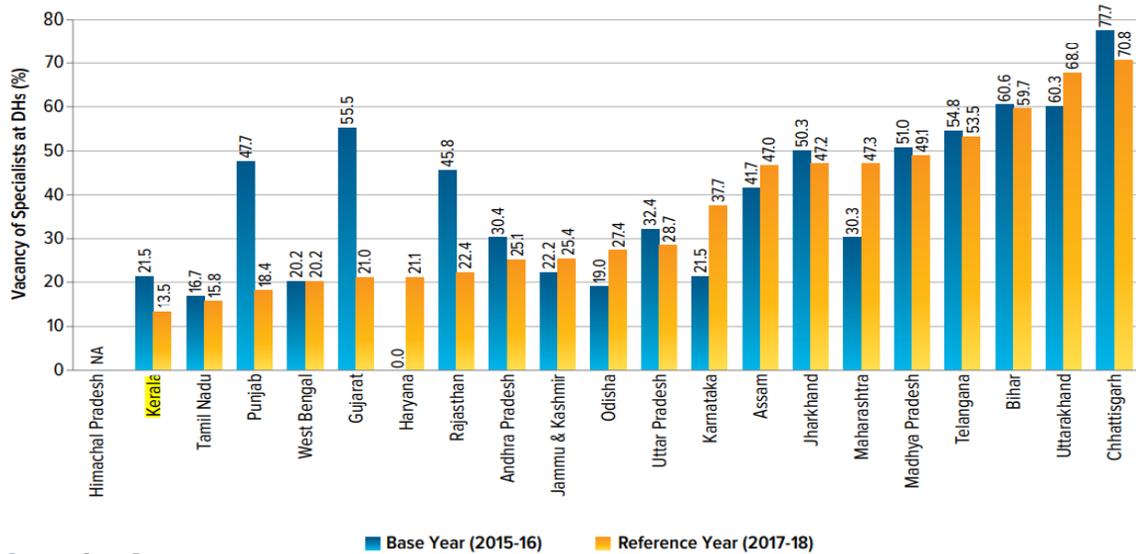
Fig 3.5. Vacancy of specialists at district hospitals – Kerala & India The

The figures above indicate that the vacancy of medical officers at primary health centres as well as specialists at district hospitals, in Kerala are the lowest in India which is an indicator of its better health system functioning.

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Table 3.20.Indicators of public health care institutional functioning -vacany postions– Kerala- 2017-18

Vacancy of ANMs at subcenters (%)	Vacancy of Staff nurses at PHC/CHC (%)	Vacancy of MOs at PHCs (%)	Vacancy of specialists at District hospitals (%)
5.3	3.6	2.4	13.5 Was 21.5 in the year 2015-16

Source: Government of India. Healthy States Progressive India: Report on the Ranks of States and Union Territories,2019. NITI Aayog. Government of India

Table 3.21. Indicators of public health care institutional functioning – functional institutions Kerala- 2017-18

Functional FRUs (%	Functional CCU per district (%)	CHC grading (%)	Quality accreditation of District/Subdistrict hospitals (%)	Quality accreditation of CHC/PHC (%)	Functional Cardiac care units per district
107.5	78.6	0.4	7.6	4.6	

Source: Government of India. Healthy States Progressive India: Report on the Ranks of States and Union Territories,2019. NITI Aayog. Government of India

Unfilled vacancies of staff at subcentres and primary health care centres including JPHNs staff nurses and medical officers are less than five percent in Kerala. Kerala was one of the three states with less than five percent vacancies in the country; the other being Uttar Pradesh and Karnataka

Vacancies of specialists at district hospitals has fallen from 21.5 percent in 2015 to 13.5 percent in 2018. However, such vacancies in the district hospitals may affect the poorer sections of the populations negatively and force them to travel greater distances or incur more expenditure to access care from tertiary centres or from private hospitals.

Chapter 4

Results from the cross – sectional survey

Base line information

Data was collected from six districts mentioned above covering a total of 1208 households. Around 56 percent of the households surveyed were in the rural areas and about 44 percent from the urban areas.

Table 4.1 Baseline information regarding the study population

District	Frequency	Percent
Alappuzha	201	16.6
Idukki	201	16.6
Kannur	201	16.6
Pathanamthitta	201	16.6
Thiruvananthapuram	200	16.6
Thrissur	204	16.9
Total	1208	100.0

Area of residence

	Frequency	Percent
Rural	682	56.4
Urban	526	43.5
Total	1208	

Variables		Rural	Urban	Total n(%)
Ration Card	APL	376	311	687 (57%)
	BPL	271	191	462 (38%)
	Anthyodaya	27	19	46 (4%)
	Nil	7	3	10 (1%)
				1205 (100) *
Caste	Scheduled Caste	63 (75.9)	20 (24.1)	83 (6.9)
	Scheduled Tribes	21 (36.8)	36 (63.2)	57 (4.7)
	OBC	335 (53.4)	292 (46.6)	627 (52.2)
	General	243 (62.3)	147 (37.7)	390 (32.3)
	Others	18 (64.3)	10 (35.7)	28 (2.3)
	Do not want to disclose	2 (10)	18 (90)	20 (1.7)
				1205 (100) *
Religion	Hindu	405 (57.8)	296 (42.2)	701 (58.1)
	Christian	153 (63.2)	89 (36.8)	242 (20.1)
	Muslim	120 (46.5)	138 (53.5)	258 (21.4)
	Buddhist	1 (50)	1 (50)	2

	Others	2 (100)	0 (0)	2
	No religion	1 (100)	0 (0)	1
				1206 (100*)
Source of drinking water	Bottled water	0 (0)	1 (100)	1
	Tap or Pipe	111 (44.8)	137 (55.2)	248 (20.5)
	Tube well	149 (68.3)	69 (31.7)	218 (18.1)
	Tanker Lorry	6 (100)	0 (0)	6
	Pucca Well	325 (53.5)	283 (46.5)	608 (50.5)
	Tank or Pond reserved for drinking	8 (100)	0 (0)	8
	River or Canal	1 (100)	0 (0)	1
	Public well or tap	58 (67.4)	28 (32.6)	86 (7.1)
	Others	24 (82.8)	5 (17.2)	29
				1205 (100) *
Type of toilets				
	Pit	40 (70.2)	17 (29.8)	57 (4.7)
	Septic Tank or Flush System	627 (55.7)	499 (44.3)	1126 (93.5)
	Public Toilet	0 (0)	1 (100)	1
	Shared Toilet	3 (60)	2 (40)	5
	Others	1 (100)	0 (0)	1
	No Toilets	10 (75)	2 (25)	12 (1%)
				1202
Cooking fuel	Firewood	275 (64.1)	154 (35.9)	429 (35.6%)
	LPG	403 (52.4)	366 (47.6)	769 (63.9%)
	Kerosene	3 (100)	0 (0)	3 (0.2%)
	Electricity	1 (50)	1 (50)	2 (0.2%)
	Others	0 (0)	1 (100)	1 (0)
				1204

The denominators are not adding up to 1208 due to missing data

About 12% of the participantss belonged to SC/ST groups and more than 50% belonged to

OBC groups. More than 50 percent of the households belonged to the hindu community and

20% each to christian and muslim communities

The mean age of the population was 38.4 (SD 21.5) and the median was 38 years (range from

1-98 years). The mean age of women was 38.9 and that of men was 38 (S D 21.2)

Drinking water : Only about one in five households had taped water in their homes and another one fifths sourced water from their own tube wells. More than half of the households had well as their main source of drinking water and though small, close to 10 percent of the households's main water source were of potentially low quality like tanker, rivers and open ponds.

Comparable figures from other surveys indicate that well water continues to be the main source of water (65.1% - KSSP survey in 1996 and 63.1% - NFHS 4 2015-16), a large increase in the number of households with taped water (4.2% -KSSP 1996 and 19.5% NFHS 4 2015-16) and that a similar proportion of households resorted to other potentially unsafe water sources. It is also noted that tube well being used as the main source of drinking water was only 4.4% in 2015-16 in contrast to almost one fifths of the households in this survey

Toilets: Majority of the households had their own toilets (98%) of which about 94% had toilets with septic tank or flush system. However, there were about 1.6% who had no or shared toilets. The proportion of those who had no toilets/shared toilets was also reported to be 1.6% in the large scale National Family Health Survey (NFHS) 4 survey done in 2015-16 period. The corresponding figure reported by the survey carried out in 1996 by the Kerala Sasthra Sahithya Parishad was 28%.

Around 64% of the households used LPG, a cleaner fuel as the main cooking fuel. More than one third of the households still used firewood as the main cooking fuel.

Individual characteristics of the household members

Table4.2. Characteristics of the individual members within the households

Variables		Total n(%)
Sex	Male	2449 (48.9)
	Female	2561 (51.1)
	Total	5010 (100)
Marital status	Never married	1756
	Currently married	2857
	Widowed	346
	Divorced or Separated	25
	Total	4984 (100)*
Education	Not literate	369
	Below Primary	383
	Primary	572
	Upper Primary or Middle	747
	Secondary	1182
	Higher Secondary	664
	Diploma or degree	1086
	Total	5003(100) *

does not add up to 5010 due to missing values

There were a total of 5010 individual members in the 1208 households that were included in the survey. Of them, slightly more than fifty percent of the members were female and about 49% were male.

Figure 4.1. Population pyramid of the participants
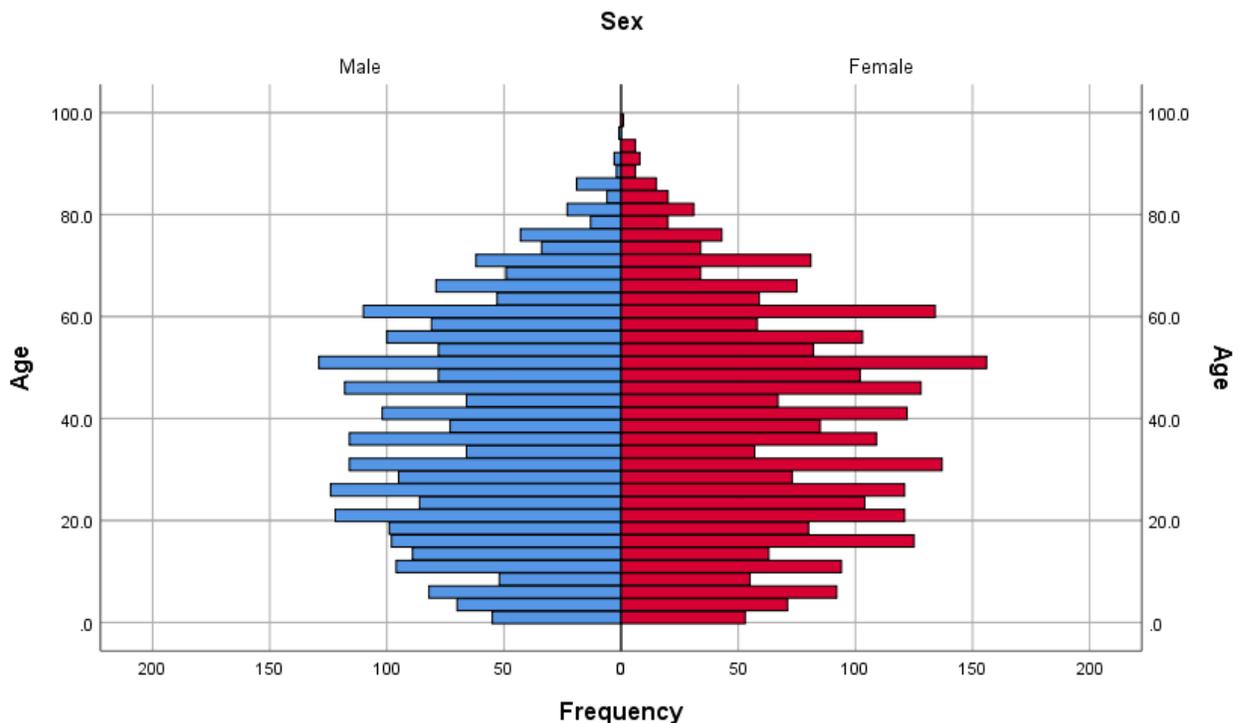
The population pyramid of the participants reflects the less bottom heavy population scenario that is expected of a state with low fertility rates.
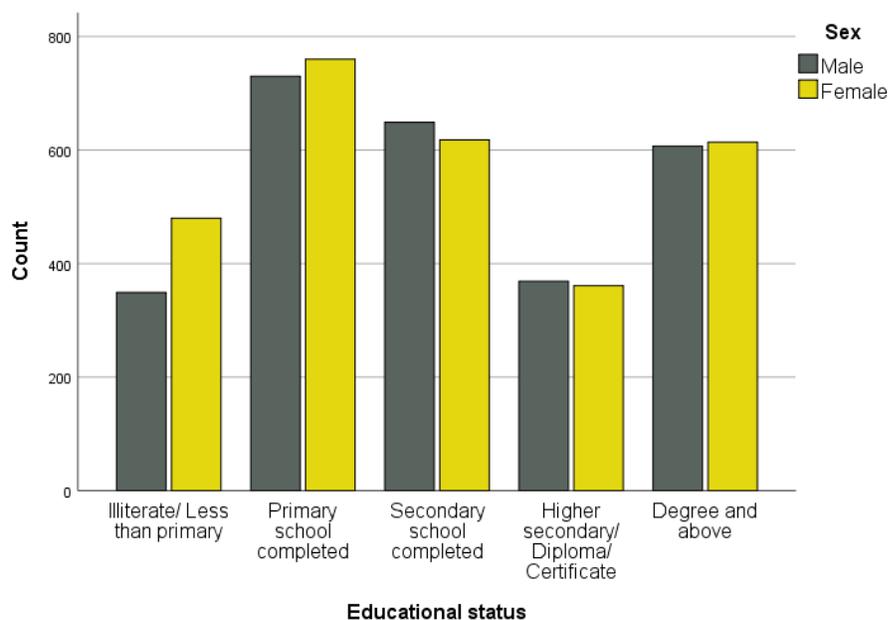
Fig 4.2. Educationals status of the participants – sex disaggregated

Hospitalisation

Among the participants, 447 (8.6%) had a history of hospitalization in the last 1 year preceding the date of interview

Table 4.3: Demographics and hospitalisation

	Sample size	Hospitalization	P value (Chi square for trend)
Age group, n (%)			
Under 10 years of age	501	35 (7)	<0.001*
Adolescents (10-19 years)	684	23 (3.4)	
Adults (20-59 years)	2870	204 (7.1)	
Elderly (60 years and above)	953	171 (17.9)	
Gender, n (%)			
Male	2449	226 (9.2)	0.152
Female	2559	207 (8.1)	
Educational status, n (%)			
Not literate	369	56 (15.2)	<0.001*
Below Primary	383	42 (11)	
Primary	572	65 (11.4)	

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Upper Primary or Middle	747	76 (10.2)	
Secondary	1182	102 (8.6)	
Higher Secondary	664	44 (6.6)	
Diploma or degree	1086	46 (4.2)	
Insurance coverage, n (%)			
Government funded insurance including ESI/CGHS	1891	190 (10)	0.013*
Employer supported health protection	148	7 (4.7)	
Private Insurance Company	192	21 (10.9)	
Others	11	0 (0)	
Not covered	2755	215 (7.8)	

*Significant

There was a significant difference in hospitalisation across the age groups. As expected, people belonging to older age groups (60 years and above) reported more hospitalisations followed by those under 10 years of age. Similarly, a significant difference in hospitalisation was observed across the insurance coverage categories There was no significant difference between males and females in terms of hospitalisation in the previous 365 days.

Hospitalisation episodes

Among those who were hospitalised about 70 percent were hospitalized once, 16 percent were hospitalized twice and around 15 percent were hospitalized thrice or more. Seven of the admissions were due to health problems caused due to floods. There was no significant difference in terms of hospitalisation episodes between males and females

Table 4.4 Frequency of hospitalisation in the previous 365 days

Number of times hospitalized in the previous 365 days	Frequency	Percent
Once	299	69.7
Twice	68	15.8
Thrice	28	6.5
>Thrice	34	8
	429	100

Fig 4.3. Age distribution and number of hospitalizations in the previous year (sex disaggregated)

Number of times hospitalized in the last one year
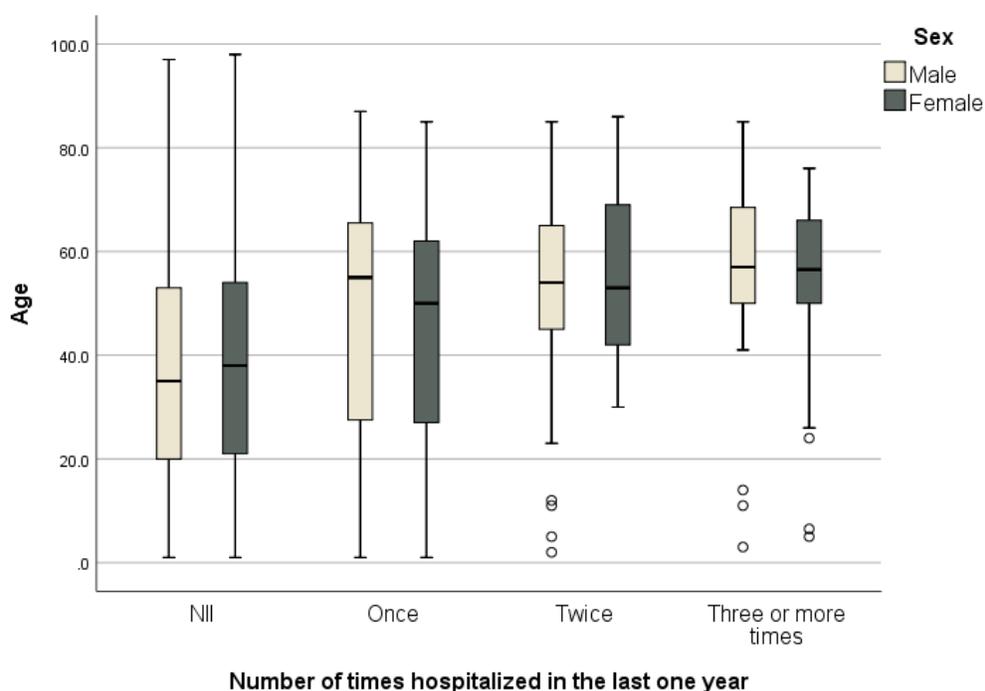
When the number of hospitalisations in the previous year was considered, more than one admission was mainly among the older groups

Hospitalisation in the last one year: other findings

There were 447 hospitalisation events in the previous 365 days, 433 (97%) were in the modern medicine institutions. An analysis of the medical system where the hospitalisations occurred and the type of medical institutions where they were admitted are provided in the tables below

Table 4.5. Hospitalisations and choice of the system of medicine

	Frequency	Percent
Allopathy	433	96.9
Ayurveda	11	2.5
Homeopathy	1	0.2
Yoga & Naturopathy	1	0.2
Siddha	1	0.2
Total	447	100

Modern medicine was the system of medicine under which, almost ninety seven percent of the hospitalisation occurred.

Table 4.6. Hospitalisation events in the last 365 days and the type of hospital

	Frequency	Percent
Public	199	44.5
Private	248	55.5
Total	447	100.0

Among last 365 days, 44.5 percent were in a public hospital and 55.5 percent in private hospitals

Table 4.7. Type of ward in the case of the hospitalisations

	Frequency	Percent
Free	194	43.6
Paid general	141	31.7
Paid special	110	24.7
Total	445	100

Around 45% of the hospitalisations were in wards that provided free care and fifty five percent of them were in paid general or special wards

Hospitalisations in the last 365 days by SES quintiles

Last 365 days	1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile	Total
Public, n (%)	67 (33.7)	41 (20.6)	36 (18.1)	32 (16.1)	23 (11.6)	199 (100)
Private, n (%)	42 (16.9)	44 (17.7)	55 (22.2)	47 (19)	60 (24.2)	248 (100)

When the hospitalisation episodes and the type of institution was analysed by SES quintiles it was observed that a larger proportion of the hospitalisation episodes in the government facilities were among those who belonged to the lower quintiles; compared to a higher proportion of those from the higher quintiles in the private hospital hospitalisations

Duration of stay during hospitalisation

The median duration of admission was 7 days, (inter-quartile range 4-12 days).

Reasons for hospitalisation in private hospitals: The commonest reasons that were stated by those who sought admission at a private institution was "the required service was not available" followed by "satisfactory quality but long waiting time" in the government hospitals About 20 % of the respondents reported their perception of low-quality services as the reason for seeking care from the private sector

Table 4. 8. Reasons for not availing services at a government facility

Required specific services not available	66	27.2
Quality satisfactory but involves long waiting time	56	23.1
Available but quality not satisfactory	49	20.2
Quality satisfactory but facility too far	35	14.4
Others	36	14.8
Total	242	100

Table 4.9. Morbidity due to a chronic illness

		Number	Percent
Has a chronic illness	Yes	813	16.3
	No	4189	83.7
	Total	5002	100

Almost one fifths of the participants (13.7) reported some form of chronic illness. The distribution of reported chronic illnesses across age groups and sex of the participants is provided in Fig 3. Some form of chronic illness was reported by 929 (16.7) persons.

Fig 4.4   Distribution of chronic illness across age groups and sex of the participants

Age Group

Children (Under 10 years) | Adolescents (10-19years) | Adults (20-59 years) | Elderly (60 years and above)

Chronic illness
■ Yes
□ No

Male: 3.5% / 96.5% | 3.4% / 96.6% | 12.1% / 87.9% | 58.1% / 41.9%

Female: 3.3% / 96.7% | 1.1% / 98.9% | 14.9% / 85.1% | 54.5% / 45.5%

Sex
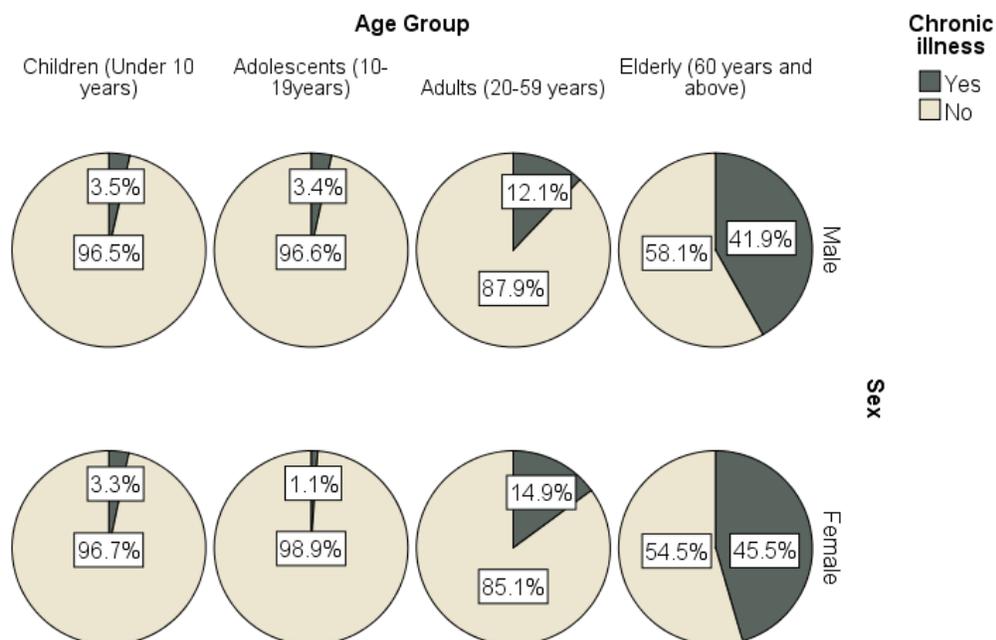
Among both the sexes, the distribution of chronic illnesses indicates that it is the highest in the 60 plus age group followed by those in the age group between 20-59

Table 4.10: Chronic illness and insurance cover and hospitalisation

	Hospitalized	p value
Chronic illness		
No	259 (5.6%)	<0.001
Yes	216 (23.3%)	
Insurance coverage		
Govt schemes/CGHS/ESI	211 (10.3%)	
Employer provided coverage	9 (5.6%)	
Private health insurance	25 (11.7%)	
Others	0 (0.0%)	
None	211 (7.4%)	

Hospitalisation among those with chronic illness was significantly higher than those who did not report any such illness.

However, there were no difference in hospitalisation the type of insurance coverages that the participants had.

Acute illness in the fifteen days prior to interview

The reported prevalence of an acute illness in the 15 days prior to the date of the interview was 13.1% among the participants

Table 4.11. Reported morbidity due to an acute illness in the past 15 days

Acute illness	Number	Percent
Yes	679	13.6
No	4328	86.4
	5007	100

Prevalence of reported acute illness in the previous 15 days was highest among children under 10 years followed by older people aged 60 years and above. There was no significant difference between the two sexes. (Fig 4.5)

Illness in the last 15 days

Information was available on 696 episodes of acute illness in the last 15 days prior to the survey. Of these, 72.2% were conditions of acute onset while the rest were ongoing chronic conditions. Among those who reported an illness 47.7% mentioned complete recovery on or before the date of the survey. Health care was sought for 662 episodes and 34 resorted to self-medication or local pharmacies.

The commonest conditions reported were:

Table 4.12. Commonest reported acute illness in the last 15 days

Diagnosis	Percent
Fever	60.0
Diabetes related	9.6
Asthma/Breathing problem	4.7
Heart attack	2.5

Fig 4.5.: Distribution of acute illness across age groups and sex of the participants
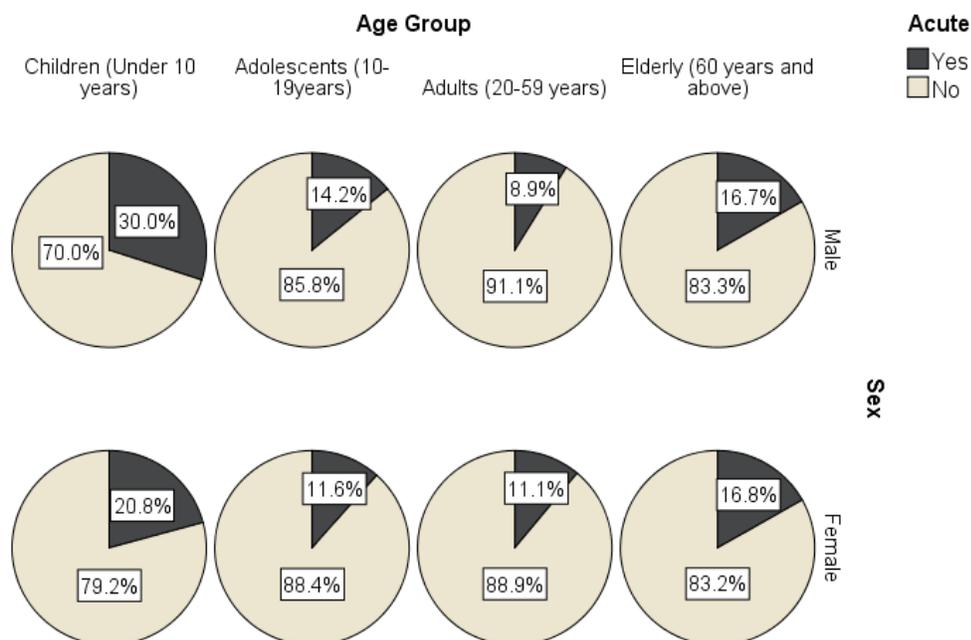
Age Group

Children (Under 10 years) | Adolescents (10-19years) | Adults (20-59 years) | Elderly (60 years and above)

Acute
■ Yes
□ No

Male: 30.0% / 70.0% | 14.2% / 85.8% | 8.9% / 91.1% | 16.7% / 83.3%

Female: 20.8% / 79.2% | 11.6% / 88.4% | 11.1% / 88.9% | 16.8% / 83.2%

Sex

Prevalence of reported acute illness in the previous 15 days was highest among children under 10 years followed by older people aged 60 years and above. There was no significant difference between the two sexes

Table 4.13. Health care sought for episodes for acute illness in the last 15 days

	Frequency	Percent
Public	402	60.7
Private	260	39.3
Total	662	100.0

More than 60 percent of the 662 episodes of acute illness was treated at a public facility (PHC or other public institutions) and close to 40 percent of the episodes were treated at a private facility

Table 4.14. Care seeking for acute illness in the last 15 days by SES quintiles

The highest proportion of treatment of acute illness at the public facilities were of those who belonged to the lowest quintile in contrast to the care seeking in the private sector where those related to the lowest quintile was the lowest.

Table 4.15. System for medicine in the care seeking for acute illnesses

	1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile	Total
Public, n (%)	134 (33.3)	85 (21.1)	73 (18.2)	68 (16.9)	42 (10.4)	402 (100)
Private, n (%)	39 (15)	58 (22.3)	46 (17.7)	51 (19.6)	66 (25.4)	260 (100)

System of medicine	Percent
Modern medicine	90.4
Ayurveda	3.5
Homoeopathy	2.8
Missing	3.3
Total	100.0

Around 90 percent of the care seeking for acute illnesses were from the modern medical system.

Table 4.16. Sources of care seeking for acute illnesses

	Percent
JPHN/ Anganwadi/ ASHA	1.9
PHC/CHC/FHC	21.7
Government Hospital	39.7
Private doctor	9.7
Private hospital	23.6
Missing	3.3
Total	100.0

In the case of acute illness episodes, primary health centre and government facilities are the most commonly approached (around 63%)

**Table 4.17. Financial protection - insurance**

Insurance coverage	Government funded insurance		1891	38.0

	Employer supported health protection	148	3
	Private Insurance Company	192	3.8
	Others	11	0.2
	Not covered	2755	55.1
		4997*	100

does not add up to 5010 due to missing values

Among those who responded, only 45 percent had some kind of financial protection in the form of insurance schemes. About 85 percent of those who had an insurance coverage were covered by a government funded insurance including the ESI/CGHS etc. However more .than half of the respondents did not have any insurance coverage for health conditions

Fig:4.6. Financial protection by age group – sex disaggregated
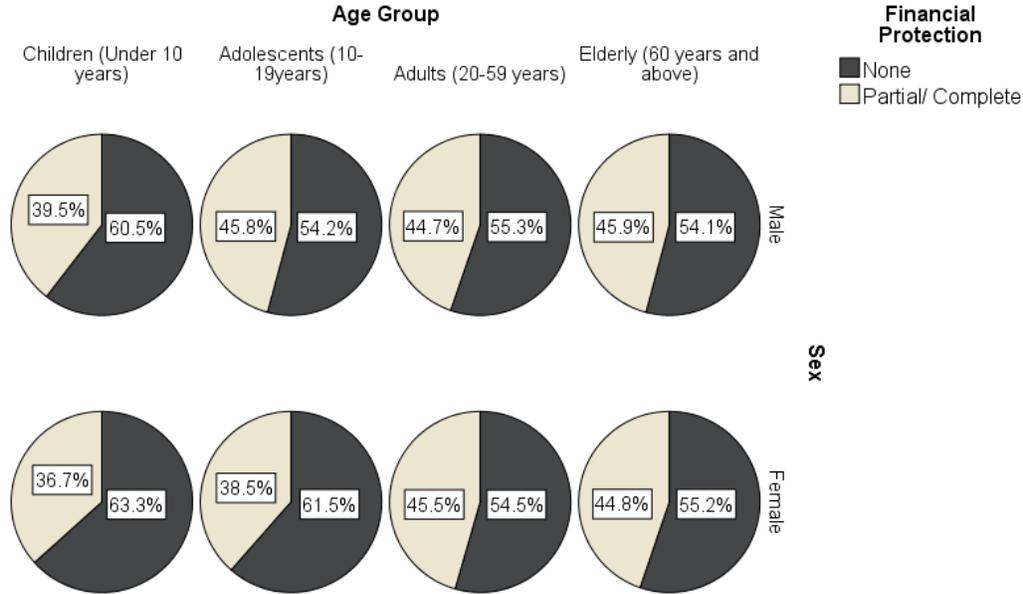
Chapter 5

Discussion

The study was done to understand the availability, distribution and utilisation of the modern medical health care institutions in Kerala. Data regarding the availability and distribution of the institutions, secondary data primarily from the Directorate of Health Services and the Department of Economics and Statistics was used for the purpose.

- The average population served by a government hospital in Kerala was 27873 and the average population served per government hospital bed was 939 during the reference year 2017.

- The overall population to bed ratio in Kerala during the reference period was 939 and hospital beds (under the DHS)/10,00 population was 1.1

This is better when compared to the other states in India and While, according to the WHO there are no global standards for these indicators, comparative world average is 3.98 beds/1000 population, India (0.5 in 2018) Srilanka (3.5 in 2010), Sweden (2.4 in 2015), Brazil (2.6), China (2.5) and Cuba (5.2 in 2017).

The health facility density and the inpatient bed density are the commonly used indicators for this purpose by the WHO for national and regional comparisons. Bed population ratio or hospital beds per 10,000 population is an indicator recommended by the WHO to assess the health care services availability and in particular in-patient facility Health facility density is often used as an indicator to assess outpatient service. These are measures that enables the policy makers to gauge the access of a populations to inpatient services and to identify regional disparities in terms of service provision.

These indicators are used by the WHO routinely to make regional and country level health system performance, but advises caution in its interpretation at smaller subnational units like districts. When applied to smaller units like the districts, variations in terms of the size of the hospitals (in terms of the number of beds) and geographical clustering of the institutions influences these indicators and therefore can lead to erroneous conclusions about the availability of services and inter district comparisons that may not be useful.

Health facility density is an indicator that is recommended by the WHO to assess health care availability and it primarily indicates access to outpatient care; however, by definition health care facility is defined as including both public and private hospitals, health centres, district and rural hospitals specialized and teaching hospitals.

Most figures published for Kerala at the state and national levels are based only on the facilities under the Directorate of health services and could be an underestimate of the real scenario. It will seriously underestimate the available services since there are close to 29,000 beds in the government and private medical colleges as per our finding and there are no reliable official figures regarding the number of beds in the private sector.

Data regarding the inpatient beds available in the medical facilities are published on the basis of the sanctioned beds and not functional beds. Better indicators like average length of stay during hospitalisation and bed occupancy rate to assess the efficiency of health care services provided is not generated routinely. Having achieved the basic requirements of health care infrastructure in Kerala, efforts must now stress on generating valid and routine data regarding functional bed density, bed occupancy rate, average length of stay during hospitalisation etc through the health management information system (HMIS) from all levels of institutions, public and private. This alone shall routinely inform policy makers on the genuine inter and intra district variations in availability as well as access to health care services.

A better bed/10,000 population in a district do not translate to better access and utilisation of these services, because there could be issues related to geographical location, terrain, clustering, travel time and even client preferences for facilities outside the district based on their socio-cultural preferences, perceptions of quality or convenience.

If global positioning system coordinates of all the health care service delivery facilities are available for all the districts, it could be regularly analysed. In order to avoid estimating the physical /geographical distance to the nearest health services point, functional services available in each facility and actual travelling time are estimated in countries where it is routinely practiced.

The conventional indicators that are available and reported are not useful to gauge regional disparities within and between districts, in terms of actual access and identify the marginalised groups in terms of availability and access to care.

From the number of doctors, nurses and midwives registered with the state councils, around 8.6 doctors, nurses and midwives per 1000 population in the State; the 'Sustainable Development Goals index threshold' for the minimum density of health workers is 4.45 per 1000.

- **Morbidity rates:** The morbidity rate for acute illnesses during the two weeks preceding the date of the interview was 135.6 per 1000 population and chronic diseases was 162.5 per 1000 population. In comparison, the percentage of persons who reported as ailing in the last two weeks was 240.5 per 1000 persons in the NSSO 2017-18. As per the KSSP survey in 1996 it was 121.9 for acute diseases and 114.9 for chronic diseases. The increase in chronic diseases morbidity rate could be indicative of the growing burden of non-communicable diseases in the state.

Health services utilisation

Private sector has been the dominant provider for inpatient as well as outpatient curative services in Kerala as well as in India since the 1990s.

Surveys carried out by the National Sample Survey Organisation (NSSO) during 2017-18 indicated that 62% of the inpatient care were provided by the private health care sector in Kerala and the percentage share of the government hospitals in the hospitalisation cases was only 38 percent. However as per this survey (2019), among the hospitalisation episodes in the previous 365 days, 55.5 percent was in the private sector and 45.5 percent in the public hospitals. There seems to be a distinct increase in the percentage share of the government hospitals in terms of hospitalisations. When the hospitalisation episodes and the type of institution was analysed by SES quintiles it was observed that a larger proportion of the hospitalisation episodes in the government facilities were among those who belonged to the lower quintiles.

The commonest reasons that were stated by those who sought admission at a private institution was "the required service was not available" followed by "satisfactory quality but long waiting time" in the government hospitals, perception of low-quality services in the government sector as well as distance to the facility were the other reasons for seeking care from the private sector. These reasons have been consistent from studies from 1989 (Kutty 1989). This points to the fact that focused efforts on improvement of the quality of services in the government sector especially for inpatient services and making them client centred is required.

In terms of acute illnesses in the previous 15 days, it was found that 61% of the people had approached a government source or facility (PHC/CHC/Government hospital). PHC/CHC was the most common facility used.

It was also observed that only about 45% of the households had any form of insurance coverage and about eighty four percent of those who were insured were covered by a

government insurance scheme. However, data related to the preauthorisations of the Karunya Arogya Suraksha Yojana indicates that 24% of the claims were from the private sector. This also needs to be taken into account when public sector contribution to health care is considered.

In terms of speciality care like, cardiology, nephrology, delivery care and services like the blood bank, the private sector continues to dominate over the public sector by a large share in Kerala. In the light of the fact that a considerable section of the population has no financial protection, this raises concerns of impoverishment due to catastrophic health expenditure in the State

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AVAILABILITY, DISTRIBUTION AND UTILISATION OF HEALTH CARE SERVICES IN KERALA

[0] Descriptive identification of sample household	
1.District:	2.Panchayat/Municipality
3.Ward No:	4. Name of the ward:	5. Rural Urban
6. Name of the head of the household:	7. Address:
8. Name of the informant:	9. Relation to the head of the household: (Code)

Codes for 9: Relation to the head of the household: self - 1, spouse of head - 2, married child - 3, spouse of married child - 4, unmarried child - 5, grandchild - 6, father/mother/father-in-law/mother-in-law - 7, brother/sister/brother-in-law/sister-in-law/nephew/niece/other relatives - 8, servant/employees/other non-relatives – 9

[2] Demographic particulars of household members

Sl.No	Name of member* *(See the explanation below)*	Relation to head (code 3)	Sex (male-1, female-2)	Age (Yrs)	Marital status (code 6)	Education (code7)	Occupation	During the last 365 days		Whether it was related to the floods that happened in Kerala in of 2018 **(Yes-1, no-2**	Whether suffering from any chronic illness **(Yes-1, no-2**)	Whether suffering from any other illness anytime **during the last 15 days (Yes 1 No 2)**	Whether covered by any scheme for health expenditure support Yes – 1 No – 2	Reporting of columns 10-12 **(Self-1, Proxy-2)**
								Whether hospitalised **(Yes-1, no-2)**	If YES in col 9, no. of times hospitalised					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

CODES FOR BLOCK 2

Col.3: Relation to the head of the household: self - 1, spouse of head - 2, married child - 3, spouse of married child - 4, unmarried child - 5, grandchild - 6, father/mother/father-in-law/mother-in-law - 7, brother/sister/brother-in-law/sister-in-law/other relatives - 8, servant/employees/other non-relatives – 9

Col. 6.: Marital status: never married - 1, currently married - 2, widowed - 3, divorced/separated – 4

All members mentioned by the respondent as members of the household.

Col. 7.: Education: not literate -01, below primary-02, primary-03, upper primary/middle-04, secondary-05, higher secondary -06, diploma/certificate course (up to secondary)-07, diploma/certificate course (higher secondary)-08, diploma/certificate course (graduation & above)-09, graduate-10, postgraduate and above-11.

Col. 14.: Whether covered by any scheme for health expenditure support: government funded insurance scheme (e.g. RSBY, Arogyasri, CGHS,ESIS, etc.) -1, employer supported health protection (other than govt.) -2, arranged by household with insurance companies-3, others-4, not covered-5.

[1] Household characteristics	
1. Type of ration card	APL BPL Anthyodaya
2. Social Category:	Scheduled Castes -1, Scheduled Tribes-2, Other Backward Classes -3, General – 4, Others -5 Do not want to disclose - 6
3. Religion *Hinduism -1, Christianity -2, Islam-3, Buddhism - 4, Others- 5, No religion – 6*	4. Major source of drinking water: *Bottled water–1, tap–2, tube-well/hand pump-3, tankers - 4, pucca well -5, tank/pond reserved for drinking – 6, river/canal - 7, others – 9*
5. Type of latrine: *latrine: service -1, pit -2, septic tank/ flush system -3, Common latrine – 4, Shared latrine – 5, others – 6, no latrine -7*	6. Primary source of energy for cooking past days *Coke/coal–01, firewood and chips -02, LPG -03, Gobar gas -04, kerosene -05, electricity -06, others -07, no cooking arrangement -8*
7. What was your last electricity bill amount?	

[3] Particulars of the last episode of medical treatment received as in-patient of a medical institution during the last 365 days							
1	Serial no. of the hospitalisation episode	1	2	3	4	5
2	Serial no. of member (as in col. 1, block 2) hospitalised					
3	Age (years) (as in col.5, block 2)					
4	Nature of the illness					
5	System of medicine Allopathy-1 Ayurveda -2 Homeopathy – 3Unani – 4Sidha - 5 Yoga & Naturopathy – 6 Others 7 (specify)……………..					
6	Type of provider					

	JPHN/ASHA/Anganwadi worker -1 PHC/dispensary/CHC/mobile medical unit -2 Public hospital (including ESI, Co-operative hospital etc) -3Private doctor/clinic-4Private hospital-5					
7	Type of ward (free -1, paying general -2, paying special -3)					
8	Duration of stay in hospital (days)					
9	**If treatment was from private doctor/private clinic or private hospital What was the reason for not availing government sources?** • required specific services not available -1 • available but quality not satisfactory -2 • quality satisfactory but facility too far - 3 • quality satisfactory but involves long waiting - 4 • financial constraint - 5 • other – 6 Others: specify ………………………………………………………………					
Details of medical services received (not received -1; received: free -2, partly free -3, on payment -4)						
10	surgery					
11	medicine					
12	X-ray/ECG/EEG/Scan – CT, MRI, Ultrasound					
13	other diagnostic tests					
14	Whether any medical service provided free					
15	**Medical expenditure for treatment in Rs** (including doctors/surgeons fee, hospital staff/other specialists, medicines, diagnostic tests, bed charges other medical expenses like blood, oxygen, attendant charges, physiotherapy, personal medical appliances etc.					
16	**Non-medical expenditure** incurred by the household **(Rs.)** (food, transport for others, expenditure onescort, lodging charges if any, etc.)					

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17	Total amount reimbursed by medical insurance or employer (**Rs**) Mark zero if not reimbursed					
18	Whether any medical services were provided free Mark only if answer is yes. Government – 1, Private – 2					
19	What is the major source of finance for medical expenses Household income/ savings-1,borrowings-2,sale of physical assets-3 contributions from friends and relatives-4, other sources-5					
20	What is the second major source of finance for medical expenses Household income/ savings-1,borrowings-2,sale of physical assets-3 contributions from friends and relatives-4, other sources-5					

[4] Particulars of illness episodes of household members during the last 15 days (including hospitalisation)						
1	Serial no. of the illness episode	1	2	3	4	5
2	Serial no. of member reporting ailment (as in col.1 of block 2)					
3	Age (years) (as in col.5, block 2)					
4.	No. of times within the reference period the person was ill					
5	Nature of illness specify………………………					
6	Whether chronic (yes-1, no-2)					
7	**Status of the illness** • started more than 15 days ago and is continuing-1 • started more than 15 days ago and has ended -2 • started within 15 days and is continuing -3 • started within 15 days and has ended -4					
8	Total duration of the illness (days)					
9	Whether treatment was taken on medical advice Yes 1 No 2 **If no, skip to 14 & 15**					
10	If treatment was taken which system of medicine was used Allopathy-1 Ayurveda -2 Homeopathy – 3Unani – 4Sidha - 5 Yoga & Naturopathy – 6 Other – 7					

	Other …………………………………………(specify)						
11	Whether hospitalised Yes 1 No 2						
12	Type of provider JPHN/ASHA/Anganwadi worker - 1 Primary health centre/dispensary/Community health centre/mobile unit -2 Public hospital (ESI,Co-operative, taluk, district, govt medical college etc) -3 Private doctor/clinic-4 Private hospital -5						
13	**If treatment was from private doctor/private clinic or private hospital** **What was the reason for not availing government sources?** • required specific services not available -1 • available but quality not satisfactory -2 • quality satisfactory but facility too far - 3 • quality satisfactory but involves long waiting - 4 • financial constraint - 5 • other – 6 Others: specify …………………………………………………………..						
14	If treatment was not taken on medical advice, what are the reasons for not seeking medical advice? • no medical facility available in the neighbourhood - 1 • facility of satisfactory quality not available - 2 • facility of satisfactory quality too expensive - 3 • facility of satisfactory quality involves long waiting - 4 • ailment not considered serious - 5 • other – 6 Others: specify …………………………………………………………..						
15	Instead of seeking medical advice who was consulted Self care : 1, Household members/friends : 2, Medical shop – 3 Others - 4						

	[5] Particulars of pre-natal and post-natal care for women of age 15-49 years during the last 365 days

serial. no. (as in block 2/1)	age (years) (as in block 2/5)	whether pregnant any time during last 365 days (yes-1, no-2)	**If pregnant in the last 365 days,**									
			serial no. of preg-nancy (1/2)	whether received tetanus toxoid vaccine during pregnancy (yes-1, no-2)	whether taken Iron tablets during pregnancy (yes-1, no-2)	whether any other pre-natal care received *yes, from HSC/ANM/ASHA/AWW -1 yes, from PHC/dispensary/CHC/mobile medical unit -2 yes, from public hospital -3 yes, from private doctor/clinic -4 yes, from private hospital -5 No -6*	if **1-5** in col. 7 nature of pre-natal care (AYUSH-1, non-AYUSH-2, both-3)	Out-come of preg-nancy *live birth normal delivery-1,live birth caesarean -2 stillbirth -3, abortion-4, pregnancy continuing 5*	if 1-4 in col. 9			if 1-5 in col. 12
									Place of delivery/ abortion *in PHC/dispensary/CHC/mobile medical unit -1 in public hospital - 2 in private clinic -3 in private hospital - 4 at home - 5*	Expenditure incurred on delivery care (Rs.)	Whether any post-natal care received *yes, from HSC/ANM/ASHA/AWW -1 yes, from PHC/dispensary/CHC/mobile medical unit -2 yes, from public hospital - 3 yes, from private doctor/clinic -4 yes, from private hospital - 5*	Nature of post-natal care (AYUSH-1, non-AYUSH-2, both-3)

60

											No -6	
1	2	3	4	5	6	7	8	9	10	11	12	13

[6] particulars of former household members who died during the last 365 days

Srl.No.	Name of the member who died	Sex (male-1, female-2)	Age at death (years)	Whether medical attention received before death (Yes-1, no-2)	Whether hospitalised (Yes-1, no-2)	If hospitalised, no. of times hospitalised	Whether pregnant any time during last 365 days (Yes-1, no-2) *information not to be sought for unmarried females, but may be recorded if voluntarily provided*	If pregnant at the time of death, was it *during pregnancy -1, during delivery -2, during abortion -3, within 6weeks of delivery/abortion -4, other deaths -5*
1	2	3	4	5	6	7	8	9