HOUSEHOLD HEALTH EXPENDITURE IN KERALA: AN ECONOMIC ANALYSIS

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By

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CERTIFICATE

This is to certify that this thesis entitled, **"HOUSEHOLD HEALTH EXPENDITURE IN KERALA: AN ECONOMIC ANALYSIS"** being submitted by **NISHA.T.A** for the award of the degree of **Doctor of Philosophy** in Economics, to the University of Calicut, is a record of bonafide research work carried out by her under my guidance and supervision at the Research and Post graduate Department of Economics, St.Thomas' College (Autonomous) Thrissur. The contents of this thesis, in full or in part, have not been submitted and will not be submitted to any other institute or University for the award of any degree or diploma. Plagiarism is checked and found within the permitted limits.

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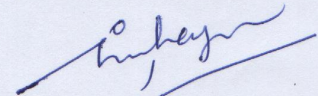St.Thomas' College (Autonomous), Thrissur

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DECLARATION

I, **NISHA.T.A**, do hereby affirm that this written account entitled **"HOUSEHOLD HEALTH EXPENDITURE IN KERALA: AN ECONOMIC ANALYSIS"** is a bonafide record of research done by me under the guidance of **Dr. SABU.P.J**, Assistant Professor & HoD, Research and Post Graduate Department of Economics, St. Thomas' College (Autonomous), Thrissur. I also declare that this thesis has not been submitted by me earlier for the award of any degree, diploma, fellowship or any other similar title.

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ABBREVIATIONS

APL	Above Poverty Line
ASEAN	Association for South East Asian Nations
ASHA	Accredited Social Health Activist
BPL	Below Poverty Line
BRICS	Britain, Russia, India, China and South Africa
CAGR	Compound Annual Growth Rate
CGHS	Central Government Health Scheme
CHIS	Comprehensive Health Insurance Scheme
CSO	Central Statistical Organisation
CVDs	Cardio-Vascular Diseases
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HIV	Human Immunodeficiency Virus
IMR	Infant Mortality Rate
ISM	Indian System of Medicine
JSY	Janani Suraksha Yojana
KASP	Karunya Arogya Suraksha Padhati
MMR	Maternal Mortality Rate
MNCH	Maternal, Newborn and Child Health
MoHFW	Ministry of Health and Family Welfare
MOSPI	Ministry of Statistics and Programme Implementation
NAS	National Account Statistics
NFHS	National Family Health Survey
NHM	National Health Mission
NHSRC	National Health System Resource Centre
NRHM	National Rural Health Mission
NSSO	National Sample Survey Office
OBC	Other Backward Class
OLS	Ordinary Least Square
PAP	Proportion of Ailing Persons
PHCs	Primary Health Centres
RCC	Regional Cancer Centre
RSBY	Rashtriya Swasthya Bhima Yojana
SAARC	South Asian Association of Regional Countries
SC/ST	Scheduled Caste / Scheduled Tribes
SGDs	Sustainable Development Goals
THE	Total Health Expenditure
WHO	World Health Organisation

CHAPTER 1

DESIGN OF THE STUDY

1.1. Introduction

The role of health in human capital formation is immense to enhance the productivity of population of a nation. Spending on health is a significant variable in determining the health capital. Reasons behind spending on health are differ from person to person. The motive behind spending on health may be preventive health care, promotive health care and tertiary health care. Both microeconomic and macroeconomic aspect of spending on health is crucial for economic analysis of expenditure on health. In microeconomic perspective health is considered as an input to generate income which in turn to buy goods and services. Government involvement in health spending and its effect on individual decision constitutes the macroeconomic perspective of spending on health.

Health, a leading component of human capital, emerged as a major element of 'pro-poor' economic growth strategies to enhance economic growth, and thereby reducing economic inequality. There exists a close relationship between income and health. Higher income prospectively allow individuals to access to better health care and to afford better nutrition; better health increases productivity; and boost the ability

to earn more. Ill health can lead to lost earnings on account of missed working days, jointly with extensive expenditures incurred on account of medical treatment, can impoverish families, especially living on the margins of survival. Investing in health is investing in economic development and economic growth (GoI, 2005). Health is potentially influential for knowledge and human capital production. Improved health contributes to economic growth in four ways: it reduces production losses caused by worker illness; it permits the use of natural resources that had been totally or nearly inaccessible because of disease; it increases the enrolment of children in schools and makes them better able to learn; and it makes alternative uses of resources that would otherwise have to be spent on treatment.

Health itself is an interesting economic issue, which deals both positive and normative aspects. Production function of health raises the issue of measurement whether higher consumption of medical services contributes better health. The demand function of health care raises the issues of determinants of quantity and quality of health care in its positive aspects while in normative aspects it specify the investigation of the condition of production and distribution of health care (Zweifel, 2009). Hence spending on health has both positive and normative aspects.

Health is multidimensional. As per the Constitution of World Health Organisation (WHO) "Health is a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity" (WHO, 1948). WHO definition captures physical, mental and social dimensions. An individual's demand for medical services is irregular and unpredictable. There are many factors contributed to good health such as nutritious food, pure drinking water, pollution free environment, opportunity for work and mental peace. Health status will never be the same for all. Different people need different treatments. Different treatments entail different costs. Their illness and their cures will not impose the same economic burden. Every system of risk pooling must face up to the challenge of heterogeneity. Heterogeneity makes health care a thing apart. The risk and uncertainty are crucial elements in medical care (Akerlof, 1970).

The main reason for government intervention is redistribution of income in the health sector. Health care is considered as a merit good. The government has a responsibility to impart the provision of health care irrespective of the desire of the consumers regarding the use of health care goods and services (Central Statistical Organisation, 2015). It is therefore important to assess the relative role of the public

sector in health care provision. The national output of a country can be allocated to various fields such as education, food, communication, housing, health care, transportation, and national defense. The share of Gross Domestic Product (GDP) allocated to health care services is a measure of the size of nation's health sector with respect to its national output. A country's share of GDP allocated to health care is positively associated with its income level suggesting that health care is a normal good (Sloan and Hsieh, 2017). In developed countries, government health spending accounts more than 5% of GDP. There exist high variations across countries in health expenditure as a share of GDP, which ranges from less than 5% to 15% (Ke et al., 2011). In India, the proportion of government health expenditure is very low compared to that of less developed countries. Public health expenditure as a proportion of GDP gradually accelerated from 0.22% in 1950-51 to 1.05% in the 1990s and then decelerated to less than 1% till 2004-05 and increased to 1.35% of GDP in 2010-11and decreased to 1.02% in 2015-16. The central government spends directly on health and also provides grants-in-aid to state governments for health spending. As health is a concurrent subject the state government undertakes the larger share of public health expenditure. The state governments also transfer funds to local bodies for health spending. The local bodies can also incur health expenditure from their own resources. More than 70% of health expenditure is carried out by the households (Garg and Karan, 2009; Ravi, 2016).

An expenditure for medical care becomes financially catastrophic when it endangers the family's ability to maintain its customary standard of living and the incidence of catastrophic medical expenses is relatively small in the population as a whole, it is quite large among the poor (Berki, 1986). World Bank report (2002) highlights how ill-health can lead to out-of-pocket payments leading to further impoverishment and indebtedness. The WHO convened the Commission on Social Determinants of Health in 2005 to provide advice on how to reduce health inequities. The growing incidences of catastrophic expenditure due to health care cost are presently estimated to be one of the major contributors of poverty (Flores et al., 2008; Joe and Mishra, 2009). An increase in the health care expenditure is a burden for an individual. The health care expenditure both in private and public sector is in increasing rate. To finance this health care expenditure is a challenge for a developing country like India. The poor and deprived households spend a much larger proportion of their meager income on health care compared with socio-economically better off

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households (Baru and Bisht, 2010; Mukherjee et al., 2011; Joe, 2015). The soaring cost of health care is a matter of concern the world over. In this context the review of literature is inevitable to get more idea on health expenditure.

1.2. Review of Literature

Various aspects of health and expenditure on health are considered for literature review. It helps to examine the various concepts of health expenditure and pattern of expenditure on health between countries and within the country. It throws light on significance of expenditure on health both by the government and households.

1.2.1. Determinants of Health

The literature on health has recognized various determinants on health such as social, cultural, economic, ecological and political. They are interlinked to each other.

Marmot (2005) examined the social determinants of health which would help in reducing inequalities in health all over the world. The study stresses on the importance of social determinant of health which is based upon food, transport, work, social exclusion, early life, unemployment, stress, addiction, social gradient and stress. Apart from social policy, the health outcome would sensitive to the effects of absolute material deprivation.

Ekbal et al. (2012) analysed the social determinants of health in Kerala. The study considers the social determinants of health as the conditions in which people are born, grow, live, work and age. The study reveals that the factors which influences inequality in health in Kerala such as distribution of money, power, power relations in politics and availability of resources. The study stresses a policy of an effective intersectoral action to reduce disease burden.

Thresia (2014) examined the socio-economic and political determinants of health of women in Kerala. The study finds that the factors weakening progress in health of women in Kerala in the 21st century. These factors consist of various socio-economic and political deterrents like gender, poverty, caste, class, ethnicity, education and employment, income and politics. The study concluded that the present health care system in Kerala faced challenges like medical poverty, chronic morbidity, declines in mental health and health inequalities across different class among the people. The study highlights the role of government in providing health care to reduce deterrents in health care.

1.2.2. Determinants of Expenditure on Health

Gerdtham et al. (1992) empirically examined the aggregate health care expenditure among 19 OECD countries by using log functional form of variables. GDP per-capita, population above the age of 65 years and institutional factors of health system are significantly contributed to the expenditure on healthcare among these countries. The study finds that institutional factors of health system include the mixture of public-private funding, inpatient and outpatient care and the way physicians are paid in outpatient care.

Siddiqui et al. (1995) examined the public health policy and changes in socio-economic factors in Pakistan during 1974 to 1993. The study highlights the complex and multidimensional nature of health policies. Health policies are based on various socio-economic and political factors. The study finds that socio-economic variables like per-capita gross domestic product, urbanisation and effect of education would be significant determinants of health resources in Pakistan. Government health policy was analysed by using the variables like public health expenditure per person, number of doctors, nurses, and hospital beds.

Angko (2009) analysed the demand side macroeconomic determinants of government health expenditure in Ghana by using time series data from 1970 to 2006. The study used Augmented Dickey-Fuller test and Phillip Perron test for unit roots. The study noticed that health care is a luxury good in Ghana. The study proved that the variables like gross domestic product, life expectancy at birth, urbanisation rate, proportion of population below 15 years and above 65 years and accessibility of health care facilities are the long run determinants of health care expenditure in Ghana.

Imoughele and Ismaila (2013) identified the factors that influence public health expenditure in Nigeria using error correction technique and time series data from 1096 to 2010. The result shows that demand for health in Nigeria is price inelastic. The study finds that proportion of population below 14 years of age and younger age young and government development policy on health are the major determinants of health expenditure in Nigeria. Unemployment rate, consumer price index and political instability are insignificant in the determination of health expenditure.

Samadi and Rad (2013) examined the determinants of health expenditure in Economic Cooperation Organisation countries by using panel data econometrics methods like Westerlund panel co-integration test. The study analyses to answer whether long term relationships exist between the variables and fixed effects estimator for short term analysis. The study found that there is a long term relationship between per-capita health expenditure and per-capita gross domestic product, proportion of population below 15 and above 65 years old, number of physicians and urbanisation. Here health is considered as a necessary commodity.

Hosoya (2014) studied the determinants of health expenditure of 25 OECD countries over the periods 1985-2006, 1990-2006 and 1997-2006. The study considered health care as a necessary commodity. The study found that there is a positive correlation between ageing of population and health expenditure. Gross domestic product, unemployment, percentage of female labour from female population aged from 15 to 64 and time variable affect the health expenditure.

1.2.3. Health Infrastructure and Expenditure on Health

Kumar and Gupta (2012) studied condition of health infrastructure in India which is in pathetic condition based on the secondary data obtained from National Health Profile 2010. The study discussed the present scenario of healthcare facilities and personnel in India. The study suggested some suggestions like geo-coding, reduction of urban bias and a model health plan of United States of America which can be helpful in providing answers to the Indian Health Problems. The study reveals that the issue of health is no longer a localized concern, in today's globalised society diseases and health problems have crossed all boundaries and this is a matter of great concern as diseases continue to become more radical the means of fighting them are still primitive and insufficient.

Kumar (2013) analysed the relationship between infrastructural health facilities and public expenditure in class-I towns of Uttar Pradesh in India. The main data source of this study is 'Town Directory', 2001 census of India. Pearson's correlation values show positive and significant results for the correlation between health expenditure and health infrastructure. Regression results between health expenditure and health infrastructure are weak. There is high inconsistency between health expenditure and health infrastructure. It indicates that private sector is much more active in providing health care facilities than that of public sector. There is a

skewed distribution of health care facilities across the class-I towns of Uttar Pradesh, which ultimately would lead to costly and poor health care facilities for the urban poor.

Lakshmi and Sahoo (2013) calculated the elasticity coefficients of health indicators with respect to health infrastructure in Andhra Pradesh during 1980-2010. By using double log simple regression technique the analysis confirms that health infrastructure has significant and positive bearing on health indicators. The study confirms that only building good health infrastructure does not yield good health outcomes; operational efficiency, implementation, maintenance of health infrastructure and efficient utilisation of available infrastructure are some of the factors contributed to the health outcomes. The study recognized that public health facilities are crucial for meeting the basic requirement of the people.

Dey et al. (2013) remarked that social health issues, natural calamities and disasters, nutritional aspects have accumulative effect on the wide disparities in the existing health infrastructure. Lack of proper infrastructure facilities has limited the ability of the facilities to drive the health care standards in the majority of the people in the country. The high morbidity and mortality levels in the country indicates the unsatisfactory health indices which in turn indicates the limited success of the public health system in meeting the preventive and curative requirements of the general population in India.

Santos et al. (2015) assessed the public health care infrastructure in Himachal Pradesh where the health care challenges of rural communities were unique due to difficult terrain, distance between health centres and diseases patterns. By using semi-standardized interviews the researchers developed a rural healthcare assessment model to assess the infrastructure across the dimensions of locations, facilities, services and stakeholder perceptions of quality. The study emphasized more resources to remove the bottlenecks in the health system.

1.2.4. Public Expenditure on Health

Bhat and Jain (2004) examined the relationship between income and health care in India using state level data. The study revealed that there exist severe imbalances between public and private health care; and within public health care between preventive and curative services; between primary, secondary and tertiary health care services and between salary expenses and other recurrent expenditures.

The study argued that the declining allocation to the health sector at state level would have detrimental effect on public health delivery. Private health care expenditures are generally demand driven and it depends on the consumers and their behavior. Public expenditure is more supply driven which depends upon how much government allocates to health care in a given year.

Varatharajan (2004) studied on the existence of government health care sector in India. The dissatisfaction of people by using government facilities would encourage the private health care sector. The failure of government in health sector is the success of private health sector. The study provides ethical view to assess the performance of government health care provision and argues that the poor are the most affected when the government health care system ignores economic principles. The budgetary allocation to the health sector is less than required level in India and this would force the poor to use private health care facilities where the cost of health care is high.

Ke et al. (2011) examined the path of health expenditure in developing countries using the panel data of 143 countries during 1995 to 2008. The study pointed out that there exist great variations across countries in health expenditure as a share of GDP, which ranges from less than 5 percent to 15 percent. Income, demographic factors and health system characteristics contributed this variation. The study revealed that the government health expenditure and out-of-pocket payments follow different paths. Moreover the study discovered that growth of health expenditure is different for different countries at different levels of economic growth.

Nyamwange (2012) examined the effect of per-capita GDP on public healthcare expenditure in Kenya for period 1982-2012 employing Ordinary Least Square regression. The study found that health care is a necessary good in Kenya. Underfunding and increased demand of quality and availability of health care services are some of the challenges in the health care sector. The study explained the minimum amount of funding that the government should direct to public health care expense given future predictions of GDP per-capita by institutions like World Bank.

Choudhury and Nath (2012) provide an estimate of health expenditure in India for the period 2004-05 to 2010-11. The study provided estimates for various definitions of health expenditure, depending on whether one uses only health expenditure or health in combination with water supply, sanitation and nutrition. The study estimates that health expenditure has increased by about 0.2 percent of GDP between 2004-05 and 2010-11 and in per-capita terms there has been a significant rise

in health expenditure from around ₹263 in 2004-05 to about ₹486 in 2010-11 at 2004-05 prices. The distribution of centre's health spending across states in recent year would appear to be an area of concern.

Hooda (2013) analysed the implications of changing pattern of government health expenditure in India during the period 1987-88 to 2011-12. The study found that the existing level of health spending is much lower than the required level of resources. The spending in rural area on preventive services is not only very low compared to urban and curative care but also shows declining trends over the period. The increasing trend in central allocation under National Rural Health Mission (NRHM) to states considered as a healthy indication but the funds remained unutilised in many states. It is desired to ensure the allocated funds get spend effectively across states.

Rajeshkumar and Nalraj (2014) examined the causal relationship between health care expenditure and economic growth in Kerala, Orissa, Tamil Nadu and Madhya Pradesh during 1991-2010. The study considered that good health is a decisive factor in the reduction of poverty and promotion of sustainable development. The study finds that there exists a unidirectional causality from health expenditure to economic growth. The increase in demand for better health care leads the private health providers to supply such goods and services. This shift from public to private health care utilisation reduced economic growth contribution on public health care expenditure.

Hooda (2015) pointed out that income of the states plays a significant role in influencing the public expenditure on health across various states in India. Health is considered as a necessary commodity in India. The demographic factors were less likely to influence the spending on health. The study found that there is high inter-state variation in public expenditure on health in India. The study revealed that the responsiveness of health spending is sensitive to change in per-capita income of the state. The expenditure on health is recorded significantly higher after the implementation of NRHM than the pre-NRHM period.

Kurt (2015) tests the direct and indirect effects of health expenditure on economic development in Turkey between 2006 and 2013 using Feder-Ram model. The study found that there is a positive direct effect of government health expenditure on total expenditures, aggregate demand and total production. The negative impact of

diseases, accidents and business disruptions on the output of other sectors and the exclusion effect of government health expenditure were found to be negative.

1.2.5. Household Expenditure on Health

Xu et al. (2003) examined multicounty analysis on household catastrophic health expenditure using regression analysis. A study of household expenditure of 59 countries revealed that the proportion of households' out-of-pocket expenditure varies differently between countries. The study defined expenditure as catastrophic expenditure if the household's financial contribution of the health system is more than 40 percentage of income. The study found that there are three key preconditions for catastrophic payment such as low capacity to pay, availability of health services requiring payment and lack of health prepayment. The study suggested risk protection policies would be significant in the situation of catastrophic health expenditure of households.

Flores et al. (2008) illustrated how taking account of the financing of payments of inpatient care affects measures of the impact of health payments on household consumption, welfare and poverty in India by using 1955-1996 NSSO data. The study demonstrated how measures of catastrophic payments and impoverishment that ignore the means of financing can give a seriously misleading impression of the short-term consequences of high out-of-pocket medical expenditures. The study revealed that hierarchy of coping strategies in which health care financed first from current income or savings, recourse is made to borrowing and asset sales if income and savings are insufficient and healthcare is forgone, if collateral is lacking.

Bonu (2009) examines the incidence and correlates of catastrophic maternal expenditure in India using data from the 60th round of National Sample Survey of India. By using multivariate regression analysis the study measures the maternal expenditure in India which is higher in private hospitals than public hospitals. Maternal expenditure is calculated in relation to households' capacity to pay. Low income households severely affected by the high catastrophic maternal expenditure. The study suggested some measures to reduce the burden of maternal expenditure such as improve the performance of public sector, appropriate regulation of and partnership with private sector and effective directive cash transfer to pregnant women in low income households.

Garg and Karan (2009) assessed the differential impact of out-of-pocket healthcare expenditure and its components, between developed and less developed regions in India based on Consumer Expenditure Survey data from the National Sample Survey conducted in 1999-2000. The study revealed that both the increase in the number of poor as a result of out-of-pocket expenditure were higher in rural areas and poorer states than in urban areas and wealthier states. Expenditure on drugs was found to constitute the major part (70%) of out-of-pocket healthcare expenditure in India, Among all the major states, Uttar Pradesh shows the highest increase in poverty, followed by three other poor states; Bihar, Orissa and Madhya Pradesh. These four states taken together constitute 58% of the total increase in poverty headcount because of out-of-pocket payments. Out-of-pocket expenditures have a striking impact on increasing the poverty ratios in the country.

Joe and Mishra (2009) analysed the magnitude and distribution of out-of-pocket spending in India using NSSO consumer expenditure survey for 2004-05. The study narrates the poverty impact of out-of-pocket payments. This analysis revisits the distribution of healthcare payments in India and examines the incidence of disproportionateness in out-of-pocket spending. The results revalidate that richer sections of the population are spending more on health care as compared with the poor. In a relative sense, poorer sections continues to spend a major share of the out-of-pocket payment expenditure on purchase of drugs and medicines and only a smaller share is allocated on diagnostics and services charges.

Berman et al. (2010) made a new approach to correct some of the biases in assessments of the impoverishing effect of health spending in India. By using NSSO 60th round data on morbidity, the analysis linked household out-of-pocket spending on health with poverty line of India and calculate the increase in poverty headcount related to health spending. The result indicates that health expenditure related impoverishment in India is very high. Out-patient care is more impoverishing than inpatient care in urban and rural areas alike.

Ghosh (2010) measures catastrophic payments and impoverishment due to out-of-pocket payments for health care. The study used cross sectional data from NSSO for 1993-94 and 2004-05. The study discovered significant changes in the 1990s and early 2000s which have occurred as a result of out-of-pocket spending on health care among the states in India. Income inequalities in out-of-pocket payment were highest in Orissa and lowest in Kerala.

Mukherjee et al. (2011) identified caste-based inequalities in out-of-pocket health expenditure of households in Kerala. The study points out that there is inadequate provision of public health care, the near absence of health insurance and increasing dependence on the private health sector have impoverished the poor and the marginalised, especially the scheduled tribe population. Caste-based inequality in household health expenditure reflects unequal access to quality health care by different caste groups. Households with high health care needs and chronic health care needs are most affected by this inequality. Households in the most marginalised castes and with high health care need require protection against impoverishing health expenditure.

Ghosh (2011) measures catastrophic payments and impoverishment due to out-p-of-pocket expenditure for health care using data from NSSO for 1993-94 and 2004-05. The study used two measures of poverty for measuring impoverishment such as the poverty head count and the poverty gap. The proportion of households facing catastrophic out-of-pocket health payments varied widely among states from 3.46 percent in Assam to 32.42 percent in Kerala during 2004-05. The price of drugs is several times higher than in established market economy and there is overuse of drugs in India. New policies had a major a impact in increasing the incidence of catastrophic expenditure and impoverishment.

Pal (2012) made an attempt to provide a new measure of catastrophic out-of-pocket expenditure in India based on consumption of necessities. According to the new measure, out-of-pocket expenditure is catastrophic if it reduces the non-health expenditure to a level where the household is unable to maintain consumption of necessities. The revised measure shows that the incidence of catastrophic payment goes down when income increases. The findings from the multivariate analysis show that economic and social status of Indian households is an important determinant of incidence of catastrophic health expenditure.

Abolhallaje et al. (2013) studied the determinants of health expenditure in Iran using data on expenditure from 2002-2008. The study found that high inflation rates in the health sector, growing the number of physicians, lack of well organized public health sector services and insufficient social health insurance mechanism are the reasons for high out-of-pocket spending on health in Iran. The study considered three categories of determinants of catastrophic payments of household such as socio-economic status of households, equality or inequality conditions of the distribution of

financing risk and economic aspect of distribution of health expenditure. The study suggested that increasing share of government spending on health care and prepayment sources of health service financing would be able to reduce the household out-of-pocket payment.

Arun and Kumar (2013) viewed that the state has a significant role to play in the delivery of health services in India. They tried to study the rationale behind promoting regulated private expenditure for the development of effective health infrastructure. The study found that health expenditure is affected by host of structural deficiencies such as high dependence on private sector investment and foreign donors. To increase the process of structural transformation, transformation of health care facilities is essential.

Ladusingh and Pandey (2013) made an attempt to evaluate impoverishment effect of the out-of-pocket expenditure in India on households and determinants of household health expenditure with an objective to serve as inputs in strengthening of public health. The study found that high out-of-pocket expenditure on health is a major source of inequity in financing health care and its impoverishment effect on households varies across states and sub groups in India. The study found that out-of-pocket payment tends to increase significantly with inequality in income distribution and shortage of physicians at the state level. Health system inadequacy measure by population density per physician has escalating effect on impoverishment.

Leone et al. (2013) assessed the economic burden of maternal health care services on Indian households using cross-sectional population data from NSSO for 2004. By using regression techniques the study proved the high burden of maternal health care expenditure across states according to the level of health care utilisation. There exists heterogeneity in maternal health care expenditure at household and community levels in India. The expenditure in private hospitals is almost four times more than that of public hospitals.

Mohanty and Srivastava (2013) explained the differentials in out-of-pocket expenditure on delivery care analysed with respect to demographic and socio-economic characteristics of women, type of health care provider and delivery characteristics. By using unit data from District Level Household Survey-3, the analysis found that the propensity and rate of out-of-pocket expenditure increases with an increase in economic status and educational attainment of mothers. The

predicted expenditure for a caesarean delivery was six times more than for a normal delivery.

Joe (2015) examined the incidence and correlates of health care financing in India by using cross sectional data from the Morbidity and Healthcare Survey 2004 conducted by NSSO. With the help of multivariate logistic regression the study found that there exist significant socio-economic gradient in the distribution of distressed health care financing for marginalised sections of the society. The financial burden of non-communicable diseases is high among backward social groups. The treatment cost of elderly and female members can be financed mainly by the contribution from friends and relatives.

Jayakrishnan et al. (2016) studied the out-of-pocket expenditure in India and factors affecting it by using the NSSO survey conducted during 2014. This paper also analyses the impact of public funded health insurance schemes on out-of-pocket expenditure in India. The study analysed the supply and demand factors in affecting the out-of-pocket expenditure. Cost of diseases per episode and morbidity level was increased in India due to supply induced demands. The drain on family income due to high expenditure on health care can neutralize the gains of income. The study found that morbidity level increased considerably due to the increase in life expectancy and demographic change of old age population.

Ravi (2016) made a comparative study of health care in India over the years 2004-2014 using the NSSO data from round 60 and round 71. This paper analyses the changes in health seeking behavior of Indian households and changes in their out-of-pocket expenditure. There exist significant variations across states in terms of health spending. There is no change in the impoverishment effect of health care cost for the period from 2004 to 2014. There exist variations in health care financing of households over the ten years.

Sinha et al. (2016) analysed the factors of out-of-pocket expenditure using cross sectional data from 986 sampled households in the state of Jharkhand in India. Out-of-pocket expenditure was high among households headed by persons above sixty years which indicates the high health care requirements of aging population. Moreover out-of-pocket expenditure was high for those families which had childbirth in the family in the past two years. The households from lower expenditure quintiles and women headed households had lower out-of-pocket expenditure due to the health care seeking from informal providers which would increase the risk of poor health.

On revisiting Kerala model of health care, Sunilkumar (2017) examined the utilisation and financing pattern of health care among three types of working class in Kerala. By using multi-logistic regression model the study found that there exist a significant difference between public and private health care facilities across households; and the size of households and utilisation of private health care service shows an inverse relationship. The economic status, size of household and insurance status were treated as the determinants of utilising private health care facilities. Economic status, level of care and nature of illness were considered as significant determinants of health seeking behavior of the households.

1.2.6. Gender and Expenditure on Health

Navaneetham and Dharmalingam (2000) examined the patterns and determinants of maternal health care use across different social settings in south India especially Andhra Pradesh, Karnataka and Tamil Nadu. They used data from the National family Health Survey (NFHS) carried out during 1992-93 across the states in India. The study emphasized that the differences in access to health care facilities between rural-urban area is the main factor for lower maternal health care services especially for institutional delivery and delivery assistance by health personnel in rural areas. The study argued that health workers would play a pivotal role in providing antenatal care in the rural areas.

Sen et al. (2007) present empirical evidence and analysis of health inequities in Koppal district of Karnataka. Using a cross sectional survey the paper seeks to find out intra and inter-household inequities in health care seeking during sickness and pregnancy. This study highlighted the interplay of systematic hierarchies and failures in determining health outcomes of poor women. It is found that women with poor entitlements within families and in health systems tolerate high levels of pain, discomfort and humiliation. Women and their families invest high effort and resources in many instances in seeking health care for general illness. The study noticed that explicit gender bias operates which disempowering normative local traditions.

Kumar and Prakash (2011) examined the utilisation of public and private health services at regional level and analysed the extent of inequality in choice of health care services using secondary data at national level. By using logistic regression models, the study found that Kerala recorded the lowest economic

inequality in utilising different reproductive and child health care services from public and private sources. For seeking health services for general ailment, the people from lower income group uses public health care centers and the people from higher income group uses private health care centers in Kerala.

Jose et al. (2014) examined the utilisation of maternal and health care services by tribal women as compared to non-tribal women in Kerala and identified the factors affecting their differential utilisation. The study conducted in Wayanad distict in Kerala. General awareness, affordability, accessibility and quality of services along with motivation by health workers are the determinants of utilisation of health services in tribal women. Among tribal women 85 % utilized maternal health care facilities fully compared to 100% among non-tribal women. Lower levels of education and lack of transport facilities are prime factors contributing to underutilization of maternal health care services by tribal women.

Annandale and Hunt (2000) analysed the general trends in research on gender and health since 1970s. The paper describes widespread social change, concentrating on changes in employment, educational qualifications, and the household and family, using Britain as a case study. The study draw out three frame works such as the traditional, the transitional and the emerging new. These workouts are mainly for summarize shifts in the theoretical and methodological approach to research on gender and health since the 1970s. Gender structures are changing in ways that are likely to impact differentially upon different subgroups of people, even at the same time as some similarities may be emerging between women and men.

Alverez-Dardet and Vives-Cases (2012) examined the link between gender and health in Spain. There are three main waves responsible for linking gender and health. The first wave is the visibility and legitimatisation of gender issues and women's health as objects of scientific study and positive policy action; and the second involves acceptance of gender as a genuine health determinant; and the final crucial wave in this political process of creating true gender policies. Public policy on gender aims to reduce the negative effects of gender on both sexes. These waves did not occur consecutively. Conversely, the three waves must occur in aspecific political setting to reach an effective state of parity.

Cogoy and Tamburlini (2012) examined the gender approaches to adolescent and child health. Gender is recognized as one of the most important social determinants of health. A lifestyle approach to gender in child and adolescent health

puts into evidence how from very early on gender, together with all other main social determinants of health, has a powerful impact on the ultimate good health of children and adolescents.

Piang et al. (2010) examined National Health Programmes and the gender component associated with these programmes in India. The study reveals that major National Health Programmes in India do not really reflect the initiative of mainstreaming gender perspective. Gender sensitivity does not mean that the National Health Programmes have to give special schemes for women; rather it is to identify which gender group is more vulnerable than the other in relation to disease deals by the programme. This would require an analysis not only of the epidemiological factors of the disease, but also of the differential impact of morbidity and mortality on more vulnerable group, identification of social factors that would enhance identification of cases like leprosy and HIV, and how to ensure sustainable treatment strategy for such identified women.

Mehrotra and Chand (2012) focus on various determinants of health care facilities in India such as residence, media exposure, females and partner's education and females and their partner's employment, religion of household head and economic status of females. Using household data from demographic health survey from demographic health survey and by using orders logistic regression analysis, this paper seeks to examine factors responsible for poor health status of women in India on the basis of parameters like delivery at health facility, antenatal care, level of anemia, family planning and prenatal care. The study finds that women in India are marginalised or neglected when it related to health care.

Batra et al. (2014) investigated the gender differences in health expenditure and treatment seeking behaviour among adults for the period 2004-07. Using a longitudinal survey on rural patients suffering from cancer in a public tertiary health centre in Odisha, the study found that expenditure on female adults was significantly lesser than those on males. It can be found that gender discrimination is the main reason for differences in expenditure in treatment seeking and before coming to the tertiary centre.

1.2.7. Health Insurance and Expenditure on Health

Ellis et al. (2000) examined a variety of health insurance system in India, their limitations and the role of General Insurance Corporation as an insurer agency. There

is a need for competitive environment for medical insurance at a much wider level. This analysis is an attempt to develop a prospectus of strategy for greater regulation and increased health insurance coverage by making suitable changes in claim settlements and exclusion clause.

Gumber (2002) addresses some critical issues with regard to extending health insurance coverage to poor households in general and those working in the informal sector in particular. Low income households face issues regarding formulating, designing, operating and managing an affordable health insurance scheme. The expectations of low income households from a new scheme indicate that coverage of illness, coverage of services, amount of premium to be paid as well as the procedural aspects such as filing claims are critical in the decision to but insurance.

Devadasan et al (2004) viewed that community health insurance programmes in India offered valuable lessons for the policy makers. The objectives of community health insurance programme ranges from 'providing low cost health care' to protecting the households from high hospitalisation cost. An effective and credible community based organisation, an affordable premium and a comprehensive benefit package are some of the conditions pointed out in this study for the success of these schemes.

Reshmi et al. (2007) carried out a community-based cross-sectional study to find out the awareness of health insurance in urban population in south India. The study argues that government should come out with a policy, where the public can be made to contribute to a health insurance scheme to ensure unnecessary out-of-pocket expenditures and also better utilization of health care facilities. The high socio-economic group of the population preferred private health insurance schemes (47.05%) over government schemes (35.29%). Among the middle group, they preferred government schemes (61.4%) rather than private (30.7%).

Escobar et al. (2010) analysed the evidence of impact of insurance programs in China, Colombia, Costa Rica, Ghana, Indonesia, Namibia, and Peru. This study aims to contribute to current policy debates on scaling up health insurance in low and middle-income countries by shedding light on the two issues; its impact on measures of health status and reducing out-of-pocket spending.

Reddy et al. (2011) examined the issue of prepayment and risk pooling in India. The three models, Central Government Health Scheme (CGHS), Employment State Insurance Scheme (ESIS) and Rashtriya Swasthya Bhima Yojana (RSBY)

independently facilitate health care treatment for different sets of population in India where as levels of care differ. Tertiary care, especially privately, provided care can be expensive. One of the prime reasons for the denial of coverage of drugs and outpatient coverage in the insurance scheme is that all the stakeholders - physicians, pharmacists, patient, etc, can easily influence the outcome.

Acharya et al. (2012) examined the impact of social health insurance schemes on health care utilisation, health outcomes and healthcare payments among low and middle income people in developing country settings. The study examines the insurance uptake. There was some evidence that health insurance schemes increased healthcare utilisation in terms of outpatient visits and hospitalisation. There was weak evidence to show that health insurance reduced out-of-pocket health expenses; the effect for the poorest was weaker than for the near poor.

Giedion et al. (2013) investigated the universal health coverage initiatives the study provides guidance to countries on how to improve the design and functioning of their health systems based on evidence of what works for achieving the goal of universal coverage. Policy makers face difficult decisions on designing the depth and height of coverage they will provide within their budget constraints. Improving the affordability of health services has an effect on access and on financial protection.

Loewenstein et al. (2013) conducted a choice study to assess the impact of a simplified health insurance plan on choices between medical tests and services in America. The study analysed the relative appeal of a traditional or simplified insurance plan both before and after respondents had been asked to compute the cost they would incur for obtaining a routine medical expense. The study provided a strong evidence that consumers do not understand traditional plans and would better understand a simplified plan, but weaker evidence that a simplified plan would have strong appeal to change their healthcare choices. Simplification is likely to have a substantial effect on individuals' understanding of their own insurance policies making.

Mini (2013) studied the average satisfaction with the services provided through the Rashtriya Swasthya Bhima Yojana (RSBY)-Comprehensive Health Insurance Scheme (CHIS) in Kerala. The scheme is a boon and it would enhance the health status of the beneficiaries. It has really assisted them to reduce their hospitalization expenses and utilize better hospital facilities. The supply of health care in the rural and remote areas of our state is far from satisfactory. Even though RSBY-

CHIS has a positive role in reducing the hospitalization expenditure among the beneficiaries, low awareness level, limited number of private empanelled hospitals, poor implementation of the scheme, absence of effective monitoring mechanism and redressal of grievances, timely reimbursement to hospitals, ambiguities in the benefits of the scheme, etc. are some of the issues still persisting as constraints in achieving the desired objectives of RSBY-CHIS.

Sinha (2018) analysed the insurance instruments and health service utilization in India especially by the poorest quintiles of the population using NSSO Consumer Expenditure Survey data for the year 2007-08 and 2011-12. The analysis shows that the proportion of non-institutional medical expenditure is very high in both the reference years. The study revealed that there is no increase in institutional health care utilization even after 3-5 years of implementation of RSBY, and that the proportion of non-institutional medical expenses continues to be disproportionately high, with almost the entire amount being borne out of pocket, threatening the household financial stability.

1.2.8. Primary Health Care and Expenditure on Health

The Planning Commission (2001) undertook a study to evaluate the functioning of Primary Health Centres (PHCs) assisted under Social Safety Net Programme (SSNP) and their effectiveness in facilitating institutional deliveries in India. By using a multi-stage sampling design the analysis found that 89 percent of beneficiaries belonging to SSNP assisted PHCs and 96 percent of beneficiaries from non-assisted PHCs have expressed their preference for PHCs for seeking health care services compared to other alternative source of treatment.

Majumder and Upadhyay (2004) examined the primary health care system in India. The study focused on reproductive health care service system which can be assessed with five categories of variables such as availability, accessibility, family characteristics, social structure and quality of care. Quality of care appeared as a crucial determinant of utilisation of services in this analysis. The study points out the acute shortage of doctors and medical staff in rural health care system and this will lead the paramedical personnel to perform crucial task of providing services to the people in rural areas.

Bajpai et.al (2008) estimated the financial and human resourced required to scale up the primary health care services in rural Andhra Pradesh and Karnataka.

Considering the shortage of medical and paramedical staff in the health facilities, there is an urgent requirement of appointing new doctors, health assistants and other paramedical staff at all levels of health facilities. In order to improve the delivery of health services the study suggests supporting community oversight of village-level health services, to carry out frequent supervision of lower level health facilities in rural areas, to introduce accreditation system based on annual or more frequent visits to the health facilities for their infrastructure, human resources and drug and medical supplies.

Baru and Bisht (2010) provided an overview of the inequities in health outcomes and their variation across regional, social and economic groups in India. This study analyses the key drivers of inequities in health services such as weak public provisioning and extensive commercialisation. The study emphasized for a multipronged and comprehensive strategy in order to address inequalities in health. The inequalities in health services would affect the people especially the socio and economically marginalised sections of the society. The study found that health services are a determinant of health status. A radical rearrangement of health services delivery, greater political attention and addressing of socio-economic determinants of health are some of the measures to reduce the inequality in health services in India.

Rakesh et al. (2010) studied the availability of services and facilities at Primary Health Centers in Gujarat. The cross sectional study conducted among 10 randomly selected PHCs of Ahmedabad district in 2006 revealed existence of vacant staff deficits ranging from 11.3% to 30% The study find that there is a necessity for suitable strengthening of these PHCs in line with their envisaged role in health care delivery line with our national guidelines. The continuous availability of good quality curative services satisfies people and motivates the community for preventive and promotive services.

Borooah (2018) examines the health status of the people in India with regards to economic and social status of the people. By using NSSO data during 2004-2014 the study tries to find out the relationship between social gradient to health and health outcomes in terms of age at death and self assessed health status of elderly people. The analysis found that age at death and self assessed health status of elderly people was significantly affected by their living conditions. The predicted age at death was significantly higher for urban households in the 71st round compared to 60th round and there was no significant difference in rural area.

1.2.9. Returns to Expenditure on Health

Wang (2002) examined the determinants of health outcomes using Demographic and Health Survey data from more than 60 low income countries between 1990 and 1999. The study found that public expenditure on health can significantly reduce child mortality. There exist differences in child mortality between rural and urban areas and reduction in child mortality is slow in rural area compared to urban area. Access to electricity and vaccination in the first year of life are the other variables affecting child mortality in this study.

Issa and Ouattara (2005) studied the relationship between health expenditure and health outcome by using dynamic and static panel data tests on data from 160 countries for the period 1980-2000. The study analysed the relative importance of public and private health expenditure on infant mortality rates at different development levels. The result of Ordinary Least Square (OLS) estimate shows a negative relation between health expenditure and infant mortality rates. The study argued that public expenditure on health is more effective during the early stages of development than private expenditure, while when a country develops private expenditure on health is more effective than public expenditure.

Anyanwu (2007) studied the relationship between health expenditure and health outcomes in 47 African countries between 1999 and 2004. The study detected that health expenditure have a significant effect on health outcomes in terms of infant mortality and under-five mortality. By using a robust OLS model the study noticed HIV prevalence and ethno linguistic fractionalization positively and significantly affect health outcomes. The study holds the view that health expenditure can be more effective in African countries in achieving the Millennium Development Goals target for health.

Farahani (2010) tries to estimate the effect of state-level public health spending on mortality across all age groups in India using second National Family Health Survey (NFHS). By using a multilevel probit model the study find that a 10% public spending on health in India decreased the average probability of death by 2% with effects mainly on the elderly, the young and women. Rural residence, poverty of households and access to toilet facilities are some of the factors contributed to mortality.

Maruthappu (2015) analysed the association between reductions in government health care spending and child mortality rates in high and low income countries between 1981 and 2010. The study incorporated comparative country level data of 176 countries from the World Bank and Institute for Health Metrics and Evaluation. By using multivariate regression analysis the study found that there exist significant increases in child mortality with the reduction in government health care spending among these countries. Compared to high income countries, low income countries experienced greater deterioration in child mortality.

Kulkarni (2016) examined the relationship between health expenditure and health outcomes in BRICS nations from 1995-2010. This study is based on panel data regression with fixed effects model using data from the World Health Organisation and World Bank databases. The study found a positive association between health outcome and the per-capita GDP, adult literacy rate and out-of-pocket expenditure. The study found that higher the public health expenditure lower the health outcomes in terms of IMR. The study also found that a negative relationship between age dependency relation and health production. Here health can be categorized as a quasi-public good. The study points out that the increase in public health expenditure is not sufficient to achieve the desired improvements in health outcomes.

Barenberg et.al. (2017) studied the impact of public health expenditure on infant mortality rate employing a pane dataset of Indian states between 1983-84 and 2011-12. The study finds out that there is a negative relationship between public health expenditure and infant mortality rate in India. The study shows that one percent increase in public health expenditure by state level net domestic product is associated with a reduction in the infant mortality rate by about nine infant deaths per 1000 live births. Other relevant covariates like political competition, urbanisation and female literacy reduce the infant mortality rate.

Rahman (2018) examined the nexus between health care expenditure and health outcomes in SAARC and ASEAN region by using World Bank datasets of 15 countries between 1995 and 2014. The study used fixed and random effects model to find out the effects of health care on health outcomes in relation to life expectancy at birth, crude death rate and infant mortality rate. The study found that private health care expenditure had a significant effect in reducing the crude death rate but public health expenditure exhibited the opposite result. Total health expenditure had a significant effect in reducing in infant mortality rate and extent of effect of private

health expenditure was greater than that of public health expenditure. The study emphasized transparency, accountability and efficient utilization of public sector health funds.

1.2.10. Morbidity and Expenditure on Health

Krishnaswami (2004) examined the morbidity rates for the various geographical regions of Kerala. There is a comparison of the morbidity rates for acute and chronic ailments for the different sectors (urban and rural and also highland, lowland, and midland within rural). A two-stage sampling design was adopted. For chronic ailments the reference period was 365 days and for acute ailments 15 days. The results show that acute morbidity is higher in the lower age group of 0-14, 45-59 and 60+ and that chronic morbidity is higher in the age group of 60+ and to a lesser extent in the age group 45-59.There is a sex differential within the age 15-44, females tending to have a higher morbidity, both acute as well as chronic. An examination of the acute morbidity figures shows that within the rural, the rate is higher in the low land (68.21) as compared to the high land (54.49) and the midland (54.63). The morbidity rate for chronic ailments in urban areas (68.73) is higher than rural rate (61.71).

Dilip (2007) examined the age pattern in reported morbidity in Kerala and its deviation from the national scenario. The study considered five age groups are such as (1) children (0-9 years), (2) adolescents (10-19 years), (3) prime working ages (20-49 years), (4) late working ages (50-59 years) and (5) elderly (60 years and above). Age-wise analysis clearly showed that a larger population of male than female children was falling sick. Greater vulnerability to illness in women began with the early-working- age group, peaked in the late working ages and diminished in older ages. Reported morbidity and the duration of life lived with a disease is higher in Kerala. Self-reported morbidity was 65% higher than proxy-reported morbidity. The study found that there is significant regional difference across all age groups.

Suryanarayana (2008) took up the issues pertaining to the health sector in Kerala in a larger comparative perspective in the Indian context. The study is based on the NSS 60th round survey. Incidence of morbidity is higher in Kerala compared to India. Incidence of morbidity is higher in the South than in the North Kerala, higher in rural than in urban Kerala, higher among women than men and higher among the poor than among the non-poor. At national level incidences of morbidity is lower in rural

than in urban. It focused on the incidence of morbidity across socio-economic dimensions and their implications for economic policy. In general, the poor depend relatively more on the public sector than on the private for inpatient and outpatient care.

Ghosh and Arokiaswamy (2009) presented evidence on levels, differentials and determinants of morbidity prevalence in India taking the NSSO 52nd and 60th round survey. In this analysis significant gender inequality is observed in morbidity prevalence with females at greater risk of ill health than males. It is observed that prevalence of illness increases with age. The study found that acute ailments are responsible for high morbidity prevalence among the children. The rise in morbidity prevalence among the elderly is due to chronic ailments. The rural-urban differences in reporting illness indicate that health conditions of the rural people are poorer than their urban counterparts. Morbidity and hospitalisation rates are more strongly associated with household expenditure on health.

The study of Navaneetham et al. (2009) is corroborated the paradox of low mortality and high morbidity, which is first brought out by the NSS survey in 1974. This study is based on a community survey conducted in 2004, in three districts of the state namely Thiruvananthapuram, Malappuram and Kannur. There exists significant gender inequality in morbidity. The age pattern of morbidity shows that the prevalence of ailments increases at a faster rate after 35 years of age. Females are more vulnerable to morbidity in the old age than males. The risk of ill-health is significantly higher for illiterates and non-formal literate than persons with higher education even after controlling other covariates. The study found that the probability of ill health for the poor is significantly higher than the rich, controlling other covariates.

Nimisha (2013) analysed the factors that determine morbidity in Kerala. This analysis is based on secondary data for a period 1991 to 2001. The study found that socio-economic factors such as ageing, literacy, per-capita income, health expenditure, health care, infant mortality rate, life expectancy and population determine morbidity in Kerala. There exist an inverse relationship between morbidity and health expenditure in this analysis. The increased government expenditure on health provides more health facilities which have an impact on morbidity in Kerala. The pattern of morbidity in Kerala changed due to the ageing of population. Co-

existence of high level of morbidity with low levels of mortality in the state attracts world attention.

Srinivas and Manjubhashini (2014) examined the morbidity profile among elderly population aged 60 years and above in Visakhapatnam district of Andhra Pradesh by using a community based cross sectional study. The study found that the most common history of previous illness of elderly population was hypertension and diabetes mellitus in both rural and urban area. Diseases of musculoskeletal system, diseases of circulatory system and diseases of eye are some of the diseases most commonly seen among elder population. The study recommended optional physical treatment and special attention and focus for the well being of elderly people.

Paul and Singh (2017) analysed the trend and pattern of self-reported morbidity across states in India using three rounds (52nd, 60th and 71st) of NSSO data. The analysis found an increasing trend of infectious diseases, cardio-vascular diseases and non-communicable diseases during 1995-2014. By using logistic regression model, the study detected sex, place of residence, education, age group, monthly per-capita consumption expenditure, caste, marital status and household size emerged as significant determinants of self-reported morbidity in India. There reported high prevalence of self-reported morbidity among the elderly and females in urban area.

1.2.11. Kerala Model of Health and Expenditure on Health

Kunhikannan and Aravindan (2000) examined the health status and medical expenditure in Kerala during 1987 to 1997. There is a hike in the morbidity rate considering the month July as one of the 'seasons of hospital' in Kerala. The mediflation, rise in medical expenditure, in various socio-economic classes and indebtedness and impoverishment due to the utilisation of health services are evident in Kerala. The ratio of annual per-capita medical expenditure to per-capita income exhibits in an uneven manner across social groups.

In the historical analysis of development of health care facilities in Kerala, Kutty (2000) examined the trend of social sector expenditure by the government. The study revealed that the revenue expenditure is higher than capital expenditure out of the public sector spending. The analysis argued that high literacy rate, increasing income of households and ageing of population with high burden of chronic illness are the determinants of demand for health care in the state. The role and growth of private medical institutions in the health care system of Kerala is immense especially

after mid 1980s. The study argued that the government would take leading role in quality maintenance and setting of standards in health care.

Narayana and Kurup (2000) studied the decentralisation of health care sector in Kerala. The study points out that there are three prominent problems of decentralizing the health care sector which are not adequately addressed. The problems are spill-over effect, role and relevance of a pre-existing body and the minimum level of health care services to be provided by health care institutions. The problem of benefit spill-over arises from the concentration of hospital beds in municipal towns. The study found that proper functioning and accountability of local self government institutions with regard to the provision of health care services through decentralisation would continue to attain accessibility of health care.

Arjunan et al. (2002) advocated the standardization of medical institutions under Health Services Department of Kerala. The study noticed that there is no standard pattern for categorization of medical institutions and unsatisfactory performance of these institutions. There exist no uniformity in service provision, bed strength and staff provision. Moreover there exist gross disparities in the number of institutions in across panchayaths, across municipalities, across taluks and across districts.

Nabae (2003) exposed new challenges in the health care system of Kerala. The author pointed out new challenges such as the fiscal problems of the government due to the sluggish economy, diseases burden of an ageing society, underutilization of public health facilities, raising tendency of household health expenditure due to excessive growth of private medical facilities, lack of regulation over private sector and existence of unsystematic training in private sector. The study suggested three recommendations such as investment in public sector to revitalize the health system, restructure the health system through decentralisation and public-private partnership in health system.

Varatharajan et al. (2004) made an assessment of the performance of primary health centres under decentralised government in Kerala. Panchayaths in Kerala allocated a lower proportion of resources to health than that allocated by the state government prior to decentralisation; while panchayath resources grew at an annual rate of 30.7 % and health resources grew at an annual rate of 7.9 %. The study found that decentralisation brought no significant changes to the health sector in Kerala.

Active panchayath support to primary health centres existed in only a few places, but the result is positive wherever it is present.

George (2005) calls for a rethink on the notion of 'good health at low cost' for Kerala. The analysis is based on NSSO 55th round data. The study found that there exist a substantial increase in the money spend for health by compromising the expenditure on essential items. Individuals at lower level of income spend a disproportionate share of their income for health care. Moreover the limited coverage of public health care facilities and growth of private sector would increase the financial burden of the low income people. The study questioned the quality and cost of health care in Kerala.

Padmaja (2005) analysed the operational efficiency of the primary health centers in providing primary health care to the rural people in Kerala. Performance evaluation of primary health centers is done through the opinion survey collected from the people relating to their awareness, accessibility, acceptability, and availability of the primary health care facilities. The study observed lower and declining rate of utilization of primary health centers because of their poor quality performance. Non-availability of medicines, doctors, treatment, and distance are the major reasons reported by the respondents for not availing any services from primary health center. There is much scope to increase the performance of public health care institution by improving the quality of services provided by them.

Soman (2007) analyses fifty years of primary health care experience of Kerala. During the fifty years (1956-2006) Kerala has made significant gains in health. Most indices of health rank favorably with those of developed, high-income countries. The dramatic decline in mortality and fertility that Kerala witnessed in second half of the 20th century has created new problems for the state. The proportion of aged people exceeds 10% of the population. Rapid changes in lifestyle have contributed to an alarming increase in non-communicable diseases. The study found that the public health machinery of the government has failed to respond to the new challenges either in fine-tuning public health care to meet the present needs or to regulate the exploitative nature of private healthcare. Healthcare has become very expensive and accounts for 30% of the total expenditure of poor households.

Gangadharan (2008) made an attempt to evaluate the changes that occurred in Kerala from 1991 onwards as the consequences of improvements in health. Kerala witnessed a demographical and epidemiological transition. This transition would lead

the problem of ageing and mounting the morbidity load. Pre-liberalisation and post-liberalisation period in the health care system was compared under this study. During post-liberalisation period the health indicators gradually started showing an unfavourable trend in many cases.

Oommen (2008) examined the issues relating to equity and sustainability concerning 'Kerala model of development'. The study points out that a model being tragedy, when it is not sustainable. Poverty and income inequality are hurdles in the way to the sustainability. The failure of trickle down growth paved the way for poverty and income inequality. Social, economic and moral foundations of the Kerala model criticized with this income inequality and poverty.

Thomas and Rajesh (2011) made an attempt to analyse the impact of the initiatives of local self governments to address the health issues in Kerala. The study found that local self governments succeeded in ensuring better household sanitation and drinking water facilities to the people. But local self governments are not address the challenges of nutritional imbalance, old age care, life style diseases and changing morbidity pattern in the state. Decentralisation in Kerala succeeded to an extent in improving the infrastructure of primary and secondary healthcare institutions.

Antony (2012) studied the efficacy of primary health care system in Kerala. The socio-demographic variables among themselves and with the levels of satisfaction of beneficiaries towards services provided at the PHCs. Manpower, infrastructure and behavioral pattern of staff and doctors of the PHCs towards beneficiaries are statistically tested to know whether they are significant or not. The study reveals that the existing infrastructure facilities, manpower and services are inadequate to meet the primary health needs of the community and it has no valid role in the promotion of the health of the people in the area of study.

John (2012) made an assessment of the effectiveness of Panchayath Raj Institutions in the health care system of Kerala with a special reference to impact of duality and role of bureaucracy. The study found that enhanced involvement and role of Panchayath Raj Institutions in the functioning of public health institutions in Kerala had resulted in the substantial improvement in the availability of health services and facilities especially medicines, health personnel and health infrastructure. Panchayath Raj Institutions and health personnel hold joint responsibilities and they share certain responsibilities. This would create dual responsibilities and control system in the health sector.

Nithya (2013) examines effect of neo-liberal policies on health sector in Kerala. The study pointed out that high per-capita health expenditure and the ratio between family expenditure and health expenditure in Kerala adversely affected the marginalised sections of people. Low budgetary allocation in health sector would increase commercialisation of health care sector. The study argued that quality in medical field is another issue in the health sector in Kerala.

Lekshmi et al. (2014) points out the present issues of government hospitals and health care system in Kerala. Lack of bed facilities, lack of equipment, lack of doctors and paramedical staffs and infections due to micro organisms are some of the major issues in government hospitals in Kerala. Patients are forced to utilize private health care facilities due to these issues in government hospitals. Insufficient infrastructure for treatment and rehabilitation are some problems observed in government mental hospitals in Kerala. Proper waste disposal is a threat to the health system in Kerala nowadays.

Mattam (2015) analyses the utilisation of health care facilities and health status of Below Poverty Line (BPL) families in Kerala in the era of economic reforms. The study found that operational inefficiency of government hospitals adversely affects the utilisation of health care facilities by the poor families. The study found that there is a positive relationship between treatment expenditure in government hospitals and debts among BPL families. Changing morbidity pattern and abnormal growth of private sector are the factors that contributed the hike in health care expenditure in Kerala.

Eldose (2018) examined the health care burden and health insurance of unorganized workers in Kerala. The study emphasized the importance of health insurance which will act as an effective instrument to reduce the burden of illness among the workers in unorganized sector. The incidence of catastrophic payment is higher among the workers of construction and manufacturing sector compared to agriculture and service sector. The study found that there is significant difference in the enrolment of RSBY scheme among the workers of various sectors. The study suggested that an enlargement of the number of empanelled hospitals under RSBY/CHIS scheme.

1.3. Statement of the Research Problem and Research Gap

There are various studies which examined the various dimensions of health expenditure. However, most of the studies in this area seldom identified the determinants of household expenditure on health and its policy implications. Further, the studies on health expenditure rarely addressed the disparity of health expenditure. Most importantly, socio-economic problems of households related to health expenditure received inadequate attention. The relationship between health achievements and health spending will be a great concern of the present study. But there is no such comprehensive study related to the determinants of household health expenditure in Kerala and returns from expenditure on health. The study tries to find out the factors which influence expenditure on health and their relative share in determining the expenditure on health. Generally, the spending on health both by the government and households has a good impact on health. The present study tries to find out the relationship between health spending and returns from expenditure on health in India and Kerala. The expenditure on health and its impact on macro economic variables is a matter under consideration. Influence of socio-economic variables on expenditure on health is also a matter of concern.

1.4. Research Questions

Based on this research gap the present study attempts to answer the following research questions.

1. What is the nature of public expenditure on health in India and Kerala?

2. What is the disparity of household expenditure on health in India and Kerala?

3. What are the major determinants of household expenditure on health in Kerala?

4. What are the major disparities of household health expenditure in Thrissur district of Kerala?

1.5. Objectives of the Study

The trend and tendencies of government and household expenditure on health at the national and state level is the core of the present study. The deviation of expenditure on health both by the government and the household and the corresponding burden are considered. The financing of health spending is a major concern for the government and the households. The study focuses the factors that related to the household health expenditure in Kerala. The study analyses the economics of spending on health. The specific objectives of the study are:

1. To analyse the public expenditure on health in India and Kerala.

2. To compare the disparity of household expenditure on health in India and Kerala.

3. To identify the major determinants of household health expenditure in Kerala.

4. To examine the major disparity of household health expenditure in Thrissur district of Kerala.

1.6. Methodology of the Study

The study is both analytical and theoretical in nature. The present study collected data both from primary and secondary sources. The secondary data were collected from Economic Reviews (various years) of the State Planning Board, Census Reports, Reports of the Directorate of Economics and Statistics, RBI Database, Economic Surveys, Human Development Reports, Sample Registration System Reports, National Family Health Survey Reports and Report of the Directorate of Health Service Trivandrum. Electronic database such as INFLIBNET and Google Scholar were also used. Relevant websites also forms source of secondary information.

In the primary data, both quantitative and qualitative aspects are considered for identifying the determinants of household health expenditure. Hence household is considered as the basic unit of analysis for analyzing the determinants of annual household health expenditure. The primary data analysis is based on cross section data collected through a household survey conducted among 336 households from rural and urban areas with the support of a structured questionnaire. The primary data collected information on socio, economic and demographic characteristics of the households, disease pattern, utilisation of health care facilities by type and level of care, health and non-health expenditure of the households and financing mechanism of household health expenditure and constraints faced by the households in relation to health care. A comprehensive and structured questionnaire was prepared for the collection of primary data. Here the study adopted the framework outlined by NSSO for its 71st and 75th rounds. The details of collection of primary data are presented in the forthcoming chapter.

Various statistical tools are used to analyse data. Annual Growth Rate (AGR), Compound Annual Growth rate (CAGR), percentage change, percentage, average etc. are some of the statistical tools used in this study. Simple and multiple regression analysis for linear and logarithmic equations are used to identify the determinants and

outcomes of health expenditure. χ^2 test and omnibus test are applied to test the statistical significant difference when comparing variables. Graphs and charts are used for presentation of data. Excel and SPSS are applied for statistical analysis.

A pilot survey has conducted to check the suitability of questionnaire. The questionnaire was testes on 25 households. The data was analysed. Based on this experience some modifications were made. The questionnaire contains three segments. First segment contains the general information of the respondents. The second segment carries questions related to socio economic characteristics of the households. The third section deals with the diseases pattern, expenditure on health and financing of expenditure on health.

1.7. Major Concepts of the Study

1. **Household Health Expenditure**: Household health expenditures are either direct expenditures (out-of-pocket payments) or indirect expenditures (Prepayments as health insurance contributions or premiums).
2. **Out-of-Pocket Expenditure**: It shows the direct burden of medical costs that households bear at the time of availing healthcare service. Out-of-Pocket Expenditures are expenditures directly made by households at the point of receiving healthcare.
3. **Public expenditure on health**: It constitutes spending under all schemes funded and managed by Union, State and local governments including quasi-governmental organizations and donors in case funds are channelled through government organizations. It has an important bearing on the health system as low government health expenditures may mean high dependence on household expenditures.
4. **Total Health Expenditure**: Total health expenditure is the sum of current health expenditure and capital health expenditure during the same year.
5. **Capital Expenditure on health**: Capital expenditures include expenditure on building capital assets, renovations and expansion of buildings, purchasing of vehicles, machines, equipment, medical /AYUSH/paramedical education, research and development, training (except on the job trainings) , major repair work, etc.
6. **Current Health expenditure**: It is defined as final consumption expenditure of resident units on healthcare goods and services net capital expenditures. It constitutes only recurrent expenditures for healthcare purpose net all capital expenditures.
7. **Current Health Expenditures as per cent of Total Health Expenditure**: It indicates the operational expenditures on healthcare that impact the health outcomes of the population in that particular year.
8. **General Government Hospital**: It includes medical college hospitals, district hospitals, sub district hospitals and community health centres.
9. **Non- Profit Institutions Serving Households (NPISH):** NPISH are a special type of non-profit organization. NPISH consists of non-profit institutions that provide financial assistance, goods or services to households free or at prices that are not economically significant.
10. **Out-of-Pocket Expenditures as per cent of THE**: This indicates extent of financial protection available for households towards healthcare payments.
11. **Per-capita Total Health Expenditure**: It indicates health expenditure per person in the country.
12. **Preventive Care**: It is defined as having the primary purpose of risk avoidance, of acquiring diseases or suffering injuries, which can frequently involve a direct and active interaction of the consumer with the healthcare system.

13. **Social Security Expenditure on health as per cent of Total Health Expenditure**: Social Security Expenditures include finances allocated by the government towards payment of premiums for union and state Government financed health insurance schemes (RSBY and other state specific health insurance schemes)., employee benefit schemes or any Social Health Insurance scheme expenditures, This indicates extent of pooled funds available for specific categories of population.

14. **Total Health Expenditure as percent of GDP**: Total Health Expenditure as a percentage of GDP indicates health spending relative to the country's economic development.

15. Infant Mortality Rate: It is defined as the infant deaths (less than one year age) per thousand live births in a given period and for a given region.

16. **Birth rate**: It gives the number of live births per thousand population in a given region and year.

17. **Death rate**: It is defined as the number of deaths per thousand population in a given region and time period.

18. **Sex ratio**: It is the number of females per thousand males.

19. **Average household health expenditure Per-Capita**: Average medical and non-medical expenses for hospitalised and non-hospitalised treatment of a person in the last 365 days at any facility.

20. **Average medical expenditure per hospitalized case**: It takes into account all payments made towards treatment of a person during all episodes of hospitalization in the last 365 days at any facility.

21. **Average medical expenditure per non-hospitalized case**: Average medical expenses for non-hospitalized cases takes into account all payments made towards outpatient treatment of a person during the last 15 days at any facility.

1.8. Significance of the Study

The role of health in human capital formation is immense. The increasing tendency of health spending of the people is a great concern today. Both the government and households spent for health care. The government spending on health sector would have a redistribution of income. The investment in health capital would increase the productive capacity of the country. The household spending on health would have influence the expectation of life. Health is a multidimensional concept. The health condition of an individual is different from another. This will also lead the spending on health differently by different persons. The dual burden of diseases (both communicable and non-communicable diseases) mounting the morbidity level especially after the post-liberalisation period.

The study descriptively examined the present status of public expenditure and in comparison with global expenditure on health. The present study analyses the determinants of household health expenditure, various types of disparities and inequity. So it will help to examine the policy gaps and factors that hinder optimum expenditure on health. This study identifies the constraints of household expenditure on health. Hence it is helpful to society, household, policy makers etc. The study examines the returns from the expenditure on health on macroeconomic perspective.

Therefore the findings would be helpful to optimize the resources of the government and the private agencies. This will enhance and optimize the health capital and human capital stock in India as well as in Kerala. It will enhance the health capital in an equitable manner. Moreover, the present study examines income and expenditure. Therefore problem specific policies may be executed.

1.9. Limitations of the Study

The scope of the study is limited to explore the extent of household health expenditure and its various components. The study on household expenditure on health is constrained with non-availability of recent time series data for certain variables related to household expenditure on health. The analysis of secondary data of the present study is based on NSSO survey on consumption expenditure. The analysis on household expenditure on health is limited to a period 1995-96 to 2007-08. The study does not consider the qualitative aspect of expenditure on health such as personal hygiene, social hygiene, health habits of the households, malnutrition etc. The primary data collection is constrained with resources. The present study has focused mainly on the household direct financial expenditure on health. Both institutional and non-institutional expenditure on health are considered. Moreover the study has other limitations such as non-consideration of non-financial returns from expenditure on health and limited explanatory variables. In spite of these limitations, present study is a considerable attempt to recognize the determinants and related aspects of household health expenditure.

1.10. Scheme of the Study

The first chapter includes framework of the study. First chapter describes literature review on various aspects on health and health expenditure, research problems, significance of the study, objectives of the study and methodology of the study. The second chapter analyses the theoretical background of health expenditure. The third chapter describes the characteristics of health expenditure in India. The fourth chapter analyses the disparity of health expenditure in India based on different perspective such as area, gender and so on. The fifth chapter finds out the peculiarities of health expenditure in Kerala. The sixth chapter examines the determinants of health expenditure in India and Kerala. In this chapter the influence of macroeconomic variables on expenditure on health are analysed. The seventh chapter illustrates a

survey based analysis on household health expenditure in Kerala. The last chapter highlights the findings and policy implications of the study.

CHAPTER 2

HEALTH EXPENDITURE AND ECONOMIC DEVELOPMENT: A THEORETICAL FRAMEWORK

2.1. Introduction

Health is a high valued asset and a prerequisite for other activities. Good health is a precondition for success in other activities. Health production can be viewed as an investment that makes for the capital consumption connected with illness, possibly even resulting in a net increase of the capital stock health (Grossman, 1972; Muurinen, 1982; Wagstaff, 1986). Health and health care act as a determinant and consequence of socioeconomic development. Health is a complex adaptive system. Individual inherit an initial amount of health capital stock that depreciates with age and can be increased by investment. Grossman (1972) was the first person to construct a model of the demand for health capital itself and relating a higher preference for health to more educated individuals.

Health occurs when individuals use their biologically given and personally acquired potentials to manage the demands of life in a way that promotes well-being. Health is a dynamic state of well-being emergent from conductive interactions between an individual's potentials, life's demands, and social and environmental determinants (Bircher, 2014). For an individual, health has a double function. On the one hand, perfect health represent a value of its own, a target that needs to be attained as closely as possible. On the other hand, there are other aims in life. In the micro economic approach health serves as an input in the generation of income, which in turn necessary to buy consumer goods (Zweifel, 2009).

2.2. Human Capital and Health

The notion of that health contributes to human capital of an individual and the importance of human capital to productivity has been widely recognized for decades. Health, adequate education, training, migration, and information play a pivotal role in enhancing human capital formation (Schultz, 1961). Among these sources of human capital formation health of the people occupies a major role in molding human capital formation of the country. Improved health has direct and indirect effect on productivity. Healthier populations are more productive (Becker 1980; Bhargava et al., 2001; Bloom, 2003; Jamison, 2005). In addition to the direct effects of improved health there are several indirect channels through which health can affect national income. Increased longevity leads to higher saving rates (Bloom, 2003). Healthy people are more efficient in creating new ideas. Knowledge capital plays a key role in generating technological change, which in turn increases productivity for the economy as a whole.

Health as human capital is a fundamental requirement for economic development. Good health has a positive, sizable, and statistically significant effect on aggregate output. Spending on health has not only for its direct welfare effects but also to boost economic growth (Becker, 1980; Bloom, 2004; Alvi and Ahmed, 2014). There is strong evidence that the educated and healthier workforce contributed the development of a country. In the human capital approach the value of life determined by the contribution the individual could make to the social product (Zweifel, 2009). Health is a choice variable because it is a source of utility and because it determines income or wealth levels.

The human capabilities emphasized the role of human well-being in the process of development of a country. According to Amartya Sen, "the standard of living of a society should not be judged by GNP per-capita and the supply of particular goods but by people's capabilities. The core of human well-being is freedom of choice by enhancing people's capabilities for attaining higher standards of health, knowledge, self-respect the ability to participate actively in community life" (Sen, 1989). Human capital is one of the important factors of economic growth in the modern world. Investment in human capital is inputs in education, health care, skills and other activities which allow people to be more economically efficient. Health as a component of human capital has created an interest in the theoretical and empirical

point of view. The quality of human capital is an important input in the production process along with physical capital and labour. Human capital accumulation could be improved by investing in the population's health (Schultz, 1961; Mushkin 1962; Grossman 1972; Becker 1980).

The causal link from good health to high levels of economic activity is questioned on several grounds (Pritchett and Summers, 1996; Deaton, 2006) because health is multidimensional; and intertemporal and intercountry comparisons are difficult to make. They argued that the relationship between health and income is not positive and linear but positive and concave; indicating diminishing returns and this relationship is not causal but rather is just a correlation.

2.3. Health and Economic Growth

The economic effects of health can be seen both at the individual and macroeconomic levels. There are different difficulties to estimate the magnitude of the health impact. The first and foremost constraint is the measurement of health. Health is measured differently in different studies. There are a wide variety of health measures in microeconomic and macroeconomic studies. The second constraint is causality. Given that income affects health and health affects income, we have to disentangle the two directions of causality. The third constraint deals with timing. There is growing evidence of long-term effects of early childhood health on cognitive and physical development, which affect productivity as an adult. This implies that health effects in the macro economy may have long time lags, making the macroeconomic relationship difficult to estimate. The fourth constraint is the effect of health on the economy i.e. the partial equilibrium and general equilibrium effect (Bloom, 2003).

2.4. Health and National Income

Generally the relationship between health and GDP can be grouped into four categories. The first is the health-led growth hypothesis where an increase in health infrastructure spending promotes the economy. This view is consistent with the Keynesian perspective. The Keynesian frame-work claims that public expenditure is an exogenous factor that influences growth, or public expenditure can be used as a policy measure to generate employment, and boost growth and economic activity. The second view is the growth-led health expenditure which argues that if the economy is doing well, people and the government will have more financial resources to invest in

health infrastructure. This view supports Wagner's law. When the per-capita income of a country increased, the Government would raise public spending. This is popularly known as Wagner's law in which unidirectional causality runs from GDP growth to public expenditure. Wagner's law of "increasing public and state activities" asserts that the role of public expenditure is an endogenous variable in the process of economic growth. The third dominant view is the feedback effect in which both health expenditure and the economic prospects affect each other. This view is sometimes known as the bi-directional perspective. The fourth mentions that there is no causality at all between the two variables (Tsaurai, 2014).

Economic assessment is about choosing between alternative uses of resources. In doing so, both of the costs and the outcomes of investments are considered. The importance of health economics in a world of proportionally increasing scarce resources can be conceived in 3 dimensions. Each dimension describes an important aspect of the analysis: Firstly the design of the analysis which may be of 4 types: cost-minimization, cost-benefit, cost-effectiveness or cost-utility. Secondly different points of view may be taken in the analysis, those of society, the prayer, the provider, or the patient. Thirdly different types of costs and benefits may be included: direct, indirect and intangible (Ferraz, 1995).

2.5. Health and Demand analysis

Both demand and supply of health are uncertain ad irregular by nature (Arrow, 1963). The demand for medical care is derived demand because it depends on the demand for good health. The demand for medical care can be categorised as patient factors and physician factors (Staniszewska, 2005). Patient factors consist of health status, demographic features and economic condition.

Engel's Law has a great implication on population's health because there is a close connection between food and health of the population. The Engel curve shows the relationship between a household expenditure on a particular good and total household expenditure on income. As a household's income increases, the percentage of income spent on food decreases while the proportion spent on other goods increases (Engel, 1857).

Generally goods are classified into luxury and necessary goods depending on the elasticity of demand with respect to income. Goods with income elasticity of demand between zero and one, and above one are called necessary goods, and luxury

goods respectively (Hicks, 1939). Is health care a necessary or luxury commodity? There are contradictory views regarding this question. Some of the studies argued that health is a necessary good (Newhouse, 1977; Gbesemete & Gerdtham, 1992; Hitiris & Posnett, 1992; Wilson, 1995; Kiymaz, 2006), while other studies reported that health is a necessary good (Font and Novell, 2007; Xu and Sakesena, 2011). A good that is a necessary for the rich can be a luxury for the poor. The concept of necessary or luxury goods can be applicable to individual or household level and not to nations as a whole.

Fundamentally the quantity of health demanded should be negatively correlated with its shadow price. The shadow price of health rises with age if the rate of depreciation on the stock of health rises over the life cycle and falls with education if more educated people are more efficient producers of health. Under certain conditions, an increase in the shadow price may simultaneously reduce the quantity of health demanded and increase the quantities of health inputs demanded (Grossman, 1972).

2.6. Health and Externalities

The goods which are non-excludable and non-rival in consumption are termed as public goods. Generally public goods are provided by the governments which have positive and negative externalities (Cornes and Sandler, 1986). It is a question whether health care a public good? Some characteristics of healthcare make it as a public good. Healthcare also has externalities based on marginal social benefit and marginal private benefit. In the health care sector the effect may be positive in the case of immunisation and medical research which provides improved health and reduces absenteeism and creates high standard of living. The effect may be negative in the case of pollution of environment from hospital waste and also of medical research. The positive externalities are often associated with the free rider problem. For example through vaccination the risk of concerned diseases can be reduced for whole of the society and this lead to the welfare of the society. This phenomenon is a free-rider problem, in which one party benefits from an activity paid by others.

2.7. Information Asymmetry Problem

The concept of quality and uncertainty leads to information asymmetry in the market (Stigler, 1961; Akerlof, 1970; Spense, 1973). Information asymmetry exists in almost all markets. There is a higher level of information asymmetry in health care.

Patients don't know the service to be demanded. The service to be provided is decided by the provider of medical care. The complexity of market boosts the enormity of principal-agent problem (Ross, 1973; Stiglitz, 1989). There can be a lot of cheating if health care is provided solely by profit-oriented service providers (Gardner and Gardner, 2001).

2.8. Health and Environment

Social well-being is an important aspect in the concept of health as per WHO definition on health. Among the factors of social well-being the role of environment is highly influential (Assadzadeh et al., 2014; Chaabouni and Saidi, 2017). The nexus between health and environment is crucial nowadays. The environment impacts human health in reflective ways. The environmental determinant of health and expenditure on health is highly associated (Hao et al., 2018; Chen and Chen, 2020). Pollution raises diseases severity and causes a hike in expenditure on health. Environment pollution affects expenditure on health positively (Jerrett et al., 2003; Narayan and Narayan, 2008).

2.9. Equity and Health

Healthy individuals are expected to contribute to production more than a sick person and increase productivity. The burden of diseases and poor state of human capital is a major challenge to economic growth and development. The health status of a country's population is considered to be a crucial factor in the economic development of any country today. The poor are often caught in a vicious circle with poverty leading to ill-health. The causality between poverty and ill-health runs in both directions. Poverty exacerbates ill-health and ill-health diminishes labour productivity which results in diminishing opportunities. This relationship paves the proposition as "a country is poor because it is poor" (Nurkse, 1966). Health is not only a consumption good that adds to wellbeing, but also an investment good that increases the future productive power of individuals and the economy (Bloom, 2003). Health has a direct effect on the productivity of workers. Health is a key component of an individual's welfare and standard of living. Sickness and ill health, and the risk of death, are central issues in shaping human capabilities and behaviour.

2.10. Saving and Health

There is a close connection between health and saving. Poor health affects the ability to save and the impetus to save. Sickness can aggravate the burden of

individual due to large out-of-pocket medical expenses that reduce current and accumulated household savings. Absence of insurance throws families into poverty. Healthier individuals are more productive in relative to those who are ill, thus enabling them to generate more output (Bloom, 2000). Higher savings lead to higher investment, which in turn leads to higher economic growth (Solow, 1956; Romer, 1989). Household savings can take the form of investments in assets that directly affect productivity. Health can affect economic growth through its impact on human and physical capital accumulation. In this way, health plays an important role in the process of economic growth through its impact on physical capital accumulation (Jack and Lewis, 2009).

Health and spending on healthcare are highly associated with economic growth. Macro economic variables such as GDP, per-capita income and population growth are highly influential on the spending on health care. Health and expenditure on health is also associated with micro economic variables. Economic analysis of health and expenditure on health has implications to the individual and the economy.

CHAPTER 3

EXPENDITURE ON HEALTH IN INDIA: AN EMPIRICAL INVESTIGATION

3.1. Introduction

The foremost goal of a health system is to enhance health of the population in an equitable and efficient manner. For this goal, policies should be designed to ensure people's access and use of good quality health services when needed, without suffering from financial hardship. When households pay directly out of their pockets for the services they use, they are at greater risk of financial hardship (Joe and Mishra, 2009; Ravi, 2016). The need to pay high out-of-pockets expenditure creates a financial barrier to accessing health services, with a probable greater impact on the poor (Ghosh, 2010; Leone et al. 2013). Low public spending on health certainly contributes to this situation. This situation affects the poorest segment of society in particular, preventing many from accessing services due to financial barriers or leading to impoverishment. Health is generally viewed as a fundamental human right, and access to health care should not be determined merely by income or wealth (WHO, 2017).

3.2. Global Public Expenditure on Health

The spending on health care may be of public expenditure as well as private expenditure which measure a country's final consumption of health care goods and services plus capital investments in health care infrastructure. The public and private expenditure of different countries follow different path at different level of economic development. The distribution of global expenditure on health is highly unequal and health sector continues to expend faster than growth of the economy. The reports of WHO 2019, pointed out that global public expenditure on health grew at an annual

growth of 4.3 percent between 2000 and 2017. Public expenditure on health constituted about 60 percent of global spending on health during 2017. The global public expenditure on health grew faster than other sources of health expenditure. There exist enormous variations in spending on health among countries of similar income. The report of WHO 2019, pointed out that in low income countries expenditure on health grew at an annual growth rate of 7.8 percent, middle income countries grew at annual growth rate of more than 6 percent and high income countries grew at annual growth rate of 3.5 percent between 2000 and 2017.

Table 3.1

Public Expenditure on Health in the World

Countries	General Govt. Health Expenditure as percentage of Current Health Expenditure		Countries	General Govt. Health Expenditure as percentage of Current Health Expenditure	
	2000	2017		2000	2017
Qatar	60	81	China	22	57
UK	82	79	South Africa	37	54
Turkey	62	78	Malaysia	40	52
Germany	78	78	Mexico	45	52
France	79	77	Iran	38	51
New Zealand	74	75	US	44	50
Italy	73	74	Indonesia	29	48
Canada	73	74	Sri Lanka	54	43
Argentina	55	72	Brazil	42	42
Austria	74	72	Egypt	35	33
UAE	69	72	Pakistan	35	32
Maldives	33	71	Switzerland	28	30
Australia	68	69	India	21	27

Source: World Health Organization, Global Health Expenditure Database, 2020

Global public expenditure on health out of total global expenditure on health increased from 56 percent in 2000 to 60 percent in 2017 (Table 3.1). The global health expenditure on health in real terms grew with an annual growth rate of 3.9 percent while the economy grew with an annual growth rate of 3.0 percent between 2000 and 2017. Average expenditure on health was only US$ 41 for a person in low income countries and US$ 2937 for a person in high income countries during 2017. Hence it is undoubtedly said that distribution of global expenditure on health is highly unequal (WHO, 2019).

Table 3.1 shows the public expenditure on health among various countries during 2000 and 2017. The share of general government (both centre and state) expenditure on health out of current health expenditure on health varies differently among different countries for the period 2000 and 2017. Government expenditure on health is high in case of UK, France, and Germany and less in the case of India and

China during 2000. In 2017 the government expenditure on health is high in the case of Qatar, UK, and Germany. Rich countries spend more on health care but there exist large variation among countries with similar income. The share of government expenditure on health in India increased from 21 percent to 27 percent whereas the share of China increased from 22 percent to 57 percent in 2017. When compared to other countries the share of government spending on health care is low in India during 2017. Higher share of government in total spending on health tend to go with lower catastrophic spending on health care for countries making the health financing transition (WHO, 2019).

Table 3.2

Public Expenditure on Health as Percentage of GDP

Countries	General Govt. Health Expenditure as percentage of GDP		Countries	General Govt. Health Expenditure as percentage of GDP	
	2000	2017		2000	2017
Germany	8	9	South Africa	3	4
France	8	9	Maldives	3	6
Austria	7	8	Sri Lanka	2	2
Canada	6	8	Mexico	2	3
New Zealand	6	7	Iran	2	4
U.S	6	9	Egypt	2	2
Italy	6	7	UAE	2	2
Netherlands	5	7	Qatar	1	2
Australia	5	6	Malaysia	1	2
U.K	5	8	Pakistan	1	1
Argentina	5	7	China	1	3
Brazil	3	4	India	1	1

Source: World Health Organization, Global Health Expenditure Database, 2020

Public expenditure on health can be easily analyzed with the support of GDP. Government expenditure on health as a percentage of GDP differs from country to country for different time periods. Between 2000 and 2017 global expenditure on health in real terms increased by an Annual Growth Rate (AGR) of 3.9 percent while global GDP increased by 3 percent. The health sector continues to expand faster than the rest of the economy (WHO, 2019). Spending on health is increasing faster than that of GDP. Germany, France, Austria and U.S pay out more for the health sector from GDP. The share of GDP for health sector by the government is meager in the case of India and Pakistan and it hang around 1 percent of GDP. As per World Health Organization report in 2020 there is marginal change in the share of GDP to the health sector in the case of India during 2000 and 2017. Health is given low priority during the resource allocation process of the government and government's failure is private

sector's success (Varatharajan, 2004). It would admirable to increase the share of GDP to the health sector.

3.3. Global Household Expenditure on Health

Private expenditure on health includes out-of-pocket expenditure and voluntary prepayment on health insurance of the households. Out-of-pocket expenditures are the payments made directly by individuals at the point of service where the entire cost of the health good or service is not covered under any financial protection scheme. There exist variations among countries on health spending. The public expenditure on health is more in the case of Qatar and U.K and less in the case of India and Pakistan. In India, 73 percent of health spending consists of private expenditure. Major share of health spending is done by the individual himself (Ladusingh and Pandey, 2013; Sinha et al., 2016). Household spending on health is the major component in the private expenditure on health. Private expenditure on health consists of individual out-of-pocket spending and voluntary prepayment. The out-of-pocket spending on health care creates inequality in the distribution of income (Flores et al., 2008; Garg and Karan, 2009 and Joe and Mishra, 2009).

Table 3.3

Out-of-Pocket Spending on Health in the World

Countries	Out-of-pocket spending as percentage of current health expenditure		Countries	Out-of-pocket spending as percentage of current health expenditure	
	2000	2017		2000	2017
South Africa	15	8	Maldives	63	21
France	7	9	Italy	26	23
Qatar	30	9	Brazil	37	27
US	15	11	Switzerland	34	29
Netherlands	11	11	Malaysia	41	34
Germany	12	13	Indonesia	44	35
Canada	17	14	China	60	36
New Zealand	15	14	Mexico	52	41
Argentina	29	15	Iran	60	42
UK	12	16	Sri Lanka	40	50
Turkey	29	17	Nepal	56	58
Australia	21	18	Egypt	62	60
Austria	18	19	Pakistan	62	60
UAE	22	19	India	72	62

Source: World Health Organization, Global Health Expenditure Database, 2020

It is clear from the Table 3.3 that out-of-pocket spending on health care varies from country to country. Both the increasing and decreasing trend can be visible in the case of out-of-pocket spending between countries. The out-of-pocket spending is low in the case of South Africa and France and high in India and Pakistan during

2017. The out-of-pocket spending is high in India during 2000 (72 percent of current health expenditure) compared to 2017 (WHO, 2019).

The high out-of-pocket expenses means high burden of individuals for health care. The high out of pocket medical expenses pushed the people into impoverishment and aggravated the problem of inequality (Ladusingh and Pandey, 2013). Low out-of pocket expenditure means low spending by the individual and high dependence on government spending and voluntary prepayments. Between 2000 and 2017 the rate of increasing in out-of-pocket expenditure per-capita globally is slower than that of government expenditure on health (WHO, 2019). Out-of-pocket expenditure continues a major component of health expenditure in India (Berman et al., 2010; Ghosh, 2010). There is an encouraging trend of reduction in out-pocket expenditure from 72 percent in 2000 to 62 percent in 2017. Hence it is indispensable to analyse the trend and pattern of public and private expenditure on health in India.

3.4. Expenditure on Health in India

The existence of federal health care policy, fragmentation of health care spending between government and households, severe information asymmetry between the providers and patients, multiple levels of care in the public sector (Sub-Centers, PHCs, Community Health Centers, Hospitals, District Hospital, Medical Colleges and Super Speciality Tertiary Centers) and in the private sector (corporate hospitals, stand alone hospitals, nursing homes, clinics, informal providers and chemist) are some of the peculiarities of Indian health care system (NITI Aayog, 2019).

Total health expenditure in India by source is classified into two main heads: public and private. The public health spending is supply driven whereas the private health spending is demand driven. There are external sources of funding apart from these internal sources. First we analyse the public expenditure on health in India.

3.4.1. Public Expenditure on Health in India

In order to achieve its full development potential, India has to ensure a better health status of its citizens. The Government is committed to provide healthcare to the people of India through various national health programs, state specific health schemes and programs, centres of excellence, public hospitals (District Hospitals, Sub District Hospitals, Community Health Centres, etc.), speciality and super speciality hospitals, ambulatory healthcare centres, outreach camps, imparting medical and

paramedical education, conducting research and development activities, and so on. These health programs and activities are governed by Ministry of Health and Family Welfare (MoHFW), other Union Ministries (Ministry of Labour and Employment, Ministry of Minority Affairs, etc.), Department of Health and Family Welfare (DoHFW) in different States and Union Territories, Urban and Rural Local Bodies, Employee State Insurance Corporation (ESIC) and (National Health System Resource Centre, 2016).

Table 3.4

Revenue Expenditure for Medical and Public Health & Family Welfare in India

Year	Medical and Public Health (₹Lakh)	Percentage Change	Family Welfare (₹Lakh)	Percentage Change
1995-96	664565	0.0	163927	0.0
1996-97	765952	15.3	155379	-5.2
1997-98	871614	13.8	172984	11.3
1998-99	1051142	20.6	185758	7.4
1999-00	1180463	12.3	210208	13.2
2000-01	1262728	7.0	233916	11.3
2001-02	1294287	2.5	246639	5.4
2002-03	1344334	3.9	237474	-3.7
2003-04	1412107	5.0	247339	4.2
2000-05	1523050	7.9	252985	2.3
2005-06	1754214	15.2	276340	9.2
2006-07	1916177	9.2	304328	10.1
2007-08	2189479	14.3	355701	16.9
2008-09	2616080	19.5	448789	26.2
2009-10	3261150	24.7	568966	26.8
2010-11	3812821	16.9	676545	18.9
2011-12	4394524	15.3	758373	12.1
2012-13	5064095	15.2	952604	25.6
2013-14	5638914	11.4	1013976	6.4
2014-15	7059539	25.2	1511025	49.0
2015-16	8100890	14.8	1646190	8.9
2016-17	9345750	15.4	1801400	9.4
2017-18	11219360	20.0	2052840	14.0
2018-19	13668150	21.8	2522620	22.9
2019-20	14620390	7.0	2803080	11.1
CAGR		13.16		12.02

Source: State Finances: A Study of Budgets, 2020, RBI

In India, the public expenditure on health is allocated under three heads such as medical expenditure, public health expenditure and family welfare expenditure. Medical & Public Health under the Department of Health deals with healthcare, including awareness campaigns, immunization campaigns, preventive medicine and public health. The department of Family Welfare is responsible for aspects relating to family welfare, especially relating to reproductive health, maternal health, paediatrics,

information, education and communication; cooperation with NGOs and international aid groups; and rural health services.

Revenue expenditure in India for Medical and Public Health and Family Welfare from 1995-96 to 2019-20 is presented in Table 3.4. In 1995-96 revenue expenditure was ₹664565 lakh and ₹163927 lakh for Medical and Public Health and Family Welfare respectively. The revenue expenditure escalated to ₹14620390 lakh and ₹2803080 lakh for Medical and Public health and Family Welfare respectively during 2019-20. It is found that the Compound Annual Growth Rate (CAGR) was more in the case of revenue expenditure for Medical and Public Health (13.16 percent) than Family Welfare (12.02 percent). The percentage change in revenue expenditure was high during 2014-15 for both Medical and Public Health and Family Welfare. The percentage change in revenue expenditure was low during 2001-02 for Medical and Public Health. During 1996-97 and 2002-03 the percentage change in revenue expenditure for Family Welfare becomes negative. Generally revenue expenditure for Medical and Public Health is higher than Family Welfare.

Government intervention to health sector is common fact in the worldwide. Governments not only spend money on health but also they use different intervention forms such as regulations and public provisions to intervene health care system of the country. The government has influence on health sector by altering the amount of public money on health care or changing its social welfare system or regulating private health sector. Government can improve the social welfare of their citizens via to change in composition and direction of public expenditure. It is necessary to examine the total allocation to the health sector from the income of the country.

Capital Expenditure for Medical and Public Health and Family Welfare in India from 1995-96 to 2019-20 is presented in Table 3.5. In 1995-96, capital expenditure for Medical and Public health was ₹30195 lakh and for Family Welfare capital expenditure was ₹3507 lakh and in 2019-20 the expenditure was ₹2188710 lakh and ₹53760 lakh for Medical and Public health and Family Welfare respectively. When considering capital account the CAGR was 18.68 percent and 11.53 percent for Medical and Public Health and Family Welfare respectively. During 2000-01 and 2017-18 the annual growth rate in revenue expenditure for Medical and Public health becomes negative. The annual growth rate in revenue expenditure for Family Welfare shows a lowest negative rate during 2010-11. Generally in India capital expenditure for Medical and Public Health is higher than Family Welfare during 1995-96 to 2019-

20. Preventive and curative health care services are come under Medical and Public Health.

Table 3.5

Capital Expenditure for Medical and Public Health & Family Welfare in India

Year	Medical and Public Health(₹Lakh)	Annual Growth Rate	Family Welfare(₹Lakh)	Annual Growth Rate
1995-96	30195	0.00	3507	0.00
1996-97	32987	8.46	3759	6.70
1997-98	45111	26.88	6508	42.24
1998-99	48187	6.38	4476	-45.40
1999-00	66871	27.94	2663	-68.08
2000-01	60413	-10.69	4188	36.41
2001-02	60452	0.06	3410	-22.82
2002-03	62292	2.95	1031	-230.75
2003-04	91699	32.07	1841	44.00
2000-05	100808	9.04	319	-477.12
2005-06	172200	41.46	368	13.32
2006-07	313482	45.07	3485	89.44
2007-08	341541	8.22	4049	13.93
2008-09	363190	5.96	7258	44.21
2009-10	392872	7.56	10521	31.01
2010-11	423687	7.27	878	-1098.29
2011-12	500676	15.38	7334	88.03
2012-13	607302	17.56	6099	-20.25
2013-14	762347	20.34	25161	75.76
2014-15	1051506	27.50	31360	19.77
2015-16	1232570	14.69	28070	-11.72
2016-17	1359020	9.30	12740	-120.33
2017-18	1327400	-2.38	38660	67.05
2018-19	1921190	30.91	59390	34.90
2019-20	2188710	12.22	53760	-10.47
CAGR		18.68		11.53

Source: State Finances: A Study of Budgets, 2020, RBI

Revenue expenditure on health is recurring in nature which is for the normal functioning of the government in the health sector.

Figure 3.1
Percentage Share of Revenue & Capital Expenditure on Health in India
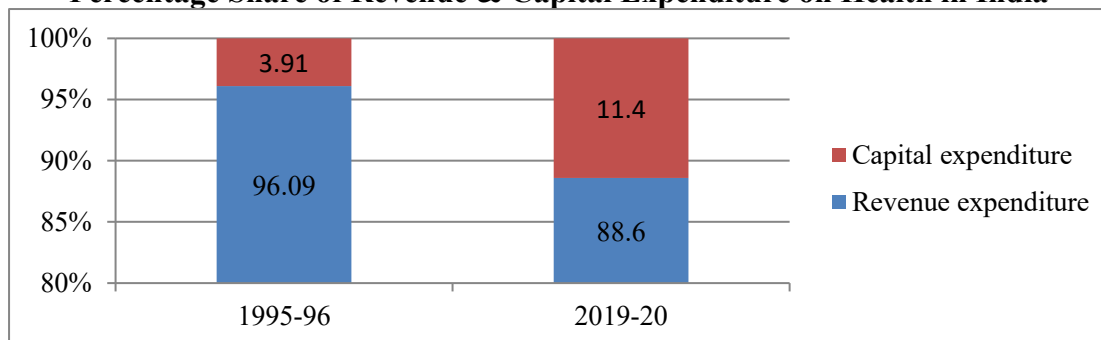
Source: State Finances: A Study of Budgets, 2020, RBI.

Capital expenditure on health adds to the capital stock in the health sector and non-recurring in nature

It is clear from the Figure 3.1 that the share of revenue expenditure on health in India decreased from 96.09 percent during 1995-96 to 88.6 percent during 2019-20 and the share of capital expenditure on health increased from 3.91 percent during 1995-96 to 11.4 percent during 2019-20. It is clear from the Table 3.6 (a) that the revenue expenditure on health is greater than the capital expenditure in its money terms. When considering the CAGR, it is more in the case of capital expenditure (18.28 percent) than revenue expenditure (12.25 percent) for the period 1995-96 to 2019-20.

Table 3.6 (a)
Revenue & Capital Expenditure on Health in India (₹ Lakh)

Year	Revenue Expenditure on Health	Percentage Change	Capital Expenditure on Health	Percentage Change
1995-96	828492	0.0	33702	0.0
1996-97	921331	11.21	36746	9.03
1997-98	1044598	13.38	51619	40.48
1998-99	1236900	18.41	52663	2.02
1999-00	1390671	12.43	69534	32.04
2000-01	1496644	7.62	64601	-7.09
2001-02	1540926	2.96	63862	-1.14
2002-03	1581808	2.65	63323	-0.84
2003-04	1659446	4.91	93540	47.72
2000-05	1776035	7.03	101127	8.11
2005-06	2030554	14.33	172568	70.64
2006-07	2220505	9.35	316967	83.68
2007-08	2545180	14.62	345590	9.03
2008-09	3064869	20.42	370448	7.19
2009-10	3830116	24.97	403393	8.89
2010-11	4489366	17.21	424565	5.25
2011-12	5152897	14.78	508010	19.65
2012-13	6016699	16.76	613401	20.75
2013-14	6652890	10.57	787508	28.38
2014-15	8570564	28.82	1082866	37.51
2015-16	9747080	13.73	1260640	16.42
2016-17	11147150	14.36	1371760	8.81
2017-18	13272200	19.06	1366060	-0.42
2018-19	16190770	21.99	1980580	44.98
2019-20	17423470	7.61	2242470	13.22
CAGR		12.95		18.28

Source: State Finances: A Study of Budgets, RBI, Various Years

Revenue expenditure on health expanded from ₹828492 lakh to ₹17423470 lakh and capital expenditure from ₹33702 lakh to ₹2242470 lakh for the period 1995-96 to 2019-20. Percentage change in revenue expenditure on health is always positive from 1995-96 to 2019-20 which shows the increasing nature of public expenditure on

health in India. It is evident from Table 3.6 (a) that the percentage change in capital expenditure on health shows a negative trend.

It is clear from the Table 3.6 (b) that the percentage change in expenditure on health (total of revenue and capital expenditure on health) from 1995-96 to 2019-20 varies differently and it is highest during 2014-15 and lowest during 2002-03. Percentage change in expenditure on health (total of revenue and capital expenditure on health) shows a diminishing trend after 1999-2000 especially during 2002-03. Total of revenue and capital expenditure on health shows a CAGR of 13.32 percent during the period from 1995-96 to 2019-20. Expenditure on health (total of revenue and capital expenditure on health) in India increased from ₹862194 lakh during 1995-96 to ₹19665940 lakh during 2019-20.

Table 3.6 (b)
Revenue & Capital Expenditure on Health in India (₹ Lakh)

Year	Total of Revenue and Capital Expenditure on Health	Percentage Change	Year	Total of Revenue and Capital Expenditure on Health	Percentage Change
1995-96	862194	0.0	2008-09	3435317	18.84
1996-97	958077	11.12	2009-10	4233509	23.23
1997-98	1096217	14.42	2010-11	4913931	16.07
1998-99	1289563	17.64	2011-12	5660907	15.20
1999-20	1460205	13.23	2012-13	6630100	17.12
2000-01	1561245	6.92	2013-14	7440398	12.22
2001-02	1604788	2.79	2014-15	9653430	29.74
2002-03	1645131	2.51	2015-16	11007720	14.03
2003-04	1752986	6.56	2016-17	12518910	13.73
2004-05	1877162	7.08	2017-18	14638260	16.93
2005-06	2203122	17.36	2018-19	18171350	24.14
2006-07	2537472	15.18	2019-20	19665940	8.22
2007-08	2890770	13.92	CAGR		13.32

Sources: 1. State Finances: A Study of Budgets, RBI, Various Years
      2. Economic Survey, Various Years

Public expenditure on health (both central and state governments) in India is presented in Table 3.7. Public expenditure on health in India increased from ₹19710.68 crores during 1999-2000 to ₹263158.30 crores during 2019-20 with a CAGR of 13.13 percent. The central government expenditure escalated from ₹5108.63 crores to ₹66498.88 crores and the state government expenditure from ₹19710.68 crores to ₹263158.30 crores for the period 1999-2000 to 2019-20.

The growth rate of centre and state governments expenditure on health in India from 1995-96 to 2019-20 is presented in Table 3.7. The AGR in expenditure on health from 1999-2000 to 2019-20 by central government was maximum (26.36 percent) during 2017-18 and minimum (3.14 percent) during 2012-13. The AGR in state government expenditure on health was maximum (22.92 percent) during 2014-15 and minimum (2.45 percent) during 2002-03.

Table 3.7

Public Expenditure on Health in India (₹ crores)

Year	Central Government	Annual Growth Rate	State Governments	Annual Growth Rate	Total Public Expenditure on Health	Annual Growth Rate
1999-2000	5108.63	0.0	14602.05	0.0	19710.68	0.0
2000-01	5405.15	5.49	15612.45	6.47	21017.60	6.22
2001-02	6122.02	11.71	16047.88	2.71	22169.90	5.20
2002-03	6652.49	7.97	16451.31	2.45	23103.80	4.04
2003-04	7470.08	10.94	17529.86	6.15	24999.94	7.58
2004-05	8679.29	13.93	18771.62	6.62	27450.91	8.93
2005-06	10039.83	13.55	22031.22	14.80	32071.05	14.41
2006-07	11757.74	14.61	25374.72	13.18	37132.46	13.63
2007-08	14974.34	21.48	28907.70	12.22	43882.04	15.38
2008-09	18476.00	18.95	34353.17	15.85	52829.17	16.94
2009-10	21680.00	14.78	42335.09	18.85	64015.09	17.47
2010-11	25055.00	13.47	49139.31	13.85	74194.31	13.72
2011-12	28353.06	11.63	56609.07	13.20	84962.13	12.67
2012-13	29272.56	3.14	66301.00	14.62	95573.56	11.10
2013-14	30847.31	5.10	74403.98	10.89	105251.30	9.19
2014-15	31965.00	3.50	96534.30	22.92	128499.30	18.09
2015-16	35189.53	9.16	110077.20	12.30	145266.70	11.54
2016-17	40241.24	12.55	125189.10	12.07	165430.30	12.19
2017-18	54644.87	26.36	146382.60	14.48	201027.50	17.71
2018-19	57738.00	5.36	181713.50	19.44	239451.50	16.05
2019-20	66498.88	13.17	196659.40	7.60	263158.30	9.01
CAGR		12.99		13.18		13.13

Sources: 1. State Finances: A Study of Budgets, Reserve Bank of India, various years
   2. Budget document, Government of India, various years

The spending on healthcare can be shared by both the central and state governments. The share of Centre and State in total expenditure on health was an average of 29.2 percent and 70.8 percent respectively during the period from 1999-2000 to 2019-20. The share of Centre in total expenditure on health was highest (35 percent) during 2008-09 and lowest (24.1 percent) during 2018-19. The spending of

the central government to the health sector would be an area of concern (Choudhury and Nath, 2012).

Table 3.8

Centre-State Share of Public Expenditure on Health in India

Year	Central Government	State Governments	Year	Central Government	State Governments
1999-2000	25.9	74.1	2010-11	33.8	66.2
2000-01	25.7	74.3	2011-12	33.4	66.6
2001-02	27.6	72.4	2012-13	30.6	69.4
2002-03	28.8	71.2	2013-14	29.3	70.7
2003-04	29.9	70.1	2014-15	24.9	75.1
2004-05	31.6	68.4	2015-16	24.2	75.8
2005-06	31.3	68.7	2016-17	24.3	75.7
2006-07	31.7	68.3	2017-18	27.2	72.8
2007-08	34.1	65.9	2018-19	24.1	75.9
2008-09	35.0	65.0	2019-20	25.3	74.7
2009-10	33.9	66.1	**Mean**	**29.2**	**70.8**

Source: Computed from the Table 3.7

The variations in health expenditure would be due to the differences in regional and health care demand across different states in India.

Figure 3.2

Centre-State Share of Public Expenditure on Health in India
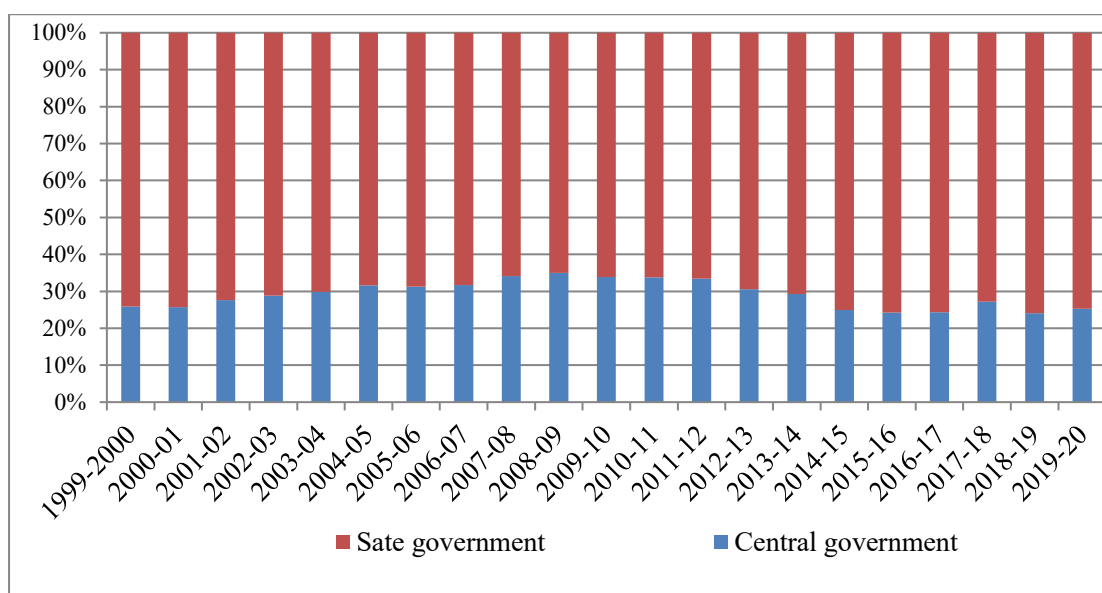
Sources: 1. State Finances: A Study of Budgets, Reserve Bank of India, various years
2. Budget document, Government of India, various years

The budgetary allocation to the health sector in India is less than the required level and declining allocation to the health sector would have detrimental effect on public health delivery (Bhat and Jain, 2004; Varatharajan, 2004). Per-capita public

expenditure on health in India is presented in Table 3.9. It is the average public expenditure per person in a country. It is the average government spending per person for health. Per-capita public expenditure on health in India increased from ₹197 in 1999-2000 to ₹1962 in 2019-20 with a CAGR of 11.57 percent.

Table 3.9

Per-capita Public Expenditure on Health in India

Year	Per-capita Public Expenditure on Health(₹)	Annual Growth Rate	Year	Per-capita Public Expenditure on Health(₹)	Annual Growth Rate
1999-2000	197	0.0	2010-11	626	12.62
2000-01	206	4.37	2011-12	696	10.06
2001-02	213	3.29	2012-13	774	10.08
2002-03	219	2.74	2013-14	841	7.97
2003-04	233	6.01	2014-15	1014	17.06
2004-05	252	7.54	2015-16	1132	10.42
2005-06	290	13.10	2016-17	1274	11.15
2006-07	331	12.39	2017-18	1530	16.73
2007-08	386	14.25	2018-19	1804	15.19
2008-09	458	15.72	2019-20	1962	8.05
2009-10	547	16.27	CAGR		11.57

Source: Computed from the Table 3.7

The annual growth rate in per-capita public expenditure on health shows that there exist variations in growth rate from 2.74 percent in 2002-03 to 17.06 percent in 2014-15 (Table 3.9). The growth rate in per-capita public expenditure on health is positive during the period from 1999-2000 to 2019-20. The budgetary allocation to the health sector in India is low compared to the required level. The poor people would force to use private health care facilities due to the low level of spending of the government in the health sector (Varatharajan, 2004).

3.4.1.1. Public Expenditure on Health and Expenditure on Social Sector

Expenditure on social sector has a profound impact on the quality of the human capital. Improvement in social sector increases the productivity of the economy. Social sector expenditure includes education, healthcare, housing, water supply and sanitation, nutrition, social security and labour welfare by the general government. From the Table 3.10 it is clear the trend of social sector expenditure of general government in India from 2008-09 to 2019-20. Here the expenditure on social services can be sub-divided into education, health and others. The social sector expenditure in India increased from ₹3.80 lakh crore in 2008-09 to ₹60.72 lakh crore

in 2019-20. The expenditure on health out of social sector expenditure increased from ₹0.74 lakh crore during 2008-09 to ₹3.24 lakh crore during 2019-20. The expenditure on education out of social sector expenditure increased from ₹1.62 lakh crore during 2008-09 to ₹6.43 lakh crore during 2019-20. The expenditure on others out of social sector expenditure increased from ₹1.44 lakh crore during 2008-09 to ₹6.12 lakh crore during 2019-20.

Table 3.10

Health Expenditure and Social Sector Expenditure in India (in ₹ lakh crore)

Year	Total Budgetary Expenditure (1)	Expenditure on Social Services (2)=(3)+(4)+(5)	Expenditure on Education (3)	Expenditure on Health (4)	Expenditure on Others (5)
2008-09	15.99	3.80	1.62	0.74	1.44
2009-10	18.52	4.46	1.97	0.88	1.61
2010-11	21.45	5.29	2.44	1.00	1.84
2011-12	24.21	5.80	2.77	1.10	1.93
2012-13	26.95	6.58	3.13	1.26	2.2
2013-14	30.00	7.46	3.48	1.39	2.59
2014-15	32.85	7.68	3.54	1.49	2.65
2015-16	37.61	9.16	3.92	1.75	3.48
2016-17	42.66	10.41	4.35	2.13	3.93
2017-18	45.66	11.40	4.83	2.43	4.13
2018-19	55.17	14.47	5.81	2.92	5.74
2019-20	60.72	15.79	6.43	3.24	6.12

Source: Economic Survey 2019-20, Government of India

The increase in social sector expenditure by the government provides social welfare. The expenditure on education is also in an increasing path. There is a close relation between education and health (Barro, 1996; Cutler and Muney, 2006). Poor health leads to low level of schooling. Health reduces the depreciation rate of human capital. This interconnection has a positive impact on total factor productivity. The growth in social sector expenditure enhances the human capital formation substantially (Alvi and Ahmed, 2014).

3.4.1.2. Five Year Plans and Public Expenditure on Health

For achieving growth, equity, self-reliance and modernization the government allocation through five year plans is significant. Health is an important area of development process. The plan allocation to the health sector in India for different plan period is presented in Table 3.11. Total plan investment outlay increased from ₹1960 in first plan to ₹2156571 in eleventh plan. Out of the total plan investment outlay the total health investment increased from ₹65.3 to ₹140135 for the same time period. Percentage of plan allocation to health sector out of total plan investment

outlay is lowest in the third plan (2.9 percent) and highest in the eleventh plan (6.5 percent). Percentage share of allocation to the health sector was same (3.1 percent) for 2nd, 5th. 6th and 7th five year plans.

Table 3.11

Five Year Plan Outlay for Health Sector in India (in ₹Crores)

Plan	Plan Period	Total plan investment outlay	Total health investment	Percentage of total health investment out of total plan investment outlay
1	1951-56	1960.0	65.3	3.4
2	1956-61	4672.0	145.8	3.1
3	1961-66	8576.5	250.8	2.9
4	1969-74	15778.8	613.5	3.9
5	1974-79	39426.2	1252.6	3.1
6	1980-85	109291.7	3412.2	3.1
7	1985-90	218729.6	6809.4	3.1
8	1992-97	434100.0	14102.2	3.2
9	1997-02	859200.0	35204.9	4.1
10	2002-07	1484131.3	58920.3	4.0
11	2007-12	2156571.0	140135.0	6.5

Source: National Health Profile, GoI, Various Years

Share of allocation to the health sector out of total investment is 4.0 percent during 10th plan and it increased to 6.5 percent in 11th five year plan. Plan allocation to the health sector is a welcoming trend.

3.4.2. Household Expenditure on Health in India

Private health expenditure includes out-of-pocket expenditure incurred by households for availing health care services, health expenditure through insurance mechanism and expenditure by corporate bodies on their employees and families. Household out-of-pocket payment is that expenditure paid by the household or individuals at point of receiving healthcare services. These are net of reimbursements of any nature and include all expenditures on inpatient care, outpatient care, child birth, antenatal care, postnatal care, family planning devices, therapeutic appliances, expenditure on patient's transportation, immunization, over the counter drugs and other medical expenditures (National Health System Resource Centre, 2019).

Household health expenditures are the expenditures incurred by households on health care and includes out-of-pocket expenditures and prepayments. The fund flows directly and indirectly from households to providers of health care services and goods. Generally, the indirect flow of funds occurs where there is an involvement of insurers

who then pay providers for services. In this study the private final consumption expenditure on health estimates of National Account Statistics (NAS) by Central Statistical Organisation (CSO) is treated as the household expenditure on health in India.

Table 3.12

Household Expenditure on Health in India

Year	Household Expenditure on Health in India (₹Crores)	Annual Growth Rate	Year	Household Expenditure on Health in India (₹Crores)	Annual Growth Rate
1985-86	5671	0.0	2003-04	82889	5.65
1986-87	5968	4.98	2004-05	95560	13.26
1987-88	6601	9.59	2005-06	105244	9.20
1988-89	8095	18.46	2006-07	115900	9.19
1989-90	8495	4.71	2007-08	127648	9.20
1990-91	9207	7.73	2008-09	140595	9.21
1991-92	10064	8.52	2009-10	154872	9.22
1992-93	10998	8.49	2010-11	170624	9.23
1993-94	12242	10.16	2011-12	181334	5.91
1994-95	17452	29.85	2012-13	214348	15.40
1995-96	20624	15.38	2013-14	248829	13.86
1996-97	23391	11.83	2014-15	300261	17.13
1997-98	28752	18.65	2015-16	349659	14.13
1998-99	40960	29.80	2016-17	410905	14.91
1999-20	52844	22.49	2017-18	459484	10.57
2000-01	62436	15.36	2018-19	537043	14.44
2001-02	73760	15.35	CAGR		14.32
2002-03	78209	5.69			

Source: National Account Statistics, MOSPI. Various years

It is clear from the Table 3.12 that the household expenditure on health in India increased from ₹5671 crores in 1985-86 to ₹537043 crores in 2018-19 with a CAGR of 14.32 percent. The AGR in household expenditure on health shows a wave like movement with an underneath of 4.71 percent in 1989-90 and a beneath of 29.85 percent in 1994-95. The AGR in household expenditure on health was more or less same for the period from 2005-06 to 2010-11.

Per-capita household expenditure on health in India is presented in Table 3.13. Per-capita household expenditure on health is the average household expenditure per person in a country which can be used to estimate the financial hardship of the individual. It is the average household spending per person for health. Household expenditure on health includes the out-of-pocket payment and voluntary prepayment. Per-capita household expenditure on health includes both the out-of-pocket payment and voluntary prepayment. The per-capita household expenditure on health in India

increased from ₹75 in 1985-86 to ₹4047 in 2018-19 with a CAGR of 12.45 percent. The AGR in per-capita household expenditure on health hit the highest point (28.65 percent) during 1994-95 and dip the lowest point (1.94 percent) during 1989-90. The AGR in per-capita expenditure on health shows high variations especially after 1994-95 and 2011-12.

Table 3.13

Per-capita Household Expenditure on Health in India

Year	Per-capita Household Expenditure on Health in India(₹)	Annual Growth Rate	Year	Per-capita Household Expenditure on Health in India(₹)	Annual Growth Rate
1985-86	75	0.0	2003-04	773	4.14
1986-87	77	2.60	2004-05	878	11.96
1987-88	84	8.33	2005-06	952	7.77
1988-89	101	16.83	2006-07	1033	7.84
1989-90	103	1.94	2007-08	1122	7.93
1990-91	110	6.36	2008-09	1218	7.88
1991-92	118	6.78	2009-10	1324	8.01
1992-93	126	6.35	2010-11	1439	7.99
1993-94	137	8.03	2011-12	1486	3.16
1994-95	192	28.65	2012-13	1736	14.40
1995-96	222	13.51	2013-14	1989	12.72
1996-97	247	10.12	2014-15	2370	16.08
1997-98	298	17.11	2015-16	2725	13.03
1998-99	417	28.54	2016-17	3163	13.85
1999-20	528	21.02	2017-18	3497	9.55
2000-01	613	13.87	2018-19	4047	13.59
2001-02	709	13.54	CAGR	12.45	
2002-03	741	4.32			

Source: National Account Statistics, MOSPI, Various years

Percentage share of household expenditure in total expenditure on health is presented in Table 3.14. Both the public and household expenditure on health constitutes the total health expenditure in a country. The public-household share in total expenditure on health differs from country to country and time to time. The percentage share of household expenditure on health in total expenditure on health (both public and household) decreased from 72.8 percent in 1999-2000 to 69.2 percent in 2018-19 in India. The total expenditure on health (both public and household) in India increased from ₹72554.6 crores during 1999-2000 to ₹776494.5 crores during 2018-19 with a CAGR of 12.58 percent. The AGR in total expenditure on health was far above the ground during 2014-15 with 17.42 percent and near to the ground during 2002-03 with 5.31 percent.

The household spending on health increases the financial hardship of the individuals (Ladusingh and Pandey, 2013; Mohanty and Srivastava, 2013). It is essential to examine the share and magnitude of out-of-pocket payment and voluntary prepayment in household expenditure on health. Household expenditure on health in India includes out-of-pocket payment and health insurance expenditures.

Table 3.14

Total Expenditure on Health in India

Year	Total Expenditure on Health (Public+ Household) (₹Crores)	Annual Growth Rate	Percentage Share Household Health Expenditure in Total Health Expenditure
1999-2000	72554.6	0.0	72.8
2000-01	83453.6	13.06	74.8
2001-02	95929.9	13.01	76.9
2002-03	101312.8	5.31	77.2
2003-04	107888.9	6.10	76.8
2004-05	123010.9	12.29	77.7
2005-06	137315.1	10.42	76.6
2006-07	153032.5	10.27	75.7
2007-08	171530.0	10.78	74.4
2008-09	193424.2	11.32	72.7
2009-10	218887.1	11.63	70.8
2010-11	244818.3	10.59	69.7
2011-12	266296.1	8.07	68.1
2012-13	309921.6	14.08	69.2
2013-14	354080.3	12.47	70.3
2014-15	428760.3	17.42	70.0
2015-16	494925.7	13.37	70.6
2016-17	576335.3	14.13	71.3
2017-18	660511.5	12.74	69.6
2018-19	776494.5	14.94	69.2
CAGR		12.58	

Computed from Table 3.7 and Table 3.12

The trend of household expenditure on Health in India from 1995 to 2014 is clear from the Tables 3.15 (a) and (b). Out-of-pocket expenditure as a percentage of household expenditure on health decreased from 91.36 percent in 1995 to 89.21 percent in 2014. Household expenditure constitutes 67.0 percent of total expenditure on health in 1995 and it falls to 62.0 percent in 2014. It is clear from the Tables 3.15(a) and 3.15(b) that the out-of-pocket expenditure has a diminishing trend in India. But major share of expenditure on health in India is spent by the households. Higher household health expenditure leads higher burden of the households especially the poor and marginalised sections of the society. The disease pattern, age

composition, reproductive and child health care and cost variations in health services are some of the factors contribute to high out-of-pocket spending in India (Joe, 2015; Sinha et al., 2016).

Table 3.15 (a)

Trend of Household Expenditure on Health in India

Year	Household expenditure as % of total expenditure on health	Year	Household expenditure as % of total expenditure on health
1995	67.45	2005	65.90
1996	67.51	2006	65.75
1997	68.71	2007	65.25
1998	68.23	2008	64.39
1999	65.46	2009	63.33
2000	67.86	2010	63.37
2001	70.26	2011	64.43
2002	70.50	2012	64.88
2003	70.61	2013	63.81
2004	67.85	2014	62.42

Source: World Health Statistics 2017, WHO

Health expenditure related impoverishment is reasonably high in India. In India, major share of expenditure on health is spent by the households.

Table 3.15 (b)

Trend of Household Expenditure on Health in India

Year	Out-of pocket expenditure as % of household expenditure on health	Year	Out-of pocket expenditure as % of household expenditure on health
1995	91.36	2005	89.65
1996	91.03	2006	89.03
1997	91.92	2007	88.20
1998	91.84	2008	87.96
1999	91.02	2009	87.84
2000	91.81	2010	86.96
2001	92.41	2011	88.43
2002	91.92	2012	88.85
2003	91.61	2013	89.14
2004	89.55	2014	89.21

Source: World Health Statistics 2017, WHO

In this context it is useful to analyse the health financing schemes in India. Household expenditure on health in India is one of the highest in the world.

3.5. Health Financing Schemes in India

The health financing schemes in India is carried out by Central and State governments and local bodies. Health care financing is a method of accumulating resources which ensure equitable and quality health coverage to the population. A major share of the private health expenditure is borne by the households (NHSRC, 2019). It is a method of accumulating resources to meet the expected and unexpected

expenditure on health. It is a relief to the people to take prepayment on healthcare in the situation of mounting household expenses on healthcare. Every year a large number of households fall below the poverty line because of high household expenses on health care. The Indian households spend a shockingly large proportion of their income on medical care. These medical expenses are a significant reason why households fall into the debt trap.

Table 3.16
Health Expenditures by Healthcare Financing Schemes (%) in India

Financing Scheme	2013-14	2014-15	2015-16
Union Government schemes (Non-Employee)	4.70	5.10	6.70
Union Government schemes (Employee)	1.90	1.90	2.63
State Government schemes (Non-Employee)	10.50	11.20	10.18
State Government schemes (Employee)	0.40	0.48	0.73
Urban local bodies schemes	0.90	0.90	1.41
Rural local bodies schemes	0.70	0.70	0.86
Social health insurance schemes	2.90	2.70	3.08
Employer-based insurance	1.90	2.00	2.73
Government-based voluntary insurance	1.10	1.00	1.43
Other primary coverage schemes	1.70	1.90	2.33
Community-based insurance	0.02	0.02	0.01
Non-Profit Institutions Serving Households (NPISH)	1.60	1.90	1.67
Resident Foreign Agencies Schemes	0.18	0.30	0.28
Enterprises financing schemes	2.40	2.90	2.75
All Household out-of-pocket payment	69.10	67.00	63.21
Total	100	100	100

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, various years

Percentage share of health expenditures in India by healthcare financing schemes during 2013-14, 2014-15 and 2015-16 is presented in Table 3.16. The household out-of-pocket payment is a major factor in the financing schemes in India. State government and Union government schemes to non-employee occupy the first and second position among financing schemes by the government. State government financing schemes have also given due emphasis to providers of primary care who provide a wide range of outpatient care services. Prevention of diseases also seems to be seeking the attention of States. The State governments financing schemes are given to ASHAs, Multipurpose Health Workers, Community Health Workers who actively engage in prevention and control of communicable and non-communicable diseases, provide collective preventive programs and campaigns that benefit large sections of the population.

In India less than 10 percent of the population is covered by formal contributory health insurance and around 60 percent are covered by comprehensive

health insurance. The main state and national level multiple contributory risk schemes are:

1. National level contributory quasi-public single insurers (CGHS, ESIS, Railway health system, armed forces and others

2. National level commercial health insurance schemes under general insurer schemes

3. National Health Mission- a large supply side fully subsidised national scheme co-financed by the union and states

4. State level contributory and non-contributory schemes

5. Rashtriya Swasthya Bima Yojana (RSBY), Pradhan Mantri Jan Arogya Yojana (PM-JAY) – a national demand side subsidised insurance scheme.

Table 3.17

Current Health Expenditure (₹ million) by Financing Schemes in India

Year	Government schemes and compulsory contributory health care financing schemes	Voluntary health care payment schemes	Household out-of-pocket payment	Current health expenditure	
	1	2	3	(1+2+3)	Percent change
2000	198355	50263	629954	878571	-
2001	207572	52465	744208	1004245	14.3
2002	215738	70610	789097	1075445	7.1
2003	225643	77052	836316	1139011	5.9
2004	251910	101157	930003	1283070	12.6
2005	296567	79400	1024249	1400216	9.1
2006	335112	97964	1127955	1561030	11.5
2007	384354	127587	1242288	1754230	12.4
2008	456287	154210	1368290	1978786	12.8
2009	569655	180878	1507236	2257769	14.1
2010	650254	236509	1660293	2547057	12.8
2011	794726	276618	1764768	2836112	11.3
2012	897700	327259	2085753	3310712	16.7
2013	931099	371527	2909317	4211943	27.2
2014	1033854	454758	3024248	4512860	7.1
2015	1226728	472417	3202115	4901260	8.6
2016	1370899	531656	3603645	5523724	12.7

Note: Rest of the world financing schemes (non-resident) includes ₹17523 million included in the year 2016
Source: Global Health Expenditure Database, WHO

The Indian health insurance market is characterized by fragmented, low level risk pooling and shallow benefit packages. Utilising the growing capacities and capabilities of commercial health insurance and related Third Party Administrators (TPAs) is a very guaranteeing short and medium term strategy to grow and develop risk pooling in India (NITI Aayog, 2019).

As per the WHO estimates healthcare financing schemes consists of government healthcare schemes, compulsory and voluntary healthcare payment,

household out-of-pocket payment and the financing schemes by the rest of the world. The trend of healthcare financing schemes from 2000 to 2016 is presented in the Table 3.17. The current health expenditure increased sharply from 2012 to 2013 and the percent increase is lowest in the year 2003. From 2000 to 2016 the percent increase in current health expenditure ranges between 5.9 percent and 27.2 percent. More than 65 percent of the current health expenditure is carried by the household through out-of-pocket payment.

Figure 3.3

Percentage Share of Current Health Expenditure by Financing Schemes in India for 2000 & 2015
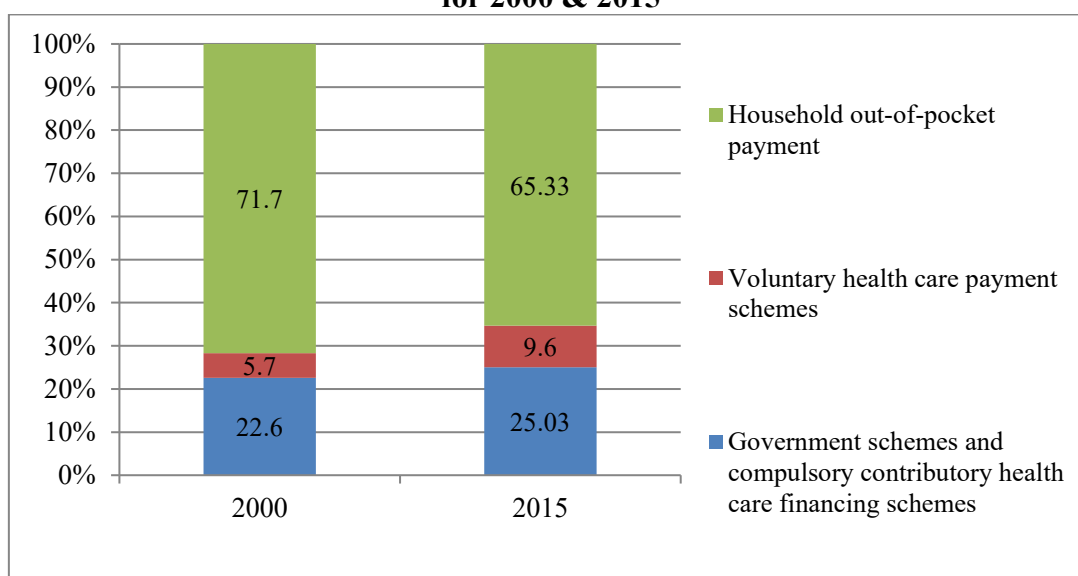
Source: Global Health Expenditure Database, WHO

The percentage share of current health expenditure in India for 2000 and 2015 is shown in the Figure 3.3. Among the financing schemes share of household payment to the current health expenditure diminishes from 71.7 percent in 2000 to 65.33 percent in 2015. The contribution of government schemes and compulsory contributory health care financing schemes to the current health expenditure shows a marginal increase from 22.6 percent to 25.03 percent and voluntary health care payment schemes also shows an increasing share from 5.7 percent to 9.6 percent to the current health expenditure for the same period.

This chapter deals with the health expenditure in India. It throws light on the global spending on health; and the relative position of India with regards to spending on health. The public expenditure on health related to GDP, general government expenditure, revenue and capital account, social sector expenditure and five year plan allocation visualises the clear picture of health spending in India. Public expenditure

on health in India shows an increasing trend. Private expenditure on health is crucial in the analysis of health expenditure in India which accounts more than 65 percent of health spending. Moreover the government policy towards health sector is crucial in the health expenditure analysis. The next chapter analyses the disparity of health expenditure in India.

CHAPTER 4

DISPARITY OF PUBLIC AND HOUSEHOLD EXPENDITURE ON HEALTH IN INDIA: A COMPARATIVE ANALYSIS

4.1. Introduction

Spending money on health leads to an improvement in human capital formation. Spending of the government to the health sector is necessary because good health is a crucial factor in the reduction of poverty and promotion of sustainable economic development. It is clear that the public expenditure on health in India exhibits a rising tendency and household spending on health shows a falling trend (NHSRC, 2019). The total health expenditure in India is captured by inherent and slowly decreasing high out-of-pocket expenditure. It is essential to analyse the state wise expenditure on health in order to confirm the disparity among the states in health spending. The composition of total health expenditure among various states in India and the disparity among these components is considered in this chapter. This chapter analyses how far the disparity exist in India among various states with respect to gender, geographical location and type of hospital and type of care for different time periods. Before analysing the disparity in health spending in India it will be fruitful to examine the disparity of health status of the country firstly.

4.2. Disparity in Health Status of India

The health sector in India faces an epidemiological transition. The epidemiological profile of India witnessed with a high burden of communicable diseases as well as Maternal, Newborn and Child Health (MNCH) related morbidity and mortality. Moreover the strategy for addressing mounting burden of non-communicable diseases is imperative. Prioritising high-impact and cost-effective

interventions in health sector positively contributed the global competitiveness of a country and growth through improvements in labour productivity arising from improvements in health status and human capital investments by the households (NITI Aayog, 2019). The differences in health status among various states in India are presented in Tables 4.1(a) and 4.1 (b)

Table 4.1 (a)

Inter-State Comparison of Health Status in India

States	Infant Mortality Rate (IMR) per 1000 live births			Life expectancy at birth		
	2005	2016	2018	2006-10	2010-14	2014-18
Andhra Pradesh	57	34	29	67.9	68.5	70.0
Assam	68	44	41	63.3	63.9	66.9
Bihar	61	38	32	67.7	68.1	69.1
Chhattisgarh	63	39	41	-	64.8	65.2
Gujarat	54	30	28	68.2	68.7	69.9
Haryana	60	33	30	68.2	68.6	69.8
Himachal Pradesh	49	25	19	71.0	71.6	72.9
Jammu & Kashmir	50	24	22	72.0	72.6	74.0
Jharkhand	50	29	30	-	66.6	69.1
Karnataka	50	24	23	68.5	68.8	69.4
Kerala	14	10	7	74.8	74.9	75.3
Madhya Pradesh	76	47	48	63.8	64.2	66.5
Maharashtra	36	19	19	71.3	71.6	72.5
Odisha	75	44	40	64.8	65.8	69.3
Punjab	44	21	20	71.1	71.6	72.7
Rajasthan	68	41	37	67.5	67.7	68.7
Tamil Nadu	37	17	15	70.2	70.6	72.1
Telangana	-	31	27	-	-	69.6
Uttar Pradesh	73	43	43	63.8	64.1	65.3
Uttarakhand	42	38	31	-	71.7	70.9
West Bengal	38	25	22	69.9	70.2	71.6
All-India	58	34	32	67.5	67.9	69.4

Source: Office of Registrar General, Sample Registration System Bulletin, Government of India, Various Years

It is clear from the Table 4.1 (a) that the IMR in India shows a declining trend from 58 infant deaths per thousand live births in 2005 to 32 infant deaths per thousand live births in 2018. IMR per 1000 live births varies from 10 in Kerala to 47 in Madhya Pradesh during 2016. During 2018 IMR is low in the case of Kerala (7), Tamil Nadu (15), Maharashtra (19) and Himachal Pradesh (19) and high in Madhya Pradesh (48). IMR is low in Kerala (14) and high in Madhya Pradesh (76) during 2005.

The expectation of life at birth among the states in India ranges from 63.3 years in Assam to 74.8 years in Kerala during 2006-10. The expectation of life at birth among the states in India varies from 63.9 years in Assam to 74.9 years in Kerala during 2010-14. The expectation of life at birth among the states in India is highest in

the case of Kerala, Jammu & Kashmir and Himachal Pradesh and lowest in Chhattisgarh, Uttar Pradesh and Madhya Pradesh during 2014-18.

It is evident from the Table 4.1 (b) that India reported a significant reduction in MMR. Kerala, Tamil Nadu, Andhra Pradesh, Rajasthan, Telangana and Maharashtra have met the Sustainable Development Goals target of MMR of 70 per 100000 live births. Telangana and Andhra Pradesh are within the range.

Table 4.1 (b)
Inter-State Comparison of Health Status in India

States	Maternal Mortality Ratio (MMR) per 100000 live births		
	2004-06	2014-16	2016-18
Andhra Pradesh	154	74	65
Assam	480	237	215
Bihar	312	165	149
Gujarat	160	91	75
Haryana	186	101	91
Karnataka	213	108	92
Kerala	95	46	43
Madhya Pradesh	335	173	173
Maharashtra	130	61	46
Odisha	303	180	150
Punjab	192	122	129
Rajasthan	388	199	164
Tamil Nadu	111	66	60
Telangana	-	81	63
Uttar Pradesh	440	201	197
West Bengal	141	101	98
All-India	254	130	113

Source: Office of Registrar General, Sample Registration System Bulletin, Government of India, Various years

According to the Office of Registrar General of India, the MMR has declined from 254 in 2004-06 to 113 in 2016-18.

Figure 4.1
MMR and Life Expectancy at Birth in India
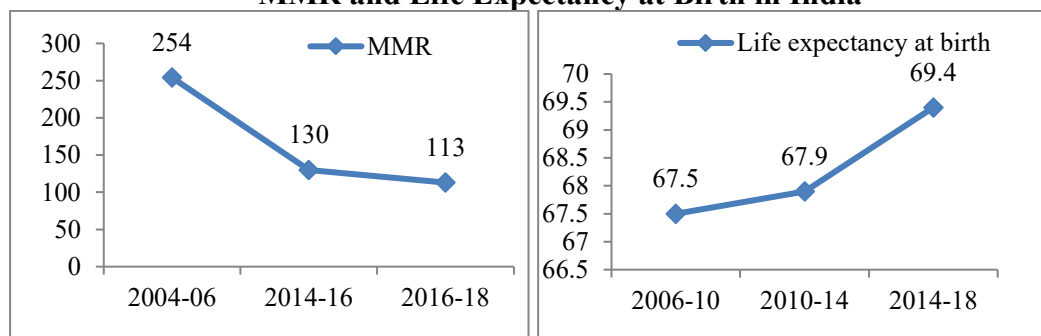
Source: Office of Registrar General, Sample Registration System Bulletin, Government of India, Various years

National level life expectancy at birth increased 67.5 years during 2006-10 to 69.4 years in 2014-18. The increase in expectation in life is an indicator better health status of a nation. It is the outcome of expenditure on health (Rahman, 2018).

The health status can be measured in different perspective. There can be variability among the states and the rural-urban as well as gender differentials in the health status. Various social, cultural and epidemiological factors are contributed this variations. Health is multi-dimensional and it includes physical, mental and social wellbeing of individuals.

Table 4.2

Inter-State Comparison of Demographic Indicators in India

States	Sex Ratio		Old age dependency Ratio
	2005-07	2013-15	
Andhra Pradesh	915	918	15.4
Assam	939	900	11.0
Bihar	909	916	14.2
Chhattisgarh	969	961	13.1
Gujarat	891	854	12.6
Haryana	843	831	14.1
Himachal Pradesh	931	924	16.1
Jammu & Kashmir	854	899	12.5
Jharkhand	927	902	12.7
Karnataka	926	939	14.8
Kerala	958	967	19.6
Madhya Pradesh	913	919	13.4
Maharashtra	871	878	15.7
Odisha	933	950	15.4
Punjab	837	889	16.1
Rajasthan	865	861	13.0
Tamil Nadu	944	911	15.8
Uttar Pradesh	881	879	13.9
Uttarakhand	-	844	14.9
West Bengal	936	951	13.2
All-India	901	900	14.2

Source: Office of Registrar General, Sample Registration System Bulletin, Government of India, Various years

The old age dependency ratio is highest in Kerala followed by Punjab, and Himachal Pradesh and lowest in Delhi, Assam and Jammu & Kashmir. Age is a crucial determinant of health. The elder people need much more health care compared to other age group. The higher the rate of old age dependency ratio the higher will be health care demand which aggravates the health expenditure (Navaneetham et al., 2009; Srinivas and Manjubhashini, 2014; Paul and Singh, 2017).

4.3. Inter-State Morbidity Rate in India

Morbidity rate is an indicator of health status of a country. Morbidity rate can be of different reference period. In NSS survey morbidity is termed as Proportion of Ailing Persons (PAP). It is measured as the number of living persons per 1000 persons reporting ailment during 15 day reference period for rural and urban sector. The PAP in India during 15 day reference period from 71st (January-June 2014) and

75th (July 2017- June 2018) NSS rounds is presented in Table 4.3. The PAP for 15 day reference period among various states in India varies from 26 in Manipur and Mizoram to 310 in Kerala in rural area and for urban area it ranges from 4 in Manipur to 306 in Kerala during 2014. During 2014 rural-urban difference in PAP is maximum for Andhra Pradesh followed by Arunachal Pradesh and Jammu & Kashmir while the difference is minimum for Telengana, Kerala and Chhattisgarh. During 2014 the rural-urban difference in PAP for 15 day reference period at national level is 29.

Table 4.3

Morbidity Rate in India

States	2014			2017-18		
	Rural	Urban	Difference	Rural	Urban	Difference
Andhra Pradesh	155	204	49	133	163	30
Arunachal Pradesh	95	49	46	28	36	8
Assam	31	47	16	22	43	21
Bihar	57	62	5	25	29	4
Chhattisgarh	40	44	4	45	69	24
Goa	160	194	34	66	54	-12
Gujarat	92	103	11	57	84	27
Haryana	56	75	19	53	70	17
Himachal Pradesh	82	51	31	95	144	49
Jammu& Kashmir	64	41	23	65	92	27
Jharkhand	52	96	44	64	81	17
Karnataka	93	103	10	39	48	9
Kerala	310	306	4	254	234	-20
Madhya Pradesh	53	71	18	35	54	19
Maharashtra	80	70	10	72	107	35
Manipur	26	4	22	18	20	2
Meghalaya	32	26	6	4	1	-3
Mizoram	26	31	5	34	35	1
Nagaland	31	19	12	5	16	11
Odisha	103	97	6	87	117	30
Punjab	161	170	9	119	99	-20
Rajasthan	54	83	29	46	57	11
Sikkim	34	67	33	26	63	37
Tamil Nadu	146	184	38	65	55	-10
Telangana	97	95	2	54	58	4
Tripura	35	51	16	29	37	8
Uttar Pradesh	68	91	23	71	87	16
Uttarakhand	77	111	34	23	71	48
West Bengal	161	179	18	127	164	37
All- India	89	118	29	68	91	23

Sources:1. NSS 71st Round, NSS KI (71/25.0), Key Indicators of Social Consumption in India-Health, 2015
  2. NSS 75th Round, NSS Report No: 586 (75/25.0), Health in India, 2020

The PAP for 15 day reference period among various states in India is low in Meghalaya and high in Kerala both for rural and urban area during 2017-18. During 2017-18 rural-urban difference in PAP for 15 day reference period is maximum for Himachal Pradesh followed by Uttar Pradesh and Jammu & Kashmir while the

difference is minimum for Telengana, Kerala and Chhattisgarh. The PAP is high in urban than in rural area during 2014 and 2017-18. There is a decrease in PAP in India during 2017-18 as compared to 2014. There is a difference of 29 and 23 points in the PAP between the rural and urban areas during 2014 and 2017-18 respectively. There is a large inter-state variation in PAP both in rural and urban areas. The morbidity rate in India for a reference period of 15 days is more in urban area (118) compared to rural area (89) during 2014. The morbidity rate is reduced to 68 in rural area and 91 in urban area during 2017-18 for a reference period of 15 days during 2017-18. The morbidity rate is more in urban area for both time periods. Morbidity and hospitalisation rates would have strong positive effect on household expenditure on health (Ghosh and Arokiaswamy, 2009).

4.4. Inter-State Disparity of Public Expenditure on Health in India

Disparity in expenditure on health among various states can be of different category.

Table 4.4

Government Expenditure on Health in India (₹Crore)

State	2004-05	2014-15	2015-16	2016-17
Andhra Pradesh	1696	3551	5814	7090
Assam	672	1927	2992	3294
Bihar	1091	3689	4756	5740
Chhattisgarh	-	2376	2871	3463
Gujarat	996	6446	7808	9145
Haryana	421	2410	3033	3621
Himachal Pradesh	306	1411	1621	1971
Jammu & Kashmir	471	1461	1993	1995
Jharkhand	-	1631	2339	2582
Karnataka	1267	6011	8227	9168
Kerala	1048	4229	5694	7522
Madhya Pradesh	1051	4799	5662	6324
Maharashtra	3527	9009	13443	14708
Odisha	684	3233	4988	4988
Punjab	827	2578	3245	3421
Rajasthan	1190	6511	7980	8447
Tamil Nadu	1590	7696	9378	9959
Uttar Pradesh	2650	12209	14283	16828
Uttarakhand	-	1534	1607	1595
Telangana	-	2650	5148	-

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

The disparity in public expenditure on health can be analysed with respect to General Government Expenditure (GGE) and Gross State Domestic Product (GSDP) for different time periods such as 2004-05, 2014-15, 2015-16 and 2016-17. Government expenditure on health among various states in India is presented in the

Table 4.4. Government expenditure on health was highest in Maharashtra (₹3527 crore), followed by Utter Pradesh (₹2650 crores) and Andhra Pradesh (₹1696 crores) during 2004-05. Government expenditure on health was high in the case of Uttar Pradesh and Maharashtra during 2014-15 and 2015-16. The government spending on health was low in Himachal Pradesh during the periods 2004-05, 2014-15 and 2015-16. Generally government expenditure on health among states shows an increasing trend except in the case of Uttarakhand from 2015-16 to 2016-17.

Table 4.5

Government Health Expenditure Per-Capita (₹) in India

State	2004-05	2014-15	2015-16	2016-17
Andhra Pradesh	216	573	923	1125
Assam	239	602	907	998
Bihar	124	338	425	504
Chhattisgarh	-	880	1063	1237
Gujarat	187	1040	1239	1429
Haryana	189	927	1123	1341
Himachal Pradesh	486	2016	2316	2816
Jammu & Kashmir	431	1124	1533	1535
Jharkhand	-	480	668	717
Karnataka	231	939	1266	1389
Kerala	319	1208	1627	2149
Madhya Pradesh	164	640	745	811
Maharashtra	348	763	1120	1216
Odisha	179	735	762	1108
Punjab	326	889	1119	1180
Rajasthan	198	904	1078	1126
Tamil Nadu	248	1026	1234	1293
Uttar Pradesh	150	581	667	772
Uttarakhand	-	1534	1461	1450
Telangana	-	1019	1980	-

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

Government expenditure on health was high in Utter Pradesh (₹16828 crores), Maharashtra (₹14708 crores) and Tamil Nadu (₹9959 crores) during 2016-17. During 2016-17, government expenditure on health was less in the case of Uttarakhand (₹1595 crores), Himachal Pradesh (₹1971 crores) and Jammu & Kashmir (₹1995 crores). There exists disparity on government expenditure on health among various states in India for different time periods such as 2004-05, 2014-15, 2015-16 and 2016-17. It is clear from the Table 4.5 that per-capita government health expenditure varies from ₹338 for Bihar to ₹2016 for Himachal Pradesh during 2014-15. Per-capita government health expenditure is low in Bihar and high in Himachal Pradesh from 2004-05 to 2016-17. Gujarat has the highest percent increase and Maharashtra has the

lowest percent increase in government health expenditure per-capita from 2004-05 to 2014-15. Per-capita government health expenditure among various states shows an increasing trend from 2004-05 to 2016-17. Per-capita government health expenditure decreased in the case of Uttarakhand from ₹1461 during 2015-16 to ₹1450 during 2016-17. During 2016-17, per-capita government health expenditure ranges between ₹504 in the case of Bihar and ₹2816 in the case of Himachal Pradesh. Himachal Pradesh with a population of 0.7 crores occupies lowest government expenditure on health and highest per-capita government expenditure on health during 2016-17.

Table 4.6

Government Health Expenditure as Percentage of GSDP in India

State	2014-15	2015-16	2016-17
Assam	1.0	1.3	1.3
Andhra Pradesh	0.7	1.0	1.0
Bihar	1.0	1.2	1.4
Chhattisgarh	1.0	1.1	1.4
Gujarat	0.7	0.8	0.8
Haryana	0.5	0.6	0.7
Himachal Pradesh	1.4	1.4	1.6
Jammu & Kashmir	1.4	1.7	1.6
Jharkhand	0.8	1.0	1.1
Karnataka	0.7	0.8	0.8
Kerala	0.8	1.0	1.2
Madhya Pradesh	1.0	1.1	1.0
Maharashtra	0.5	0.7	0.7
Odisha	1.0	1.0	1.3
Punjab	0.7	0.8	0.8
Rajasthan	1.1	1.2	1.1
Tamil Nadu	0.7	0.8	0.8
Uttar Pradesh	1.2	1.3	1.3
Uttarakhand	0.9	0.9	0.8
Telangana	0.5	0.9	1.0

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

Government health expenditure as percentage of GSDP of various states for different time periods is presented in Table 4.6. During 2014-15 government health expenditure as a percentage of GSDP varies between 0.5 percent (Haryana, Maharashtra and Telengana) and 1.5 percent (Himachal Pradesh and Jammu & Kashmir). During 2015 -16 government health expenditure as a percentage of GSDP varies between 0.6 percent for Haryana and 1.7 percent Jammu & Kashmir. During 2016-17 government health expenditure as a percentage of GSDP varies between 0.7 percent (Haryana and Maharashtra) and 1.6 percent (Himachal Pradesh and Jammu & Kashmir). It can be noted government health expenditure as a percentage of GSDP shows a marginal increase in majority of states from 2014-15 to 2016-17. When

comparing GSDP of various states Maharashtra reported high GSDP during 2016-17 while Jammu & Kashmir and Himachal Pradesh have low GSDP. During 2015-16 Jammu & Kashmir and Himachal Pradesh reported low GSDP and Maharashtra and Tamil Nadu have highest GSDP.

Table 4.7

Government Health Expenditure as Percentage of GGE in India

State	2014-15	2015-16	2016-17
Assam	4.5	7.5	6.0
Andhra Pradesh	2.8	5.3	5.4
Bihar	4.1	4.4	4.7
Chhattisgarh	5.2	5.6	6.0
Gujarat	5.8	6.5	7.2
Haryana	4.6	4.6	4.8
Himachal Pradesh	6.3	6.4	6.8
Jammu & Kashmir	4.2	4.6	4.1
Jharkhand	4.4	5.2	4.6
Karnataka	4.9	6.0	5.7
Kerala	5.6	6.6	7.4
Madhya Pradesh	5.1	4.9	4.3
Maharashtra	4.6	6.3	6.2
Odisha	5.2	4.4	5.0
Punjab	5.2	6.1	5.7
Rajasthan	5.9	6.2	5.9
Tamil Nadu	5.2	5.9	5.7
Uttar Pradesh	5.4	5.2	5.5
Uttarakhand	5.9	5.9	5.3
Telangana	4.5	5.8	-

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

Percentage share of government health expenditure out of General Government Expenditure (GGE) of various states for different time periods is given in Table 4.7. During 2014-15, government health expenditure as a percentage of GGE varies between 2.8 percent for Andhra Pradesh and 6.3 percent for Himachal Pradesh. Government health expenditure as a percentage of GGE is less in the case of Bihar and Odisha (4.4 percent) and more in the case of Assam (7.5 percent) and Kerala (6.6 percent) during 2015-16. During 2016-17, government health expenditure as a percentage of GGE is less for Jammu & Kashmir (4.1 percent) and Madhya Pradesh (4.3 percent) and high for Kerala (7.4 percent) and Gujarat (7.2 percent). Utter Pradesh, Maharashtra and Tamil Nadu reported a high GGE during 2016-17. Himachal Pradesh has lowest GGE during 2016-17 compared to other states (NHSRC, 2019).

The government health spending as the percentage of total health expenditure was lowest in Bihar while Tamil Nadu occupies the highest position in 2004-05. There exists a wide disparity in the government health spending as a percentage of

total health spending across the country which ranges between 15.4 percent for Andhra Pradesh and 44.3 percent for Himachal Pradesh in 2014-15. During 2016-17, the percentage share of government health expenditure out of total health expenditure is low for Punjab (19.8 percent), Bihar (21.3 percent) and Utter Pradesh (22.2 percent) and high for Himachal Pradesh (51.2 percent), Assam (39.0 percent) and Jammu & Kashmir (38.8 percent). The lowest health spending of the government contributed the highest burden to the people.

Table 4.8

Government Health Expenditure as Percentage of Total Health Expenditure in India

State	2004-05	2014-15	2015-16	2016-17
Assam	17.8	29.4	38.0	39.0
Andhra Pradesh	19.4	15.4	22.2	24.5
Bihar	8.3	16.5	19.1	21.3
Chhattisgarh	-	27.9	31.5	33.9
Gujarat	15.8	34.0	37.2	38.6
Haryana	10.6	24.4	27.5	29.6
Himachal Pradesh	12.4	44.3	47.0	51.2
Jammu & Kashmir	20.7	34.6	40.2	38.8
Jharkhand	-	23.9	29.6	31.0
Karnataka	23.2	21.5	25.6	26.8
Kerala	10.8	17.8	22.7	26.6
Madhya Pradesh	13.6	25.5	27.8	28.7
Maharashtra	22.1	17.0	23.7	23.3
Odisha	18.0	21.5	20.2	27.3
Punjab	18.0	17.0	20.0	19.8
Rajasthan	24.5	30.7	33.4	33.0
Tamil Nadu	26.6	25.0	28.4	27.3
Uttar Pradesh	13.0	19.0	20.7	22.2
Uttarakhand	-	36.2	37.4	36.1
Telangana	-	22.3	37.5	-

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

It is evident from the Table 4.8 that the percentage share of government health expenditure out of total health expenditure shows an increasing trend from 2004-05 to 2016-17. The declining allocation to health sector at state level would have damaging effect on public health delivery (Bhat and Jain, 2004; Hooda, 2013).

4.5. Inter-State Disparity of Household Expenditure on Health in India

Private expenditure on health amounts to the leading share in total expenditure on health in India. Household expenditure on health is the major contributory factor in private health expenditure. The inter-state variation in household expenditure on health in India during the periods 2004-05, 2014-15, 2015-16 and 2016-17 is shown in Table 4.9. There exists disparity in household health expenditure among the states in India. Household health expenditure is high for Uttar Pradesh (₹17158 crores), Bihar (₹11854 crores) and Maharashtra (₹11704 crores) and low for Jammu &

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Kashmir (₹1759 crores), Himachal Pradesh (₹2126 crores) and Odisha (₹2999 crores) during 2004-05.

Table 4.9

Household Expenditure on Health (₹ Crore) in India

State	2004-05	2014-15	2015-16	2016-17
Andhra Pradesh	6441	17988	19512	20928
Assam	3054	4139	4339	4547
Bihar	11854	18364	19890	20857
Chhattisgarh	-	4963	5322	5711
Gujarat	4893	10081	10589	11399
Haryana	3385	6177	6552	6923
Himachal Pradesh	2126	1592	1706	1785
Jammu& Kashmir	1759	2562	2780	3004
Jharkhand	-	4884	5228	5496
Karnataka	3847	14603	15908	16815
Kerala	8373	17581	17889	18967
Madhya Pradesh	6432	13560	14283	15166
Maharashtra	11703	31675	33459	35771
Odisha	2999	11077	11849	12582
Punjab	3493	12001	12563	13362
Rajasthan	3399	12529	13455	14504
Tamil Nadu	3624	20432	21500	22626
Uttar Pradesh	17158	50322	52841	56609
Uttarakhand	-	2545	2630	2748
Telangana	-	2834	7941	-

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

During the periods 2014-15 2015-16 and 2016-17 lowest and highest amount of household health expenditure spend by Himachal Pradesh and Utter Pradesh respectively.

Figure 4.2
Per-Capita Household Expenditure on Health (₹) in India during 2016-17
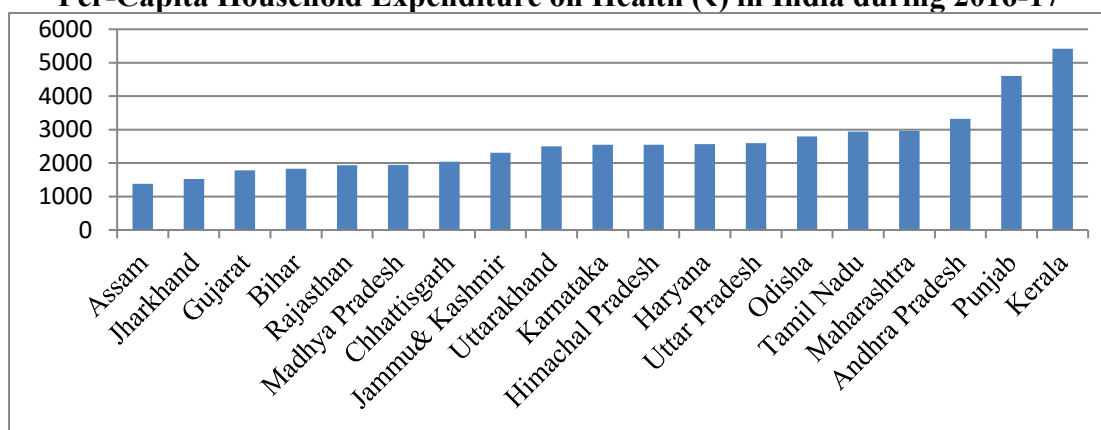
Source: National Health System Resource Centre, National Health Accounts Estimates for India, 2016-17, MoHFW

The differences in health spending would be differences utilisation pattern of health facilities, morbidity pattern and accessibility of health facility across states.

The financial burden of households in relation to health care spending is measured in terms of per-capita household health expenditure. It is evident from the Figure 4.2 that there exists various disparities in spending on health by the households across various states in India during 2016-17. Kerala has the highest per-capita household health expenditure in India during 2016-17 and Assam reported the lowest per-capita household health expenditure.

Per-capita household expenditure among various states for different time period is given in Table 4.10. Per-capita household health expenditure is low for Rajasthan and Tamil Nadu and high for Himachal Pradesh and Kerala during 2004-05. There is an interesting variation in the case of Himachal Pradesh where the household expenditure shows a declining trend from 2004-05 to 2016-17.

Table 4.10

Per-Capita Household Expenditure on Health (₹) in India

State	2004-05	2014-15	2015-16	2016-17
Andhra Pradesh	820	2901	3097	3322
Assam	1089	1293	1315	1378
Bihar	1021	1685	1776	1830
Chhattisgarh	-	1838	1971	2040
Gujarat	920	1626	1681	1781
Haryana	1518	2376	2427	2564
Himachal Pradesh	3377	2274	2437	2550
Jammu& Kashmir	1609	1971	2138	2311
Jharkhand	-	1436	1494	1527
Karnataka	702	2282	2447	2548
Kerala	2548	5023	5111	5419
Madhya Pradesh	746	1808	1879	1944
Maharashtra	1156	2684	2788	2956
Odisha	786	2518	2693	2796
Punjab	1379	4138	4332	4608
Rajasthan	565	1740	1818	1934
Tamil Nadu	566	2724	2829	2938
Telangana	-	2834	3054	-
Uttar Pradesh	924	2396	2469	2597
Uttarakhand	-	2545	2391	2498

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

The highest per-capita household health expenditure is in Kerala and the lowest in Assam during the periods 2014-15, 2015-16 and 2016-17. It seems to be the difference in disease pattern, health status and utilisation of health care facilities that lead to the differences in expenditure on health. Economic and social status of households was crucial in the incidence of expenditure on health (Pal, 2012; Sinha et al., 2016).

The burden of households with respect to GSDP is presented in Table 4. 11. Household health expenditure as percentage of GSDP is lowest in Gujarat and the highest in Bihar during 2014-15, 2015-16 and 2016-17. Household health expenditure as percentage of GSDP of Gujarat varies between 1.1 percent in 2014-15 to 1.0 percent in 2016-17. Household health expenditure as percentage of GSDP of Bihar varies between 4.9 percent in 2014-15 to 5.2 percent in 2015-16. Household health expenditure as percentage of GSDP among various states in India shows a decreasing trend from 2014-15 to 2016-17 except in the case of Chhattisgarh and Jharkhand.

Table 4.11

Household Expenditure on Health as Percentage of GSDP in India

State	2014-15	2015-16	2016-17
Assam	2.1	1.9	1.8
Andhra Pradesh	3.4	3.2	3.0
Bihar	4.9	5.2	4.9
Chhattisgarh	2.1	2.0	2.2
Gujarat	1.1	1.0	1.0
Haryana	1.4	1.4	1.2
Himachal Pradesh	1.5	1.5	1.4
Jammu & Kashmir	2.5	2.3	2.4
Jharkhand	2.2	2.3	2.3
Karnataka	1.6	1.6	1.4
Kerala	3.3	3.2	3.0
Madhya Pradesh	2.8	2.7	2.3
Maharashtra	1.8	1.7	1.6
Odisha	3.6	3.6	3.2
Punjab	3.3	3.2	3.1
Rajasthan	2.0	2.0	1.9
Tamil Nadu	1.9	1.9	1.7
Uttar Pradesh	4.8	4.7	4.5
Uttarakhand	1.6	1.5	1.4
Telangana	1.4	1.4	3.5

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

There was a high burden on households for health care due to high expenditure on health. Household expenditure shows the financial burden of individuals for health care. Bihar, Kerala and Himachal Pradesh reported high out-of-pocket spending out of total health expenditure during 2004-05. Tamil Nadu, Rajasthan and Karnataka witnessed a low out-of-pocket spending for health care out of total health expenditure during 2004-05. Bihar, Punjab and Uttar Pradesh witnessed a high household spending out of total health expenditure during 2016-17.

Decreasing trend of percentage share of household expenditure in total health expenditure may reduce the impoverishment due to health care cost. There was a decline in the household expenditure from 2004-05 to 2016-17 across various states in India. Household health expenditure in India continues to a major share in total

expenditure on health. There was a significant variation in the spending on health by households and its impoverishment effect across states (Ladusingh and Pandey, 2013; Ravi et al., 2016). It is clear from the Table 4.12 that household health expenditure still occupies a major share in total expenditure on health across various states in India for the periods from 2004-05 to 2016-17.

Table 4.12

Household Expenditure as Percentage of Total Health Expenditure in India

State	2004-05	2014-15	2015-16	2016-17
Assam	80.8	63.1	55.1	53.8
Andhra Pradesh	73.4	78.0	74.7	72.2
Bihar	90.2	82.3	79.9	77.6
Chhattisgarh	-	58.3	58.4	55.9
Gujarat	77.5	53.1	50.4	48.1
Haryana	85.0	62.5	59.5	56.6
Himachal Pradesh	86.0	50.0	49.5	46.4
Jammu & Kashmir	77.3	60.7	56.0	58.5
Jharkhand	-	71.7	66.3	66.0
Karnataka	70.4	52.2	49.6	49.2
Kerala	86.3	73.9	71.3	67.0
Madhya Pradesh	83.4	72.0	70.1	68.9
Maharashtra	73.3	59.6	58.9	56.7
Odisha	79.1	73.6	71.5	68.9
Punjab	76.1	79.3	77.4	77.3
Rajasthan	70.0	59.1	56.4	56.7
Tamil Nadu	60.7	66.4	65.2	62.1
Uttar Pradesh	84.3	78.3	76.5	74.8
Uttarakhand	-	60.1	61.2	62.1
Telangana	-	62.1	57.9	74.1

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

Inter-state variations in household health expenditure in India for different time periods would be due to the differences in socio-economic, cultural, geographical, political, health facilities and gender.

4.6. Inter-State Disparity of Total Health Expenditure in India

Total expenditure on health consists of public expenditure and household expenditure including external fund. It is clear that the share of household spending on health in total health expenditure shows a declining trend and the share of public expenditure on health out of total health expenditure exhibits an increasing trend.

Total health expenditure of various states in India for different time periods is exhibited in Table 4.13. The highest total health expenditure is in Uttar Pradesh and Maharashtra during the periods 2004-05, 2014-15, 2015-16 and 2016-17. During 2004-05 total health expenditure is lowest in Jammu & Kashmir. The lowest total health expenditure is in Himachal Pradesh during the periods 2014-15, 2015-16 and 2016-17. During 2004-05, total health expenditure among various states in India

varies from ₹20559 crores ₹2277 crores. Total health expenditure among various states in India ranges from ₹64256 crores to ₹3181 crores in 2014-15. During 2015-16, total health expenditure among various states in India varies from ₹69036 crores ₹3448 crores. Total health expenditure among various states in India ranges from ₹75634 crores to ₹3851 crores in 2016-17.

Table 4.13

Total Health Expenditure (₹ Crore) among Various States in India

State	2004-05	2014-15	2015-16	2016-17
Andhra Pradesh	8777	23064	26133	28981
Assam	3778	6556	7874	8453
Bihar	13147	22317	24901	26885
Chhattisgarh	-	8509	9112	10214
Gujarat	6313	18970	20990	23700
Haryana	3981	9878	11015	12238
Himachal Pradesh	2472	3183	3448	3851
Jammu& Kashmir	2277	4219	4960	5138
Jharkhand	-	6813	7889	8325
Karnataka	5467	27995	32083	34210
Kerala	9702	23805	25090	28291
Madhya Pradesh	7711	18829	20373	21999
Maharashtra	15957	53122	56806	63046
Odisha	3795	15052	16579	18266
Punjab	4593	15138	16234	17285
Rajasthan	4855	21188	23869	25592
Tamil Nadu	5974	30761	32975	36451
Telangana	-	11868	13710	-
Uttar Pradesh	20359	64256	69036	75634
Uttarakhand	-	4233	4299	4421

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

Total health expenditure of various states in India exhibits an increasing trend from 2004-05 to 2016-17. Moreover, there exist inter-state variations in total health expenditure in India for different time periods. There would be disparity in total health expenditure within the states.

Per-capita total health expenditure of various states in India for different time periods is presented in Table 4.14. The highest per-capita total health expenditure is in Himachal Pradesh (₹3927), Kerala (₹2952) and Jammu & Kashmir (₹2082) and the lowest in Rajasthan (₹808), Tamil Nadu (₹933) and Odisha (₹995) for the period 2004-05. Kerala (₹6801) and Punjab (₹5220) places highest per-capita total health care spending; and Jharkhand (₹2004), Bihar (₹2047) and Assam (₹2049) holds lowest position in 2014-15. Per-capita total health expenditure varies from ₹808 to ₹3927 during 2004-05 and from ₹2004 to ₹6801 during 2014-15. Per-capita total health expenditure ranges between ₹2223 for Bihar to ₹7169 for Kerala during 2015-

16 and from ₹2313 for Jharkhand to ₹8083 for Kerala during 2016-17. It is noted that Kerala ranked foremost position in the health index constructed by NITI Aayog. Kerala is well known for its better health indicators compared to the other states in India. Moreover per-capita total health expenditure is highest in Kerala among the states of India. Per-capita total health expenditure of various states in India shows an increasing trend from 2004-05 to 2016-17. The differences in socio-economic and biological conditions of the people would lead differences in health expenditure in India.

Table 4.14

Per-capita Total Health Expenditure (₹) among Various States in India

State	2004-05	2014-15	2015-16	2016-17
Andhra Pradesh	1118	3720	4148	4600
Assam	1347	2049	2386	2562
Bihar	1497	2047	2223	2358
Chhattisgarh	-	3151	3375	3648
Gujarat	1187	3060	3332	3703
Haryana	1786	3799	4080	4533
Himachal Pradesh	3927	4547	4926	5501
Jammu& Kashmir	2082	3245	3815	3952
Jharkhand	-	2004	2254	2313
Karnataka	997	4374	4936	5183
Kerala	2952	6801	7169	8083
Madhya Pradesh	1200	2511	2681	2820
Maharashtra	1576	4502	4734	5210
Odisha	995	3421	3768	4059
Punjab	1813	5220	5598	5960
Rajasthan	808	2943	3226	3412
Tamil Nadu	933	4101	4339	4734
Telangana	-	4565	5273	-
Uttar Pradesh	1152	3060	3226	3469
Uttarakhand	-	4233	3908	4019

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

The differences in diseases pattern, differences in health status, differences in utilisation of health care facilities and availability of health facilities and differences in socio-economic backgrounds which would mount the differences in spending on health.

Total health expenditure as a percentage of GSDP related to the economic development of a country with respect to health care spending. Total health expenditure as a percentage of GSDP is less in Gujarat, Haryana and Telangana during the periods 2014-15 and 2015-16. Total health expenditure as a percentage of GSDP is more in the case of Uttar Pradesh, Bihar and Odisha during the periods 2014-15 and 2015-16. There would be a positive relationship between health care

spending and GSDP and vice versa. In other words, there exists a bi-directional relationship between health capital and income. Needless to say health capital would positively influence productivity of workforce through human capital formation.

Table 4.15

Total Health Expenditure as Percentage of GSDP among Various States in India

State	2014-15	2015-16	2016-17
Andhra Pradesh	4.3	4.3	4.2
Assam	3.3	3.5	3.3
Bihar	6.0	6.5	6.4
Chhattisgarh	3.6	3.5	4.0
Gujarat	2.1	2.0	2.1
Haryana	2.2	2.3	2.2
Himachal Pradesh	3.0	3.1	3.1
Jammu & Kashmir	4.1	4.2	4.1
Jharkhand	3.1	3.4	3.5
Karnataka	3.0	3.2	2.8
Kerala	4.5	4.5	4.5
Madhya Pradesh	3.9	3.8	3.4
Maharashtra	3.0	2.8	2.9
Odisha	4.9	5.0	4.6
Punjab	4.1	4.1	4.0
Rajasthan	3.5	3.5	3.4
Tamil Nadu	2.8	2.8	2.8
Telangana	2.3	2.4	-
Uttar Pradesh	6.2	6.2	6.1
Uttarakhand	2.6	2.4	2.3

Source: National Health System Resource Centre, National Health Accounts Estimates for India, MoHFW, Various years

The composition of total expenditure in India is varies differently between the public and households.

Table 4.16

Total Health Expenditure Indicators in India

Indicator	2004-05	2013-14	2014-15	2015-16	2016-17
THE as percent of GDP	4.2	4.0	3.9	3.8	3.8
THE per-capita (₹)	1201	3638	3826	4116	4381
Current health expenditure as percentage of THE	98.9	93.0	93.4	93.7	92.8
Government health expenditure as percentage of THE	22.5	28.6	29.0	30.6	32.4
Household health expenditure as percentage of THE	69.4	64.2	62.6	60.6	58.7
Social security expenditure on health as percentage of THE	4.2	6.0	5.7	6.3	7.3
Private health insurance expenditure as percentage of THE	1.6	3.4	3.7	4.2	4.7
External funding for health as percentage of THE	2.3	0.3	0.7	0.7	0.6

Note: Total Health Expenditure (THE)
Source: National Health System Resource Centre, National Health Accounts Estimates for India, 2016-17, MoHFW

The changes in total expenditure on health on various grounds for different time periods such as 2004-05, 2013-14, 2014-15, 2015-16 and 2016-17 are presented in Table 4.16. Total health expenditure as percentage of GDP varies from 4.2 percent

in 2004-05 to 3.8 percent in 2016-17. Per-capita total health expenditure in India shows an increasing trend from ₹1201 in 2004-05 to ₹4381 in 2016-17. Current health expenditure as percentage of THE is decreased from 98.9 percent in 2004-05 to 92.8 percent in 2016-17.

Figure 4.3

Composition of Total Health Expenditure in India
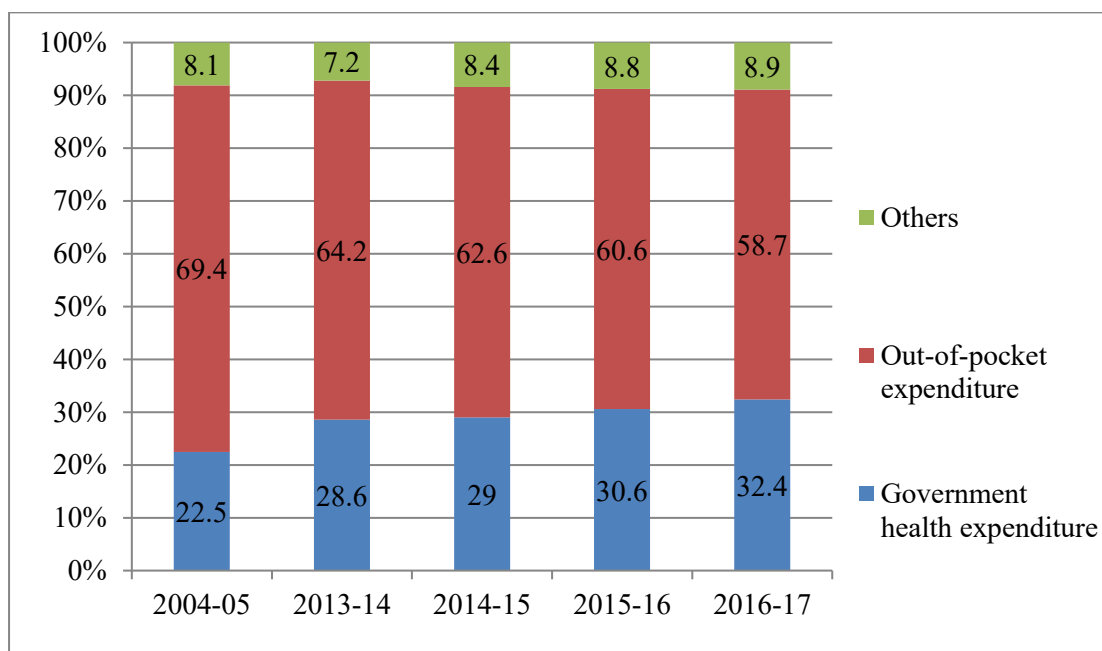
It is clear that the percentage share of government health expenditure in total health expenditure increased from 22.5 in 2004-05 percent to 32.4 percent in 2016-17. Percentage share of out-of-pocket expenditure in total health expenditure decreased from 69.4 in 2004-05 percent to 58.7 percent in 2016-17. Other expenditure in total health expenditure consists of social security expenditure on health, private health insurance expenditure and external funding for health. The share of other expenditure in total health expenditure marginally increased from 8.1 percent in 2004-05 to 8.9 percent in 2016-17.

4.7. Medical and Non-Medical Expenditure in India

Both medical and non-medical expenditure constitute the expenditure on health by the households. The disparity between medical and non-medical expenditure among various states in India can be analysed on various grounds; level of care, nature of ailment, geographical location and so on. Medical expenditure consists of doctor's fee, medicine, diagnostic test, blood and oxygen and others.

Medical expenditure would be a significant component in household health expenditure in India due to the immense share of medical expenditure in total expenditure of households on healthcare. The percentage distribution of total medical expenditure among various states in India is shown in Table 4.17.

Table 4.17
Total Medical Expenditure among Various States in India (2014-15)

States	Percentage distribution of total medical expenditure (Rural)			Percentage distribution of total medical expenditure (Urban)		
	Doctor's fee	Medicine	Others *	Doctor's fee	Medicine	Others *
Andhra Pradesh	11.3	76.2	12.7	8.5	79.3	12.2
Assam	7.0	63.8	29.4	10.3	52.1	37.7
Bihar	12.0	71.9	16.1	15.0	62.9	22.2
Chhattisgarh	25.5	69.5	5.0	10.6	82.5	6.8
Gujarat	23.6	57.5	18.6	28.6	54.2	17.2
Haryana	10.3	72.7	17.2	15.5	67.3	17.1
Jharkhand	17.9	66.0	15.9	16.2	45.5	38.2
Karnataka	18.2	67.0	14.9	16.2	64.4	19.3
Kerala	11.2	73.8	15.1	10.2	74.6	14.9
Madhya Pradesh	14.4	68.6	17.0	15.2	71.4	13.4
Maharashtra	23.4	63.6	12.8	23.1	60.3	16.6
Odisha	4.8	74.9	20.3	6.2	79.2	14.8
Punjab	9.8	76.2	14.2	9.4	72.8	18
Rajasthan	10.2	82.4	7.4	20.9	67.4	11.8
Tamil Nadu	20.8	60.7	18.5	15.8	70.6	13.5
Telangana	11.8	69.4	18.8	13.5	71.6	14.8
Uttar Pradesh	12.8	76.1	11.2	14.9	70.9	14.3
West Bengal	15.5	69.8	14.7	15.5	68.7	15.8
All-India	13.6	71.5	14.7	15.6	68.0	16.4

* Inclusive of diagnostic test
Source: NSS 71st Round, Report No. 574: Health in India, April 2016

It is evident that medicines constitutes single largest component of medical expenditure both in rural and urban area. As national average medicine expenditure is highest in rural compared to urban area while doctor's fee is highest in urban area compared to rural area. There are medical and non-medical expenditure incurred by the household for treatment. Since drugs involve the bulk of out-of-pocket expenditure, the government provision of free essential drugs in public health facilities, Jan Aushadhi, would have reduce the burden of the poor people. As per the report of India Council of Medical Research 2017, the disease burden due to communicable, maternal, neonatal, and nutritional diseases dropped from 61 per cent to 33 per cent between 1990 and 2016. Disease burden from non-communicable diseases increased from 30 per cent to 55 per cent in the same period. There is undergoing an epidemiological transition that the non-communicable diseases dominate over communicable in the total disease burden of the country. The

contribution of injuries to the total disease burden has increased in India. The growth of non-communicable diseases and re-emergence of communicable diseases aggregated the level of morbidity which leads to a crisis in health care system (Gangadharan, 2008).

Table 4.18
Average Medical Expenditure (₹) per-hospitalisation Case in India

Broad Ailment Category	2014-15			2017-18		
	Public Hospital	Private Hospital	All	Public Hospital	Private Hospital	All
Infections	3007	11810	8134	2054	15208	9064
Cancers	24526	78050	56712	22520	93305	61216
Psychiatric and Neurological	7482	34561	23984	7235	41239	26843
Eye	1778	13374	9307	2605	18767	10912
Cardio-Vascular	11549	43262	31647	6635	54970	36001
Respiratory	4811	18705	12820	3346	24049	13905
Gastro-Intestinal	5281	23933	17687	3847	29870	19821
Musculo-Skeletal	8165	28396	21862	5716	46365	32066
Genito-Urinary	9295	29608	24525	5345	33409	24770
All / any ailment	6120	25850	18268	4452	31845	20135

Sources: 1. NSS 71st Round, Key Indicators of Social Consumption in India, Health, June 2015
2. NSS 75th Round, Key Indicators of Social Consumption in India, Health, November 2019.

The average medical expenditure by ailment category shows that the expenditure for treatment of cancers, cardio-vascular diseases, genito-urinary diseases are costlier. And the expenditure per-hospitalisation case was lower in public hospitals than in private hospitals.

Table 4.19
Range in Prices/Average Costs of Diagnostic Tests across Cities in India (2017)

Name of Diagnostic Tests	Costs of Diagnostics (In ₹)		Average Costs of Diagnostics (In ₹)	
	Minimum (of all cities)	Maximum (of all cities)	Minimum (of average price of cities)	Maximum(of average price of cities)
Lipid Profile Test (125)	90	7110	217	759
ANC test (74)	110	6500	389	2396
Albumin test (120)	20	1810	100	203
2d echo test (51)	500	5200	856	2412
Electrolyte test (121)	30	3000	245	627
Liver Function test (117)	100	2500	210	1186
Thyroid test (123)	100	3100	300	721
ESR test (103)	10	1100	35	116
Dengue IgG test (114)	100	3600	314	1312

Note: Figures in parenthesis are number of cities. ESR (Erythrocyte Sedimentation Rate)
Source: Economic Survey, 2017-18, GoI

The average medical expenditure per-hospitalisation case in India was ₹18268 and ₹20135 during 2014-15 and 2017-18 respectively. There is an interesting fact that the average medical expenditure in public hospitals is low during 2017-18 compared to 2014-15 and the expenditure in private hospitals is high during 2017-18.

Diagnostics are a crucial part of health care system which provides information required by service providers to build informed decisions about health care provisions associated to treatment and management.

Table 4.20

Average Medical Expenditure (₹) per-hospitalisation Case in India

States	Rural			Urban		
	2014-15	2017-18	Percentage Change	2014-15	2017-18	Percentage Change
Andhra Pradesh	13227	16717	26.4	31242	22479	-28.0
Arunachal Pradesh	5678	4504	-20.7	8926	6092	-31.7
Assam	6966	9826	41.1	47064	38935	-17.3
Bihar	11432	11595	1.4	25004	17861	-28.6
Chhattisgarh	12149	26123	115.0	22647	19873	-12.2
Goa	29954	7765	-74.1	23165	16742	-27.7
Gujarat	14298	14924	4.4	20155	22418	11.2
Haryana	18341	19177	4.6	32370	30337	-6.3
Himachal Pradesh	18860	20308	7.7	28590	17791	-37.8
Jammu & Kashmir	8442	6371	-24.5	13948	15678	12.4
Jharkhand	10351	17288	67.0	13151	26055	98.1
Karnataka	14091	12768	-9.4	22190	26575	19.8
Kerala	17642	17054	-3.3	15465	22123	43.1
Madhya Pradesh	13090	14325	9.4	23993	17365	-27.6
Maharashtra	20475	19383	-5.3	29493	36612	24.1
Manipur	6061	14170	133.8	10215	17505	71.4
Meghalaya	2075	2790	34.5	18786	22711	20.9
Mizoram	8744	7260	-17.0	13461	17371	29.0
Nagaland	5628	6020	7.0	15788	12110	-23.3
Odisha	10240	11159	9.0	19750	18748	-5.1
Punjab	27718	31805	14.7	29971	29338	-2.1
Rajasthan	12855	16268	26.5	16731	20824	24.5
Sikkim	8035	7180	-10.6	9939	7703	-22.5
Tamil Nadu	11842	12362	4.4	23757	23260	-2.1
Telangana	19664	19887	1.1	20617	30082	45.9
Tripura	5694	5161	-9.4	11638	13400	15.1
Uttar Pradesh	18693	23144	23.8	31653	33339	5.3
Uttarakhand	9162	15945	74.0	25703	37038	44.1
West Bengal	11327	13310	17.5	24875	25235	1.4
All- India	14935	16676	11.7	24436	26475	8.3

Sources: 1. NSS 71st Round, NSS KI (71/25.0), Key Indicators of Social Consumption in India-Health, 2015
2. NSS 75th Round, NSS Report No: 586 (75/25.0), Health in India, 2020

An enquiry of prices of diagnostic tests across various cities in India shows that there are not only large differences in average prices of diagnostic tests but also range in price is significant. Limited affordability and accessibility of quality medical services are the foremost challenges contributing to delayed or inappropriate responses to diseases control and patient management (Economic Survey, 2017-18). Average medical expenditure per-hospitalisation case between rural and urban areas of India during 2014-15 and 2017-18 is given in Table 4.20. On an average, in India about ₹14935 and ₹24436 were spent during 2014-15 and ₹16676 and ₹26475 during

2017-18 for rural and urban areas respectively on medical expenditure per-hospitalisation for a period of 365 days. Among the states Meghalaya and Goa witnessed the lowest and the highest medical expenditure respectively during 2014-15 and Meghalaya and Punjab during 2017-18 for rural area. In the case of urban area Arunachal Pradesh and Assam witnessed a lowest and highest medical expenditure respectively for the period 2014-15 and 2017-18. In rural area the percent change in medical expenditure during 2014-15 and 2017-18 varies between -74.1 percent (Goa) to 133.8 percent (Manipur). In urban area the percent change in medical expenditure varies between -37.8 percent (Himachal Pradesh) to 98.1 percent (Jharkhand). Average medical expenditure per-hospitalisation case in India decreased in the case of Arunachal Pradesh, Goa, Jammu & Kashmir, Karnataka, Kerala, Maharashtra, Mizoram, Sikkim and Tripura during 2014-15 to 2017-18.

Figure 4.4
Average Medical Expenditure (₹) per-hospitalisation Case in India
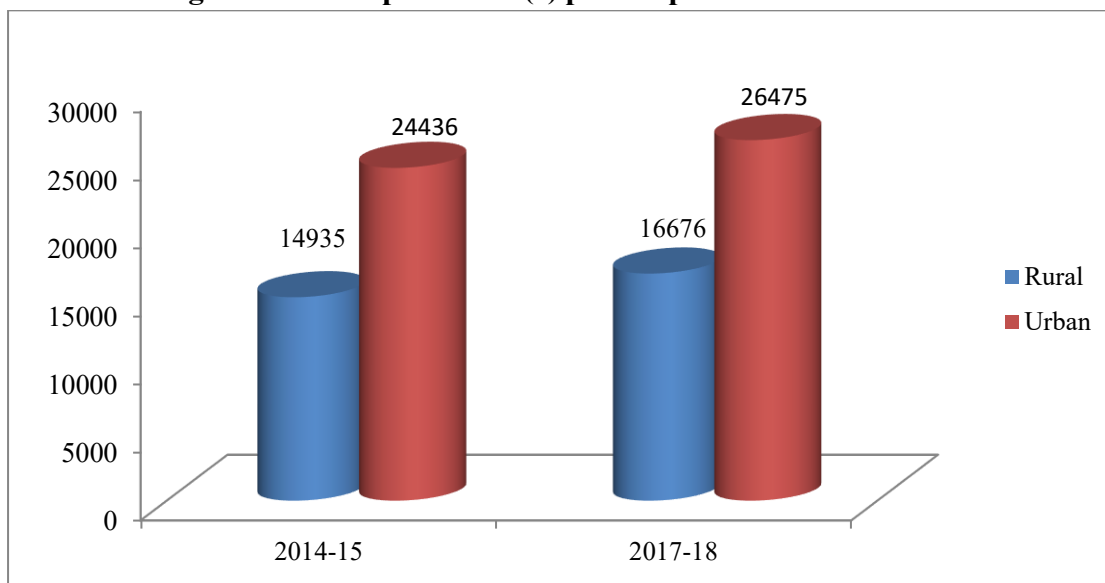
It is evident that there exists rural-urban disparity in average medical and non-medical expenditure per-hospitalisation case in India. Average medical medical expenditure per-hospitalisation case in India is depicted on Figure 4.4. Average medical expenditure per-hospitalisation case increased from ₹14935 in 2014-15 to ₹16676 in 2017-18 for rural area and in urban area expenditure increased from ₹24436 in 2014-15 to ₹26475 in 2017-18. Average medical expenditure per-hospitalisation case is higher in urban area compared to rural area during 2014-15 and 2017-18. But average non-medical expenditure per-hospitalisation case is higher in

rural area than in urban area. It is clear from the Figure 4.5 that average non-medical expenditure per-hospitalisation for a period of 365 days in India was increased from ₹2021 during 2014-15 to ₹2317 during 2017-18 in rural area and in urban area it increased from ₹2019 during 2014-15 to ₹2114 during 2017-18.

Table 4.21

Average Non-Medical Expenditure (₹) per Hospitalization Case in India

States	Rural			Urban		
	2014-15	2017-18	Percentage change	2014-15	2017-18	Percentage change
Andhra Pradesh	2184	2350	7.6	2429	1830	-24.7
Arunachal Pradesh	2363	1826	-22.7	1789	2245	25.5
Assam	1554	1981	27.5	5304	6169	16.3
Bihar	2194	1671	-23.8	3054	1849	-39.5
Chhattisgarh	1895	2778	46.6	2245	1809	-19.4
Goa	2550	1469	-42.4	3237	2153	-33.5
Gujarat	1362	1589	16.7	1121	1392	24.2
Haryana	2604	2156	-17.2	2847	2241	-21.3
Himachal Pradesh	3144	3369	7.2	2570	2278	-11.4
Jammu & Kashmir	2334	1889	-19.1	2226	2768	24.3
Jharkhand	2227	2446	9.8	1860	3131	68.3
Karnataka	2027	1862	-8.1	2012	2123	5.5
Kerala	1743	2239	28.5	1652	2071	25.4
Madhya Pradesh	2236	2229	-0.3	2381	1816	-23.7
Maharashtra	2011	2043	1.6	1534	1810	18.0
Manipur	2997	3413	13.9	3595	4376	21.7
Meghalaya	2023	1762	-12.9	3004	2178	-27.5
Mizoram	2908	2849	-2.0	3756	2808	-25.2
Nagaland	2122	2748	29.5	2689	3764	40.0
Odisha	2376	2632	10.8	2963	2967	0.1
Punjab	2061	2235	8.4	2007	1716	-14.5
Rajasthan	2755	2779	0.9	1616	2171	34.3
Sikkim	4613	3196	-30.7	5813	2616	-55.0
Tamil Nadu	2126	2611	22.8	2336	2806	20.1
Telangana	2019	4556	125.7	1966	2732	39.0
Tripura	1547	1350	-12.7	2294	2340	2.0
Uttar Pradesh	1901	2383	25.4	1749	2201	25.8
Uttarakhand	1314	2826	115.1	2180	3062	40.5
West Bengal	1514	2180	44.0	2374	1849	-22.1
All-India	2021	2317	14.6	2019	2114	4.7

Sources: 1. NSS 71st Round, NSS KI (71/25.0), Key Indicators of Social Consumption in India-Health, 2015
2. NSS 75th Round, NSS Report No: 586 (75/25.0), Health in India, 2020

Average non-medical expenditure per-hospitalisation case between rural and urban areas of India during 2014-15 and 2017-18 is given in Table 4.21. Among the states Uttarakhand and Sikkim witnessed the lowest and the highest non-medical expenditure respectively per-hospitalisation during 2014-15 and Tripura and Telengana during 2017-18 for rural area. In the case of urban area Gujarat and Sikkim witnessed a lowest and highest non-medical expenditure respectively per-hospitalisation for the period 2014-15 and Gujarat and Assam during 2017-18. In

rural area the percent change in non-medical expenditure during 2014-15 and 2017-18 varies between -42.4 percent (Goa) to 125.7 percent (Telengana). In urban area the percent change in medical expenditure varies from -55.0 percent (Sikkim) to 68.3 percent (Jharkhand).

Figure 4.5
Average Non-Medical Expenditure (₹) per-hospitalisation Case in India

Average non-medical expenditure per-hospitalisation for a period of 365 days in India decreased in the case of Andhra Pradesh, Bihar, Chhattisgarh, Goa, Haryana, Himachal Pradesh, Madhya Pradesh, Meghalaya, Mizoram, Punjab and Sikkim and West Bengal.

Figure 4.6
Average Expenditure (₹) per-hospitalisation Case in India
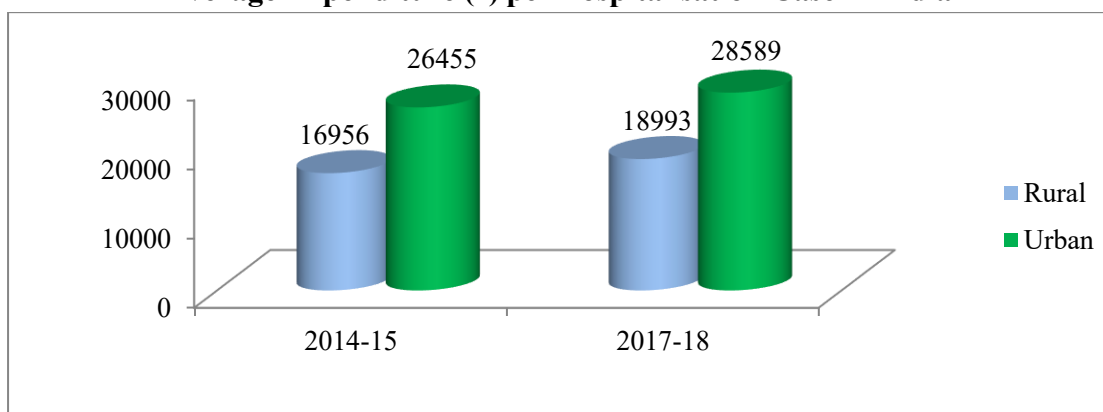
Average expenditure per-hospitalisation is higher in urban area compared to rural area during 2014-15 and 2017-18. This is evident from Figure 4.6. Average

expenditure per-hospitalisation constitutes both medical and non-medical expenditure. Average expenditure per-hospitalisation in rural area was increased from ₹16956 in 2014-15 to ₹18993 in 2017-18 and in urban area it increased from ₹26455 to ₹28589 for the same time period. Average expenditure per-hospitalisation case between rural and urban areas of India during 2014-15 and 2017-18 is given in Table 4.22.

Table 4.22

Average Expenditure (Medical and Non-Medical Expenditure in ₹) per-hospitalisation Case in India

States	Rural			Urban		
	2014-15	2017-18	Percentage Change	2014	2017-18	Percentage Change
Andhra Pradesh	15411	19067	23.7	33671	24309	-27.8
Arunachal Pradesh	8042	6329	-21.3	10715	8337	-22.2
Assam	8520	11807	38.6	52368	45104	-13.9
Bihar	13626	13265	-2.6	28058	19711	-29.7
Chhattisgarh	14043	28902	105.8	24891	21683	-12.9
Goa	32503	9234	-71.6	26401	18895	-28.4
Gujarat	15660	16513	5.4	21276	23810	11.9
Haryana	20945	21332	1.8	35217	32578	-7.5
Himachal Pradesh	22004	23678	7.6	31160	20069	-35.6
Jammu & Kashmir	10777	8260	-23.4	16174	18446	14.0
Jharkhand	12578	19734	56.9	15011	29185	94.4
Karnataka	16118	14630	-9.2	24202	28698	18.6
Kerala	19385	19292	-0.5	17117	24194	41.3
Madhya Pradesh	15326	16554	8.0	26374	19180	-27.3
Maharashtra	22486	21427	-4.7	31028	38422	23.8
Manipur	9058	17583	94.1	13810	21880	58.4
Meghalaya	4098	4552	11.1	21789	24889	14.2
Mizoram	11652	10110	-13.2	17216	20179	17.2
Nagaland	7750	8769	13.1	18477	15874	-14.1
Odisha	12616	13790	9.3	22713	21715	-4.4
Punjab	29779	34040	14.3	31978	31053	-2.9
Rajasthan	15609	19047	22.0	18346	22995	25.3
Sikkim	12648	10376	-18.0	15751	10318	-34.5
Tamil Nadu	13968	14974	7.2	26092	26066	-0.1
Telangana	21683	24443	12.7	22584	32814	45.3
Tripura	7242	6512	-10.1	13931	15739	13.0
Uttar Pradesh	20594	25527	24.0	33402	35539	6.4
Uttarakhand	10476	18770	79.2	27883	40100	43.8
West Bengal	12841	15491	20.6	27249	27084	-0.6
All-India	16956	18993	12.0	26455	28589	8.1

Sources: 1. NSS 71st Round, NSS KI (71/25.0), Key Indicators of Social Consumption in India-Health, 2015
2. NSS 75th Round, NSS Report No: 586 (75/25.0), Health in India, 2020

Average expenditure per-hospitalisation in India varies from ₹4098 (Meghalaya) to ₹32503 (Goa) in rural area and from ₹10715 (Arunachal Pradesh) to ₹52368 (Assam) in urban area during 2014 and from ₹4552 (Meghalaya) to ₹34040 (Punjab) in rural area and from ₹8337 (Arunachal Pradesh) and ₹45104 (Assam) in urban area during 2017-18. Percentage change in average expenditure per-

hospitalisation for the period 2014-15 and 2017-18 is more in the case of rural area (12 percent) compared to urban area (8.1 percent). It is clear from Figure 4.6 that average medical expenditure is higher in urban area than rural area for inpatient and outpatient treatment during 2017-18. The regional differences in health care facilities and health outcomes would lead to the differences in expenditure on health across the states in India. Average household medical expenditure per-hospitalisation case for treatment during stay at hospital for a period of 365 days is higher in urban India (₹22031) than in rural India (₹15937) during 2017-18. Average household medical expenditure for non-hospitalised treatment per spell for a period of 15 days reference period is ₹561 and ₹687 for rural and urban areas respectively (See Figure 4.7).

Figure 4.7

Average Household Medical Expenditure (₹) per Treatment in India (2017-18)
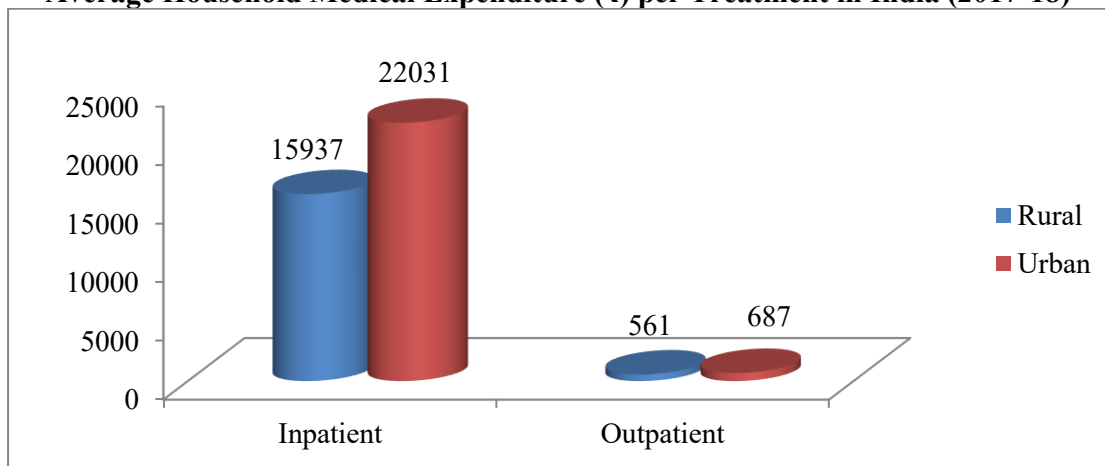
Source: NSS 75th Round, NSS Report No: 586 (75/25.0), Health in India, 2020

Average household medical expenditure for inpatient and outpatient care in India during 2017-18 is presented in Table 4.23. Average household medical expenditure for inpatient care varies from ₹1381 (Meghalaya) to ₹29829 (Punjab) in rural India and from ₹5599 (Mizoram) to ₹31482 (Assam) in urban India during 2017-18. In the case of outpatient and inpatient care the medical expenditure is highest in urban area compared to rural area. Average household medical expenditure for outpatient care varies from ₹1161 (Arunachal Pradesh) to ₹300 (Chhattisgarh) in rural India and from ₹1942 (Meghalaya) to ₹366 (Jammu & Kashmir) in urban India during 2017-18.The differences in health care utilisation and morbidity level of households would contribute the differences in expenditure on health across the states in India. the average household medical expenditure is very high in some of the states and very low in some other states. This trend shows that average household medical

expenditure per treatment in India is highly diversed and unique among major states in India. this inter-state disparity might be influenced by income, education and geography. This chapter compares the disparity of expenditure on health among the states in India. It is not at all a state wise disparity but a rural-urban, male-female, public hospitals-private hospitals, public expenditure-private expenditure and medical expenditure-non medical expenditure also.

Table 4.23
Average Household Medical Expenditure (₹) per Treatment in India (2017-18)

States	Inpatient		Outpatient	
	Rural	Urban	Rural	Urban
Andhra Pradesh	14682	19920	413	576
Arunachal Pradesh	4426	5864	1163	1815
Assam	9363	31482	728	845
Bihar	11588	17560	612	908
Chhattisgarh	24765	17473	300	531
Goa	6850	13867	432	386
Gujarat	14123	16876	359	556
Haryana	18017	21227	661	827
Himachal Pradesh	18458	14570	802	461
Jammu & Kashmir	6355	15476	368	366
Jharkhand	16554	22910	615	959
Karnataka	11930	21657	524	681
Kerala	15574	19334	421	531
Madhya Pradesh	14031	16020	721	937
Maharashtra	18898	30056	509	633
Manipur	13977	16950	776	1109
Meghalaya	1381	17937	564	1942
Mizoram	3444	5599	419	907
Nagaland	5845	11217	724	791
Odisha	10500	17018	471	464
Punjab	29829	25471	569	666
Rajasthan	15802	16972	816	809
Sikkim	6058	6759	508	608
Tamil Nadu	12057	19963	482	619
Telangana	19039	26461	533	677
Tripura	4909	12132	992	1272
Uttar Pradesh	22792	30358	712	1107
Uttarakhand	15740	22005	360	671
West Bengal	12741	18466	563	618
All-India	15937	22031	561	687

Source: NSS 75th Round, NSS Report No: 586 (75/25.0), Health in India, 2020

There is disparity among the states in India regarding health status. The causes for the disparity of health spending would be socio-economical, political, cultural, geographical, demographical and genetical in nature.

1.152(PCII), 1.15 (GDPI), 0.904 (PEHI) to 0.877 (PEHI/pc). Per-capita income variables would substantial positive effect on per-capita household health expenditure compared to government expenditure on health. It is clear from the above analysis that the income variables and government expenditure would a decisive role in the determination of household health expenditure in India. The regression results of both linear and logarithmic equation suggest that the selected independent variables are key variables which influences and determines the household health expenditure in India.

6.5. Financial Return and Expenditure on Health in India

Health contributes the human capital of an individual. Healthy population act as a determinant and consequence of socio-economic development (Schultz, 1961). The investment in human capital can produce the monetary and non-monetary returns in an economy. Spending on health has both direct and indirect effect on economic growth (Becker, 1980). It is essential to examine the impact of investment on health on the productive capacity of India. It is evident that there is a positive association between per-capita GDP and household health expenditure in India during the period 1999-2000 to 2018-19. Household health expenditure can explain the productive capacity of the country in terms of GDP and per-capita income. In order to prove the relationship between expenditure on health and financial income, both linear and logarithmic regression equations are estimated.

Health is a fundamental requirement of economic development of a country. Human capital accumulation can be improved by investing in the health of the population (Schultz, 1961). It is obvious that, both public and household expenditure on health have a positive influence on the productivity of the country. The regression equation holds the same result and it is statistically significant. The productive capacity of the nation can be influenced by the spending on health by the government and the household. The GDP of the country would positively influenced by the health spending of the public and households (Equn.1 and Equn.2 in Table 6.7). The regression coefficient of GDPI is more in the case of HHEI than PHEI. At the same time the per-capita income is also dependent on the per-capita household health expenditure and per-capita public expenditure on health (Equn.3 and Equn.4 in Table 6.7). It can be observed that the regression coefficient of PCII is more in the case of HHEI/pc than PEHI/pc. The regression coefficient is also high in the case of total

negative rate during 2000-01 (0.52 percent) and maximum during 1996-97 (22.34 percent). The role of medical institutions for attaining a favourable health index is immense. The health institutions in the private sector also contributed to the better health indicators to the state. But there is no sufficient data regarding private health care facilities. The supply of health care is measured only with government medical institutions. The number of government medical institutions also exhibits an increasing trend and it rose from 2370 in 1994-95 to 2706 in 2007-08 with a CAGR of 0.95 percent. The percentage change in the number of medical institutions is high during 1999-2000 with 3.90 percent. The CAGR of variables varies from 6.01 percent (GSDPK), 5.48 percent (RTK), 5.37 percent (PCIK), 5.26 percent (PEHK), and 3.92 percent (PEHK/pc) to 0.95 percent (MIK). The CAGR of HHEK/pc is 11.95 percent which outruns all the selected variables in Kerala.

Table 6.11 (a)

Regression Results of Household Health Expenditure in Kerala

Equn. No	Dependent Variable	Intercept (Constant)	GSDP K	PEH K	PEHK /pc	TRK	PCIK	R^2	Adj R^2	F Ratio
Equn.1	HHEK/pc	-271.58 (-0.96)					0.042 (4.91)	0.68	0.64	24.06
Equn.2	HHEK/pc	-1375.38 (-4.06)			9.23 (7.31)					
Equn.3	HHEK/pc	-168.76 (-0.68)	0.012 (5.16)					0.69	0.66	26.57
Equn.4	HHEK/pc	-959.38 (-3.73)		2.415 (8.03)				0.84	0.83	64.41
Equn.5	HHEK/pc	-846.25 (-4.34)				0.109 (10.03)		0.89	0.88	100.53

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.8, 6.10(a), 6.10(b) and 6.10(c)

Among the variables related to expenditure on health in Kerala the annual growth rate is more in the case of per-capita GSDP of Kerala followed by remittances to Kerala, per-capita income, public expenditure on health, per-capita public expenditure on health and medical institutions in Kerala. The simple and multiple regression analysis of per-capita household health expenditure in Kerala is presented in Table 6.11 (a), 6.11 (b), 6.12 (a) and 6.12 (b). Both the linear and logarithmic equations are considered to identify the determinants of expenditure on health in Kerala.

The regression result shows a marginal positive association between per-capita income and the per-capita household health expenditure in Kerala (Equn.1 in Table 6.11 (a)). The per-capita income of Kerala marginally influences the variations in the

inequality in the distribution of health care. Hence public expenditure seems to have a high association with the household expenditure on health. Public expenditures are inevitable to reduce the income inequality in terms of providing accessibility of health care (Angko, 2009).

Table 6.12 (b)

Regression Results of Household Health Expenditure in Kerala (Logarithmic Equation)

Equation No	Dependent Variable	Intercept (Constant)	Independent Variables			R^2	Adj R^2	F Ratio
			PEHK/ pc	MIK	PCIK			
Equn.1	HHEK/ pc	-7.90 (-2.85)	3.318 (3.49)		-0.357 (-0.57)	0.82	0.79	24.86
Equn.2	HHEK/ pc	-67.56 (-7.93)		9.46 (8.74)		0.86	0.85	76.32

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.8, 6.10(a), 6.10(b) and 6.10(c)

The relative influence of variables in logarithmic equation on HHEK/pc differs from 9.46 (MIK), 2.824 (PEHK/pc), 2.281 (PEHK), 2.099 (TRK), 1.615 (PCIK) to 1.49 (GSDPK). The regression result shows the association of household health expenditure in Kerala and the variables determining it. The regression result helps to find out of the relative influence of household health expenditure in Kerala and macro economic variables such as GSDP, per-capita income, remittances and public expenditure on health. The regression result of logarithmic equation indicates a strong positive effect of MIK and a weak effect of GSDPK on household health expenditure in Kerala.

6.8. Financial Return and Expenditure on Health in Kerala

The productive capacity of the economy can be measured by GSDP, per-capita GSDP and household income through remittances. In order to find relationship between financial return and expenditure on health linear and logarithmic regression equations are used.

In the economic assessment both of the cost and outcome of the health investment are considered. The cost dimension includes cost-minimization, cost-benefit, cost-effectiveness or cost-utility (Ferraz, 1995). It can be evident from the regression result of return on expenditure on health that public expenditure on health in Kerala would influence substantial positive effect on GSDPK (Equn.2 in Table 6.13). Investment in human capital enhances the productivity of the state. Human capital formation through education and health increases the productivity of the labour which fosters economic development. In Kerala household expenditure on education seems to be positively significant on productivity in terms of per-capita

6.10. Financial Return from Health in India and Kerala

The financial return from health concentrates the macroeconomic productivity indicators such as per-capita income and national income. This section tries to compare the returns from health expenditure in Kerala and in India. The financial return is greater from public expenditure on health than household health expenditure both in Kerala and in India. Moreover the effect of GDPI or GSDPK from public expenditure on health is higher in Kerala than in India. The impact of household health expenditure on income is more in Kerala than in India. The regression result is mostly consistent with both linear and logarithmic equation on financial returns on health in India and Kerala.

The regression results help to find out the influence of independent variables on household health expenditure in Kerala and in India. It also throws light on the productive capacity from expenditure on health. The analysis helps to find the strength among the variables. The variables like PEHI, PEHI/pc, PCII, GDPI and GDPI/pc have a significant role in determining the household health expenditure in India. In Kerala the variables such as PEHK, PEHK/pc, GSDPK, PCIK, RTK and MIK plays a prominent role in determining the household health expenditure. The productive capacity from household health expenditure in India is in terms of PCII and GSDPI. In Kerala the productive capacity is in terms of PCIK and GSDPK. The public expenditure on health is the most crucial factor to determine the household health expenditure in Kerala. Apart from these variables there are several factors contributed to the household health expenditure in Kerala. Hence to identify the micro level variables, a detailed primary data base analysis is needed.

(6) **Others**: Thrissur district shows lowest child sex ratio in Kerala as per Census 2011.

A pilot survey has conducted. Based on the insights from pilot survey, sampling instruments were revised. From the pilot survey it is found that 32.2 percent of households have expenditure on health care for a reference period of 15 days. Based on the pilot survey, the total sample size was fixed at 336 households. Rural population of Thrissur district is 32.81 percent and urban population is 67.19 percent of the total population as per the census 2011. The rural-urban sample size is fixed as a proportion of rural and urban population of Thrissur district. The rural and urban sample households are selected in the proportion of 1:2 based on census 2011. Out of 336 households 224 households are from urban area and 112 households are from rural area of Thrissur district (see Appendix 2- Table 1).

Figure 7.2
Analytical Framework

Population
Questionnaire
Pilot Survey
Sample Size
Collection of Data
Qualitative and Quantitative Data
Regression Analysis

Source: Prepared by the investigator

Thrissur district, the cultural capital of Kerala, is the center of health care in the central Kerala since it covers the health care needs of the people in Thrissur, Palakkad, Malappuram and northern part of Ernakulum district. Thrissur district is the fastest becoming educational capital of Kerala due to the existence of various medical, engineering, ayurvedic, veterinary and art and science colleges. Kerala University of Medical and Allied Sciences is located at Thrissur. There are four medical colleges in Thrissur district. The three allopathic medical colleges in Thrissur district are Government Medical College, Thrissur, Jubilee Mission Medical College and Research Institute, and Amala Institute of medical Sciences. Thrissur district is also well known for its Ayurvedic treatment. There are two Ayurveda colleges,

percentage of head of households who have PG &Above is low in rural area than in urban area.

Household expenditure is mainly dependent upon the household income. Hence the occupational background of the head of the household is considered under study to examine the determinants of household health expenditure. The occupation is categorized into regular salaried, self employed and casual wage labourers. The major share of occupation of head of household occupies self employed category both in rural and urban areas of Thrissur (Table 7.3). The occupation of head of household in urban area contains 39.3 percent of regular salaried category followed by 19.2 percent of casual wage labourers. But in rural area casual wage labourers (30.4 percent) occupies the second place followed by regular salaried category (27.7 percent).

Sometimes the gender of head of household would influence the expenditure pattern of households (Sinha et al., 2016). Majority of sample households in urban and rural areas have male-head of household. It is evident that 79.5 percent of rural households and 81.3 percent of urban households have male-head of household Female headed household is higher in rural area (20.5 percent) than in urban area (18.7 percent).

Table 7.4

Distribution of Households by Family

Category	Sub-Category	Rural	Urban
Type of Family	Joint family	19(16.9)	34(15.2)
	Nuclear family	93(83.1)	190(84.8)
	Total	112(100)	224(100)
Size of Family	1-4	55(49.1)	116(51.8)
	5-8	46(41.1)	90(40.2)
	9≤	11(9.8)	18(8.0)
	Total	112(100)	224(100)

Source: Survey Data

Type of family may be joint or nuclear. The sample households in Thrissur district are highly favoured for nuclear family. The rural-urban difference in type of family is low in the sample households. There are 16.9 percent of the rural households are in the nature of joint family and 83.1 percent of nuclear family. At the same time 15.2 percent of the families are joint and 84.8 percent are nuclear family.

Family size can be categorized to three classes; households with number of persons in the class of 1-4, 5-8 and 9 & above. Majority of households have 4 members both in rural and urban areas of sample households in Thrissur district. In rural area, 9.8 percent of families have a number of more than 9 members and 41.1

the same time, injury related diseases are comparatively low both in rural and urban area alike. Therefore, in this context, the government and other policy makers should take some urgent measures to control the non-communicable diseases in rural and urban area of Kerala. Similarly there should be specific attention to the problems related to non-communicable diseases of the marginalised sections of the society.

Figure 7.3

Distribution of Households by Nature of Diseases

Source: Survey Data

In rural area the burden of non- communicable diseases (43.9 percent) is high when compared to communicable diseases (41.9). In urban area 46.4 percent of diseases are non-communicable in nature and 42.0 percent are communicable diseases. The difference between burden of communicable and non-communicable diseases is low in both rural and urban area. 14.3 percent of rural households and 11.6 percent of urban households have reported injury cases.

Table 7.9

Distribution of Households by Type of Treatment

Type of Treatment	Rural	Urban
Specialty	26(23.2)	55(24.6)
General	50(44.6)	117(52.2)
Specialty+ General	36(32.2)	52(23.2)
Total	112(100)	224(100)

Source: Survey Data

Healthcare treatment may be general treatment or specialty treatment. It is noticed that 44.6 percent of rural and 52.2 percent of urban households utilize general treatment and 23.2 percent of rural and 24.6 percent of urban households utilize specialty treatment. Further there are, 32.2 percent of rural and 23.2 percent of urban

the sample households for post-discharge treatment. The source of treatment from government hospital increased after hospitalisation (50.15 percent) when compared to before hospitalisation (43.9 percent). But the source of treatment from private/charitable hospital decreased after hospitalisation (47.75 percent) when compared to before hospitalisation (48.2 percent). There would high discrepancy in expenditure between government and private hospitals.

7.5. Annual Household Health Expenditure of Households

Annual household health expenditure per-capita has obtained by dividing the annual household health expenditure by the household size. The variations in average annual household health expenditure per-capita with respect to various indicators are given below.

Table 7.14

Distribution of Average Annual Household Health Expenditure Per-capita by Religion

Religion	Rural	Urban
Hindu	6616.9	7015.3
Muslim	5554.9	6889.2
Christian	4836.0	8563.6
Average	5669.3	7489.4
Test Statistic	1.644	2.633
p value	0.440	0.268

Source: Survey Data

There is no significant difference between religion of households and average annual household health expenditure per-capita both in rural and urban area since p>0.05. Average annual household health expenditure per-capita is the highest for Hindus (₹6616.9) followed by Muslims (₹5554.9) and Christians (₹4836) in rural area. In urban area, the religion-wise household health expenditure is the highest for Christians (₹8563.6) followed by Hindus (₹7015.3) and Muslims (₹6889.2).

Table 7.15

Average Annual Household Health Expenditure Per-capita by Caste

Caste	Rural	Urban
General	6354.3	8440.9
SC/ST	4126.1	3850.3
OBC	5281.7	6760.5
Average	5254.0	6350.6
Test Statistic	0.268	15.195
p value	0.875	0.001

Source: Survey Data

Average household health expenditure is more for urban area (₹7489.4) than rural area (₹5669.3) with respect to religion. There is significant difference between

especially for urban households with PG & above. Lower educational level of urban and rural head of household would mount the expenditure on health.

There is marginal difference between different occupation of the head of household and average annual household health expenditure per-capita in rural area (p>0.05). But in urban area there is significant difference between different occupation of the head of household and average annual household health expenditure per-capita since the p value is 0.017.

The variations in the health expenditure based on occupation of head of the household shows that household health expenditure is high for self employed (₹6652) followed by casual wage labourers (₹6008.5) and regular salaried workers (₹4090.9) in rural area. In urban area, household health expenditure in relation to occupation of head of household varies from self employed (8723.4) followed by regular salaried workers (₹8048.2) to casual wage labourers (₹4412.6).

Table 7.19

Distribution of Average Annual Household Health Expenditure Per-capita by Gender of Head of the Household

Gender of head of the household	Rural	Urban
Male	6112.2	7509.9
Female	4621.9	7573.9
Average	6112.2	7541.9
Test Statistic	-0.853	-0.102
p value	0.394	0.919

Source: Survey Data

The influence of gender in determining the household health expenditure can be examined through the gender of head of sample household. There is no head of household as transgender.

Table 7.20

Distribution of Average Annual Household Health Expenditure Per-capita by Family Type

Family Type	Rural	Urban
Joint family	6245.9	6048.5
Nuclear family	5803.2	7792.8
Average	6024.5	6920.7
Test Statistic	-0.651	-0.453
p value	0.515	0.651

Source: Survey Data

The analysis shows that there is marginal difference between gender of head of household as male and female and average annual household health expenditure per-capita in rural (p=0.394) and urban area (p=0.919).

nature of diseases and household health expenditure (p=0.00). The burden of non-communicable diseases is much higher than that of communicable diseases among households. The incidence of non- communicable diseases is high in Kerala especially among elder people (Paul and Singh, 2017). Morbidity profile of Kerala shows a increase in non-communicable diseases without reduction in communicable diseases. Households spend more for non-communicable diseases compared to communicable diseases. Non-communicable diseases would enhance health expenditure among households. Average annual household health expenditure per-capita for injury in rural area is ₹1690.7 and ₹2525.7 in urban area. Average household health expenditure per-capita for communicable diseases in rural area is ₹9126.7 and ₹9928.3 in urban area while the expenditure for non-communicable diseases is ₹13300.8 in rural area and ₹18504.7 in urban area in Thrissur district.

Table 7.24

Distribution of Average Annual Household Health Expenditure Per-capita by Type of Treatment

Type of Treatment	Rural	Urban
Specialty	3821.5	5732.7
General	985.9	1339.3
Specialty+ General	8315.4	15755.7
Average	4374.3	7609.3
Test Statistic	80.297	122.214
p value	0.000	0.000

Source: Survey Data

Type of treatment influences expenditure on health among households. Specialised health services are costlier than general health services. The average expenditure for specialty treatment (₹3821.5) is higher than general treatment (₹985.9) in rural area.

Table 7.25

Distribution of Average Annual Household Health Expenditure Per-capita by Episodes of Hospitalisation

Episodes of hospitalisation	Rural	Urban
0-3	4421.3	5832.5
4+	11428.1	13918.6
Average	7924.7	9875.5
Test Statistic	-4.590	-6.463
p value	0.000	0.000

Source: Survey Data

In urban area average expenditure on general treatment is ₹1339.3 and ₹5732.7 for specialty treatment. Since p=0.00, there exists significant difference between household health expenditure and different type of treatment of households

The analysis shows that the burden of household health expenditure is reduced with voluntary prepayment on health care. Majority of the sample households have government funded health insurance scheme. Government funded health insurance scheme assisted households to reduce hospitalization expenses and utilize better hospital facilities (Reshmi et al., 2007; Mini, 2013). One of the major drawbacks of government sponsored health insurance scheme in Kerala is the limited number of private empanelled hospitals.

7.7. Household Budget and Expenditure on Health

Household budget shows the relative importance of various commodities and services with the given level of income. The preference of the consumer is different for different commodities. Percentage share of expenditure on health in household budget shows the relative importance of healthcare of households.

The two groups of consumption expenditure, food and non-food, among BPL and APL households in rural and urban area is shown in Table 7.29. Health is included in the non-food category of the total household consumption expenditure. In rural area food component in the average annual total household is low among BPL households (39 percent) compared to APL households (41 percent).

Table 7.29
Average Annual Consumption Expenditure by Item

Item	Rural			Urban		
	BPL	APL	Total	BPL	APL	Total
Food	38.5	39.2	38.85	37.2	36.5	36.85
Housing	10.5	9.5	10	10.9	9.1	10
Education	11.5	13.1	12.3	12.9	13.8	13.35
Transport and entertainment	6.9	7.4	7.15	6.1	8.9	7.5
Health	8.3	9.9	9.1	9.5	10.3	9.9
Fuel and Energy	7.4	6.9	7.15	8.4	8	8.2
Clothing and Footwear	8.1	8.9	8.5	8.1	7.5	7.8
Others	8.8	5.1	6.95	6.9	5.9	6.4
Total	100	100	100	100	100	100

Source: Survey Data

The average share of health of the total household consumption expenditure is 9.1 percent in rural area and it is 8.3 percent for BPL households and 9.9 percent for APL households. The share of health in average total household consumption expenditure among BPL households is very low in rural area. This may be due to the influence of government supported health insurance schemes like RSBY and CHIS. The government takes steps for a universal health insurance scheme by broadening the different categories of households into the scheme. This government supported

Average rural medical expenditure per-hospitalisation case in public hospital is ₹4759 and ₹26471 for private hospitals. Average rural medical expenditure per-hospitalisation case in public hospital increased from ₹3035 (NSS 71st round) to ₹4395 (NSS 75th round). Average rural medical expenditure per-hospitalisation case in private hospital increased from ₹25411 (NSS 71st round) to ₹25949 (NSS 75th round).

Table 7.30 (c)

Average Medical Expenditure in Kerala per-Hospitalization Case

Average expenditure Excluding Childbirth (₹) for treatment under	Public Hospital (Urban)		
	NSS 71st round	NSS 75th round	Primary Survey
Package Component	115	199	212
Doctors Fee	125	128	149
Diagnostic Tests	720	1063	1112
Medicines	1197	2175	2312
Bed Charges	155	212	257
Others	430	812	905
Total	2743	4590	4947

Source: NSS Report No. 574: Health in India, April 2016; NSS Report No. 586: Health in India, July 2020; Survey Data

Average urban medical expenditure per-hospitalisation case in public hospital is ₹4947 and ₹33378 for private hospitals. Average rural medical expenditure per-hospitalisation case in public hospital increased from ₹2743 (NSS 71st round) to ₹4590 (NSS 75th round).

Table 7.30(d)

Average Medical Expenditure in Kerala per-Hospitalization Case

Average expenditure Excluding Childbirth (₹) for treatment under	Private Hospital (Urban)		
	NSS 71st round	NSS 75th round	Primary Survey
Package Component	3730	5470	5518
Doctors Fee	4151	5502	5645
Diagnostic Tests	2570	3956	4003
Medicines	5163	7724	7980
Bed Charges	2721	5812	5911
Others	3474	4283	4321
Total	21808	32747	33378

Source: NSS Report No. 574: Health in India, April 2016; NSS Report No. 586: Health in India, July 2020; Survey Data

Average rural medical expenditure per-hospitalisation case in private hospital increased from ₹21808 (NSS 71st round) to ₹32747 (NSS 75th round). The cost of treatment has been increasing for the past several years. The price of medicines has increased tremendously.

Households received 80.1 percent surgery as free, 9.6 percent as partly free and 10.3 percent as on payment for surgery in government hospital. Households received 3.0 percent of surgery as free and 92.8 percent of surgeries as on payment in

Parameter Estimates table shows the coefficients, their standard errors, the *t* test, associated p-values (Sig.) and the coefficient intervals. Urban (Type of locality), Christian (Religion), OBC (Caste), APL (Income status), 1000000+ (Income group), Nuclear family (Family Type), 8+ (Family size), Yes (Old age dependency), Non-Communicable (Nature of diseases), 4+ (Episodes of institutional care) and Availed (Delivery care) are taken as the reference categories of the corresponding independent variables.

Table 7.34
Result of Multivariate Analysis

Parameter		B	Std. Error	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept		18515.26	2873.53	6.44	0.00	12861.67	24168.86
Type of Locality	Rural	-2103.22	673.85	-3.12	0.00	-3429.00	-777.43
	Urban	0ᵃ					
Religion	Hinduism	704.36	846.66	0.83	0.41	-961.43	2370.15
	Muslim	1106.75	1828.54	0.61	0.55	-2490.86	4704.36
	Christian	0ᵃ					
Caste	General	1438.77	1569.66	0.92	0.36	-1649.50	4527.04
	SC/ST	-32.86	1842.58	-0.02	0.99	-3658.09	3592.37
	OBC	0ᵃ					
Income status	BPL	-2225.59	2043.15	-1.09	0.28	-6245.44	1794.26
	APL	0ᵃ					
Income group	<150000	3954.39	2261.89	1.75	0.08	-495.82	8404.61
	150001-300000	2299.71	1401.27	1.64	0.10	-457.26	5056.67
	300001-500000	2655.85	1441.70	1.84	0.07	-180.65	5492.35
	500001-1000000	3195.05	1470.10	2.17	0.03	302.66	6087.44
	1000000+	0ᵃ					
Family type	Joint family	-3385.40	1277.30	-2.65	0.01	-5898.46	-872.34
	Nuclear family	0ᵃ					
Family size	1-4	428.06	1790.75	0.24	0.81	-3095.20	3951.32
	5-7	-334.77	1559.69	-0.21	0.83	-3403.44	2733.89
	8+	0ᵃ					
Old age dependency	No	157.46	762.83	0.21	0.84	-1343.39	1658.32
	Yes	0ᵃ					
Nature of diseases	Injury	-8431.21	1324.83	-6.36	0.00	-11037.78	-5824.64
	Communicable	-5818.60	1129.69	-5.15	0.00	-8041.24	-3595.96
	Non-Communicable	0ᵃ					
Episodes of institutional care	1-3	-2087.13	877.773	-2.378	.018	-3814.129	-360.135
	4+	0ᵃ					
Delivery care	Non-Availed	-7960.61	991.367	-8.030	.000	-9911.096	-6010.116
	Availed	0ᵃ					

Parameter Estimates
Dependent Variable: Average Annual Household Health Expenditure per-capita

a. This parameter is set to zero because it is redundant.

Source: Survey Data

Other categories are significant when compared with the reference categories. Since the corresponding p value of the category type of locality is less than 0.05 we can conclude that the average annual household health expenditure of rural is significantly different from that of urban. Also the negative value of the estimate

government hospitals. Debt position is the main constraint faced by the households in urban and rural area in relation to high household health expenditure. While in the case of rural households lack of saving (19.5percent) and low-insurance participation (18.2 percent) are the main problems to tackle high health expenditure.

Table 7.36

Problems of Households in Relation to Expenditure on Health

Problems	Rural	Urban
Inadequate saving	19.5	18.5
Insignificant cooperation of the head of household	3.6	2.2
Inadequate of health consciousness	5.5	4.7
Inadequate insurance participation	18.2	19.5
Insufficient information on health care facilities.	6.1	5.4
Inadequate support from the government	4.3	2.5
Infrastructure in government hospitals	6.2	12.1
Inadequate financing	16.5	13.8
Sub-optimum debt position	20.1	21.3

Source: Survey Data

The least affected problem is the poor cooperation of head of household both in rural (3.6 percent) and urban area (2.2 percent). Lack of health consciousness and poor information on health care are the other problems faced by the households in relation to expenditure on health.

The central and state government spent large amounts of money on health. The central government expenditure increased from ₹5108.63 crores to ₹66498.88 crores and the state government expenditure from ₹19710.68 crores to ₹263158.30 crores for the period 1999-2000 to 2019-20. Public expenditure on health in India increased from ₹19710.68 crores during the period from 1999-2000 to ₹263158.30 crores during the period 2019-20 with a CAGR of 13.13 percent. There exist variations in growth rate in per-capita public expenditure on health. Per-capita public expenditure on health in India also shows an increasing trend. It increased from ₹197 in 1999-2000 to ₹1962 in 2019-20. The CAGR of per-capita public expenditure on health in India is 11.57 percent during the period from 1999-2000 to 2019-20. Out of the total plan investment outlay the total health investment increased from ₹65.3 in first plan to ₹140135 in eleventh plan. Percentage of plan allocation to health sector out of total plan investment outlay is the lowest in the third plan (2.9 percent) and the highest in the eleventh plan (6.5 percent).

There exists a wide variation in household expenditure on health among different countries in the world. As per the WHO estimates, globally, the percentage change in out-of-pocket expenditure per-capita is low when compared to government expenditure on health. The household expenditure on health in India increased from ₹5671 crores in 1985-86 to ₹537043 crores in 2018-19 with a CAGR of 14.32 percent. The per-capita household expenditure on health in India increased from ₹75 in 1985-86 to ₹4047 in 2018-19 with a CAGR of 12.45 percent. The percentage share of household expenditure on health in total expenditure on health (both public and private) decreased from 72.8 percent in 1999-2000 to 69.2 percent in 2018-19 in India. Out-of-pocket expenditure as a percentage of household expenditure on health decreased from 91.3 percent in 1995-96 to 89.2 percent in 2014. Out-of-pocket expenditure constitutes 67.0 percent of total expenditure on health in 1995-96 and it falls to 62.0 percent in 2014-15. The total expenditure on health (both public and private) in India increased from ₹72554.6 crores during 1999-2000 to ₹776494.5 crores during 2018-19 with a CAGR of 12.58 percent.

Among the various financing schemes, share of household out-of-pocket payment to the current health expenditure diminishes from 71.7 percent in 2000-01 to 65.33 percent in 2015-16. The contribution of government schemes and compulsory mode of contribution to health care financing schemes to the current health expenditure shows a marginal increase from 22.6 percent to 25.03 percent and

expenditure on health can positively influence Gross state domestic product of India. More specifically, the financial return is positive via the health capital formation. In other words, the Gross domestic product and per-capita income of India would be influenced by following independent variables: - (1) public health expenditure in India (2) household expenditure on health in India. The extent and degree of impact of household expenditure is significant in determining the aggregate as well as per-capita income in India. The impact of GDP of India would be high in positively influencing the health spending of the public and households. More specifically, health expenditure and financial return is positively associated and it is statistically significant. Based on the insights from the all-India analysis, this study identified the determinants of household expenditure on health in Kerala.

The study result indicates that following variables are significant:- (1) per-capita government expenditure on health in Kerala (2) Gross State Domestic Product in Kerala (3) remittances to Kerala and (4) medical institutions in Kerala. The regression result shows a marginal positive association between per-capita income and the per-capita household health expenditure in Kerala. Per-capita household expenditure on health also likely has a substantial positive association with per-capita public expenditure on health in Kerala. Medical institutions in Kerala would have a strong positive effect on household health expenditure. The regression analysis indicates that the per-capita public expenditure on health would have a pivotal role in determining the household health expenditure in Kerala when compared to other variables. The regression analysis evaluated the impact of health expenditure on financial income in Kerala. It is evident from the regression results of return on expenditure on health that public expenditure on health in Kerala would influence on Gross State Domestic Product and per-capita income of Kerala.

8.2.4. Nature and Constraints of Household Expenditure on Health

The expenditure at the aggregate level and its impact at the micro level is examined in Thrissur district of Kerala. The study found that the expenditure is different with respect to following factors such as religion, caste, geographical location of the household, occupation of the head of household, education and household income. For instance, there is significant difference between religion of households and average annual household health expenditure per-capita both in rural and urban areas. Average annual household health expenditure per-capita is the

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expenditure policy should give special attention into the problems of government sector in the context of neo-liberal policies. Further, an effective mechanism is necessary to regulate the private health institutions in India.

4. Government expenditure is very important in determining the household expenditure on health. Both of these variables will enhance the monetary income in India as well as in Kerala. Therefore, Government should encourage household expenditure on health and regulate private medical institutions in India.

5. The study highlights the importance of mutual-coexistence of household and public expenditure on health in India as well as in Kerala.

6. Spending on health per-capita expenditure in very crucial in a populated country like India.

7. In Kerala, the government should support Non-Resident Indians (NRIs) through various measures such as health cards, pension schemes, and speedy processes for migration. It will positively influence the state income. Further, it will have positive spill-over effects and externalities in the health system of the state. However, state should measures to regulate the administration of private medical institutions which is funded by remittances.

8. At the micro level, household have faced various constraints. Among these constraints, inadequate health education is obvious. Health education is a prerequisite for good health. It will reduce gender inequality of the bottom most sections of the society. Effective incorporation of health education in the education system will produce healthy children.

9. The role of voluntary prepayment in expenditure on health is immense. Therefore, government should allocate more funds to the health insurance scheme of the poor families.

10. Government should take urgent initiatives to start various health schemes to improve the savings position of the households in the area of health expenditure.

11. Government should make some urgent measures to improve the quality and quantity of infrastructure in government hospitals in Kerala especially in the context of Covid-19.

12. Health-card to the poor patients in the private hospitals will be a viable option to converge the services of government and private medical institutions in the state.

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9. Type of Latrine:

Connected to septic tank	
Biogas toilet	
Open pit latrine	

10. Solid waste disposal:

Burial	
Dumping	
Burning	
Composting	
Biogas plant	
Collected by agency	
No method	
Others	
No response	

11. Liquid waste disposal:

Soakage pits	
Connected to sewerage system	
Drainage to outside drain	
Open drainage	
Others	
No response	

12. Type of water storage:

Protected water tank	
Unprotected water tank	
Protected sump	
Unprotected sump	
Utensils	
No specific storage	
Others	
No response	

2.HOUSEHOLD INFORMATION

Sl.No	Age	Gender	Marital Status	Nature of diseases	Type of treatment	Episodes of hospitalisation	Category of Services received	Payment Category of Services received	Average expenditure

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CONSTRAINTS RELATED TO HEALTH EXPENDITURE

Accessibility of Governmentt Health Programmes
Financing problems
Insurance problems
Information problem
Infrastructure problem
Problem related to govt. Hospital
Medicine related problem:
Food and life style diseases problem

Communicable Diseases
Typhoid, malaria, cholera
gastroenteritis, jaundice,
mumps, measles, chicken-pox
and TB

Non-Communicable Diseases
Arthritis, rheumatism, CVDs,
diabetes, kidney problems,
asthma, cancer, anemia,
disorders
Respiratory infections, fever, skin diseases,
eye diseases, headache, body ache,
stomach problems, diarrheal diseases,
indigestion, gas acidity.

Appendix 2

Table 1

Sample Framework for Primary Data Collection of Thrissur District in Kerala

Area	Block Panchayath	Grama Panchayath	No. of Selected Wards	No. of Selected Households from Each Ward	Total Households
Rural	Chowannur	Kadavallur	1	28	28
	Cherpu	Avinissery	1	28	28
	Wadakkancherry	Velur	1	28	28
	Thalikulam	Nattika	1	28	28
Total (Rural)					112
Urban		Chavakkad Municipality	2	28	56
		Chalakkudy Municipality	2	28	56
		Kodungallur Municipality	2	28	56
		Thrissur Corporation	2	28	56
Total (Urban)					224
Grand Total (Rural + Urban)					336

CHAPTER 5

HOUSEHOLD HEALTH EXPENDITURE IN KERALA: AN EMPIRICAL ANALYSIS

5.1. Introduction

The foundation for a medical care system was laid in Kerala much before independence. Some of the present health facilities especially hospitals were started before independence. Accessibility of medical care facilities has played a major role in influencing the health status of Kerala. Decentralisation of economy since 1994 improved the infrastructure facilities and equipments in primary and secondary healthcare institutions in Kerala (Economic Review 2016). The good health status of the population had existed prior to its foundation. The health care system is considered to be the principal factor for attaining the high level of health status in Kerala. Favourable health outcomes are often attributed to its effective health care system, which has ensured high accessibility at low cost, and non-health sector contributions including wide-spread education, land reforms, public distribution of food, and housing. Incorporated western and traditional medicine provided by the government was accessible to the people (Panikar and Soman, 1984).

Kerala achieved a remarkable progress in the health care. These have been achieved due to a large number of factors such as pro-active intervention by the State, social mobilization by social, political and religious groups and improvement in other social indicators such as female education. However recent trends show that health of

the people of Kerala face the double threats of re-emerging communicable diseases and emergence of risk factors that predispose persons to chronic diseases (State Planning Board, 2013). The expectancy of life has increased, with consequent rise in degenerative diseases of aging and life-styles. Changes in dietary habits and increased tobacco and alcohol use are likely to increase the incidence of chronic diseases in future (Economic Review, 2013).

5.2. Health Status and Demographic Indicators in Kerala

The peculiarities in health status and demography of Kerala are essential to examine the variations in expenditure on health. Population of the state shows an increasing trend from 1.69 crores in 1961 to 3.34 crores in 2011. The decadal growth rate of population diminished from 26.29 percent in 1971 to 4.91 percent in 2011 (See Table 5.1).

Table 5.1

Percentage Distribution of Population and Growth Rate of Population in Kerala

Year	Age Group			Population (Crores)	Growth Rate of Population
	0-14	15-59	60+		
1961	42.42	51.53	5.84	1.69	24.76
1971	40.26	53.52	6.22	2.13	26.29
1981	35.00	57.50	7.50	2.54	19.24
1991	29.80	61.40	8.80	2.90	14.32
2001	26.08	63.44	10.48	3.18	9.43
2011	23.40	63.90	12.70	3.34	4.91

Source: Census of India, 2011

One of the important characteristics of demographic transition of Kerala is population ageing. The proportion of the population in the old age group (60+) is showing an increasing trend from 5.84 percent in 1961 to 12.7 percent in 2011. This may be due to the increasing life expectancy and availability of health facilities in the state. The proportion of the population in the age group of 0-14 shows a diminishing trend from 42.42 percent in 1961 to 23.4 percent in 2011. The old age dependency ratio in Kerala which is highest among Indian states also aggravated the level of morbidity.

5.2.1. Life Expectancy at Birth

It is clear from the Table 5.2 that the expectation of life at birth in Kerala shows an increasing trend from 72.5 years during 2001 to 75.3 years during 2016. The high expectation of life necessitates high demand for healthcare. High expenditure on

healthcare would increase the life expectancy. Hence life expectancy would be the cause and effect of expenditure on health in Kerala.

5.2.2. Birth Rate and Death Rate

Birth rate and death rate are significant factors in the growth rate of population. Birth rate, a measure of fertility of population, in Kerala shows a decreasing trend from 17.0 percent in 2001 to 13.9 percent in 2018. As per the Sample Registration System Statistical report the birth rate in India exhibits a diminishing rate from 25.0 percent in 2001 to 20.0 percent in 2018. Birth rate in Kerala is low during 2001 and 2018 compared to the national level.

Table 5.2

Health Indicators of Kerala

Mid Year	Birth Rate	Death Rate	Life Expectancy at birth
2001	17.0	6.6	72.5
2002	16.9	6.4	73.2
2003	16.7	6.3	73.6
2004	15.2	6.1	73.9
2005	15.0	6.4	74.1
2006	14.9	6.7	74.3
2007	14.7	6.8	74.3
2008	14.6	6.6	74.2
2009	14.7	6.8	74.4
2010	14.8	7.0	74.7
2011	15.2	7.0	74.8
2012	14.9	6.9	74.9
2013	14.7	6.9	75.2
2014	14.8	6.6	75.1
2015	14.8	6.6	75.2
2016	14.3	7.6	75.3

Source: Sample Registration System Statistical Report, Various Years

Death rate is a simple measure of mortality. There is a marginal increase observed in the case of death rate of Kerala from 6.6 percent in 2001 to 6.9 percent in 2018. As per the Sample Registration System Statistical report the death rate in India is reduced from 8.4 percent in 2001 to 6.2 percent in 2018.

5.2.3. Infant Mortality Rate

IMR is a crude indicator of overall health scenario of a country. Lower the IMR higher will be the health status of a country. Kerala achieved the desired level of infant deaths. IMR in Kerala increased from 11 infants in 2001 to 15 infants in 2006. After that the IMR decreased to 7 infants in 2018. There is a decrease in the IMR at national level from 66 infants in 2001 to 32 infants in 2018. Reducing IMR is a Sustainable Development Goal.

5.2.4. Under 5 Mortality Rate

Under 5 Mortality Rate is also an indicator of mortality to measure the death rate of children below 5 years. Under 5 Mortality Rate in Kerala decreased from 13 during 2011 to 9 during 2015 while at the national level it reduced from 55 during 2011 to 43 during 2015. Under 5 Mortality Rate is highest among female child compared to male child both in Kerala and national level for 2011 and 2015. Under 5 Mortality Rate among female child reduced from 14 to 10 and male child from 12 to 7 for the period 2011 and 2015 in Kerala. At the national level Under 5 Mortality Rate among female child reduced from 59 to 45 and male child from 51 to 40 for the period 2011 and 2015.

5.2.5. Maternal Mortality Ratio

Maternal Mortality Ratio (MMR) is an indicator of maternal death. It can be observed that the MMR has been reducing in Kerala and at the national level. MMR in Kerala reduced from 95 maternal deaths during 2004-06 to 46 maternal deaths during 2014-16 while at the national level it decreased from 254 to 130 for the period 2004-06 to 2014-16.

5.2.6. Sex Ratio

Sex ratio, the number of females per 1000 males, in Kerala increased from 1058 during 2001 to 1084 during 2011and at the national level it marginally increased from 933 during 2001 to 943 during 2011. Kerala has a favourable sex ratio among the states of India. Child sex ratio, the number of female child to per 1000 male child under 5 years, is very low compared to sex ratio of adults. At the national level child sex ratio is in an alarming situation since it decreased from 927 during 2001 to 919 during 2011. In Kerala it increased from 960 in 2001 to 964 in 2011.

5.2.7. Prevalence of Diseases

Both the communicable and non-communicable diseases are great threat to life. Kerala witnessed the re-emergence of the communicable and existence of non-communicable diseases. The high cost of medicines and longer duration of treatment leads a huge financial burden to the people. Cancer, diabetes, cardio-vascular diseases and lung diseases are major non-communicable diseases prevalent in Kerala. Among the non-communicable diseases cancer is a major threat to all sections of human population. Delay in early detection, minimal treatment centres, enormous treatment cost and lack of awareness donate to high mortality of this diseases. Regional Cancer

Centre (RCC), Malabar Cancer Centre and Cochin Cancer and Research Centre are the hospitals in government sector for cancer treatment apart from the medical colleges. the number of new cancer cases registered in RCC, Thiruvananthapuram is presented in Table 5.3.

Table 5.3

Number of New Cancer Cases Registered in RCC

Year	Number of new cases registered	Percentage change
2013-14	14985	-
2014-15	15940	5.99
2015-16	16042	0.64
2016-17	16255	1.31
2017-18	16443	1.14
Total	79665	-

Source: Regional Cancer Centre, Thiruvananthapuram

The number of new cancer cases registered in RCC during the period 2013-14 to 2017-18 was 79665. In 2017-18 the new cases registered in RCC was 16443 and there was 1.14 percent increase from the previous year. There was a tremendous increase in the number of new cancer cases from 2013-14 to 2014-15. In Kerala nearly 1 lakh people are under treatment for this disease annually. Extensive modernisation and urbanisation, extreme lifestyle changes, profound dependency on alcohol and tobacco, likeness for white collar jobs, unhealthy eating patterns, high levels of stress in all strata of population are the contributory factors of high prevalence of non-communicable diseases in Kerala (Economic Review, 2018). A survey conducted by Achutha Menon Centre for Health Science Studies on non-communicable diseases exhibits the severity of non-communicable diseases in Kerala which is highest among the Indian States. The survey reveals that one out of five has diabetes and one out of three has hypertension.

Mental health in Kerala also calls for special attention. As per the Census of India 2011, in Kerala 0.2% of the population suffers from mental retardation and 0.2% suffers mental illness compared to a national average of 0.12% and 0.06% respectively. Kerala reported high levels of mental illness compared to all India. Another notable feature in the health scenario of Kerala is high suicide rate. As per the report of National Crime Records Bureau the suicide rate is 23.9 per 100000 population for the year 2014 which is double the national rates. Kerala witnessed the dual burden of diseases (both communicable and non-communicable).

The magnitude of public health issues in Kerala in the form of communicable diseases for different time periods is given in Table 5.4. The state has been successful in controlling a number of communicable diseases earlier

Table 5.4

Prevalence of Communicable Diseases in Kerala

Disease	2014	2015	2016	2017
Dengue Fever	2548	4114	7218	21993
Malaria	1751	1549	1540	1192
Leptospirosis	1075	1098	1710	1408
Hepatitis-A	2833	1980	1351	988
Typhoid	1955	1772	1668	3144
Fever(inpatient)	85959	96189	80049	109974
H1N1	62	900	22	1411
Confirmed Chikungunya	264	152	124	54

Source: Directorate of Health Services, Kerala

But the emergence of dengue fever, malaria, leptospirosis, hepatitis H1N1 and Nipha results a hike in morbidity and mortality.

Figure 5.1

Epidemiological Updates of COVID-19 in Kerala
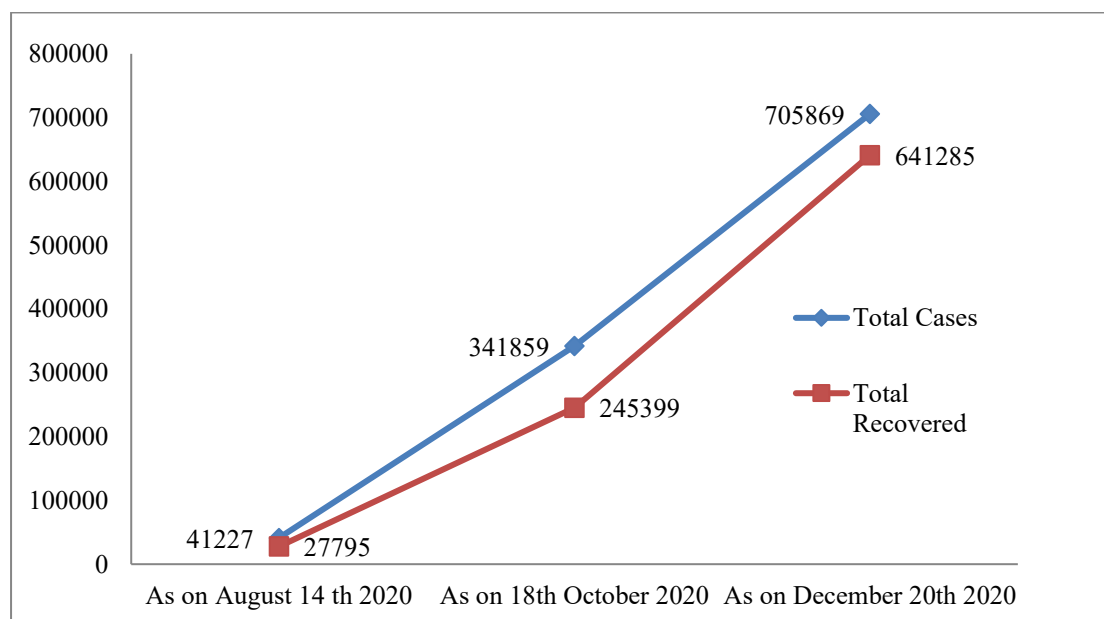
Source: Directorate of Health Services, Kerala

Apart from the other communicable diseases, COVID-19 also mounted the disease burden of the people. The fist case of COVID-19 was confirmed in Kerala (the first case in India also) on 30th January 2020. As per COVID-19 Weekly Bulletin of Directorate of Health Services Kerala, there have been 705869 confirmed cases with 641285 recoveries and 2816 deaths in Kerala as on 20th December 2020. COVID-19 pandemic would influence the economy badly.

5.3. Health Institutions in Kerala

The health care system in Kerala consists of institutions in government sector, private sector and co-operative sector with systems of treatment in Allopathy, Indian System of Medicine (ISM), Homeopathy, Sidha, Unani and Naturopathy. Modern medical services in Kerala are offered by the Department of Health Services and the concerned medical education is dealt by the Directorate of Medical Education.

Table 5.5

Number of Modern Medical Institutions in Kerala (2017)

District	General Hospital		District Hospitals		Private Hospitals	
	Number	Bed	Number	Bed	Number	Bed
Thiruvananthapuram	2	1183	2	562	966	10348
Kollam	0	0	1	537	850	7995
Pathanamthitta	2	714	1	210	451	5873
Alappuzha	1	400	2	487	881	4112
Kottayam	4	1064	0	0	980	7622
Idukki	0	0	2	274	487	4984
Ernakulam	2	1049	1	271	1810	17806
Thrissur	2	456	1	117	979	11267
Palakkad	0	0	1	544	653	6561
Malappuram	1	501	3	483	1353	8767
Kozhikode	1	550	1	210	1206	8764
Wayanad	1	250	1	500	301	2284
Kannur	1	514	1	616	950	7184
Kasaragod	1	212	1	400	487	1806
Kerala	18	6920	18	5157	12363	105373

Source: Department of Economics and Statistics, Kerala, 2019

The number of modern medical institutions in Kerala during 2017 is presented in Table 5.5. The number of modern medical institutions consists of 12363 private medical institutions during 2017. The number of beds under private facilities is high compared to the government facilities. Health care become very expensive due to the inefficiency of government facilities and exploitative nature of private sector (Soman, 2007). Relative neglect of public health care sector over time, in particular the primary and secondary health care, especially before the 11th plan alienated the public health system from the common person. Subsequently dependence on private sector grew substantially even among the poorer section in the rural area. The public sector was unable to meet the needs of the population. After the 10th plan the government reversed this trend and revamp the public health system thoroughly (Economic Review, 2010). The decentralisation of the government since 1994 improved the infrastructure facilities and equipments in primary and secondary health care institutions in Kerala.The number of private hospitals was high in Ernakulam (1810)

followed by Malappuram (1353) and least number of private hospitals was in Wayanad (301) during 2017. The number and bed strength in Kerala was 18 and 6920 in general hospitals, 18 and 5157 in district hospitals and 12363 and 105373 in private hospitals respectively

Table 5.6

Private Medical Institutions in Kerala based on Year of Starting

District	Before 1990	Between 1990-1999	Between 2000-2009	2010 onwards	Total
Thiruvananthapuram	136	142	237	451	966
Kollam	144	136	178	392	850
Pathanamthitta	81	103	112	155	451
Alappuzha	153	189	197	342	881
Kottayam	212	187	224	357	980
Idukki	160	67	75	185	487
Ernakulam	270	281	434	825	1810
Thrissur	134	163	228	454	979
Palakkad	79	70	143	361	653
Malappuram	106	142	263	842	1353
Kozhikode	139	150	282	635	1206
Wayanad	62	46	63	130	301
Kannur	149	161	212	437	959
Kasaragod	97	75	120	195	487
Total	1922	1912	2768	5761	12363

Source: Department of Economics and Statistics, 2019, Kerala

The sanctioned bed strength was high in Thiruvananthapuram for general hospitals and Kannur for district hospitals and Ernakulam for private hospitals during 2017. There was no general hospital in Kollam, Idukki and Palakkad.

Table 5.7

Number of Government, Aided and Unaided Colleges in Kerala, October 2018

Stream	Government	Aided	Unaided	Total
Modern Medicine	10	0	23	33
Ayurveda Medicine	3	2	12	17
Homoeo Medicine	2	3	0	5
Dental	5	0	20	25
Sidha Medicine	0	0	1	1
Unani Medicine	0	0	1	1
Nursing	6	0	117	123
Paramedical	7	0	41	48
Pharmacy	4	0	39	43
Total	37	5	254	296

Source: Kerala University of Health and Allied Sciences

It is clear from the Table 5.7 that there was 37 government, 5 aided and 254 unaided colleges affiliated under various streams as on October 2018. The predominance of unaided colleges in the health sector makes this as a profit oriented

business. Not only has medical care led to better health, greater longevity and increased productivity, but it has also become of the largest business in the world. The business aspects of the health care act as an invisible hand in creating a demand for health care which is more powerful than the desire to improve the standard of living and care for the sick. However the fundamental theorem of exchange upholds that for a trade to take place, both the buyer and the seller must believe that it makes them better off (Getzen, 2012).

5.4. Public Expenditure on Health in Kerala

Public expenditure on health in Kerala can be generally divided into two; Medical and Public Health and Family Welfare. Revenue and capital expenditure on Medical and Public Health and Family Welfare constitutes public expenditure on health in Kerala.

Table 5.8

Revenue Expenditure on Health in Kerala

Year	Revenue Expenditure (₹ Lakh)		Percent change in Revenue Expenditure	
	Medical and Public Health	Family Welfare	Medical and Public Health	Family Welfare
2000 - 2001	58170	9218	-	-
2001 - 2002	62678	10256	7.75	11.26
2002 - 2003	66630	9320	6.31	-9.13
2003 - 2004	71975	11195	8.02	20.12
2004 - 2005	78395	10704	8.92	-4.39
2005 - 2006	83708	10403	6.78	-2.81
2006 - 2007	98005	12758	17.08	22.64
2007 - 2008	108966	15234	11.18	19.41
2008 - 2009	135008	17770	23.90	16.65
2009 - 2010	145618	19675	7.86	10.72
2010 - 2011	174885	21598	20.10	9.77
2011 - 2012	247378	30621	41.45	41.78
2012 - 2013	278935	32347	12.76	5.64
2013 - 2014	315336	35418	13.05	9.49
2014 - 2015	363864	39646	15.39	11.94
2015 - 2016	411592	43565	13.12	9.88
2016-2017	501298	48644	21.79	11.66
2017-2018	598411	52081	19.37	7.07

Source: State Finances: A Study of Budgets, Reserve Bank of India, Various Years

Revenue expenditure on Medical and Public Health and Family Welfare in Kerala is presented in Table 5.2. It is clear that revenue expenditure on Medical and Public Health and Family Welfare in Kerala shows an increasing trend. Revenue expenditure on Medical and Public Health increased from ₹58170 lakhs during 2000-

01 to ₹598411 lakh during 2017-18. Revenue expenditure on Family Welfare increased from ₹9218 lakh during 2000-01 to ₹52081 lakh during 2017-18. In 2000-2001 revenue expenditure for Medical and Public Health was six times more than of Family Welfare and in 2017-2018 it was eleven times more than of Family Welfare.

Table 5.9
Capital Expenditure on Health in Kerala

Year	Capital Expenditure on Health (₹ Lakh)		Percentage change in Capital Expenditure	
	Medical and Public Health	Family Welfare	Medical and Public Health	Family Welfare
2000 - 2001	1630	49	-	-
2001 - 2002	2659	14	63.13	-71.43
2002 - 2003	4437	139	66.87	892.86
2003 - 2004	2153	115	-51.48	-17.27
2004 - 2005	2937	91	36.41	-20.87
2005 - 2006	5704	103	94.21	13.19
2006 - 2007	2986	23	-47.65	-77.67
2007 - 2008	4665	18	56.23	-21.74
2008 - 2009	4456	18	-4.48	0.00
2009 - 2010	6265	1	40.60	-94.44
2010 - 2011	9880	0	57.70	-100.00
2011 - 2012	11765	0	19.08	-
2012 - 2013	13041	24	10.85	-
2013 - 2014	13032	0	-0.07	-100.00
2014 - 2015	19319	1	48.24	-
2015 - 2016	21967	0	13.71	-100.00
2016 - 2017	34411	0	56.65	-
2017 - 2018	32179	0	-6.49	-

Source: State Finances: A Study of Budgets, Reserve Bank of India, Various Years

Public Expenditure on health from capital account increases from ₹1630 lakh in 2000-2001 to ₹32179 lakh in 2017-18 for Medical and Public Health. The percentage increase in Medical and Public Health from capital account was maximum during 2005-2006 and minimum during 2003-2004. The maximum allocation for Family Welfare from capita account was ₹139 lakh during 2002-2003. There was insignificant capital allocation to Family Welfare from 2010-2011 to 2017-2018 except for the periods 2009-2010 and 2012-2013.

Percentage change in revenue expenditure for Medical and Public Health was in the peak level (41.45 percent) during 2011-2012. Percentage change in revenue expenditure for Medical and Public Health was minimum (6.31 percent) during 2002-2003. Percentage change in revenue expenditure for Family Welfare reached the highest trend (41.78 percent) during 2011-12. Expenditure on Family Welfare shows negative percentage change during 2002-2003, 2004-2005 and 2005-2006.

Percentage change in revenue expenditure for Medical and Public Health and Family Welfare in Kerala is evident from Figure 5.2. Percentage change in capital expenditure for Medical and Public Health and Family Welfare in Kerala is evident from Figure 5.3.

Figure 5.2
Percentage Change in Revenue Expenditure on Health in Kerala
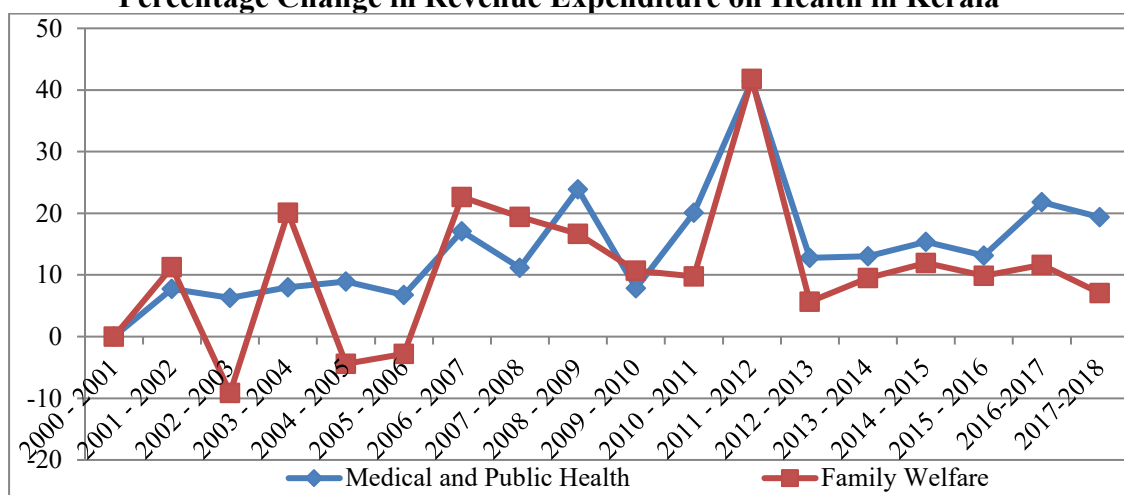
Source: State Finances: A Study of Budgets, Reserve Bank of India, Various Years

Percentage change in capital expenditure for Family Welfare reached its highest point (892.86 percent) during 2002-03.

Figure 5.3
Percentage Change in Capital Expenditure on Health in Kerala
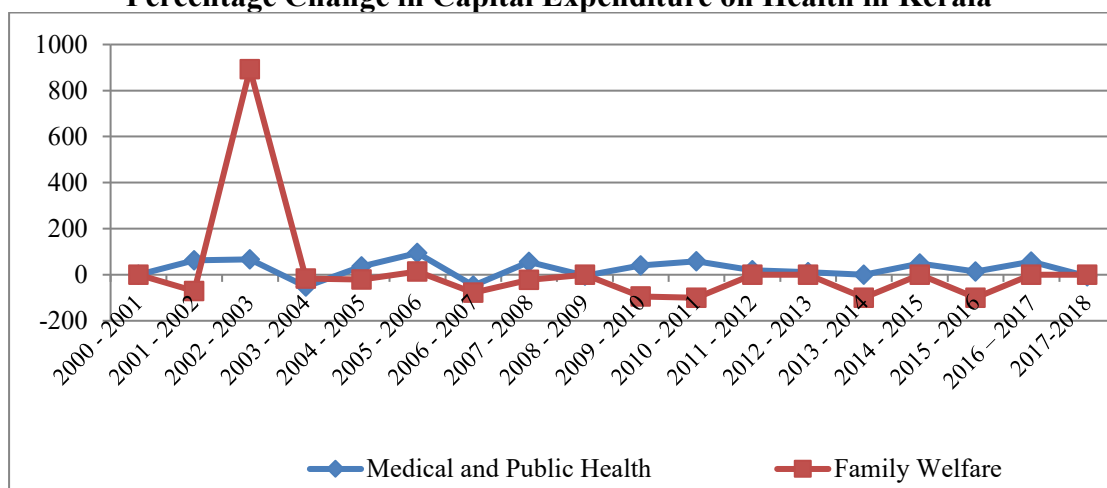
Source: State Finances: A Study of Budgets, Reserve Bank of India, Various Years

Percentage change in capital expenditure for Medical and Public Health was maximum (94.21 percent) during 2005-2006. Capital expenditure on Family Welfare shows negative percentage change. It is evident from the Table 5.10 that the public expenditure on health (both revenue and capital expenditure on Medical and Public Health and Family Welfare) in Kerala increased from ₹41721 in 1995-1996 to

₹682671 in 2017-2018 with a CAGR of 12.92 percent. There was a negative percentage change in public expenditure on health in Kerala during 2000-2001.

Table 5.10
Public Expenditure (Revenue & Capital Expenditure) on Health in Kerala

Year	Public Expenditure (₹ Lakh)	Percentage change	Year	Public Expenditure (₹ Lakh)	Percentage change
1995 - 1996	41721	0.00	2007 - 2008	128883	13.28
1996 - 1997	45341	8.68	2008 - 2009	157252	22.01
1997 - 1998	51044	12.58	2009 - 2010	171559	9.10
1998 - 1999	57511	12.67	2010 - 2011	206363	20.29
1999 - 2000	71106	23.64	2011 - 2012	289764	40.41
2000 - 2001	69067	-2.87	2012 - 2013	324347	11.93
2001 - 2002	75607	9.47	2013 - 2014	363786	12.16
2002 - 2003	80526	6.51	2014 - 2015	422830	16.23
2003 - 2004	85438	6.10	2015 - 2016	477124	12.84
2004 - 2005	92127	7.83	2016 -2017	584353	22.47
2005 - 2006	99918	8.46	2017 - 2018	682671	16.83
2006 - 2007	113772	13.87	CAGR		12.92

Source: State Finances: A Study of Budgets, Reserve Bank of India, Various Years

Health has been a major area of concern in the budget of the state. Department-wise plan outlay during the annual plan period 2012-13 and 2019-20 is given in the Figure 5.4

Figure 5.4
Percentage of Plan Outlay on Health by Department-wise in Kerala
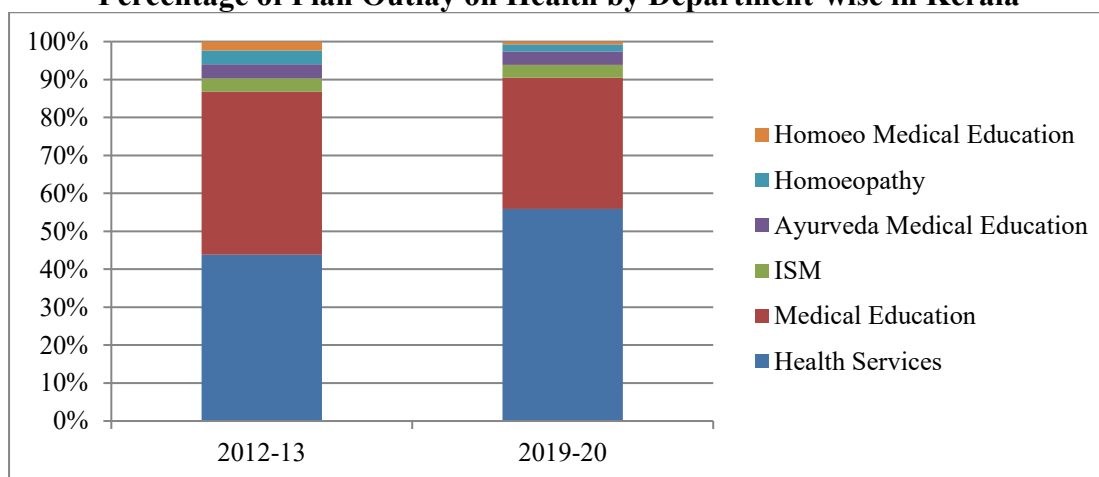
Source: Economic Review, Government of Kerala, Various Issues

The percentage of plan allocation during 2012-13 as department-wise is likely that 43.8 percent for Health Services, 43.0 percent for Medical Education 3.5 percent for ISM, 3.7 percent for Ayurveda Medical Education, 3.7 percent for Homoeopathy and 2.3 percent for Homoeo Medical Education. During 2019-20, 55.89 percent for Health Services, 34.56 percent for Medical Education, 3.39 percent for ISM, 3.55

percent for Ayurveda Medical Education, 1.90 percent for Homoeopathy and 0.71 percent for Homoeo Medical Education allocated for various department of health.

Table 5.11 (a)
Department-wise Plan Outlay and Expenditure (₹ lakh) in Kerala

Year	Health Services		Medical Education		ISM	
	Outlay	% Exp.	Outlay	% Exp.	Outlay	% Exp.
2012-13	20564	90.15	20220	81.15	1665	101.38
2013-14	24530	97.67	22665	93.85	2330	95.11
2014-15	29693	78.9	25750	97.40	2545	78.15
2015-16	32216	67.86	26699	89.69	2670	93.85
2016-17	52174	113.3	39388	77.56	3412	94.06
2017-18	72402	97.74	47009	82.25	4320	81.56
2018-19	78921	84.23	49414	56.47	4820	70.10
2019-20*	78329	43.38	48425	26.34	4755	40.79

* Expenditure up to October , 2019
Source: Economic Review, Government of Kerala, Various Issues

During the first year of 12th Plan an amount of ₹47000 lakh had been allotted for health sector of which 82 percent was expended. It can be clear from the Table 5.11 (a) and Table 5.11 (b) that the allocation of the state to the health sector shows a steady increase.

Table 5.11 (b)
Department-wise Plan Outlay and Expenditure (₹ lakh) in Kerala

Year	Ayurveda Medical Education		Homoeopathy		Homoeo Medical Education		Total	
	Outlay	% Exp.	Outlay	% Exp.	Outlay	% Exp.	Outlay	% Exp.
2012-13	1760	59.16	1721	40.66	1070	32.01	47000	82.38
2013-14	2300	94.04	1475	61.80	800	90.50	54100	94.72
2014-15	2567	84.1	1440	88.76	945	97.6	62940	87.76
2015-16	2567	94.6	1440	91.26	945	93.78	66537	79.65
2016-17	3364	55.5	1983	76.26	990	24.3	101311	95.24
2017-18	4600	48.51	2300	88.37	864	42.98	131495	89.42
2018-19	5060	50.82	2700	100.00	1015	100.00	141930	73.24
2019-20*	4975	24.46	2660	30.16	1000	43.62	140594	36.49

* Expenditure up to October
Source: Economic Review, Government of Kerala, Various Issues

During 2018-19 an amount of ₹141930 lakh was allocated for health sector. During 2016-17 95.24 percent of allocation to the health sector was expended. The budget allocation to the health sector in Kerala shows an increasing trend from ₹47000 lakh during 2012-13 to ₹141930 lakh in 2018-19.

5.5. Household Health Expenditure in Kerala

Major share of expenditure on health is spent by the individual himself. The household spending on health is highest in Kerala compared to the other states in India. At the same time the Monthly Per-capita Consumption (MPCE) is also high in Kerala when compared to the other states. Household spending on health varies with differences in gender, geographical location and age pattern. As per NSS Reports, household spending on health in Kerala decreased from 86.3% in 2004-05 to 73.9 % in 2014-15. Per-capita household health expenditure increased from ₹2548 in 2004-05 to ₹5023 in 2014-15. There was 97.1 percentage increase in per-capita household health expenditure from 2004-05 to 2014-15.

5.5.1. Medical Expenditure of Households in Kerala

Medical expenditure may be institutional or non-institutional. The expense on medical treatment as an in-patient of a medical institution is called institutional medical expenditure or otherwise non-institutional medical expenditure. Monthly per-capita medical expenditure in Kerala is given in Table 5.12.

Table 5.12

Monthly Per-Capita Institutional Medical Expenditure of Households (₹) in Kerala

Year	Monthly Per-capita Institutional Medical Expenditure			
	Rural	Percentage Change	Urban	Percentage Change
1994-95	2.52	0.00	3.46	0.00
1995-96	5.22	107.14	5.12	47.98
1996-97	9.62	84.29	27.59	438.87
1997-98	16.44	70.89	62.97	128.23
1998-99	25.75	56.63	7.99	-87.31
1999-20	21.56	-16.27	27.37	242.55
2000-01	22.58	4.73	26.77	-2.19
2001-02	31.17	38.04	33.66	25.74
2002-03	36.19	16.11	57.56	71.00
2003-04	50.49	39.51	58.65	1.89
2004-05	42.78	-15.27	24.22	-58.70
2005-06	33.84	-20.90	42.47	75.35
2006-07	52.61	55.47	44.63	5.09
2007-08	61.98	17.81	55.71	24.83
2009-10	65.77	6.11	88.96	59.68
2011-12	96.65	46.95	63.14	-29.02

Source; NSS Consumer Expenditure Survey, Various Years

Monthly per-capita institutional medical expenditure in Kerala escalated from ₹2.52 during the period 1994-95 to ₹96.65 during the period 2011-12 in rural area and from ₹3.46 during the period 1994-95 to ₹63.14 during the period 2011-12. Percentage change in rural monthly per-capita institutional medical expenditure from

1994-95 to 2011-12 is maximum during the period 1995-96 (107.14 percent) and negative during the periods 1999-2000, 2004-05 and 2005-06. Percentage change in urban monthly per-capita institutional medical expenditure from 1994-95 to 2011-12 is maximum during the period 1996-97 (438.87 percent) and negative during the periods such as 1998-99, 2000-01, 2004-05 and 2011-12.

Table 5.13

Monthly Per-Capita Non-Institutional Medical Expenditure of Households in Kerala

Year	Non-Institutional Medical Expenditure (₹)			
	Rural	Percentage Change	Urban	Percentage Change
1994-95	14.52	0.00	15.01	0.00
1995-96	14.32	-1.38	15.86	5.66
1996-97	17.17	19.90	16.00	0.88
1997-98	18.94	10.31	28.59	78.69
1998-99	28.21	48.94	43.46	52.01
1999-20	39.27	39.21	41.08	-5.48
2000-01	44.62	13.62	49.39	20.23
2001-02	55.44	24.25	56.41	14.21
2002-03	46.84	-15.51	64.56	14.45
2003-04	55.51	18.51	74.84	15.92
2004-05	61.22	10.29	67.71	-9.53
2005-06	64.53	5.41	71.69	5.88
2006-07	79.80	23.66	94.77	32.19
2007-08	97.06	21.63	119.47	26.06
2009-10	99.85	2.87	116.08	-2.84
2011-12	148.12	48.34	162.40	39.90

Source; NSS Consumer Expenditure Survey, Various Years

Monthly per-capita non-institutional medical expenditure in Kerala increased from ₹14.52 during the period 1994-95 to ₹148.12 during the period 2011-12 in rural area and from ₹15.01 during the period 1994-95 to ₹162.40 during the period 2011-12. Percentage change in rural monthly per-capita non-institutional medical expenditure from 1994-95 to 2011-12 is maximum during the period 1998-99 (48.94 percent) and negative during the period 1995-96, and 2002-03. Percentage change in urban monthly per-capita non-institutional medical expenditure from 1994-95 to 2011-12 is maximum during 1997-98 (78.69 percent) and negative during the periods such as 1999- 2000, 2004-05 and 2009-10.

District-wise monthly per-capita medical expenditure in Kerala during 2009-10 is shown in Table 5.14 There exist inter-district variations in the spending on health by the rural and urban households in Kerala. Monthly per-capita medical expenditure was more in urban (₹147.3) than in rural (₹117.88) Kerala during 2009-10. Among the districts Thiruvananthapuram and Wayanad ranked highest and lowest

respectively in monthly per-capita medical expenditure both in the rural and urban area.

Table 5.14
Monthly Per-capita Medical Expenditure (₹) in Kerala (2009 -2010)

District	Rural			Urban		
	Institutional Medical expenses	Non-Institutional expenses	Total	Institutional Medical expenses	Non-Institutional expenses	Total
TVM	87.36	133.44	220.8	75.58	153.67	229.25
Kollam	79.11	74.93	154.04	59.31	81.54	140.85
Pathanamthitta	74.53	133.57	208.1	16.09	120.36	136.45
Alappuzha	48.64	83.23	131.87	94.40	107.93	202.33
Kottayam	86.69	109.02	195.71	27.30	120.58	147.88
Idukki	110.4	75.15	185.55	43.01	80.77	123.78
Ernakulam	65.68	77.53	143.21	57.03	94.02	151.05
Thrissur	57.58	102.15	159.73	61.80	71.93	133.73
Palakkad	54.40	75.66	130.06	80.56	110.05	190.61
Malappuram	30.85	60.01	90.86	29.72	54.14	83.86
Kozhikode	30.54	75.93	106.47	32.23	83.22	115.45
Wayanad	14.77	35.46	50.23	4.32	14.09	18.41
Kannur	18.34	40.32	58.66	39.94	26.91	66.85
Kasaragod	31.16	37.64	68.8	22.77	35.39	58.16
Kerala	48.82	69.06	117.88	59.18	88.12	147.3

Source: NSS 66th Round, Household consumption of various goods and services in Kerala 2009-10, DES, Kerala

Medical expenditure constitutes both the institutional and non-institutional expenditure. Medical expenditure is highest in urban area

Figure 5.5
Monthly Per-capita Medical Expenditure (₹) in Kerala in 2009-10
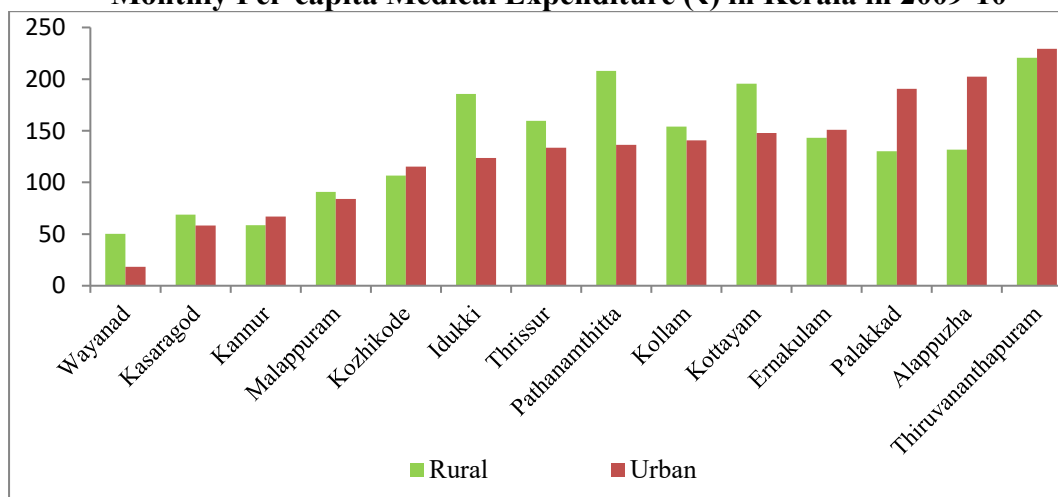
Source: NSS 66th Round, Household consumption of various goods and services in Kerala 2009-10, DES, Kerala

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Institutional medical expenditure in Kerala was ₹48.82 and ₹59.18 for rural and urban area respectively. Non-institutional medical expenditure in Kerala was ₹69.06 in rural area and ₹88.12 for urban area.

Figure 5.6
Institutional Medical Expenditure in Kerala (2009-2010)
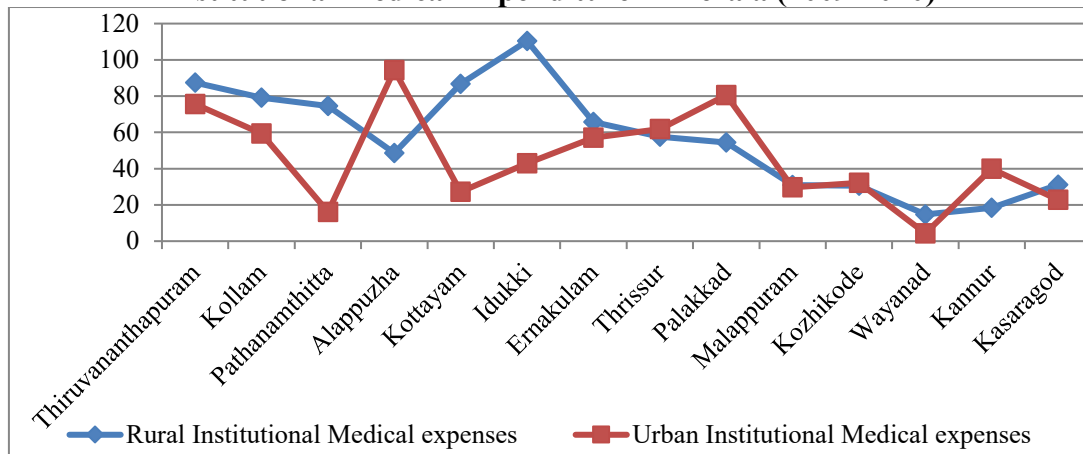
Source: NSS 66th Round, Household consumption of various goods and services in Kerala 2009-10, Department of Economics and Statistics, Kerala

Non-institutional expenditure is higher than institutional expenditure both in rural and urban area of Kerala.

Figure 5.7
Non-Institutional Medical Expenditure in Kerala (2009-2010)
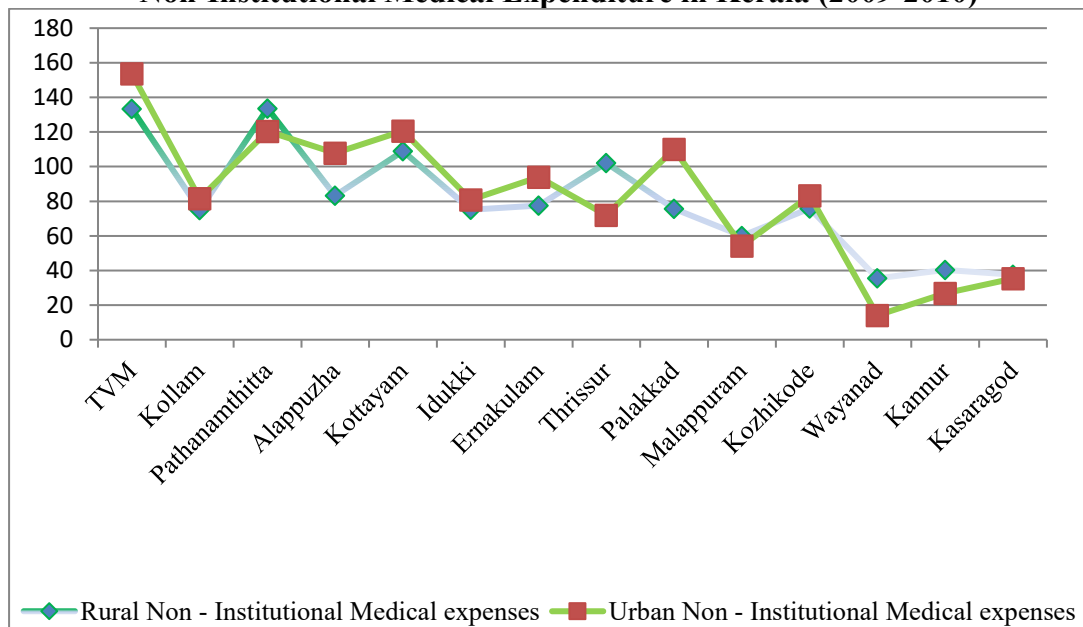
Source: NSS 66th Round, Household consumption of various goods and services in Kerala 2009-10, Department of Economics and Statistics, Kerala

Rural institutional medical expenditure varies from ₹14.77 in Wayanad to ₹110.4 in Idukki while rural non-institutional medical expenditure ranges from ₹35.46

in Wayanad to ₹133.57 in Pathanamthitta. Urban institutional medical expenditure was highest in Alappuzha and lowest in Wayanad. Urban non-institutional medical expenditure was highest in Thiruvananthapuram and lowest in Wayanad. Above all in Kerala non-institutional medical expenditure exceeds the institutional expenditure.

Table 5.15

Institutional Medical Expenditure of Households by Item-wise in Kerala (2009-10)

Item	Per-capita expenditure in 30 days (₹)		% of households incurring expenditure in 365 days	
	Rural	Urban	Rural	Urban
Medicine	22.53	26.63	25.0	26.7
X-ray, ECG, Patho. Test	4.24	6.86	15.7	17.3
Doctors Fee	4.77	5.5	17.1	18.2
Hospital Charges	12.28	16.34	17.0	16.8
Other medical expenses	5.0	3.85	11.6	10.9
Total (Institutional Medical Expenditure)	48.82	59.18	26.1	28.1

Source: 66th Round NSS Report, Department of Economics and Statistics Kerala

The items wise share of institutional medical expenditure of Kerala during 2009-10 for different reference period can be show in Table 5.15. Among the items in per-capita institutional medical expenditure of Kerala medicines contributes the largest share followed by hospital charge both in rural and urban area for a reference period of 30 days. In the case of household institutional medical expenditure largest component is medicine followed by doctors' fee both in rural and urban area for a reference period of 365 days.

Table 5.16

Non-Institutional Medical Expenditure of Households by Item wise in Kerala (2009-10)

Item	Per-capita expenditure in 30 days (₹)		% of households incurring expenditure in 30 days	
	Rural	Urban	Rural	Urban
Medicine	57.29	73.2	72.7	69.7
X-ray, Patho. Test	3.5	4.36	4.4	7.2
Doctors fee	6.6	8.85	28	25.3
Family Planning Appliances	0.1	0.12	1.1	10
Other Medical expenses	1.58	1.58	3.8	2.8
Total (Non-Institutional Medical expenditure)	69.06	88.12	73.1	70.2

Source: 66th Round NSS Report, Department of Economics and Statistics, Kerala

The distinction between institutional and non-institutional medical expenses lies in whether the expenses were incurred on medical treatment as an in-patient of a medical institution (institutional), or otherwise (non- institutional). Medical institution

here covers private as well as Government institutions such as hospitals and nursing homes. In Kerala per-capita non-institutional medical expenditure is more in urban while household expenditure is high in rural area. Medicines contribute the largest share in non-institutional per-capita expenditure with a reference period of 30 days followed by doctors' fee and diagnostic test both in rural and urban area.

Table 5.17

Range in Prices of Diagnostic Tests across Two Cities in Kerala (2017)

Name of Diagnostic Tests	Costs of Diagnostics (₹)					
	Ernakulam			Thiruvananthapuram		
	Average Price	Minimum Price	Maximum Price	Average Price	Minimum Price	Maximum Price
Bilirubin Test	118	50	1010	87	30	150
Blood Sugar Test	64	40	100	53	20	200
Cholesterol Test	95	60	150	72	40	140
Creatinine Test	94	70	170	76	30	130
ECG	149	100	250	113	80	250
Folic Acid Test	810	400	1000	812	300	1200
HbA1C Test	378	300	450	353	280	450
HDL Cholesterol	147	100	250	125	50	250
HIV Test	312	150	550	263	150	700
Insulin Test	500	400	650	412	350	500
Kidney/Renal Function Test	346	180	500	368	140	520
LDL Cholesterol	122	90	150	170	50	300
Lipid Profile	362	250	475	336	90	410
Liver Function Test	372	300	475	377	270	490
Pregnancy Test	100	80	150	98	50	120
Protein Test	152	100	200	158	60	410
Sodium Test	129	80	160	114	50	350
Sonography	718	500	900	688	500	850
Thyroid Test	373	300	460	407	290	600
Uric Acid Test	104	70	150	92	30	130
VDRL Test	143	90	275	131	50	260
Vitamin D Test	1296	600	3500	1777	500	4000
X-Ray	212	150	280	243	140	400
2D Echo	1315	900	2000	1344	1100	2000

Source: www.medifee.com accessed on 26th April, 2019

High out-of-pocket spending, mainly led by household spending on pharmaceuticals, is pushing millions into poverty and representing financial hardship to them (Mattam, 2015; Eldose, 2018). It is not a new finding that medicines are the highest component of out-of-pocket expenditure. The persistence of high out-of-pocket expenditure on medicines demonstrates that policy efforts so far have not reduced the problem. The regular updates of the Essential Medicines List (EML) tackled the challenges of access to medicines over the past few years. The success of this government policy depends upon the design of the EML, i.e. whether and to what extent the EML has taken into consideration the effectiveness and cost-effectiveness

of the medicines, as well as the overall burden of disease of population, amongst other criteria, the quality of the supply chain and the final use of services by users (WHO, 2017).

Table 5.17 shows the price variations of various diagnostic tests in two cities, Ernakulam and Thiruvananthapuram, in Kerala. It is clear from the table that there exist variations in average prices and also in minimum and maximum prices of different diagnostic tests between these two cities. Uncertainty creates most of the information problems in health care. Financial uncertainty can be reduced by insurance whereas uncertainty about the quality of care and outcome of treatment cannot. Information asymmetry arises from the difference between the physicians' and the patient's knowledge of medical treatment. Because of this disparity in the cost of knowledge patients must trust physicians to act as their agents and make decisions on their behalf (Getzen, 2012).

5.5.2. Medical Expenditure and Childbirth

There exists disparity between medical expenditure for hospitalised treatment per childbirth in public sector hospital and private sector hospital and also between rural and urban. This can be evident from Table 5.18.

Table 5.18

Average Total Medical Expenditure in Kerala and India (2014-15)

Medical Expenditure		Rural			Urban		
		Public	Private	All	Public	Private	All
Average total medical expenditure for treatment (₹) per case excluding childbirth	Kerala	3524	25411	17642	2768	21808	15465
	India	5636	21726	14935	7670	32375	24436
Average total medical expenditure for treatment (₹) per childbirth	Kerala	1662	19443	13830	1534	21578	15346
	India	1587	14778	5544	2117	20328	11685

Source: NSS Report No. 574: Health in India, April 2016

The rural population spent ₹5636 in a public sector hospital and ₹21726 in a private sector hospital for a hospitalised treatment at national level during 2014. While the urban population spent ₹7670 in a public sector hospital and ₹32375 in a private sector hospital for a hospitalised treatment at national level. ₹5544 was spent per institutional childbirth in rural areas and ₹11685 in urban areas of the country.

Kerala spends less for a hospitalised treatment than national average of urban area. In Kerala average total medical expenditure excluding childbirth is higher in rural area (₹17642) than in urban area (₹15465) during 2014-15. In India average total medical expenditure excluding childbirth is higher in urban area (₹24436) than in rural area (₹14935). In the case of expenditure for childbirth during 2014-15 the state and national average move in the same direction i.e. higher in urban and lower in rural.

Generally patients face shortage of essential medicines, hospital facilities in government hospitals. There are irregular medical services and irregular supply of medicines in public hospitals and this lead to overdependence on private sector. Moreover, private hospitals have outpaced the government hospitals in the provision of sophisticated facilities, modern method of diagnosis such as MRI scans, CT scans, endoscopy etc. The excessive privatisation of medical care generates escalation of health care cost (Health Economics).

In order to reduce household expenditure on health e-Health Project is implemented in Kerala. The main aim of this programme is to build a database of individual medical records which avoid repeated medical tests through the exchange of medical data between different health care delivery units. This would help the households to reduce the cost of diagnosis.

5.6. Health Insurance in Kerala

The health system goals of equity and accessibility necessitate adoption of a financing strategy that will ensure protection of the majority of individuals from catastrophic health expenditure. The financial burden due to health care expenditure India is growing day by day. The heaviest burden is faced by the people engaged in non-formal rural and urban activities. Absence of health insurance and increasing dependence on the private health sector has impoverished the poor (Ellis, 2000; Mukherjee et.al, 2011). The main sources of finances in health insurance are the households/employees, government, and enterprises/employers. These entities pay premiums or contributions for health service coverage for the financing schemes.

For providing free and quality inpatient care the Government of India sponsored a new Health Insurance Scheme called Rashtriya Swasthya BimaYojana (RSBY). The scheme ensures inpatient treatment facility upto ₹30,000/- on paperless, cashless and floater basis to a maximum of five members in a family, for a period of one year through selected public and private hospitals with a prefixed medical and

surgical rates for treatment in general ward. The Government of Kerala adopting RSBY in 2008 decided to implement it in all the districts of the state simultaneously to BPL families. The government broadened to include other categories of households to make it a universal health insurance scheme by formulating its own Scheme. These two schemes are being jointly run under the banner Comprehensive Health Insurance Scheme (CHIS). Another special programme named CHIAK (Comprehensive Health Insurance Agency, Kerala) is formed to help the people from catastrophic expenditure on health care (Economic Review 2015, 2016). In addition to the RSBY and CHIS, there is another scheme names CHISPLUS to provide an additional ₹70000 treatment benefit to the BPL category patients of cardiology, oncology, neurology etc. These schemes are subsumed into a new scheme called Karunya Arogya Suraksha Padhati (KASP). Due to the growing physician consultancy fee, expensive drugs and medical tests, people take health insurance policies. Insurance provides protection against risk or uncertain events. Health insurance covers the medical expenses based on the policy and premium.

Table 5.19

Growth of Public Health Insurance Schemes (RSBY/ CHIS) in Kerala

Year	Number of families enrolled (lakh)	Premium Paid (₹crore)
2008-10	11.78	51
2010-11	18.75	80
2011-12	28.01	205
2012-13	28.28	310
2013-14	29.73	219.49
2014-15	31.94	236
2015-16	31.94	216
2016-17	32.53	167.03
2017-18	34.85	267.69
2018-19	40.96	302.82

Source: Economic Review 2019, Kerala State Planning Board, Government of Kerala

From just 11.78 lakh families in 2008-10, the RSBY/CHIS have now 40.96 lakh families for the year 2018-19. The amount of premium of RSBY/CHIS increased from ₹51 crores in 2008-10 to ₹302.82 crores in 2018-19. The amount of premium for RSBY/CHIS is highest (₹310 crores) during 2012-13. The number of claims increased from 1.43 lakh during 2008-10 to 8.08 lakh during 2018-19. The amount of claims paid under RSBY/CHIS mounted from ₹45 crores in 2008-10 to ₹367.71 crores in 2018-19. The amount of claims paid under CHIS PLUS increased from ₹0.28 crores in 2010-11 to ₹80.58 crores in 2018-19. The amount of claims paid under

RSBY/CHIS and CHIS PLUS increased from ₹113.28 crores in 2010-11 to ₹448.29 crores in 2018-19. The number of empanelled hospitals rose to 554. The non-institutional medical expenses are also high and the entire amount being carried out by the household which hamper the household financial stability. Limited number of private empanelled hospitals, ambiguities in the benefits of the scheme, absence of effective monitoring mechanism and redressal of grievances are some of the constraints in achieving the desired objectives of RSBY-CHIS (Mini, 2013).

Table 5.20

Utilization of Public Health Insurance Schemes in Kerala

Year	RSBY-CHIS		CHIS PLUS		Total	
	Number of claims (lakh)	Claims paid (₹crore)	Number of claims (lakh)	Claims paid (₹crore)	Number of claims (lakh)	Claims paid (₹crore)
2008-10	1.43	45.00	-	-	1.43	45.00
2010-11	3.6	113.00	0.002	0.28	3.60	113.28
2011-12	6.98	212.00	0.14	26.08	7.12	238.08
2012-13	7.0	181.00	0.42	56.94	7.42	237.94
2013-14	5.57	199.03	0.51	53.08	6.08	252. 11
2014-15	5.87	228.06	0.67	68.02	6.54	296.08
2015-16	5.26	205.86	0.80	73.42	6.06	279.28
2016-17	5.86	267.42	1.02	83.59	6.88	351.01
2017-18	7.08	314.14	1.09	73.09	8.17	387.23
2018-19	8.08	367.71	1.31	80.58	9.39	448.29

Source: Economic Review 2019, Kerala State Planning Board, Government of Kerala

In this chapter we can see the expenditure on health in Kerala. The plan allocation to health sector shows an increasing trend which is a welcoming trend. The public expenditure on health in Kerala increased from ₹41721 in 1995-1996 to ₹682671 in 2017-2018. The implementation of National Health Mission (NHM), submission of both NRHM and NUHM, is a vital step to provide accessible, affordable and accountable quality health care to the poor households. Both the central government and state government fund to the health sector would accelerate the affordable and quality health care to the households. As per NSS reports household spending on health in Kerala decreased from 86.3% in 2004-05 to73.9 % in 2014-15.

CHAPTER 6

DETERMINANTS OF HOUSEHOLD HEALTH EXPENDITURE IN INDIA AND KERALA

6.1. Introduction

Spending on health generally constitutes the human capital formation. The investment on health contains two perspectives: individual and institutional. Individual investment is the investment made by the individual for himself or for the entire family. So it is the household investment for better health by providing nutritional support, preventing and curing diseases, family planning programs, maternal and child health care and so on. Private expenditure on health includes out-of-pocket expenditure, health insurance and expenditure towards health by firms and NGOs. The percentage share of health care financing by the Non-Profit Institutions Serving Households (NPISH) is increased from 1.6 percent in 2013-14 to 1.9 percent in 2014-15 (NHSRC, 2017). The institutional investment is the investment made by the government for the better health condition of the people. The public investment on health is inevitable to reduce inequality in the distribution of health care. The central, state and local governments spend on health care since healthy people is the wealth of the nations. In India the percentage share of out-of-pocket expenditure in total expenditure on health decreased from 69.4 percent in 2004-05 to 60.6 percent in 2015-16 (NHSRC, 2018). In India the major portion of the expenditure on healthcare is made by the households than the government.

The factors responsible to the spending on health by the households are varied from each household. Therefore the factors are generally classified into: (I) Personal

and biological factors, (II) Institutional factors, (III) Economic factors, (IV) Socio-cultural factors, (V) Demographic factors and (VI) household factors also.

(I)   Personal and biological factors

As per NSSO report the prevalence o self-reported morbidity increased from 55 to 98 per 1000 populations within a period of two decades (1995-2014), higher among females compared to males. The household expenditure on health varies with the age, gender, and physical condition of the members of the household (Sunilkumar, 2017). The aged people need more medical and non- medical care and this will necessitate more spending on health (Sinha et al., 2016). The gender is also a crucial role in determining the expenditure on health by the household (Sen et al. 2007). The biological conditions of the household members constitute the need for healthcare (Bircher, 2014). The pregnant ladies need special medical care compared to others. The maternal and child health care is also crucial in household health care spending (Bonu, 2009; Navaneetham and Dharmalingam, 2000; Leone et al., 2013). Children represent the future and ensuring their healthy growth and development would be a prime concern of every households. The post natal period is also a critical phase in the lives of mothers and new babies. Newborns are particularly vulnerable and children are vulnerable to malnutrition and infectious diseases, many of such diseases can be effectively prevented or treated (WHO, 2013). National Policy of Children 2013 promotes prevention of disabilities, mental and physical through timely measures to take pre-natal, natal, peri-natal, and post-natal care of mother and child. Preventive, promotive, curative and rehabilitative healthcare for all is a decisive factor of household health expenditure.

(II)   Institutional factors

In India utilization of health care facilities are 60 percent for private hospitals and 40 percent for public hospitals. The role of private hospitals in the health sector is immense. At the same time the expenditure on health care in private hospitals is double than that of public hospitals. The underutilization of public health care facilities paved the way for hike in the household health expenditure. There are different reasons for the underutilization of public health care facilities such as quality of services, lack of medical facilities, lack of health personnel, and lack of medicine (Nabae, 2003; John, 2012).

(III)   Economic factors

It explains the two way causality between health expenditure and income. It tries to find out the relationship between health and income; whether health creates income or income creates health. It explains the determinants of health expenditure in terms of income variables. Consumption expenditure on health care is depends upon the income variable. The income variable may be household or government. They are compliment to each other in health spending. The policy of the government on health care will affect the health care spending of the households (Abolhallaje et al., 2013).

The return from health expenditure is measured by income variables. The health spending of government and households can booster economic growth. The financial return from health expenditure is shared by government and households. The comparative advantage of expenditure on health between government and households is also considered under non-financial and non-monetary returns.

(IV)   Socio-cultural factors

Health is a multidimensional concept. Social background also determines the health expenditure of a household. Education, urbanisation, unemployment rate and utilization of health care services are some of the factors influencing household expenditure on health (Siddiqui et al., 1995; Angko, 2009; Samadi and Rad, 2013).

(V)   Demographic factors

The factors like poverty ratio, old-age dependency ratio, life expectancy at birth and child-dependency ratio are some of the demographic factors that influence expenditure on health. The rate of hospitalisation is highest in the aged persons and youngest age group (0-14) compared to other age group (Srinivas and Manjubhashini, 2014, Hosoya, 2014).

(VI)   Epidemiological factors

The epidemiological factors also affect the expenditure on health. The burden from injuries, communicable and non-communicable diseases shows an increasing trend. The disease burden of non-communicable diseases is rapidly increasing. As per the report of Indian Council of Medical Research in 2017, the disease burden from non-communicable diseases increased from 30 percent to 55 percent between 1990 and 2016. Disease burden due to communicable, maternal, neonatal and nutritional diseases dived from 61 percent to 33percent in the same period. As per WHO Weekly Epidemiological Update on 8th December 2020, cases of Coronavirus (COVID-19) continued to increase and reported 65.8 million cases and 1.5 million deaths globally since the start of the pandemic. Disability also caused a hike in expenditure on health.

(VII)   Other factors

Factors like geography, climate, pollution, diet and exercises are other determinants of expenditure on health. The determinants of expenditure on health are different from person to person and time to time.

6.2. Analytical Framework

The analytical framework for finding the determinants of expenditure on health is in the following way.

Figure 6.1

Analytical Framework

Selection of dependent and independent variables
Inflation adjusted
Model specification
Percentage Change
CAGR
Simple Regression
Logarithmic Regression
Determinants
Financial returns

Source: Prepared by the investigator
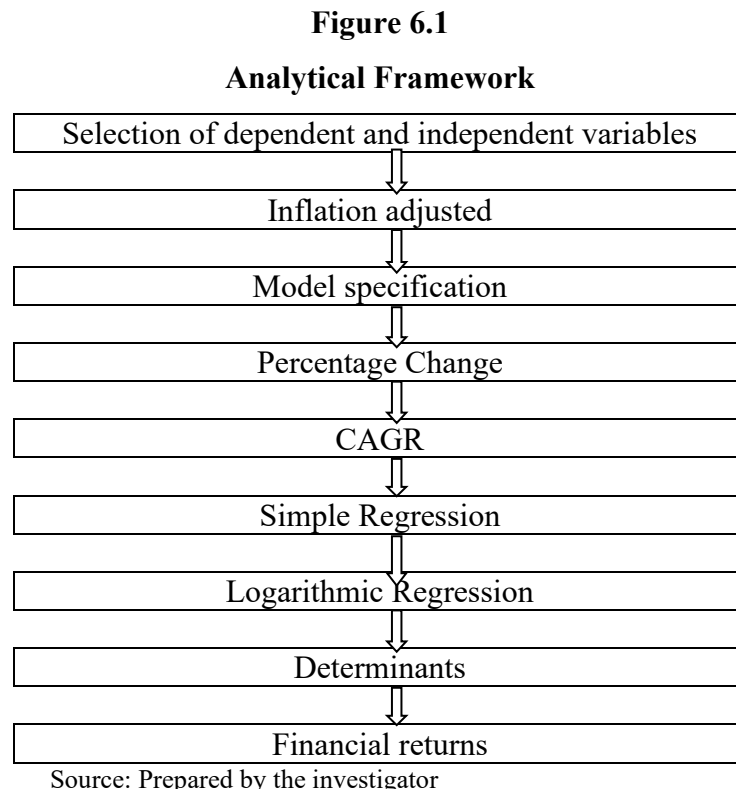
The analytical framework to recognize the determinants of household expenditure on health is as follows:

$$HHE = f(X)$$

Where HHE refers household health expenditure, and X is a single or a set of independent variables. The equation can be given in the following functional form.

$$HHE = \alpha + \beta_i X_i + \epsilon$$

Where the symbol α is the intercept term which give the mean effect on the dependent variable for all the variables that are excluded from the model. It is the average value of dependent variables which are set equal to zero. β_i is the regression coefficient to be estimated that measures the extent to which various variables X_i influence on the household health expenditure. The coefficient β shows the change in

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the levels of household expenditure associated with one unit change in the independent variable of interest. ϵ is the random error term in the equation. The model used time series data. Here time is denoted by the term't' where t= 1….n. The model uses annual data of India from 1999-2000 to 2018-19 and the state level data from 1994-95 to 2007-08.

The monetary variables in the regression analysis are adjusted to inflation. This would enable to assess the significant relation between variables. The national level data are adjusted to 2011-12 prices while the state level data adjusted to 2004-05 prices. Due to the non availability of recent data on expenditure variables at state level, the study confined to a limited time period. Moreover the time series data on certain variables are unavailable. The model is presented in both linear and logarithmic regression equations.

Table 6.1

Models on Determinants of Household Expenditure on Health in India and Kerala

Sl.No	Models
1	HHE/pc = α + β_1GDPI$_{it}$+ β_2 GDPI/pc $_{it}$+β_3PEHI $_{it}$+ β_4PEHI/pc $_{it}$ + β_5PFCEI/pc $_{it}$ + ϵ
2	LN HHEI/pc = α + β_1GDPI$_{it}$+ LN β_2 GDPI/pc $_{it}$+LN β_3 PEHI $_{it}$+LN β_4 PEHI/pc $_{it}$ + ϵ
3	GDPI= α +β_1 PEHI $_{it}$+β_2 PEHI/pc $_{it}$+β_3HHEI$_{it}$ + ϵ
4	LN GDPI= α + LNβ_1 PEHI $_{it}$+LN β_2 PEHI/pc $_{it}$+LNβ_3HHEI$_{it}$ + ϵ
5	HHEK/pc = α + β_1 GSDPK$_{it}$+ β_2 PCIK$_{it}$+β_3 PEHK $_{it}$+ β_4 PEHK/pc $_{it}$ +β_5 RTK$_{it}$+β_6 MIK$_{it}$+ ϵ
6	LN HHEK/pc = α + LN β_1 GSDPK$_{it}$+ LN β_2 PCIK $_{it}$+ LN β_3 PEHK $_{it}$+ LN β_4 PEHK/pc $_{it}$ +LN β_5 RTK$_{it}$+β_6 MIK$_{it}$+ ϵ
7	GSDPK= α +β_1 PEHK $_{it}$+ β_2 PEHK/pc $_{it}$ +β_3 HHEK/pc + ϵ
8	LN GSDPK= α +LNβ_1 PEHK $_{it}$+ LN β_2 PEHK/pc $_{it}$ +LN β_3 HHEK/pc + ϵ

Note: See Tables 6.2, 6.3, 6.4, 6.8, 6.9, 6.10 and 6.10
Source: Prepared by the investigator

The study used both simple and multiple regressions for linear and logarithmic equations. The analysis used household health expenditure as dependent variable in India and Kerala. In order to find the determinants of health expenditure all other variables are considered as independent variables firstly. In order to find financial return from health expenditure, health expenditure variables are considered as dependent variable. This is applicable for India and Kerala. The equation on financial return of expenditure on health used the tool of both simple and multiple regressions for linear and logarithmic equation. The study examines the cause and effect of expenditure on health in India and Kerala. Hence national and state level variables are considered here to analyse the cause and effect of expenditure on health. Table 6.1

shows the models of the analysis. The logic behind the selection of variables in the regression analysis may be of different grounds. The foremost reason behind the selection of variables is the literature review on expenditure on health. There are many views regarding the determinants of expenditure on health for different nations and for different time periods.

Table 6.2

Notation and Definitions of Household Health Expenditure and its Determinants in India

Sl No.	Notations of Variables	Variables
1	HHEI/pc	Average Annual Per-capita Household Final Consumption Expenditure (₹) on Health in India
2	HHEI	Household Final Consumption Expenditure (₹Crore) on Health in India
3	GDPI	Gross Domestic Product of India (₹Crore)
4	GDPI/pc	Per-capita Gross Domestic Product of India (₹)
5	PEHI	Public Expenditure (₹Crore) on Health in India
6	PEHI/pc	Per-capita Public Expenditure (₹) on Health in India

Source: Prepared by the investigator

Availability of data is the second reason for the selection of these variables. Due to the non-availability of data some of the variables are excluded from the study. Lack of time series data for suitable proxy variables limited this analysis to few variables. Economic logic is also applied for the selection of variables in the study.

6.3. Household Health Expenditure in India

Household health expenditures are the expenditures incurred by the households on health care. The private final consumption expenditure on health estimated by National Account Statistics by CSO is considered as the household health expenditure in India. The trend of household health expenditure and the related variables in India would give insight into the movement and relationship between the explanatory variables and dependent variables. Household health expenditure in India was ₹70768 in 1999-2000 and it increased to ₹360795 in 2018-19.

The percentage change in household health expenditure varies from 14.66 percent in 2014-15 to 3.35 percent in 2003-04 over the same period. The per-capita household health expenditure in India increased from ₹707 to ₹2719 over the period 1999-2000 to 2018-19. The percentage change in per-capita household health expenditure varies from 13.22 in 2014-15 to 1.78 in 2003-04 during the period 1999-2000 to 2018-19. The percentage change is positive for both household health expenditure and per-capita household health expenditure for the period 1999-2000 to

2018-19. The CAGR of household health expenditure is 8.48 percent while it is only 6.96 percent in per-capita terms in India during the period 1999-2000 to 2018-19.

Table 6.3

Private Household Final Consumption Expenditure on Health in India (2011-12 prices)

Year	Household Health Expenditure in India (₹Crores) (1)	Percentage change (1)	Per-capita Household Health Expenditure in India (₹) (2)	Percentage change (2)
1999-00	70768	0.00	707	0.00
2000-01	78895	11.48	774	9.48
2001-02	90070	14.16	866	11.89
2002-03	94829	5.28	898	3.70
2003-04	98003	3.35	914	1.78
2004-05	110277	12.52	1013	10.83
2005-06	119930	8.75	1084	7.01
2006-07	130412	8.74	1162	7.20
2007-08	136262	4.49	1197	3.01
2008-09	145641	6.88	1262	5.43
2009-10	158569	8.88	1355	7.37
2010-11	170650	7.62	1439	6.20
2011-12	181334	6.26	1486	3.27
2012-13	198663	9.56	1609	8.28
2013-14	216675	9.07	1732	7.64
2014-15	248443	14.66	1961	13.22
2015-16	274549	10.51	2140	9.13
2016-17	308487	12.36	2375	10.98
2017-18	330540	7.15	2516	5.94
2018-19	360795	9.15	2719	8.07
CAGR		8.48		6.96

Note: 1. Household Expenditure on Health is also referred to as Private Expenditure on Health
Source: CSO, Various Years, Government of India

According to NSSO estimates, household health expenditure constitutes 67.74 percent of total health expenditure in India in the year 2013-14.

6.4. Determinants of Household Health Expenditure in India

When considering the growth models, a large set of macroeconomic variables which determine the household health expenditure such as GDP of India (GDPI), per-capita GDP of India (GDPI/pc), public expenditure on health in India (PEHI), per-capita public expenditure on health in India (PEHI/pc), are considered as independent variables in the analysis. In absolute terms GDP of India was ₹3823027 crores in 1999-2000 and increased to ₹13981426 crores in 2018-19. The average annual percentage change of GDP of India was positive in all years from 1999-2000 to 2018-19 and varies from 10.26 percent in 2010-11 to 3.80 percent in 2002-03. The percentage change in GDP is also low during 2000-01 and 2008-09 from 1999-2000 to 2018-19. The global financial crisis of the 2007-2009 slow down the growth rate of the economy dropped to 3.8 percent during 2008-09. After that the GDP growth rate

accelerated to 10.26 during 2010-11. The growth rate in GDP is also low during 2012-13 with 5.46 percent. The CAGR of GDP of India is 6.69 percent for the period 1999-2000 to 2018-19. The per-capita GDP of India was increased from ₹41625 in 1999-2000 to ₹105361 in 2018-19.

Table 6.4(a)

Determinants of Household Health Expenditure in India

Year	GDP of India (2011-12 prices)		Per-capita GDP of India (2011-12 prices)		Public Expenditure on Health in India (2011-12 prices)	
	Amount (₹Crores)	Percentage Change	Amount (₹)	Percentage Change	Amount (₹Crores)	Percentage Change
1999-00	3823027	0.00	41625	0.00	39667.30	0.00
2000-01	3969870	3.84	42461	2.01	39469.67	-0.50
2001-02	4161375	4.82	43610	2.71	40184.70	1.81
2002-03	4319672	3.80	44583	2.23	40497.46	0.78
2003-04	4659215	7.86	47370	6.25	41555.75	2.61
2004-05	5028360	7.92	50325	6.24	42851.87	3.12
2005-06	5495237	9.28	53478	6.27	47910.14	11.80
2006-07	6004314	9.26	56964	6.52	50665.11	5.75
2007-08	6592818	9.80	60466	6.15	58744.36	15.95
2008-09	6849342	3.89	61468	1.66	65447.44	11.41
2009-10	7430152	8.48	65394	6.39	76399.44	16.73
2010-11	8192482	10.26	69994	7.03	80821.69	5.79
2011-12	8736329	6.64	71609	2.31	84962.13	5.12
2012-13	9213017	5.46	74599	4.18	89404.64	5.23
2013-14	9801370	6.39	78348	5.03	93556.71	4.64
2014-15	10527674	7.41	83091	6.05	112817.65	20.59
2015-16	11369493	8.00	88616	6.65	132421.79	17.38
2016-17	12308193	8.26	94751	6.92	148235.04	11.94
2017-18	13175160	7.04	100268	5.82	174958.66	18.03
2018-19	13981426	6.12	105361	5.08	199876.04	14.24
CAGR		6.69		4.75		8.42

Sources: 1. Reserve Bank of India, Data base on Indian Economy, Various Issues
         2. Reserve Bank of India, State Finances; A Study of Budgets, Various Issues

The percentage change in per-capita GDP of India is lowest in 2008-09 (1.66 percent) and highest in 2010-11 (7.03 percent). The global financial crisis during 2007 also muted per-capita income of the country. There is a CAGR of 4.75 percent in per-capita GDP of India during the period 1999-2000 to 2018-19. Public expenditure on health (both the central and state governments) is an indicator of welfare by imparting accessible and adorable health care to the people. The public expenditure on health in India moved up from ₹39667.30 crores in 1999-2000 to ₹199876.04 crores in 2018-19. The percentage change in public expenditure on health shows a positive trend from 1999-2000 to 2018-19 except for the year 2000-01 and it is highest during 2014-15 with 20.59 percent. The public expenditure on health in India shows an increasing trend especially after the implementation of NRHM which provides affordable health care to the households (Hooda, 2013). The CAGR of public expenditure on health is

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8.42 percent during the period from 1999-2000 to 2018-19. The CAGR of per-capita public expenditure on health is 6.9 percent during the period from 1999-2000 to 2018-19. It can be evident from the table that per-capita public expenditure on health in India varies from ₹404 to ₹1506 during the period from 1999-2000 to 2018-19.

Table 6.4(b)

Determinants of Household Health Expenditure in India

Year	Per-capita Public Expenditure on Health in India (2011-12 prices)		Per-capita Income in India (2011-12 prices)		Per-capita Private Final Consumption Expenditure in India (2011-12 prices)	
	Amount (₹)	Percentage Change	Amount (₹)	Percentage Change	Amount (₹)	Percentage Change
1999-00	396	0.00	32643	0.00	25679	0.00
2000-01	387	-2.4	33193	1.68	26093	1.61
2001-02	386	-0.2	34291	3.31	27088	3.81
2002-03	384	-0.6	35079	2.30	27443	1.31
2003-04	387	0.9	37367	6.52	28635	4.34
2004-05	393	1.6	39250	5.04	29646	3.53
2005-06	433	10.1	42293	7.75	31367	5.81
2006-07	452	4.2	45629	7.89	32445	3.44
2007-08	517	14.4	49312	8.07	34318	5.77
2008-09	567	9.8	51622	4.68	35349	3.00
2009-10	653	15.1	55113	6.76	36610	3.57
2010-11	682	4.5	58854	6.79	38543	5.28
2011-12	696	2.1	63462	7.83	40250	4.43
2012-13	724	4.0	65538	3.27	41936	4.19
2013-14	748	3.2	68572	4.63	44423	5.93
2014-15	890	19.1	72805	6.17	46667	5.05
2015-16	1032	15.9	77659	6.67	49738	6.58
2016-17	1142	10.6	83003	6.88	53120	6.80
2017-18	1332	16.6	87828	5.81	56163	5.73
2018-19	1506	13.1	92085	4.85	59594	6.11
CAGR		6.90		5.32		4.29

Sources: 1. Reserve Bank of India, Data base on Indian Economy, Various Issues
2. Reserve Bank of India, State Finances; A Study of Budgets, Various Issues

The percentage change in per-capita public expenditure on health is almost positive except in the years 2000-01(-2.4 percent), 2001-02 (-0.2) and 2002-03 (-0.6 percent) and the percentage change is maximum during 2014-15 (19.1 percent). Launching of NRHM in 2005 created a hike in public expenditure on health in India. The pre-NRHM period witnessed a lesser allocation to the health sector in India than after the implementation of NRHM (Hooda, 2015).

Per-capita income, an indicator of economic growth, increased from ₹32643 in 1999-2000 to ₹92085 in 2018-19 with a CAGR of 5.32 percent in India. The percentage change in per-capita income of India varies from 8.07 percent in 2007-08

to 1.68 percent in 2000-01 over the period from 1999-2000 to 2018-19. Per-capita private final consumption expenditure in India rose from ₹25679 in 1999-2000 to ₹59594 in 2018-19 and the percentage change per-capita private final consumption expenditure varies from 1.31 percent in 2002-03 to 6.8 percent in 2016-17. There is a CAGR of 4.29 percent in per-capita private final consumption expenditure in India during the period 1999-2000 to 2018-19.

The present study gives attention to a few selected independent variables in order to identify the determinants of household health expenditure in India. The CAGR of variables in the study differs from 8.42 percent (PEHI), followed by 6.90 percent (PEHI/pc), 6.69 percent (GDPI), 5.32 percent (PCII), 4.75 percent (GDPI/pc) to 4.29 percent (PFCI/pc) for the period 1999-2000 to 2018-19. Among the variables the growth rate is higher for public expenditure on health than GDP. The CAGR is more in the case of household health expenditure (8.48 percent) compared to its per-capita terms (6.96 percent) during 1999-2000 to 2018-19.

In this study two sets of regression equations, linear and logarithmic, are estimated to identify the causal relationship between household health expenditure and the selected independent variables in India. Some of the very few variables have eliminated with respect to the emergence of multicolinearity. At the same time those variables were useful to insight for a macro level analysis. The estimated results of linear regression equations are presented in Tables 6.5 (a) and 6.5 (b). The regression result shows that there exists a marginal positive association between average annual per-capita household health expenditure and per-capita income in India (Equn. 5 in Table 6.5(a)) with the high value of R^2 (0.98 percent). But data discrepancy may be there. This is characterised as the initial stages of growth and this would necessitates high public expenditure on health especially for poor people, women and children.

The association between average annual per-capita household health expenditure and GDP per-capita in India is marginally positive (Equn.1 in Table 6.5(a)). Equn.1and Equn.5 in Table 6.5(a) shows that the per-capita income variables (PCII and GDP/pc) have a positive effect on per-capita household health expenditure in India. The regression coefficient of PCII (0.031) is more than that of GDP/pc (0.029). The relationship between income and household health expenditure is relevant in the context of India. Generally consumption is a function of income. The theoretical backbone of consumption function is income. The variations in income are highly affected by the household health expenditure (Sunilkumar, 2017).

The regression coefficients of various equations show that the selected independent variables are significant in determining household health expenditure in India (Table 6.5 (a)). Household expenditure varies with changes in consumption expenditure positively which support the influence of economic status and income in the consumption of health care. Ability and capacity to pay determines the household expenditure on health (Xu et al., 2003).

Table 6.5 (a)
Regression Results of Household Health Expenditure in India

Equn. No	Dependent Variable	Intercept (Constant)	Independent Variables			R^2	Adj R^2	F-ratio
			GDPI/pc	PCII	PEHI/pc			
Equn.1	HHEI/pc	-537.74 (-9.09)	0.029 (35.34)			0.98	0.98	1249.02
Equn.2	HHEI/pc	254.88 (4.38)			1.759 (22.96)	0.96	0.96	527.22
Equn.3	HHEI/pc	-738.24 (-18.15)				0.99	0.99	3128.58
Equn.4	HHEI/pc	-285.40 (-3.86)	0.019 (7.89)		0.617 (4.14)	0.99	0.99	1192.84
Equn.5	HHEI/pc	-278.01 (-4.23)		0.031 (27.87)		0.98	0.98	776.92

Notes: 1. Figures in parentheses indicates t- Statistic value
 2. Equn: Equation
Source: Computed from variables specified in Tables 6.3, 6.4 (a) and 6.4 (b)

Total household health expenditure in India is positively associated with the GDPI. The value of regression coefficients in GDPI is statistically significant in the total household health expenditure (Equn. 2 and Equn.3 in Table 6.5 (b)). The total household health expenditure and public expenditure on health would have a significant positive association in simple (1.80) and multiple regression (0.767) equations (Equn.1 and Equn. 3 in Table 6.5 (b)). High R^2 implies which measures the goodness fit between the dependent and independent variables by assuming that every single variable explains the variation in the dependent variable. The value of Adjusted R^2 is also high for the regression result which shows the percentage of variation explained by only the independent variables that actually affect the dependent variable. Higher public expenditure on health would have positive effect on household health expenditure implies the reduction of financial burden of households through redistribution of income from the government through allocation to health care (Sloan and Hsieh, 2017). There are differences in the coefficient values of simple regression equations on HHEI and HHEI/pc with respect to independent variables. The values of regression coefficients with respect to household health expenditure in India varies from 1.80 (PEHI), 1.759 (PEHI/pc), 0.031 (PCII), 0.029 (GDPI/pc) to 0.026 (GDPI). There would have a strong positive effect of PEHI on HHEI and HHEI/pc compared

to other variables and GDPI would have a weak positive effect on household health expenditure in India. The regression analysis implies that the burden of household health expenditure would reduce through higher government expenditure on health rather than an increase in the national output.

Table 6.5 (b)

Regression Results of Household Health Expenditure in India

Equation No	Dependent Variable	Intercept (Constant)	Independent Variables		R^2	Adj R^2	F Ratio
			GDPI	PEHI			
Equn.1	HHEI	26677.04 (4.17)		1.80 (26.84)	0.97	0.97	720.65
Equn.2	HHEI	-32697.79 (-4.91)	0.026 (33.86)		0.98	0.98	1146.71
Equn.3	HHEI	-10256.67 (-1.74)	0.015 (7.44)	0.767 (5.38)	0.99	0.99	1476.32

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.3, 6.4 (a) and 6.4 (b)

The regression results based on logarithmic equation also give the association between household health expenditure and various variables which are presented in Tables 6.6 (a) and 6.6 (b). The results are more or less same in both models of regression. Both the linear and logarithmic equation regression result shows the substantially positive association between household health expenditure and per-capita income of the country.

Table 6.6 (a)

Regression Results of Household Health Expenditure in India
(Logarithmic Equation)

Equn. No	Dependent Variable	Intercept (Constant)	Independent Variables			R^2	Adj R^2	F-ratio
			GDPI/pc	PCII	PEHI/pc			
Equn.1	HHEI/pc	-7.61 (-21.22)	1.339 (41.33)			0.98	0.98	1708.28
Equn.2	HHEI/pc	1.57 (5.21)			0.877 (18.76)	0.95	0.94	351.93
Equn.3	HHEI/pc	-8.652 (-27.38)				0.99	0.99	2520.61
Equn.4	HHEI/pc	-6.94 (-6.49)	1.239 (8.02)		0.068 (0.66)	0.98	0.98	827.82
Equn.5	HHEI/pc	-5.33 (-13.07)		1.152 (30.77)		0.98	0.98	946.66

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables. 6.3, 6.4 (a) and 6.4 (b)

Income is a major determinant of household health expenditure in India. This notion is also supported by the regression result (Equn.5 in Table 6.5 (a) and 6.6 (a). The household health expenditure is also positively determined by GDP/pc. This result is consistent with the logarithmic equation (Equn.1 in Table 6.5 (a) and 6.6 (a). The simple regression result of logarithmic equation shows that the per-capita public expenditure on health would substantial positive effect (regression coefficient=0.877)

on the household health expenditure in the country (Equn. 2 in Table 6.6(a)). The multiple regression result of logarithmic equation proves that the per-capita public expenditure on health would positive effect (regression coefficient=0.068) on household health expenditure (Equn. 3 in Table 6.6(a)). The regression result of linear and logarithmic equations hold the view that an increase in per-capita public expenditure on health would substantially positive influence the per-capita household health expenditure in India (Equn.2 in Table 6.5 (a) and 6.6 (a)).

The regression coefficient value of 1.15 indicates that the effect of GDPI on total household health expenditure is substantially positive in logarithmic regression equations (Equn.2 in 6.6 (b)). The contributory effect of GDPI on HHEI is true for simple and multiple regression equations.

Table 6.6 (b)

Regression Results of Household Health Expenditure in India
(Logarithmic Equation)

Equation No	Dependent Variable	Intercept (Constant)	Independent Variables		R^2	Adj R^2	F Ratio
			GDPI	PEHI			
Equn.1	HHEI	1.846 (4.08)		0.904 (22.39)	0.96	0.96	501.76
Equn.2	HHEI	-6.19 (13.58)	1.15 (39.80)		0.98	0.98	1584.08
Equn.3	HHEI	-4.84 (-4.52)	0.948 (6.43)	0.163 (1.39)	0.98	0.98	834.63

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.3, 6.4 (a) and 6.4 (b)

The regression coefficient of logarithmic equation shows that the public expenditure on health in India would substantial positive effect on household health expenditure in India (Equn.1 in Table 6.6 (b)) since the regression coefficient of PEHI is 0.904 In India more than 60 percent of expenditure on health is borne by the households (NHSRC, 2019). The public expenditure on health and household health expenditure in India are complementary to each other. If the government increases the expenditure on health, that would reduce the burden of the households. Increasing share of household expenditure in health care may shut them into a vicious circle of poverty especially the marginalized sections of the society (Ghosh, 2011; Jayakrishnan et al., 2016).

The value of simple logarithmic regression coefficients with respect to HHEI and HHEI/pc is distinctive from one another. It varies from 1.339 (GDPI/pc),

1.152(PCII), 1.15 (GDPI), 0.904 (PEHI) to 0.877 (PEHI/pc). Per-capita income variables would substantial positive effect on per-capita household health expenditure compared to government expenditure on health. It is clear from the above analysis that the income variables and government expenditure would a decisive role in the determination of household health expenditure in India. The regression results of both linear and logarithmic equation suggest that the selected independent variables are key variables which influences and determines the household health expenditure in India.

6.5. Financial Return and Expenditure on Health in India

Health contributes the human capital of an individual. Healthy population act as a determinant and consequence of socio-economic development (Schultz, 1961). The investment in human capital can produce the monetary and non-monetary returns in an economy. Spending on health has both direct and indirect effect on economic growth (Becker, 1980). It is essential to examine the impact of investment on health on the productive capacity of India. It is evident that there is a positive association between per-capita GDP and household health expenditure in India during the period 1999-2000 to 2018-19. Household health expenditure can explain the productive capacity of the country in terms of GDP and per-capita income. In order to prove the relationship between expenditure on health and financial income, both linear and logarithmic regression equations are estimated.

Health is a fundamental requirement of economic development of a country. Human capital accumulation can be improved by investing in the health of the population (Schultz, 1961). It is obvious that, both public and household expenditure on health have a positive influence on the productivity of the country. The regression equation holds the same result and it is statistically significant. The productive capacity of the nation can be influenced by the spending on health by the government and the household. The GDP of the country would positively influenced by the health spending of the public and households (Equn.1 and Equn.2 in Table 6.7). The regression coefficient of GDPI is more in the case of HHEI than PHEI. At the same time the per-capita income is also dependent on the per-capita household health expenditure and per-capita public expenditure on health (Equn.3 and Equn.4 in Table 6.7). It can be observed that the regression coefficient of PCII is more in the case of HHEI/pc than PEHI/pc. The regression coefficient is also high in the case of total

public expenditure on health than per-capita public expenditure on health. The productive capacity of the nation is depend on both public and household health expenditure which enhances human capital formation.

Table 6.7

Regression Results on Financial Returns from Expenditure on Health in India (Logarithmic Equation)

Equation No	Dependent Variable	Intercept (Constant)	Independent Variables				R^2	Adj R^2	F Ratio
			HHEI	HHEI/pc	PEHI	PEHI/pc			
Equn.1	GDPI	5.502 (21.28)	0.859 (39.8)				0.98	0.98	1584.08
Equn.2	GDPI	7.048 (17.57)			0.78 (21.79)		0.96	0.96	474.88
Equn.3	PCII	4.74 (23.73)		0.851 (30.77)			0.98	0.98	946.67
Equn.4	PCII	6.036 (22.99)				0.753 (18.49)	0.95	0.95	341.97
Equn.5	GDPI	5.668 (18.33)	0.747 (6.43)		0.105 (0.98)		0.98	0.98	791.02
Equn.6	PCII	2.76 (10.31)	0.526 (5.24)		0.162 (1.75)		0.98	0.98	701.42

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.3, 6.4(a) and 6.4(b)

The regression result of logarithmic equation also proves that the positive association of financial return from the investment in health capital. Healthy populations are productive and capable of creating new ideas. Hence healthy people can contribute to the knowledge capital which in turn enhances the productivity of the country. Hence investment in health will generate high level of income and economic growth (Bloom, 2004).

6.6. Household Health Expenditure in Kerala

Kerala holds the highest position in the human development index of India. Kerala is well known for its achievements in education and health care. The health indicators like low IMR, low MMR and high life expectancy which are comparable with the developed nations. As per the report of NITI Aayog in 2018 titled 'Healthy States: Progressive India', Kerala secured highest health index in terms of overall performance incorporating 23 indicators of health sector performance among the larger states in India. So it is identify to point out the determinants of household health expenditure in Kerala. Recent time series data on household health expenditure in Kerala is not available.

The logic behind the selection of data set on household health expenditure in Kerala is as follows:

1. Unavailability of time series data (relevant independent variables)

2. Evidences from present literature (theoretical and empirical)

3. The study examined various proxies such as number of doctors, medical institutions in both government and private hospitals, but the time series data is scanty.

Table 6.8

Average Annual Per-capita Household Health Expenditure (₹) in Kerala

Year	Per-capita Household Health Expenditure (HHEK/pc)	Percentage Change
1994-95	354	0.00
1995-96	374	5.65
1996-97	621	66.04
1997-98	1075	73.11
1998-99	841	-21.77
1999-20	1000	18.91
2000-01	1035	3.50
2001-02	1231	18.94
2002-03	1382	12.27
2003-04	1530	10.71
2004-05	1176	-23.14
2005-06	1220	3.74
2006-07	1464	20.00
2007-08	1720	17.49
CAGR		11.95

Source: Computed from NSS Household Consumption Expenditure Survey, Various Rounds, GOI

As per NSSO estimates the household health expenditure is highest in Kerala among the states of India. Household health expenditure in Kerala is witnessing an increasing trend during the period from 1994-95 to 2007-08. In absolute terms per-capita household health expenditure in Kerala increased from ₹354 during 1993-94 to ₹1720 during 2007-08. It is clear that household health expenditure has shown a CAGR of 11.95 percent in Kerala during the period 1993-94 to 2007-08.

6.7. Determinants of Household Health Expenditure in Kerala

In connection with the previous section, a large set of state level variables such as GSDP of Kerala, per-capita GSDP of Kerala, public expenditure on health in Kerala, per-capita public expenditure on health in Kerala, total remittances to Kerala, and number of Government Medical institutions (Allopathy, Ayurveda and Homoeopathy) in Kerala have been taken into consideration to identify the determinants of household health expenditure in Kerala. The feasible association with household health expenditure and independent variables, growth rate of variables and regression results are illustrated in this section.

The independent variables are considered the level of economic development, government expenditure on health and demand and supply of health care.

Table 6.9
Notation and Definitions of Household Health Expenditure and its Determinants in Kerala

Sl.No.	Notations of Variables	Variables
1	HHEK/pc	Average Annual Per-capita Household Final Consumption Expenditure (₹) on Health in Kerala
2	GSDPK	Gross State Domestic Product of Kerala (₹Crore)
3	GSDPK/pc	Per-capita Gross State Domestic Product of Kerala (₹)
4	PEHK	Public Expenditure (₹Crore) on Health in Kerala
5	PEHK/pc	Per-capita Public Expenditure (₹) on Health in Kerala
6	TRK	Total Remittances to Kerala (₹Crore)
7	MIK	Government Medical institutions in Kerala- Allopathy, Ayurveda and Homoeopathy (Number)

Source: Derived from estimated functions

In order to measure the level of economic development of Kerala, the variables such as GSDP of Kerala and per-capita GSDP of Kerala are considered.

Table 6.10 (a)
Determinants of Household Health Expenditure in Kerala

Year	GSDP (2004-05 prices) in ₹crores	Percentage Change	Per-capita income (2004-05 prices) in ₹	Percentage Change
1994-95	68046	0.0	22522	0.0
1995-96	71119	4.52	23318	3.53
1996-97	73750	3.70	23964	2.77
1997-98	75881	2.89	24448	2.02
1998-99	81239	7.06	25963	6.20
1999-20	87368	7.54	27709	6.72
2000-01	90450	3.53	28482	2.79
2001-02	95124	5.17	29752	4.46
2002-03	102071	7.30	31598	6.20
2003-04	108449	6.25	33276	5.31
2004-05	119264	9.97	36825	10.67
2005-06	131294	10.09	40346	9.56
2006-07	141667	7.90	43325	7.38
2007-08	154093	8.77	46899	8.25
CAGR		6.01		5.37

Sources: 1. Economic Review, Various Issues, GOK
       2. Department of Economic and Statistics, GOK

Secondly, government expenditure on health is measured in terms of two aspects such as public expenditure on health in Kerala and per-capita public expenditure on health in Kerala. The supply of health care facilities is measured through the availability of medical institutions especially in the public hospitals. The medical institutions include the three systems of medicine i.e. Allopathic, Ayurveda and Homoeopathy. The private health care facilities are not considered because of insufficient information on the health care facilities in the private sector. This research considered various aspects aspect such as number of hospitals, number of beds,

number of physicians etc. especially in the private sector. But the data is not sufficient to build a model to associate the determinants of household health expenditure in Kerala. The study confined to only public health care facilities in relation to supply of health care facilities in Kerala.

Total remittances to Kerala play a pivotal role in the economic scenario of the state. Remittances lead to a boom in the purchasing power of the households in Kerala. Remittances would act as a determinant of demand for and supply of health care facilities due to the hike in income. The details of selected variables are presented in the Table 6.10 (a), 6.10 (b) and 6.10 (c).

Table 6.10 (b)

Determinants of Household Health Expenditure (₹) in Kerala

Year	Public expenditure on health in Kerala (2004-05 prices) crores	Percentage Change	Per-capita public expenditure on health (2004-05 prices)	Percentage Change
1994-95	539	0.00	196	0.00
1995-96	643	19.29	211	7.65
1996-97	668	3.89	217	2.84
1997-98	720	7.78	232	6.91
1998-99	766	6.39	245	5.60
1999-20	917	19.71	291	18.78
2000-01	831	-9.38	262	-9.97
2001-02	878	5.66	275	4.96
2002-03	904	2.96	280	1.82
2003-04	910	0.66	279	-0.36
2004-05	921	1.21	284	1.79
2005-06	956	3.80	294	3.52
2006-07	1021	6.80	312	6.12
2007-08	1105	8.23	336	7.69
CAGR		5.26		3.92

Sources: 1. Economic Review, Various Issues, GOK
2. Department of Economic and Statistics, GOK

It can be evident from the Table 6.11 (a) that the GSDP of Kerala increased from ₹68046 crores in 1994-95 to ₹154093 crores in 2007-08 with a CAGR of 6.01 percent. The percentage change in GSDP of Kerala varies from 2.89 percent in 1997-98 to 10.09 percent in 2005-06 during the period from 1994-95 to 2007-08. The per-capita income also shows an increasing trend. It rose from ₹22522 in 1994-95 to ₹46899 2007-08. The CAGR of per-capita income is 5.37 and CAGR of GSDP is 6.01 during 1994-95 to 2007-08. The percentage change in per-capita income of Kerala is highest during 2004-05 (10.67 percent) and lowest in 1997-98 (2.02 percent). The percentage change in per-capita income is also low in 1996-97 and 2000-01.

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The total health expenditure is shared by the government and the households. The role of government in health care spending can stimulate the human capital formation of a country. The public expenditure on health in Kerala increased from ₹539 crores in 1994-95 to ₹1105 crores in 2007-08. The public expenditure on health shows a CAGR of 5.26 percent from 1994-95 to 2007-08. The percentage change in public expenditure on health in Kerala shows a negative rate during 2000-01 (-9.38 percent) and shows a maximum during 1999-2000 (19.71 percent) and 1995-96 (19.29 percent).

Table 6.10 (c)

Determinants of Household Health Expenditure in Kerala

Year	Remittances to Kerala(2004-05price) in ₹Crores	Percentage Change	Number of Government Medical Institutions(Allopathy, Ayurveda and Homoeopathy)	Percentage Change
1994-95	10529	0.0	2370	0.00
1995-96	11833	12.38	2415	1.90
1996-97	14477	22.34	2468	2.19
1997-98	15197	4.97	2524	2.27
1998-99	15343	0.96	2564	1.58
1999-20	17851	16.35	2664	3.90
2000-01	17758	-0.52	2678	0.53
2001-02	18741	5.54	2707	1.08
2002-03	19807	5.69	2696	-0.41
2003-04	20017	1.06	2706	0.37
2004-05	20161	0.72	2711	0.18
2005-06	20713	2.74	2711	0.00
2006-07	20873	0.77	2711	0.00
2007-08	22234	6.52	2706	-0.18
CAGR		5.48		0.95

Sources: 1. Economic Review, Various Issues, GOK
2. Department of Economic and Statistics, GOK

The per-capita public expenditure on health in Kerala increased from ₹196 in 1994-95 to ₹336 in 2007-08 with a CAGR of 3.92 percent. The percentage change in per-capita public expenditure on health also shows a negative rate during 2000-01 (-9.97 percent) and 2003-04 (-0.36 percent) and exhibits a maximum during 1999-2000 (18.78 percent). The role of remittances in the development scenario of Kerala is admirable (Kannan and Hari, 2002; Zachariah, 2002; Sunny, 2019). Remittances paved the way for development in education and health care in Kerala. Remittances to Kerala mounted from ₹10529 crores in 1994-95 to ₹22234 crores in 2007-08 with a CAGR of 5.48 percent. The percentage change in remittances to Kerala displayed a

negative rate during 2000-01 (0.52 percent) and maximum during 1996-97 (22.34 percent). The role of medical institutions for attaining a favourable health index is immense. The health institutions in the private sector also contributed to the better health indicators to the state. But there is no sufficient data regarding private health care facilities. The supply of health care is measured only with government medical institutions. The number of government medical institutions also exhibits an increasing trend and it rose from 2370 in 1994-95 to 2706 in 2007-08 with a CAGR of 0.95 percent. The percentage change in the number of medical institutions is high during 1999-2000 with 3.90 percent. The CAGR of variables varies from 6.01 percent (GSDPK), 5.48 percent (RTK), 5.37 percent (PCIK), 5.26 percent (PEHK), and 3.92 percent (PEHK/pc) to 0.95 percent (MIK). The CAGR of HHEK/pc is 11.95 percent which outruns all the selected variables in Kerala.

Table 6.11 (a)

Regression Results of Household Health Expenditure in Kerala

Equn. No	Dependent Variable	Intercept (Constant)	Independent Variables					R^2	Adj R^2	F Ratio
			GSDPK	PEHK	PEHK/pc	TRK	PCIK			
Equn.1	HHEK/pc	-271.58 (-0.96)					0.042 (4.91)	0.68	0.64	24.06
Equn.2	HHEK/pc	-1375.38 (-4.06)			9.23 (7.31)					
Equn.3	HHEK/pc	-168.76 (-0.68)	0.012 (5.16)					0.69	0.66	26.57
Equn.4	HHEK/pc	-959.38 (-3.73)		2.415 (8.03)				0.84	0.83	64.41
Equn.5	HHEK/pc	-846.25 (-4.34)				0.109 (10.03)		0.89	0.88	100.53

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.8, 6.10(a), 6.10(b) and 6.10(c)

Among the variables related to expenditure on health in Kerala the annual growth rate is more in the case of per-capita GSDP of Kerala followed by remittances to Kerala, per-capita income, public expenditure on health, per-capita public expenditure on health and medical institutions in Kerala. The simple and multiple regression analysis of per-capita household health expenditure in Kerala is presented in Table 6.11 (a), 6.11 (b), 6.12 (a) and 6.12 (b). Both the linear and logarithmic equations are considered to identify the determinants of expenditure on health in Kerala.

The regression result shows a marginal positive association between per-capita income and the per-capita household health expenditure in Kerala (Equn.1 in Table 6.11 (a)). The per-capita income of Kerala marginally influences the variations in the

per-capita household health expenditure in Kerala. This is applicable to both simple and multiple regression analysis (Equn.1 in Table 6.11 (a) and 6.11 (b). The regression result reveals that per-capita household expenditure on health also likely have a substantial positive association with per-capita public expenditure on health (Equn.2 in Table 6.11 (a)). It should be noted that the per-capita household health expenditure and public expenditure on health are compliment to each other (Equn. 2 in Table 6.11 (a)). The state has a significant role in the process of structural transformation, and rejuvenation of health care facilities (Arun and Kumar, 2013). The public expenditure on health in Kerala would substantial positive effect on per-capita household health expenditure. The regression coefficient of PEHK is 2.415 which show substantial positive effect on household health expenditure in Kerala (Equn.4 in Table 6.11 (a)). The availability of health care facilities at easy on the pocket is highly influential in the health care spending of the households, especially weaker sections of the society. The development policy of the government would highly effective in reducing the burden of people for utilising health care (Imoughele and Ismaila, 2013)

Table 6.11 (b)

Regression Results of Household Health Expenditure in Kerala

Equn. No	Dependent Variable	Intercept (Constant)	Independent Variables			R^2	Adj R^2	F Ratio
			PEHK/pc	MIK	PCIK			
Equn. 1	HHEK/pc	-1359.89 (-3.21)	9.049 (2.99)		0.001 (0.07)	0.82	0.78	24.52
Equn. 2	HHEK/pc	-6715.31 (-5.90)		2.98 (6.85)		0.79	0.78	46.98

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.8, 6.10(a), 6.10(b) and 6.10(c)

The GSDP of Kerala would have marginal positive effect on per-capita household health expenditure in Kerala (Equn.3 in Table 6.11 (a)). The economic growth of a country determines the level of private spending in health care. Remittances to Kerala also have a marginal positive effect on household health expenditure in Kerala. The spending habit of the people is drastically changed on account of high remittances to the state. The demand for education and health care facilities increased due to the flow of remittances to Kerala. Household health expenditure is positively affected by the remittances to Kerala (Equn.5 in Table 6.11 (a)). The value of R^2 and adjusted R^2 in this equation (0.89 and 0.88 respectively) shows the significant effect of the variables.

Health care facilities would influence the health care spending of the households. Public health care facilities are crucial for meeting the basic health requirements of the people since health infrastructure has significant and positive influence on health indicators (Lakshmi and Sahoo, 2013). The regression result shows that the medical institutions have a positive bearing of household health expenditures (Equn.2 in Table 6.11 (b)). The relative influence of variables in simple linear regression equation on HHEK/pc differs from 9.23 (PEHK/pc), 2.98 (MIK), 2.415 (PEHK), 0.109 (TRK), 0.042 (PCIK) to 0.012 (GSDPK). Hence it is clear from the regression analysis that the per-capita public expenditure on health would have a pivotal role in determining the household health expenditure in Kerala compared to other variables.

Table 6.12 (a)

Regression Results of Household Health Expenditure in Kerala (Logarithmic Equation)

Equation No	Dependent Variable	Intercept (Constant)	Independent Variables					R^2	Adj R^2	F Ratio
			GSDPK	PEHK	PEHK / pc	TRK	PCIK			
Equn.1	HHEK/pc	-9.79 (-2.59)					1.615 (4.41)	0.62	0.59	19.43
Equn.2	HHEK/pc	-8.84 (-4.06)			2.824 (7.23)			0.81	0.80	52.31
Equn.3	HHEK/pc	-10.27 (-2.82)	1.49 (4.71)					0.65	0.62	22.20
Equn.4	HHEK/pc	-8.44 (-4.48)		2.281 (8.13)				0.85	0.83	66.04
Equn.5	HHEK/pc	-13.59 (-7.82)				2.099 (11.78)		0.92	0.91	138.88

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.8, 6.10(a), 6.10(b) and 6.10(c)

GSDPK would have a weak positive association on household health expenditure. Medical institutions in Kerala would have a strong positive effect on household health expenditure. The availability and accessibility of health infrastructure would positively influence on health spending of the households (Dey et al., 2013; Santos et al., 2015). The regression result of logarithmic equation of household health expenditure in Kerala holds more or less same result in linear equation. The regression result of logarithmic equation household health expenditure in Kerala is presented in Table 6.12 (a) and 6.12 (b).

The per-capita public expenditure on health would have a positive significance on per-capita household health expenditure in Kerala. Medical institutions in Kerala would have a strong positive influence on household health expenditure in Kerala. The variable of remittances indicates a highly positive association with the household health expenditure in Kerala. Public expenditure on health is essential to reduce the

inequality in the distribution of health care. Hence public expenditure seems to have a high association with the household expenditure on health. Public expenditures are inevitable to reduce the income inequality in terms of providing accessibility of health care (Angko, 2009).

Table 6.12 (b)

Regression Results of Household Health Expenditure in Kerala (Logarithmic Equation)

Equation No	Dependent Variable	Intercept (Constant)	Independent Variables			R^2	Adj R^2	F Ratio
			PEHK/ pc	MIK	PCIK			
Equn.1	HHEK/ pc	-7.90 (-2.85)	3.318 (3.49)		-0.357 (-0.57)	0.82	0.79	24.86
Equn.2	HHEK/ pc	-67.56 (-7.93)		9.46 (8.74)		0.86	0.85	76.32

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.8, 6.10(a), 6.10(b) and 6.10(c)

The relative influence of variables in logarithmic equation on HHEK/pc differs from 9.46 (MIK), 2.824 (PEHK/pc), 2.281 (PEHK), 2.099 (TRK), 1.615 (PCIK) to 1.49 (GSDPK). The regression result shows the association of household health expenditure in Kerala and the variables determining it. The regression result helps to find out of the relative influence of household health expenditure in Kerala and macro economic variables such as GSDP, per-capita income, remittances and public expenditure on health. The regression result of logarithmic equation indicates a strong positive effect of MIK and a weak effect of GSDPK on household health expenditure in Kerala.

6.8. Financial Return and Expenditure on Health in Kerala

The productive capacity of the economy can be measured by GSDP, per-capita GSDP and household income through remittances. In order to find relationship between financial return and expenditure on health linear and logarithmic regression equations are used.

In the economic assessment both of the cost and outcome of the health investment are considered. The cost dimension includes cost-minimization, cost-benefit, cost-effectiveness or cost-utility (Ferraz, 1995). It can be evident from the regression result of return on expenditure on health that public expenditure on health in Kerala would influence substantial positive effect on GSDPK (Equn.2 in Table 6.13). Investment in human capital enhances the productivity of the state. Human capital formation through education and health increases the productivity of the labour which fosters economic development. In Kerala household expenditure on education seems to be positively significant on productivity in terms of per-capita

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income and state domestic product. Just like education, the spending on health by households contributed to the economic growth. The per-capita household health expenditure would a positive bearing on GSDPK (Equn.1 in Table 6.13). Not only the government but also the household sector also contributed to the nation income. So it is clearly said that the expenditure on health whether it is government or household will enhance the economic growth.

Table 6.13
Regression Results of Household Health Expenditure in Kerala (Logarithmic Equation)

Equation No	Dependent Variable	Intercept (Constant)	Independent Variables				R^2	Adj R^2	F Ratio
			HHEK/pc	PEHK	PEHK/pc	TRK			
Equn.1	GSDPK	8.49 (13.33)	0.43 (4.71)				0.65	0.62	22.20
Equn.2	GSDPK	3.32 (3.05)		1.21 (7.50)			0.82	0.81	56.32
Equn.3	GSDPK	3.16 (1.66)		1.14 (1.54)		0.069 (0.106)	0.82	0.79	25.84
Equn.4	PCIK	7.69 (12.84)	0.38 (4.41)				0.62	0.59	19.43
Equn.5	PCIK	8.87 (49.94)			0.005 (8.25)		0.85	0.84	68.00
Equn.6	TRK	6.73 (26.23)	0.438 (11.78)				0.92	0.91	138.88

Note: Figures in parentheses indicates t- Statistic value
Source: Computed from variables specified in Tables 6.8, 6.10 (a), 6.10 (b) and 6.10 (c)

The remittances also contribute the development strategy of Kerala and enhance the way for economic growth. Remittances would have a strong positive influence on GSDPK. The positive association of remittances and state income can be evident from the regression result (Equn.3 in Table 6.13). Another interesting regression result is that the household health expenditure significant on volume of remittances to Kerala (Equn.6 in Table 6.13). Health is an important factor of human capital formation and this would enable the labour productivity. Spending on health has a direct welfare effect to boost economic growth (Becker, 1980; Alvi and Ahmed, 2014).

Income level of the individual also depends upon the investment in health capital which enhances productivity of labour and enabled him to earn more. Improved health has direct and indirect effect on income (Bloom 2004; Jamison et al., 2005). The per-capita public expenditure on health seems to be highly positive significant effect on per-capita income of an individual (Equn.5 in Table 6.13). Not only the public expenditure but also the per-capita household health expenditure in Kerala would influence highly on PCIK (Equn.4 in Table 6.13). The financial return

from household expenditure on health and its impact on macroeconomic variables like GSDP and per-capita income is noteworthy. The association between investment in human capital and returns from investment in human capital makes bi-directional.

The regression result of logarithmic equation on financial return from spending on health is shown in Table 6.13. The regression result of logarithmic equations is coexistent with the result of linear equations of financial returns. The investment in health would create productivity which in turn paved the way for economic growth. The investment in health both by the government and the household increases the productive capacity of the individual and this result in increase in the income level and economic growth. Health can affect economic growth through its impact on physical and human capital accumulation (Tang, 2011). Investment in human capital leads to the development of a nation. This does not mean that human capital alone create income growth, there are some other variables which contributed the growth process. Human capital investment is inevitable in the process of economic development.

6.9. Determinants of Expenditure on Health in India and Kerala

The national and state level analysis on the determinants of expenditure on health gives a comparative picture even though there are some differences between them. The regression results show that the household health expenditure is highly influenced by the public expenditure on health in India as well as in Kerala. Per-capita public expenditure on health would have highly positive effect on per-capita household health expenditure in Kerala than in India (Equn.2 in Table 6.5 (a) and in Table 6.12 (a)). Per-capita income is one of the key determinants in the household health expenditure at the state and national level. The significance of per-capita income on per-capita household health expenditure is more in Kerala than in India (Equn.5 in Table 6.5 (a) and Equn.1 in Table 6.12 (a)). The effect of GDPI over GSDPK is high in determining household health expenditure (Equn.2 in Table 6.5 (b) and Equn.5 in Table 6.12 (a)). Household expenditure varies with changes in consumption expenditure positively. GDPI would have a weak positive effect on household health expenditure in India. The GDP of the country would positively influenced by the health spending of the public and households. Public expenditure on health also shows a substantially positive effect on household health expenditure in India.

6.10. Financial Return from Health in India and Kerala

The financial return from health concentrates the macroeconomic productivity indicators such as per-capita income and national income. This section tries to compare the returns from health expenditure in Kerala and in India. The financial return is greater from public expenditure on health than household health expenditure both in Kerala and in India. Moreover the effect of GDPI or GSDPK from public expenditure on health is higher in Kerala than in India. The impact of household health expenditure on income is more in Kerala than in India. The regression result is mostly consistent with both linear and logarithmic equation on financial returns on health in India and Kerala.

The regression results help to find out the influence of independent variables on household health expenditure in Kerala and in India. It also throws light on the productive capacity from expenditure on health. The analysis helps to find the strength among the variables. The variables like PEHI, PEHI/pc, PCII, GDPI and GDPI/pc have a significant role in determining the household health expenditure in India. In Kerala the variables such as PEHK, PEHK/pc, GSDPK, PCIK, RTK and MIK plays a prominent role in determining the household health expenditure. The productive capacity from household health expenditure in India is in terms of PCII and GSDPI. In Kerala the productive capacity is in terms of PCIK and GSDPK. The public expenditure on health is the most crucial factor to determine the household health expenditure in Kerala. Apart from these variables there are several factors contributed to the household health expenditure in Kerala. Hence to identify the micro level variables, a detailed primary data base analysis is needed.

CHAPTER 7

HOUSEHOLD HEALTH EXPENDITURE IN KERALA: A SURVEY BASED ANALYSIS

7.1. Introduction
7.2. Sampling Framework
7.3. Socio-Economic Characteristics of Households
7.4. Health Seeking Characteristics of Households
7.5. Annual Household Health Expenditure of Households
7.6. Household Health Expenditure and Voluntary Prepayment
7.7. Household Budget and Expenditure on Health
7.8. Family Budget Allocation and Household Health
7.9. Financing Mechanism of Household Health Expenditure
7.10 Constraints Related to Household Health Expenditure

7.1. Introduction

Efficient healthcare system improves quality of life, well-being of people and reduce burden of both communicable and non-communicable diseases. This would increase productivity and growth of the country. Higher income permits individuals to afford better nutrition and access to better healthcare. Investment in health would affect not only macroeconomic level but also individual and household level. The financial impact of ill-health would deepen poverty and mount the number of people living below the poverty line. The most significant feature of ill-health is that its impact is seems to persist across generations. The enormity of household expenditure on health is high in Kerala, which is a topmost state in terms of health indicators. The Bhore Committee Report of 1946 emphasized the objective of enhancing financial access of healthcare and reducing inequality in healthcare. There exists an inter-state and intra-state variation in health status. Moreover, there are inequalities among different categories of social groups with respect to income, gender and health status. The main drivers of cost escalation in the healthcare system consist of human resources for health, access to essential drugs and medicine and access and availability of appropriate technology.

7.2. Sampling Framework

Primary data have been collected for the period from July 2018 to June 2019 by employing a pre-tested interview schedule. A multi-stage random sampling

method has been used for collecting primary data. In order to examine the determinants of household health expenditure in Kerala, sample households are selected from one district. Thrissur district is selected for the analysis of household health expenditure in Kerala. The population is the households in Kerala. The sampling and analytical framework of the present study is presented in Figures 7.1 & 7.2.

Figure 7.1
Sampling Framework
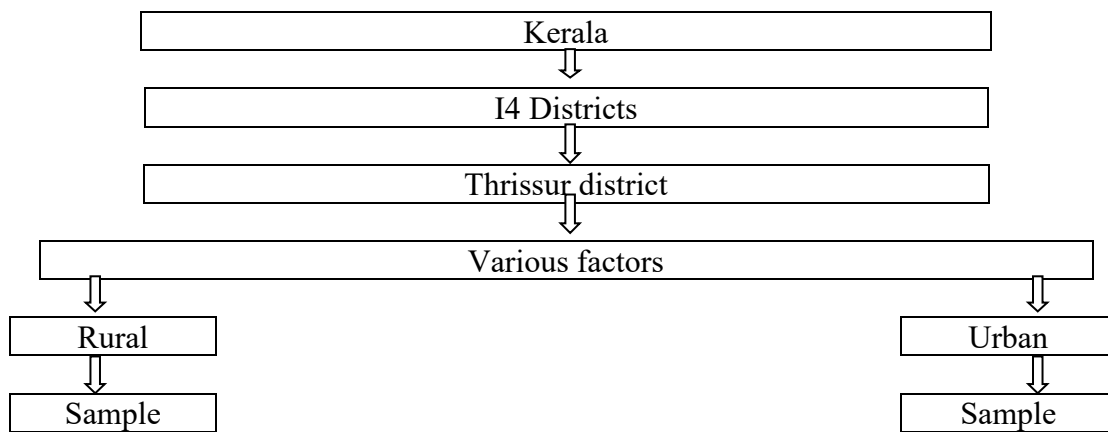
Source: Prepared by the investigator based on Census of India, 2011

The rationale for selecting Thrissur district in Kerala for primary survey is categorized into the following domains:-

(1) **Geography**: Among North, Central and South Kerala Coast, Thrissur district falls in the Central Kerala Coast. The district is also contains four sub-micro region such as coast, upland, plain and hills.

(2) **Health infrastructure**: Considering the number of medical institutions, Thrissur district secured a state level average among the districts in Kerala.

(3) **Health indicators**: Health indicators such as life expectancy at birth and MMR in Thrissur district reported a state level average.

(4) **Household** Health expenditure: Regarding monthly per-capita medical expenditure on health among the districts in Kerala during 2009-10, Thrissur reported a state level average expenditure on health by the households.

(5) **Consumption expenditure**: Among the 14 districts, Thrissur secured top in the non-food consumption expenditure of the households during 2011-12 as per the Consumption Expenditure Survey (Department of Economics and Statistics, Kerala, 2018).

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(6) **Others**: Thrissur district shows lowest child sex ratio in Kerala as per Census 2011.

A pilot survey has conducted. Based on the insights from pilot survey, sampling instruments were revised. From the pilot survey it is found that 32.2 percent of households have expenditure on health care for a reference period of 15 days. Based on the pilot survey, the total sample size was fixed at 336 households. Rural population of Thrissur district is 32.81 percent and urban population is 67.19 percent of the total population as per the census 2011. The rural-urban sample size is fixed as a proportion of rural and urban population of Thrissur district. The rural and urban sample households are selected in the proportion of 1:2 based on census 2011. Out of 336 households 224 households are from urban area and 112 households are from rural area of Thrissur district (see Appendix 2- Table 1).

Figure 7.2
Analytical Framework

Population
Questionnaire
Pilot Survey
Sample Size
Collection of Data
Qualitative and Quantitative Data
Regression Analysis

Source: Prepared by the investigator

Thrissur district, the cultural capital of Kerala, is the center of health care in the central Kerala since it covers the health care needs of the people in Thrissur, Palakkad, Malappuram and northern part of Ernakulum district. Thrissur district is the fastest becoming educational capital of Kerala due to the existence of various medical, engineering, ayurvedic, veterinary and art and science colleges. Kerala University of Medical and Allied Sciences is located at Thrissur. There are four medical colleges in Thrissur district. The three allopathic medical colleges in Thrissur district are Government Medical College, Thrissur, Jubilee Mission Medical College and Research Institute, and Amala Institute of medical Sciences. Thrissur district is also well known for its Ayurvedic treatment. There are two Ayurveda colleges,

Vaidhyaratnam Ayurveda College, Ollur and Poomully Neelakandan Namboothiripad Memorial Ayurveda Medical College, Cheruthuruthy. Thrissur district has 6 Taluks (Thalappilly, Chavakkad, Kodungallur, Thrissur, Mukundapuram and Chalakudy) and 255 villages.

Table 7.1
Demographic Profile of Thrissur District

Description	2011			2001
	Rural	Urban	Total	
Actual Population	1020537	2089790	3110327	2974232
Male	485875	988790	1474665	1422052
Female	534662	1101000	1635662	1552180
Sex Ratio (per 1000)	1100	1113	1109	1092
Child Sex Ratio (0-6 Age)	955	944	948	958
Child Percentage (%)	9.43	9.23	9.30	11.18
Male Child Percentage (%)	10.13	10.03	10.07	11.94
Female Child Percentage (%)	8.79	8.51	8.60	10.48
Average Literacy (%)	93.99	95.97	95.32	92.27
Male Literacy (%)	96.09	97.41	96.98	95.11
Female Literacy (%)	92.11	94.70	93.85	89.71
Population Growth (%)			4.58	8.66
Proportion to Kerala Population (%)			9.32	9.34
Area Sq. Km			3032	3032
Density /km^2			1026	981

Source: Census of India, 2011

There are 88 GramaPanchayaths, 16 Block Panchayaths and 1 District Panchayath in the three tier system of rural local bodies. There are 7 urban local bodies consist of 6 Municipalities and 1 Corporation.

7.3. Socio-Economic Characteristics of Households in Thrissur District

The differences in socio economic characteristics with respect to household health expenditure are presented in Table 7.2. Religion-wise distribution of rural households in Thrissur district constitutes 47.3 percent of Hindus followed by 26.3 percent of Christians and 25.9 percent of Muslims. In urban area the religion-wise distribution of households contain 37.5 percent of Hindus, 39.3 percent of Christians and 23.2 percent of Muslims. Among the rural households 54.5 percent constitute General category followed by Other Backward Class (OBC) (32.1 percent) and Scheduled Caste / Scheduled Tribes (SC/ST) (13.4 percent).

The social category of urban households contains 62.0 percent of General, 27.7 percent of OBC and 10.3 percent of SC/ST. The income status of households in

Thrissur district contains 30.4 percent of BPL households and 69.6 percent of Above Poverty Line (APL) households in rural area.

The income status of urban area includes 28.1 percent of BPL households and 71.9 percent of APL households. The percentage of BPL households are more in rural areas than in urban areas of Thrissur district.

Table 7.2

Socio-Economic Characteristics of the Households in Thrissur District

Category	Sub-Category	Rural	Urban
Religion	Hindu	53 (47.3)	84 (37.5)
	Muslim	29 (25.9)	52 (23.2)
	Christian	30 (26.8)	88 (39.3)
	Total	112 (100)	224 (100)
Social Category	General	61 (54.5)	139 (62.0)
	SC/ST	15 (13.4)	23 (10.3)
	OBC	36 (32.1)	62 (27.7)
	Total	112 (100)	224 (100)
Income status	BPL	34 (30.4)	63 (28.1)
	APL	78 (69.6)	161 (71.9)
	Total	112 (100)	224 (100)

Source: Survey Data

There are 27.7 percent of head of household who have SSLC among the rural households while it is 15.6 percent of urban households of Thrissur district. There are 35.7 percent +2 holders among the head of rural households when compared to 33.9 percent in urban samples of Thrissur district.

Table 7.3

Characteristics of Head of the Household

Category	Sub-Category	Rural	Urban
Education	SSLC	31 (27.7)	35 (15.6)
	+2	40 (35.7)	76 (33.9)
	Graduate	33 (29.5)	79 (35.3)
	PG & Above	8 (7.1)	34 (15.2)
	Total	112 (100)	224 (100)
Occupation	Regular salaried	31 (27.7)	88 (39.3)
	Self employed	47 (41.9)	93 (41.5)
	Casual wage labourers	34 (30.4)	43 (19.2)
	Total	112 (100)	224 (100)
Gender	Male	89 (79.5)	182 (81.3)
	Female	23 (20.5)	42 (18.7)
	Total	112 (100)	224 (100)

Source: Survey Data

There are 35.3 percent of degree holders among the head of urban households when compared to 29.5 percent in rural sample households in Thrissur district. The

percentage of head of households who have PG &Above is low in rural area than in urban area.

Household expenditure is mainly dependent upon the household income. Hence the occupational background of the head of the household is considered under study to examine the determinants of household health expenditure. The occupation is categorized into regular salaried, self employed and casual wage labourers. The major share of occupation of head of household occupies self employed category both in rural and urban areas of Thrissur (Table 7.3). The occupation of head of household in urban area contains 39.3 percent of regular salaried category followed by 19.2 percent of casual wage labourers. But in rural area casual wage labourers (30.4 percent) occupies the second place followed by regular salaried category (27.7 percent).

Sometimes the gender of head of household would influence the expenditure pattern of households (Sinha et al., 2016). Majority of sample households in urban and rural areas have male-head of household. It is evident that 79.5 percent of rural households and 81.3 percent of urban households have male-head of household Female headed household is higher in rural area (20.5 percent) than in urban area (18.7 percent).

Table 7.4

Distribution of Households by Family

Category	Sub-Category	Rural	Urban
Type of Family	Joint family	19(16.9)	34(15.2)
	Nuclear family	93(83.1)	190(84.8)
	Total	112(100)	224(100)
Size of Family	1-4	55(49.1)	116(51.8)
	5-8	46(41.1)	90(40.2)
	9≤	11(9.8)	18(8.0)
	Total	112(100)	224(100)

Source: Survey Data

Type of family may be joint or nuclear. The sample households in Thrissur district are highly favoured for nuclear family. The rural-urban difference in type of family is low in the sample households. There are 16.9 percent of the rural households are in the nature of joint family and 83.1 percent of nuclear family. At the same time 15.2 percent of the families are joint and 84.8 percent are nuclear family.

Family size can be categorized to three classes; households with number of persons in the class of 1-4, 5-8 and 9 & above. Majority of households have 4 members both in rural and urban areas of sample households in Thrissur district. In rural area, 9.8 percent of families have a number of more than 9 members and 41.1

percent of families have a number of 8 members and 49.1 percent of families have a number of 4 members. Dependency of old- age population out of total population is high in Kerala. The sample households in Thrissur district hold the same result. Households have old-age dependency is the highest in rural area (74.1 percent) than in urban areas (67.9) in Thrissur district.

Table 7.5

Distribution of Households by Old-age Dependency

Old-age Dependency	Rural	Urban
Existent	83(74.1)	152(67.9)
Non-Existent	29(25.9)	72(32.1)
Total	112(100)	224(100)

Source: Survey Data

The health care needs are highly for the old-age population. The demand for health care among the old-age people lifts the expenditure on health (Angko, 2009; Samadi and Rad, 2013).

Table 7.6

Distribution of Households by Income

Annual Income (₹)	Rural	Urban
<150000	28 (25.0)	61 (27.3)
150001-300000	30 (26.8)	64 (28.6)
300001-500000	25 (22.3)	51 (22.7)
500001-1000000	20 (17.9)	35 (15.6)
1000001+	9 (8.0)	13 (5.8)
Total	112 (100)	224 (100)

Source: Survey Data

Annual income of the households can be categorized into five groups. 8.0 percent of rural households and 5.8 percent of urban households have income above ₹1000001.

Table 7.7

Distribution of Households by Health Insurance Scheme

Health Insurance Scheme	Rural	Urban	Total
Government funded	26(23.2)	46(20.5)	72(21.4)
Arranged by households	11(9.8)	24(10.7)	35(10.4)
Employer (not Govt.) supported health protection	15(13.4)	36(16.1)	51(15.2)
Others	4(3.6)	6(2.7)	10(3.0)
No insurance at all	56 (50.0)	112(50.0)	168 (50.0)
Total	112(100)	224(100)	336(100)

Source: Survey Data

It is observed that 26.8 percent of rural households have income in between 150001 to 300000. In rural area, 25.0 percent of households have income below

150000 and 17.9 percent of households have income in between 500001 to 1000000. In urban area, 28.6 percent of households have income in between 150001 to 300000 and 27.3 percent of households have income below 150000.

The fifty percent of households have insurance coverage. 21.4 percent of sample households have government funded health insurance scheme. RSBY/CHIS, CHISPLUS schemes in Kerala provide insurance coverage to the BPL households. Low income people from APL households also have the benefit of government supported insurance schemes in Kerala. All of these health insurance programmes of the government are named as KASP. Among the health insurance schemes government funded schemes constitute 21.4 percent followed by employer supported health protection (15.2 percent), arranged by households (10.4 percent) and others (3.0 percent). Among the schemes employer supported health protection constitute 13.4 percent in rural area and 16.1 percent in urban area of sample households.

7.4. Health Seeking Behaviour of Households

The health status of each and every person in the household is different. This will result in differences in health seeking behavior of households. The main characteristics of health seeking behavior of households are given below.

Table 7.8

Distribution of Households by Nature of Diseases

Nature of diseases	Rural	Urban
Injury	16(14.3)	26(11.6)
Communicable	47(41.9)	94(42.0)
Non-Communicable	49(43.8)	104(46.4)
Total	112(100)	224(100)

Source: Survey Data

Nature of diseases may be grouped into injury, communicable diseases and non-communicable diseases. The burden of non-communicable diseases along with communicable diseases is high in Kerala. The dual burden of diseases can be evident both in rural and urban area. The diseases have an important role in determining household expenditure on health in the Thrissur district. From the Figure 7.3, it is evident that communicable diseases as well as non-communicable diseases have a crucial role in determining household health expenditure in Thrissur district.

From the Figure7.3, it is revealed that non-communicable diseases are high in the rural areas of the sample district during the study period (43.8 percent). At the same time, non-communicable diseases are high in urban areas also (46.4 percent). At

the same time, injury related diseases are comparatively low both in rural and urban area alike. Therefore, in this context, the government and other policy makers should take some urgent measures to control the non-communicable diseases in rural and urban area of Kerala. Similarly there should be specific attention to the problems related to non-communicable diseases of the marginalised sections of the society.

Figure 7.3

Distribution of Households by Nature of Diseases

Source: Survey Data

   In rural area the burden of non- communicable diseases (43.9 percent) is high when compared to communicable diseases (41.9). In urban area 46.4 percent of diseases are non-communicable in nature and 42.0 percent are communicable diseases. The difference between burden of communicable and non-communicable diseases is low in both rural and urban area. 14.3 percent of rural households and 11.6 percent of urban households have reported injury cases.

Table 7.9

Distribution of Households by Type of Treatment

Type of Treatment	Rural	Urban
Specialty	26(23.2)	55(24.6)
General	50(44.6)	117(52.2)
Specialty+ General	36(32.2)	52(23.2)
Total	112(100)	224(100)

Source: Survey Data

   Healthcare treatment may be general treatment or specialty treatment. It is noticed that 44.6 percent of rural and 52.2 percent of urban households utilize general treatment and 23.2 percent of rural and 24.6 percent of urban households utilize specialty treatment. Further there are, 32.2 percent of rural and 23.2 percent of urban

households utilize both specialty and general treatment. The cost of treatment seems to be high for specialty treatment when compared to general treatment. Episodes of hospitalization are classified into two groups; number of times of hospitalization up to 3 and 4 & above. The relationship between episodes of hospitalisation and expenditure on health is positive.

Table 7.10

Distribution of Households by Episodes of Hospitalization

Episodes of hospitalisation	Rural	Urban
0-3	40(71.4)	85(75.9)
4+	16(28.6)	27(24.1)
Total	56 (100)	112(100)

Source: Survey Data

Higher the episodes of hospitalisation higher will be the expenditure. Majority of the households in rural and urban area have episodes of hospitalization up to 3. It is evident that 23.2 percent of rural households and 21.9 percent of urban households have more than four episodes of hospitalization.

Table 7.11

Distribution of Households by Delivery care

Delivery care	Rural	Urban
Availed	29(25.9)	46(20.5)
Non-availed	83(74.1)	178(79.5)
Total	112(100)	224(100)

Source: Survey Data

Among the households, 25.9 percent of rural and 20.5 percent of urban households have hospitalization for delivery care.

Table 7.12

Percentage Distribution of Hospitalisation Cases Receiving Treatment before Hospitalisation by Source of Treatment

Type of Medical Institution	Hospitalisation cases receiving treatment from before hospitalisation				
	Government Hospital	Private/ Charitable Hospital	Private clinic	Informal Healthcare Provider	All
Government Hospital	76.2	14.8	8.4	0.6	100
Private/ Charitable hospital	11.6	81.6	6.6	0.2	100
All	43.9	48.2	7.5	0.4	100

Source: Survey Data

As per the Vital Statistics Report 2016, among the number of live births in Kerala, 59.05 percent are normal deliveries and 39.75 percent are caesareans in government hospitals and in private hospitals 54.78 percent are normal deliveries and

41.93 percent are caesareans. As per NSS report of 71st round the medical expenditure for childbirth is higher in private hospitals than public and also higher in urban areas of Kerala. Delivery care would mount household health expenditure. Implementation of Janani Suraksha Yojana (JSY) would help to reduce maternal and child mortality by promoting institutional delivery with financial assistance especially for BPL households.

Percentage of hospitalisation cases receiving treatment before hospitalisation by source of treatment availed for each type of medical institution where admitted during the last 365 days are presented in Table 7.12. Distribution of hospitalisation cases receiving treatment before hospitalisation is 43.9 percent from government hospital, 48.2 percent from private/charitable hospital, 7.5 from private clinic and 0.4 percent from informal health provider. It is evident that 14.8 percent of hospitalisation cases receiving treatment from private/charitable hospital before hospitalisation and received treatment under government hospital and 81.6 percent from private hospitals before hospitalisation seeks medical care from private/charitable hospital. Percentage of treatment from government hospital before hospitalisation and utilize medical care as inpatient from government hospital is 76.2 percent and 11.6 percent from private/charitable hospital. The utilisation of private health care facilities is higher than government facilities among the sample households for treatment before hospitalisation.

Table 7.13

Percentage Distribution of Hospitalisation Cases Receiving Treatment after Hospitalisation by Source of Treatment

Type of Medical Institution	Source of post-discharge treatment				
	Government Hospital	Private/ Charitable Hospital	Private clinic	Informal Healthcare Provider	All
Government Hospital	96.1	2.1	1.3	0.5	100
Private/ Charitable hospital	4.2	93.4	2.1	0.3	100
All	50.15	47.75	1.7	0.4	100

Source: Survey Data

Distribution of hospitalisation cases receiving treatment after hospitalisation is 50.15 percent from government hospital, 47.75 percent from private/charitable hospital, 1.7 from private clinic and 0.4 percent from informal health provider. The utilisation of private health care facilities is lower than government facilities among

the sample households for post-discharge treatment. The source of treatment from government hospital increased after hospitalisation (50.15 percent) when compared to before hospitalisation (43.9 percent). But the source of treatment from private/charitable hospital decreased after hospitalisation (47.75 percent) when compared to before hospitalisation (48.2 percent). There would high discrepancy in expenditure between government and private hospitals.

7.5. Annual Household Health Expenditure of Households

Annual household health expenditure per-capita has obtained by dividing the annual household health expenditure by the household size. The variations in average annual household health expenditure per-capita with respect to various indicators are given below.

Table 7.14

Distribution of Average Annual Household Health Expenditure Per-capita by Religion

Religion	Rural	Urban
Hindu	6616.9	7015.3
Muslim	5554.9	6889.2
Christian	4836.0	8563.6
Average	5669.3	7489.4
Test Statistic	1.644	2.633
p value	0.440	0.268

Source: Survey Data

There is no significant difference between religion of households and average annual household health expenditure per-capita both in rural and urban area since p>0.05. Average annual household health expenditure per-capita is the highest for Hindus (₹6616.9) followed by Muslims (₹5554.9) and Christians (₹4836) in rural area. In urban area, the religion-wise household health expenditure is the highest for Christians (₹8563.6) followed by Hindus (₹7015.3) and Muslims (₹6889.2).

Table 7.15

Average Annual Household Health Expenditure Per-capita by Caste

Caste	Rural	Urban
General	6354.3	8440.9
SC/ST	4126.1	3850.3
OBC	5281.7	6760.5
Average	5254.0	6350.6
Test Statistic	0.268	15.195
p value	0.875	0.001

Source: Survey Data

Average household health expenditure is more for urban area (₹7489.4) than rural area (₹5669.3) with respect to religion. There is significant difference between

caste and average annual household health expenditure per-capita in urban area (since p<0.05). There is marginal difference between caste and average annual household health expenditure per-capita in rural area since the p-value is greater than the significance level. Average household health expenditure is more for urban area (₹6350.6) than rural area (₹5254.0) in relation to caste of the households. Caste-wise average annual household health expenditure per-capita is high for General (₹6354.3) followed by OBC (₹5281.7) and SC/ST (₹4126.1) in rural area. In urban area, it is also high for General (₹8440.9) followed by OBC (₹6760.5) and SC/ST (₹3850.3). Caste-wise household health expenditure pattern is same for households in rural and urban area.

Table 7.16

Distribution of Average Annual Household Health Expenditure Per-capita by Income Status

Income Status	Rural	Urban
BPL	3251.0	4249.0
APL	6774.7	8858.4
Average	5012.8	6553.7
Test Statistic	-1.629	-4.958
p value	0.103	0.000

Source: Survey Data

Income status would influence the health expenditure of households. There is significant difference between income status and average annual household health expenditure per-capita in urban area where p=0.00. Average annual household health expenditure per-capita is higher for APL category (₹6774.7) than BPL category (₹3251.0) in rural area.

Table 7.17

Distribution of Average Annual Household Health Expenditure Per-capita by Education of Head of the Household

Education of head of the household	Rural	Urban
Under 10	9364.0	9010.4
+2	7043.7	6707.8
Graduate	5604.8	7513.6
PG & Above	4551.4	9218.1
Average	6641.0	8112.5
Test Statistic	7.862	6.245
p value	0.049	0.100

Source: Survey Data

Average annual household health expenditure per-capita is higher for APL category (₹8858.4) than BPL category (₹4249.0) in rural area. Average annual household health expenditure per-capita is more in urban area with respect to income

status. There is marginal difference between income status and average annual household health expenditure per-capita in urban area since p-value is greater than significance level.

There would be significant difference between household health expenditure and education level of head of household in rural area. (p=0.049). There exists rural-urban differences in the literacy rate and this would lead differences in the education level of head of household between rural and urban area.

Table 7.18

Distribution of Average Annual Household Health Expenditure Per-capita by Occupation of Head of the Household

Occupation of head of the household	Rural	Urban
Regular salaried	4090.9	8048.2
Self employed	6652.0	8723.4
Casual wage labourers	6008.5	4412.6
Average	5583.8	7061.4
Test Statistic	2.46	8.156
p value	0.292	0.017

Source: Survey Data

Education level of head of household is not significant in average annual household health expenditure per-capita of urban households. The increase in education of head of household would decrease the expenditure on health among rural sample households. Education level of head of the household substantially influences the household health expenditure in rural area.

Figure 7.4

Average Annual Household Health Expenditure Per-capita by Occupation of Head of the Household
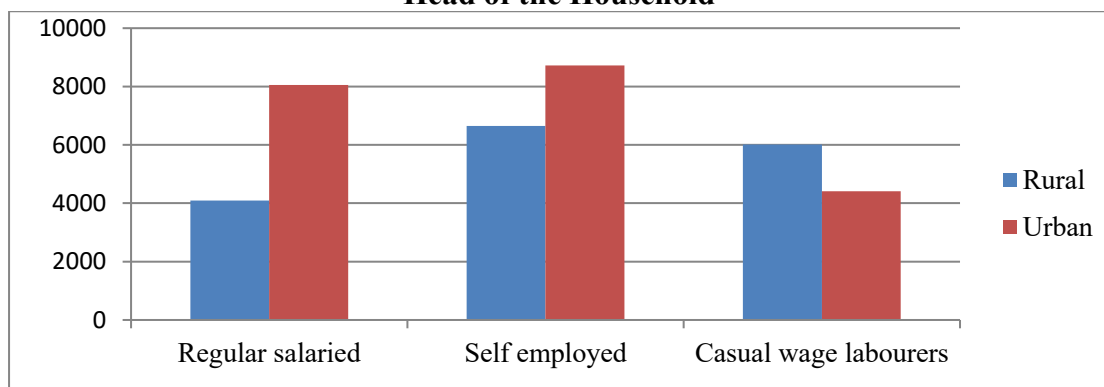
Source: Survey Data

Higher the level of education of head of household lower would be the household health expenditure in rural area. Educational level of head of household influences the preventive and curative health care expenditure of the households

especially for urban households with PG & above. Lower educational level of urban and rural head of household would mount the expenditure on health.

There is marginal difference between different occupation of the head of household and average annual household health expenditure per-capita in rural area ($p>0.05$). But in urban area there is significant difference between different occupation of the head of household and average annual household health expenditure per-capita since the p value is 0.017.

The variations in the health expenditure based on occupation of head of the household shows that household health expenditure is high for self employed (₹6652) followed by casual wage labourers (₹6008.5) and regular salaried workers (₹4090.9) in rural area. In urban area, household health expenditure in relation to occupation of head of household varies from self employed (8723.4) followed by regular salaried workers (₹8048.2) to casual wage labourers (₹4412.6).

Table 7.19

Distribution of Average Annual Household Health Expenditure Per-capita by Gender of Head of the Household

Gender of head of the household	Rural	Urban
Male	6112.2	7509.9
Female	4621.9	7573.9
Average	6112.2	7541.9
Test Statistic	-0.853	-0.102
p value	0.394	0.919

Source: Survey Data

The influence of gender in determining the household health expenditure can be examined through the gender of head of sample household. There is no head of household as transgender.

Table 7.20

Distribution of Average Annual Household Health Expenditure Per-capita by Family Type

Family Type	Rural	Urban
Joint family	6245.9	6048.5
Nuclear family	5803.2	7792.8
Average	6024.5	6920.7
Test Statistic	-0.651	-0.453
p value	0.515	0.651

Source: Survey Data

The analysis shows that there is marginal difference between gender of head of household as male and female and average annual household health expenditure per-capita in rural (p=0.394) and urban area (p=0.919).

The difference between expenditure on health based on gender of head of household is negligible in the case of urban households. Average annual household health expenditure per-capita in rural area (₹6112.2) is lower than the urban area (₹7541.9) with respect to gender of head of household. Expenditure on health is low in rural households where female as the head of household compared to male. Moreover, expenditure on health is high in urban households where female as the head of household when compared to male.

Average annual household expenditure on health per-capita is higher for joint family (₹6245.9) than nuclear family (₹5803.2) in rural area. But household health expenditure in urban area is high for nuclear family (₹7792.8) compared to joint family (₹6048.5). Moreover expenditure is high in nuclear family of the rural households with voluntary prepayment when compared to joint family.

Table 7.21
Distribution of Average Annual Household Health Expenditure Per-capita by Family Size

Family Size	Rural	Urban
1-4	5752.3	7957.6
5-7	6182.5	7194.6
8+	5274.5	6736.5
Average	5736.4	7296.2
Test Statistic	2.526	0.230
p value	0.283	0.891

Source: Survey Data

However the analysis shows that there is marginal difference between joint family and nuclear family with respect to average annual household health expenditure.

Table 7.22

Distribution of Average Annual Household Health Expenditure Per-capita by Income

Income	Rural	Urban
<150000	2981	4275.3
150001-300000	5960.5	7817.2
300001-500000	6468	8687.1
500001-1000000	7585	9264.8
1000001+	7632.6	10351.1
Average	6125.4	8079.1
Test Statistic	3.652	21.153
p value	0.455	0.000

Source: Survey Data

Household health expenditure seems to vary with the size of family. In urban area, household health expenditure is high for that household family size of 1-4 and

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expenditure is low for that household family size of more than 8 members. But household health expenditure is more for that household family size of 5-7 in rural area. Average annual household health expenditure per-capita is more in urban area (₹7296.2) than in rural area (₹5736.4) based on family size. In spite of this variations, the analysis shows there is marginal difference between different family size and average annual household health expenditure in rural (p= 0.283) and urban area (p=0.891).

Generally income is one of the major determinants of consumption expenditure of households. It is evident that household health expenditure is low for poor income households both in rural and urban area. Household health expenditure is substantially high for high income households both in rural and urban area. There is a notable increase in household health expenditure to the high income people in rural and urban area. It is revealed that household health expenditure and income of households are positively related. Average annual household health expenditure per-capita is more in urban area (₹8079.1) than in rural area (₹6125.4) based on income of the households.

The analysis shows that significant variation in income levels and urban average annual household health expenditure (p=0.00). There is marginal difference in income levels and average annual household health expenditure per-capita in rural area (p=0.455). Income level of rural households seems to be more or less same with respect to household health expenditure except in the case of very low income category. Majority of low income category people in rural households have government supported health insurance schemes which would be helpful in reducing expenditure on health.

Table 7.23

Distribution of Average Annual Household Health Expenditure Per-capita by Nature of Diseases

Nature of diseases	Rural	Urban
Injury	1690.7	2525.7
Communicable	9126.7	9928.3
Non-Communicable	13300.8	18504.7
Average	8039.4	10319.6
Test Statistic	43.443	84.623
p value	0.000	0.000

Source: Survey Data

There exists significant variation between nature of diseases and household health expenditure. Both rural and urban areas show a significant variation between

nature of diseases and household health expenditure (p=0.00). The burden of non-communicable diseases is much higher than that of communicable diseases among households. The incidence of non- communicable diseases is high in Kerala especially among elder people (Paul and Singh, 2017). Morbidity profile of Kerala shows a increase in non-communicable diseases without reduction in communicable diseases. Households spend more for non-communicable diseases compared to communicable diseases. Non-communicable diseases would enhance health expenditure among households. Average annual household health expenditure per-capita for injury in rural area is ₹1690.7 and ₹2525.7 in urban area. Average household health expenditure per-capita for communicable diseases in rural area is ₹9126.7 and ₹9928.3 in urban area while the expenditure for non-communicable diseases is ₹13300.8 in rural area and ₹18504.7 in urban area in Thrissur district.

Table 7.24

Distribution of Average Annual Household Health Expenditure Per-capita by Type of Treatment

Type of Treatment	Rural	Urban
Specialty	3821.5	5732.7
General	985.9	1339.3
Specialty+ General	8315.4	15755.7
Average	4374.3	7609.3
Test Statistic	80.297	122.214
p value	0.000	0.000

Source: Survey Data

Type of treatment influences expenditure on health among households. Specialised health services are costlier than general health services. The average expenditure for specialty treatment (₹3821.5) is higher than general treatment (₹985.9) in rural area.

Table 7.25

Distribution of Average Annual Household Health Expenditure Per-capita by Episodes of Hospitalisation

Episodes of hospitalisation	Rural	Urban
0-3	4421.3	5832.5
4+	11428.1	13918.6
Average	7924.7	9875.5
Test Statistic	-4.590	-6.463
p value	0.000	0.000

Source: Survey Data

In urban area average expenditure on general treatment is ₹1339.3 and ₹5732.7 for specialty treatment. Since p=0.00, there exists significant difference between household health expenditure and different type of treatment of households

both in rural and urban area. Episodes of hospitalization would influence expenditure on health among households. Higher the episodes of hospitalization higher will be the household health expenditure. There exists significant difference between health expenditure and episodes of hospitalization of households both in rural (p=0.00) and urban area (p=0.00). Average household health expenditure for episodes of hospitalization is higher in urban area (₹9875.5) than in rural area (₹7924.7). When the episodes of hospitalization increases both medical and non-medical expenditure of the households also increases. If higher the episodes of hospitalization higher would be financial burden of the households.

7.6. Household Health Expenditure and Voluntary Prepayment

Households can be classified into two groups based on health insurance: households with voluntary prepayment and without voluntary prepayment. Average annual household health expenditure per-capita with respect to health insurance is given in Table 7.26.

Table 7.26
Distribution of Average Annual Household Health Expenditure Per-capita by Voluntary Prepayment

Locality	Households with voluntary prepayment	Households without voluntary prepayment	Average
Rural	3710	8004	5857
Urban	4894	10237	7566
Average	4302	9120	6711

Source: Survey Data

Average annual household health expenditure per-capita of sample households is ₹6711. Household health expenditure is high in urban area (₹7566) when compared to rural (₹5857). Average annual household health expenditure per-capita of households is higher for those households without voluntary prepayment (₹9120) than households with voluntary prepayment (₹4302).

Table 7.27
Distribution of Average Annual Household Health Expenditure Per-capita by Health Insurance Scheme

Health Insurance Scheme	Rural	Urban	Average
Government funded	2477	1457	1825.4
Arranged by households	4215	7700	6604.8
Employer (not Govt.) supported health protection	6825	7839	7433.3
Others	4647	6924	6254.5
Average	4540.9	5980.2	5529.5

Source: Survey Data

Most of the non-institutional expenditure is not covered under voluntary prepayment. This would enhance the health expenditure of households. The difference

in expenditure between two types of households is ₹4818. There exists a clear cut difference in expenditure on health based on geography. Average annual household health expenditure per-capita is more in urban area (₹5980.2) than in rural area (₹4540.9) based on health insurance scheme. The expenditure for government funded scheme of health insurance is low both in rural and urban area compared to the other types of insurance scheme. The expenditure for government funded health insurance scheme is low in urban area (₹1457) when compared to rural area (₹2477). Among the health insurance scheme, households spends more for employer supported health protection scheme (₹7433.3) followed by arranged by households (₹6604.8) and others (₹6254.5).

In rural area differences in expenditure between households with voluntary prepayment and households without voluntary prepayment is maximum in the case of nature of diseases (₹7154.6) followed by episodes of hospitalization (₹6954.2) and education of head of the household (₹5718.8) and minimum in the case of type of treatment (₹1206.3).

Table 7.28

Household Health Expenditure and Voluntary Prepayment

Indicators	Differences in Expenditure		Rural-Urban Difference
	Rural	Urban	
Religion	3883.0	5313.6	1430.6
Social category	3234.9	4236.3	1001.4
Income status	2954.7	4933.8	1979.1
Education of head of the household	5718.8	5281.6	437.2
Occupation of head of the household	3744.0	4923.2	1179.2
Gender of head of the household	3550.7	3817.8	267.1
Family type	4843.7	4274.5	569.2
Family size	3969.6	5345.0	1375.4
Income	4914.7	5612.4	697.7
Nature of diseases	7154.6	7908.0	753.4
Type of treatment	1206.3	3812.9	2606.6
Episodes of hospitalisation	6954.2	6605.1	349.1

Source: Survey Data

In urban area, differences in expenditure between households with voluntary prepayment and households without voluntary prepayment is maximum in the case of nature of diseases (₹7908) followed by episodes of hospitalization (₹6605.1) and income (₹5612.4) and minimum in the case of type of treatment (₹3812.9). Rural-urban difference in expenditure between households with voluntary prepayment and households without voluntary prepayment is high in respect of type of treatment (₹2606.6) and low in respect of gender of head of the household (₹267.1).

The analysis shows that the burden of household health expenditure is reduced with voluntary prepayment on health care. Majority of the sample households have government funded health insurance scheme. Government funded health insurance scheme assisted households to reduce hospitalization expenses and utilize better hospital facilities (Reshmi et al., 2007; Mini, 2013). One of the major drawbacks of government sponsored health insurance scheme in Kerala is the limited number of private empanelled hospitals.

7.7. Household Budget and Expenditure on Health

Household budget shows the relative importance of various commodities and services with the given level of income. The preference of the consumer is different for different commodities. Percentage share of expenditure on health in household budget shows the relative importance of healthcare of households.

The two groups of consumption expenditure, food and non-food, among BPL and APL households in rural and urban area is shown in Table 7.29. Health is included in the non-food category of the total household consumption expenditure. In rural area food component in the average annual total household is low among BPL households (39 percent) compared to APL households (41 percent).

Table 7.29
Average Annual Consumption Expenditure by Item

Item	Rural			Urban		
	BPL	APL	Total	BPL	APL	Total
Food	38.5	39.2	38.85	37.2	36.5	36.85
Housing	10.5	9.5	10	10.9	9.1	10
Education	11.5	13.1	12.3	12.9	13.8	13.35
Transport and entertainment	6.9	7.4	7.15	6.1	8.9	7.5
Health	8.3	9.9	9.1	9.5	10.3	9.9
Fuel and Energy	7.4	6.9	7.15	8.4	8	8.2
Clothing and Footwear	8.1	8.9	8.5	8.1	7.5	7.8
Others	8.8	5.1	6.95	6.9	5.9	6.4
Total	100	100	100	100	100	100

Source: Survey Data

The average share of health of the total household consumption expenditure is 9.1 percent in rural area and it is 8.3 percent for BPL households and 9.9 percent for APL households. The share of health in average total household consumption expenditure among BPL households is very low in rural area. This may be due to the influence of government supported health insurance schemes like RSBY and CHIS. The government takes steps for a universal health insurance scheme by broadening the different categories of households into the scheme. This government supported

health insurance scheme ensures inpatient treatment facility to a maximum of five members in a family through selected public and private hospitals especially for BPL households. This government sponsored health insurance scheme ensures paperless, cashless and floater basis to the beneficiaries with prefixed and surgical rates for treatment in general wards in the empanelled hospitals. RSBY and CHIS have a positive role in reducing hospitalization expenditure among BPL households in Kerala (Mini, 2013). This voluntary government supported health insurance scheme would enhance the utilization of health care facilities and improves the health status of the households.

The average share of health of the total household consumption expenditure among APL households (10.3 percent) is more than that of BPL households (9.5 percent) in urban area. The average share of health of the total household consumption expenditure is 9.9 percent in urban area.

Figure 7.5
Average Annual Consumption Expenditure by Item
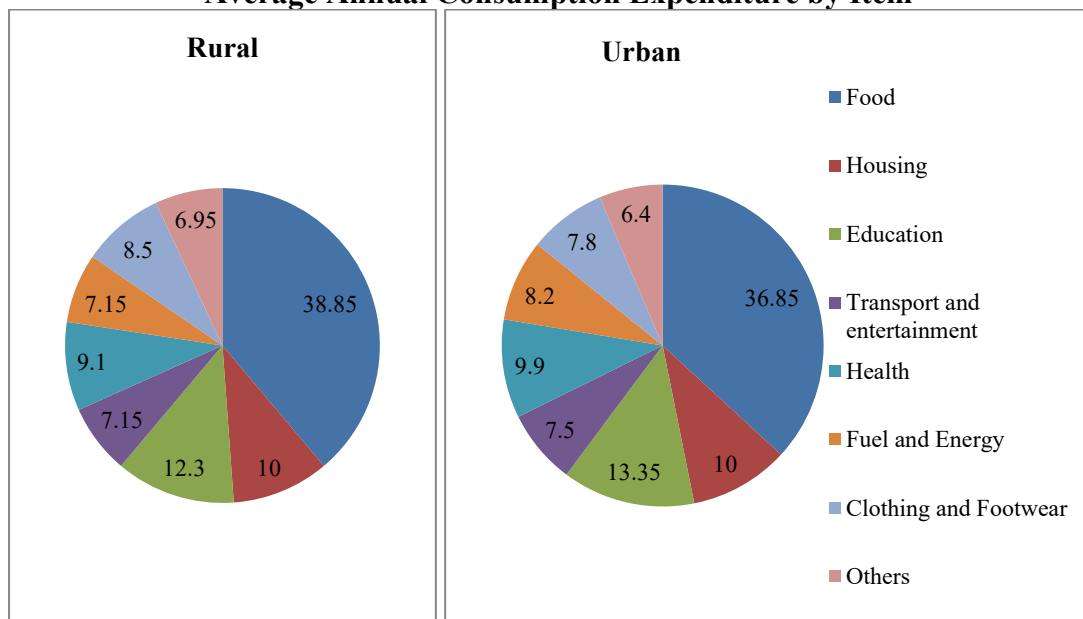
Source: Survey Data

The proportion of non-institutional medical expenditure still high after the implementation of RSBY-CHIS since the benefit is only for institutional medical expenses through empanelled hospitals. The non-institutional medical expenditure threatens the financial stability of the households (Sinha, 2014). Moreover the APL households face financial hardship due to the institutional and non-institutional medical expenditure without any support of voluntary prepayment. Food component in the average annual total household expenditure is lower than the non-food

component of households in both rural and urban area. Food component in the average annual total household expenditure is higher in rural area (38.85 percent) than in urban area (36.85 percent). It is clear that health insurance increases the utilization of health care services among various socio-economic group of the population (Acharya et al., 2012). The preference of health insurance scheme is differ from different socio economic groups. Rich people preferred private health insurance schemes over government schemes and the middle income group preferred government schemes rather than private health insurance schemes (Reshmi et al., 2007).

7.8. Family Budget Allocation and Household Health

Household expenditure on health can be split-up by item-wise for public hospital and private hospitals. Generally expenditure can be divided into two: package component and non-package component.

Table 7.30 (a)
Average Medical Expenditure in Kerala per Hospitalization Case

Average expenditure Excluding Childbirth (₹) for treatment under	Public Hospital (Rural)		
	NSS 71st round	NSS 75th round	Primary Survey
Package Component	506	325	340
Doctors Fee	108	333	342
Diagnostic Tests	743	1043	1157
Medicines	939	1810	2004
Bed Charges	173	257	276
Others	565	627	640
Total	3035	4395	4759

Source: NSS Report No. 574: Health in India, April 2016; NSS Report No. 586: Health in India, July 2020; Survey Data

The non-package component can be divided into several groups such as doctors' fee, diagnostic test, medicines, bed charges and others

Table 7.30 (b)
Average Medical Expenditure in Kerala per Hospitalization Case

Average expenditure Excluding Childbirth (₹) for treatment under	Private Hospital (Rural)		
	NSS 71st round	NSS 75th round	Primary Survey
Package Component	4097	4441	4512
Doctors Fee	5177	5071	5181
Diagnostic Tests	3429	2987	3127
Medicines	6042	6593	6611
Bed Charges	3564	3320	3430
Others	3101	3537	3610
Total	25411	25949	26471

Source: NSS Report No. 574: Health in India, April 2016; NSS Report No. 586: Health in India, July 2020; Survey Data

. Both the primary and secondary data analysis of average medical expenditure per hospitalization is presented in the Tables 7.30 (a), (b), (c) and (d).

Average rural medical expenditure per-hospitalisation case in public hospital is ₹4759 and ₹26471 for private hospitals. Average rural medical expenditure per-hospitalisation case in public hospital increased from ₹3035 (NSS 71st round) to ₹4395 (NSS 75th round). Average rural medical expenditure per-hospitalisation case in private hospital increased from ₹25411 (NSS 71st round) to ₹25949 (NSS 75th round).

Table 7.30 (c)

Average Medical Expenditure in Kerala per-Hospitalization Case

Average expenditure Excluding Childbirth (₹) for treatment under	Public Hospital (Urban)		
	NSS 71st round	NSS 75th round	Primary Survey
Package Component	115	199	212
Doctors Fee	125	128	149
Diagnostic Tests	720	1063	1112
Medicines	1197	2175	2312
Bed Charges	155	212	257
Others	430	812	905
Total	2743	4590	4947

Source: NSS Report No. 574: Health in India, April 2016; NSS Report No. 586: Health in India, July 2020; Survey Data

Average urban medical expenditure per-hospitalisation case in public hospital is ₹4947 and ₹33378 for private hospitals. Average rural medical expenditure per-hospitalisation case in public hospital increased from ₹2743 (NSS 71st round) to ₹4590 (NSS 75th round).

Table 7.30(d)

Average Medical Expenditure in Kerala per-Hospitalization Case

Average expenditure Excluding Childbirth (₹) for treatment under	Private Hospital (Urban)		
	NSS 71st round	NSS 75th round	Primary Survey
Package Component	3730	5470	5518
Doctors Fee	4151	5502	5645
Diagnostic Tests	2570	3956	4003
Medicines	5163	7724	7980
Bed Charges	2721	5812	5911
Others	3474	4283	4321
Total	21808	32747	33378

Source: NSS Report No. 574: Health in India, April 2016; NSS Report No. 586: Health in India, July 2020; Survey Data

Average rural medical expenditure per-hospitalisation case in private hospital increased from ₹21808 (NSS 71st round) to ₹32747 (NSS 75th round). The cost of treatment has been increasing for the past several years. The price of medicines has increased tremendously.

Households received 80.1 percent surgery as free, 9.6 percent as partly free and 10.3 percent as on payment for surgery in government hospital. Households received 3.0 percent of surgery as free and 92.8 percent of surgeries as on payment in

private hospitals. Households received 42.55 percent services as free, 30.45 percent services as partly free and 27.0 percent as on payment in government hospitals.

Table 7.31
Medical Services by Payment Category of Households (%) for Different Hospital

Services received	Government Hospital				Private/Charitable hospital			
	Free	Partly free	On payment	All	Free	Partly free	On payment	All
Surgery	80.1	9.6	10.3	100	3.0	4.2	92.8	100
Medicine	40.3	50.5	9.2	100	4.1	10.3	85.6	100
X-ray/ ECG/EEG/Scan	24.1	27.5	48.4	100	0.8	1.9	97.3	100
Other diagnostic services	25.7	34.2	40.1	100	0.5	1.2	98.3	100
All	42.55	30.45	27.0	100	2.1	4.4	93.5	100

Source: Survey Data

Households received 2.1 percent services as free, 4.4 percent services as partly free and 93.5 percent as on payment in government hospitals.

Multivariate Analysis on Household Health Expenditure

Table 7.32
Number of Independent Variables by Category-wise

Between-Subjects Factors			
		Value Label	N
Type of Locality	1	Rural	112
	2	Urban	224
Religion	1	Hinduism	137
	2	Muslim	81
	3	Christian	118
Caste	1	General	200
	2	SC/ST	38
	3	OBC	98
Income Status	1	BPL	97
	2	APL	239
Income Group	1	<150000	89
	2	150001-300000	94
	3	300001-500000	76
	4	500001-1000000	55
	5	1000000+	22
Family Type	1	Joint family	53
	2	Nuclear family	283
Family Size	1	1-4	171
	2	5-7	136
	3	8+	29
Old Age Dependency	0	No	101
	1	Yes	235
Nature of Diseases	0	Injury	141
	1	Communicable	153
	2	Non-Communicable	
Episodes of Institutional Care	1	1-3	261
	2	4+	75
Delivery Care	0	Non-Availed	261
	1	Availed	75
Omnibus Test[a]			
Likelihood Ratio Chi-Square		df	Sig.
245.493		18	0.000
Dependent Variable: Average Annual per-capita Household Health Expenditure			
a. Compares the fitted model against the intercept-only model.			

Source: Survey data

In the multivariate analysis, average annual household health expenditure is considered as dependent variable. Here the dependent variable is a continuous variable. The relationship between dependent and independent variables are examined by using omnibus test. The omnibus test compares the intercept only model and the full model (containing all the independent variables). It tests whether there is a significant improvement in fit of the final model relative to the intercept only model. In this case, since the p value is less than 0.05, it is evident that a significant improvement in fit of the final model over the intercept only model. The omnibus test compares the intercept only model and the full model (containing all the independent variables). It tests whether there is a significant improvement in fit of the final model relative to the intercept only model. In this case, since the p value is less than 0.05, it is evident a significant improvement in fit of the final model over the intercept in model.

Table 7.33

Result of Multivariate Analysis

Tests of Between-Subjects Effects					
Dependent Variable: Average Annual Household Health Expenditure					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	11132920749.669[a]	18	618495597.204	18.957	.000
Intercept	3843663855.840	1	3843663855.840	117.806	.000
Locality	317844956.697	1	317844956.697	9.742	.002
Religion	24322443.973	2	12161221.986	.373	.689
Caste	52176021.499	2	26088010.749	.800	.450
Income status	38713862.293	1	38713862.293	1.187	.277
Income group	182123487.819	4	45530871.955	1.395	.235
Family type	229198435.963	1	229198435.963	7.025	.008
Family size	31106604.470	2	15553302.235	.477	.621
Old age dependency	1390216.777	1	1390216.777	.043	.837
Nature of diseases	1322132760.492	2	661066380.246	20.261	.000
Episodes of institutional care	184464736.487	1	184464736.487	5.654	.018
Delivery care	2103785205.851	1	2103785205.851	64.480	.000
Error	10342773027.257	317	32627044.250		
Total	37920953113.000	336			
Corrected Total	21475693776.926	335			
a. R Squared = .518 (Adjusted R Squared = .491)					

Source: Survey Data

The multivariate analysis found that there is a moderate goodness of fit between average annual household health expenditure and independent variables since the value of R^2 is 0.518. The explanatory power of independent variables is high compared with the help of Adjusted R^2. The study found that 49.1 percent of variation of one variable is completely explained by the other (Adjusted R^2).

Parameter Estimates table shows the coefficients, their standard errors, the *t* test, associated p-values (Sig.) and the coefficient intervals. Urban (Type of locality), Christian (Religion), OBC (Caste), APL (Income status), 1000000+ (Income group), Nuclear family (Family Type), 8+ (Family size), Yes (Old age dependency), Non-Communicable (Nature of diseases), 4+ (Episodes of institutional care) and Availed (Delivery care) are taken as the reference categories of the corresponding independent variables.

Table 7.34
Result of Multivariate Analysis

Parameter		B	Std. Error	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept		18515.26	2873.53	6.44	0.00	12861.67	24168.86
Type of Locality	Rural	-2103.22	673.85	-3.12	0.00	-3429.00	-777.43
	Urban	0ᵃ					
Religion	Hinduism	704.36	846.66	0.83	0.41	-961.43	2370.15
	Muslim	1106.75	1828.54	0.61	0.55	-2490.86	4704.36
	Christian	0ᵃ					
Caste	General	1438.77	1569.66	0.92	0.36	-1649.50	4527.04
	SC/ST	-32.86	1842.58	-0.02	0.99	-3658.09	3592.37
	OBC	0ᵃ					
Income status	BPL	-2225.59	2043.15	-1.09	0.28	-6245.44	1794.26
	APL	0ᵃ					
Income group	<150000	3954.39	2261.89	1.75	0.08	-495.82	8404.61
	150001-300000	2299.71	1401.27	1.64	0.10	-457.26	5056.67
	300001-500000	2655.85	1441.70	1.84	0.07	-180.65	5492.35
	500001-1000000	3195.05	1470.10	2.17	0.03	302.66	6087.44
	1000000+	0ᵃ					
Family type	Joint family	-3385.40	1277.30	-2.65	0.01	-5898.46	-872.34
	Nuclear family	0ᵃ					
Family size	1-4	428.06	1790.75	0.24	0.81	-3095.20	3951.32
	5-7	-334.77	1559.69	-0.21	0.83	-3403.44	2733.89
	8+	0ᵃ					
Old age dependency	No	157.46	762.83	0.21	0.84	-1343.39	1658.32
	Yes	0ᵃ					
Nature of diseases	Injury	-8431.21	1324.83	-6.36	0.00	-11037.78	-5824.64
	Communicable	-5818.60	1129.69	-5.15	0.00	-8041.24	-3595.96
	Non-Communicable	0ᵃ					
Episodes of institutional care	1-3	-2087.13	877.773	-2.378	.018	-3814.129	-360.135
	4+	0ᵃ					
Delivery care	Non-Availed	-7960.61	991.367	-8.030	.000	-9911.096	-6010.116
	Availed	0ᵃ					

a. This parameter is set to zero because it is redundant.

Source: Survey Data

Other categories are significant when compared with the reference categories. Since the corresponding p value of the category type of locality is less than 0.05 we can conclude that the average annual household health expenditure of rural is significantly different from that of urban. Also the negative value of the estimate

indicates that the average annual household health expenditure of rural is lesser than that of urban.

Since the p values corresponding to the categories of the variables religion, caste, income status, family size and old age dependency are not lesser than 0.05. It is evident that the average annual household health expenditure of these categories are not significantly different from their respective reference categories.

Since the p values corresponding to the income group categories <150000, 300001-500000 and 500001-1000000 are less than 0.05, it is clear that the average annual household health expenditure of respondents belonging these categories are significantly different from that of the reference category 1000000+. Positive values of the corresponding estimates indicates that the average annual household health expenditure of the families belonging these categories are higher that of the families belonging to the reference category. Also it is clear that the average annual household health expenditure of the families having income between 150001 and 300000 is not significantly different from that of the reference category.

Since the corresponding p value of the category family type is less than 0.05, it is evident that the average annual household health expenditure of joint family is significantly different from that of nuclear family. Also the negative value of the estimate indicates that the average annual household health expenditure of joint family is lesser than that of nuclear family.

Since the p values corresponding to the nature of diseases categories Injury and Communicable are less than 0.05, it is clear that the average annual household health expenditure of respondents belonging these categories are significantly different from that of the reference category (Non-Communicable). Negative values of the corresponding estimates indicate that the average annual household health expenditure of the respondents belonging to these categories is lesser that of the respondents belonging to the reference category.

Since the corresponding p value of the category episodes of institutional care is less than 0.05, it is clear that the average annual household health expenditure of 1-3 category is significantly different from that of 4+ category. Also the negative value of the estimate indicates that the average annual household health expenditure of 1-3 category are lesser than that of 4+ category.

Since the corresponding p value of the category Delivery care is less than 0.05, it is evident that the average annual household health expenditure of delivery

care not-availed category is significantly different from that of the availed category. The negative value of the estimate indicates that the average annual household health expenditure of non-availed category is lesser than that of availed category.

7.9. Financing Mechanism of Household Health Expenditure

The financing mechanism of households for health care can be of different type. Percentage share of source of finance of households for health expenditure are presented in Table 7.36.

Table 7.35

Source of Finance for Household Health Expenditure

Source of finance	Rural	Urban
Income /savings of household	40.3	43.5
Borrowings	19.5	11.1
Sale of assets	5.4	16.2
Contributions from friends and relatives	14.2	8.7
Allowances from the government	10.9	5.1
Reimbursement of insurance company	7.8	15.4
Others	1.9	1.8
Total	100	100

Source: Survey Data

It is evident that income or savings of household is the main source of finance for expenditure on health by the households both in rural (40.3 percent) and urban (43.5 percent) area. Borrowings (19.5 percent), contributions from friends and relatives (14.2 percent) and allowances from the government (10.9 percent) are the other source of finance of rural households. Sale of assets (16.2 percent), reimbursement from insurance company (15.4 percent) and borrowings (11.1 percent) are the other financing sources of urban households. Reimbursement of insurance company as a source of finance constitutes 7.8 percent in rural area.

7.10. Constraints Related to Household Health Expenditure

Lack of medicines and lack of manpower are the main problems faced by the rural households in relation to government hospitals. Government implemented new programmes on health care. But lack of information about these programmes causes hurdles in the health care of common people. Information asymmetry is highest in health care. The complexity of health care system aggravated the problems of households in relation to expenditure. Poor condition of hospitals and poor behavior of employees are the problems faced by the urban households in relation to

government hospitals. Debt position is the main constraint faced by the households in urban and rural area in relation to high household health expenditure. While in the case of rural households lack of saving (19.5percent) and low-insurance participation (18.2 percent) are the main problems to tackle high health expenditure.

Table 7.36

Problems of Households in Relation to Expenditure on Health

Problems	Rural	Urban
Inadequate saving	19.5	18.5
Insignificant cooperation of the head of household	3.6	2.2
Inadequate of health consciousness	5.5	4.7
Inadequate insurance participation	18.2	19.5
Insufficient information on health care facilities.	6.1	5.4
Inadequate support from the government	4.3	2.5
Infrastructure in government hospitals	6.2	12.1
Inadequate financing	16.5	13.8
Sub-optimum debt position	20.1	21.3

Source: Survey Data

The least affected problem is the poor cooperation of head of household both in rural (3.6 percent) and urban area (2.2 percent). Lack of health consciousness and poor information on health care are the other problems faced by the households in relation to expenditure on health.

CHAPTER 8

FINDINGS AND POLICY IMPLICATIONS

8.1. Introduction

The present study attempted to analyse the nature of public and household expenditure on health in India and in Kerala. The present study observed that the health condition of population and health expenditure is correlated in India. In the context of demographic dividend, the importance of health-capital has enormously increased. The inter-state disparity with respect to household expenditure is diverse and uneven. More specifically, the disparity is obvious in expenditure on health with respect to gender, geography and income. Among the major states in India, the health condition of the population is satisfactory in Kerala. Needless to say, the expenditure of both household and government are high in Kerala. However, the morbidity rate is high in Kerala. Similarly, the cost of treatment is also high in Kerala. Moreover, there is widespread inequality in the affordability of quality of health care in the state. The role of household expenditure is crucial in determining the nature of morbidity and its treatment. Similarly, the insurance penetration is also has to be increased in the state. On the contrary, life expectancy is the highest in the state. The present study observed that the nature of household and public expenditure is high and unique in Kerala. The present study found that the findings in the area of household expenditure on health in Kerala require revision. In this context, the present study enquired the determinants of household expenditure on health in India as well as in Kerala. By keeping these factors in mind, the present study attempted to answer the research questions by formulating the following specific objectives.

Following are the specific objectives of the study:-

(1) To analyse the public expenditure on health in India and in Kerala;

(2) To compare the public and household expenditure on health in Kerala;

(3) To identify the determinants of household expenditure on health in Kerala; and

(4) To examine the major constraints of household health expenditure in Thrissur district.

In order to fulfil the objectives and answer research questions, the study has used both quantitative and qualitative methods to analyse the data. Based on the conceptual and empirical analysis, the study has found that the nature of public expenditure on health in India as well as in Kerala is diverse and unique. Further, the study identified some of the crucial determinants that would influence the household expenditure on health in Kerala. Moreover, the impact and constraints of households were also examined. The major findings of this study are as follows.

8.2. Findings of the Study

8.2.1. Expenditure on Health in India and in Kerala

The present study examined the public expenditure on education in the context of selected countries in the world and in India. There exist enormous variations in spending on health among various countries of similar income. Global public expenditure on health out of total global expenditure on health increased from 56 percent during 2000 to 60 percent during 2017. Public expenditure on health in India shows a marginally increasing trend. But the major chunk of the expenditure on health comes from the household sector. The revenue expenditure for Medical and Public Health increased from ₹664565 lakh during the period 1995-96 to ₹14620390 lakh during the period 2019-20. The CAGR of revenue expenditure for Medical and Public Health was 13.16 percent and 12.02 percent for Family Welfare for the period 1995-96 to 2019-20. The capital expenditure for Medical and Public Health increased from ₹30195 lakh during 1995-96 to ₹2188710 lakh during 2019-20. The capital expenditure for Family Welfare increased from ₹3507 lakh during 1995-96 to ₹53760 lakh during 2019-20. The CAGR of capital expenditure for Medical and Public Health was 18.68 percent and 11.53 percent for Family Welfare for the period 1995-96 to 2019-20. It is clear that revenue expenditure on health is greater than the capital expenditure in terms of money.

The central and state government spent large amounts of money on health. The central government expenditure increased from ₹5108.63 crores to ₹66498.88 crores and the state government expenditure from ₹19710.68 crores to ₹263158.30 crores for the period 1999-2000 to 2019-20. Public expenditure on health in India increased from ₹19710.68 crores during the period from 1999-2000 to ₹263158.30 crores during the period 2019-20 with a CAGR of 13.13 percent. There exist variations in growth rate in per-capita public expenditure on health. Per-capita public expenditure on health in India also shows an increasing trend. It increased from ₹197 in 1999-2000 to ₹1962 in 2019-20. The CAGR of per-capita public expenditure on health in India is 11.57 percent during the period from 1999-2000 to 2019-20. Out of the total plan investment outlay the total health investment increased from ₹65.3 in first plan to ₹140135 in eleventh plan. Percentage of plan allocation to health sector out of total plan investment outlay is the lowest in the third plan (2.9 percent) and the highest in the eleventh plan (6.5 percent).

There exists a wide variation in household expenditure on health among different countries in the world. As per the WHO estimates, globally, the percentage change in out-of-pocket expenditure per-capita is low when compared to government expenditure on health. The household expenditure on health in India increased from ₹5671 crores in 1985-86 to ₹537043 crores in 2018-19 with a CAGR of 14.32 percent. The per-capita household expenditure on health in India increased from ₹75 in 1985-86 to ₹4047 in 2018-19 with a CAGR of 12.45 percent. The percentage share of household expenditure on health in total expenditure on health (both public and private) decreased from 72.8 percent in 1999-2000 to 69.2 percent in 2018-19 in India. Out-of-pocket expenditure as a percentage of household expenditure on health decreased from 91.3 percent in 1995-96 to 89.2 percent in 2014. Out-of-pocket expenditure constitutes 67.0 percent of total expenditure on health in 1995-96 and it falls to 62.0 percent in 2014-15. The total expenditure on health (both public and private) in India increased from ₹72554.6 crores during 1999-2000 to ₹776494.5 crores during 2018-19 with a CAGR of 12.58 percent.

Among the various financing schemes, share of household out-of-pocket payment to the current health expenditure diminishes from 71.7 percent in 2000-01 to 65.33 percent in 2015-16. The contribution of government schemes and compulsory mode of contribution to health care financing schemes to the current health expenditure shows a marginal increase from 22.6 percent to 25.03 percent and

voluntary health care payment schemes also shows an increasing share from 5.7 percent to 9.6 percent to the current health expenditure for the same period. There is variability among the major states in relation to health status. The proportion of Ailing Persons (PAP) is the lowest in Meghalaya and the highest in Kerala both for rural and urban area during the period 2017-18. The PAP was the highest in urban than in rural area during 2014 and 2017-18. There is a decrease in PAP in India during the period 2017-18 as compared to 2014-15. Government expenditure on health was the highest in the case of Uttar Pradesh and Maharashtra during the period 2014-15 and 2015-16. The government spending on health was the lowest in Himachal Pradesh during the periods such as 2004-05, 2014-15 and 2015-16. During the period 2016-17, government expenditure on health was less in the case of Uttarakhand (₹1595 crores), Himachal Pradesh (₹1971 crores) and Jammu & Kashmir (₹1995 crores). Per-capita government health expenditure is the lowest in Bihar and the highest in Himachal Pradesh during the periods such as 2004-05, 2014-15, 2015-16 and 2016-17. Per-capita government health expenditure among various states shows an increasing trend during the period from 2004-05 to 2016-17.

Per-capita household expenditure on health is the highest in Kerala and the lowest in Assam during the periods such as 2014-15, 2015-16 and 2016-17. Out-of-pocket expenditure as percentage of GSDP is the lowest in Gujarat and the highest in Bihar during the periods such as 2014-15, 2015-16 and 2016-17. There was a decline in the out-of-pocket expenditure during the period from 2004-05 to 2016-17 among various states in India. Revenue expenditure on Medical and Public Health in Kerala increased from ₹58170 lakh during the period 2000-01 to ₹598411 lakh during the period 2017-18. Revenue expenditure on Family Welfare in Kerala increased from ₹9218 lakh during the period 2000-01 to ₹52081 lakh during the period 2017-18. Public expenditure on health (both revenue and capital expenditure on Medical and Public Health and Family Welfare) in Kerala increased from ₹41721 in 1995-1996 to ₹682671 in 2017-2018 with a CAGR of 12.92 percent.

8.2.2. Disparity on Household Expenditure on Health in Kerala

The present study examined the disparity of household expenditure on health with respect to geography, income, and nature of expenditure. The study found that the expenditure in rural area is low when compared to urban areas in Kerala. However, the intensity of disparity is high when considering the inter-state disparity

on expenditure on health in India. The inter-district disparity is obvious in Kerala. For instance, disparity in institutional medical expenditure varies from ₹14.77 in Wayanad to ₹110.4 in Idukki while rural non-institutional medical expenditure ranges from ₹35.46 in Wayanad to ₹133.57 in Pathanamthitta during the period 2009-10. Urban institutional medical expenditure is the highest in Alappuzha and the lowest in Wayanad. Urban non-institutional medical expenditure is the highest in Thiruvananthapuram and the lowest in Wayanad 2009-10. In Kerala, average total medical expenditure excluding childbirth is higher in rural area (₹17642) than in urban area (₹15465) during 2014. The amount of premium of Rashtriya Swasthya Bhima Yojana (RSBY/CHIS) increased from ₹51 crores in 2008-10 to ₹302.82 crores in 2018-19. The amount of claims paid under RSBY/CHIS and CHIS PLUS increased from ₹113.28 crores in 2010-11 to ₹448.29 crores in 2018-19. From the findings, it is clear that disparity is marginal in terms of expenditure on general population. But it is significant with respect to the households with low income. It implies that government expenditure should compensate the expenditure in rural areas especially on poor households in Kerala.

8.2.3. Determinants of Household Expenditure on Health in Kerala

The present study found that the following variables have a crucial role in determining the household health expenditure in India. They are:- (1) per-capita public expenditure in India (2) Gross Domestic Product of India (3) per-capita Gross Domestic Product of India, and (4) public expenditure on health in India. These independent variables are statistically significant in determining the household expenditure on health in India. The intensity of that the independent variables are different from another. However, it is observed that the impact of the public expenditure on health is comparatively high in determining the household expenditure on health in India. Similarly, Gross Domestic Product of India also can positively influence the household health expenditure in India. This study argues that the public expenditure and household expenditure are complimentary to each other. More specifically, there would be a positive relationship between the household expenditure on health and public expenditure on health in India. It implies that the government should spend on health in an equitable and efficient manner.

The bi-directional relationship between household expenditure on health and independent variables is also examined. The regression analysis indicates that

expenditure on health can positively influence Gross state domestic product of India. More specifically, the financial return is positive via the health capital formation. In other words, the Gross domestic product and per-capita income of India would be influenced by following independent variables: - (1) public health expenditure in India (2) household expenditure on health in India. The extent and degree of impact of household expenditure is significant in determining the aggregate as well as per-capita income in India. The impact of GDP of India would be high in positively influencing the health spending of the public and households. More specifically, health expenditure and financial return is positively associated and it is statistically significant. Based on the insights from the all-India analysis, this study identified the determinants of household expenditure on health in Kerala.

The study result indicates that following variables are significant:- (1) per-capita government expenditure on health in Kerala (2) Gross State Domestic Product in Kerala (3) remittances to Kerala and (4) medical institutions in Kerala. The regression result shows a marginal positive association between per-capita income and the per-capita household health expenditure in Kerala. Per-capita household expenditure on health also likely has a substantial positive association with per-capita public expenditure on health in Kerala. Medical institutions in Kerala would have a strong positive effect on household health expenditure. The regression analysis indicates that the per-capita public expenditure on health would have a pivotal role in determining the household health expenditure in Kerala when compared to other variables. The regression analysis evaluated the impact of health expenditure on financial income in Kerala. It is evident from the regression results of return on expenditure on health that public expenditure on health in Kerala would influence on Gross State Domestic Product and per-capita income of Kerala.

8.2.4. Nature and Constraints of Household Expenditure on Health

The expenditure at the aggregate level and its impact at the micro level is examined in Thrissur district of Kerala. The study found that the expenditure is different with respect to following factors such as religion, caste, geographical location of the household, occupation of the head of household, education and household income. For instance, there is significant difference between religion of households and average annual household health expenditure per-capita both in rural and urban areas. Average annual household health expenditure per-capita is the

highest for Hindu community (₹6616.9) followed by Muslim community (₹5554.9) and Christian community (₹4836) in rural areas of the district. In urban area, the religion-wise household health expenditure is the highest for Christian community (₹8563.6) followed by Hindu community (₹7015.3) and Muslim community (₹6889.2) during the study period. There is significant difference between average annual household health expenditure per-capita in urban and rural areas of the district.

There is significant difference with respect to income status and average annual household health expenditure per-capita in urban area. Average annual household health expenditure per-capita is high in urban area when compared to rural areas with respect to income status of the household. There is significant difference between household health expenditure and education level of head of household in rural area in the district. Education level of head of the household substantially influences the household health expenditure in rural area in the district. In urban area, there is significant difference between different occupation of the head of the household and average annual household health expenditure per-capita.

At the same time, there is no significant difference between gender of head of household (male and female) and average annual household health expenditure per-capita in rural and urban areas. Further, average annual household expenditure on health per-capita is high for joint family (₹6245.9) than in nuclear family (₹5803.2) in rural households when compared to urban households. Average annual household health expenditure per-capita is more in urban household than in rural household based on family size. There is only marginal difference between family sizes and average annual household health expenditure per-capita.

There exists significant variation between nature of diseases and household health expenditure. Households spend more for non-communicable diseases when compared to communicable diseases. There exists significant difference between household health expenditure and different type of treatment of households. Specialised health services are costlier than general health services. There exists significant difference between health expenditure and episodes of hospitalization of households. Higher the episodes of hospitalization higher would be financial burden of the households.

The average annual household health expenditure of rural households is significantly different from that of urban households. The average annual household health expenditure of rural households is lower than that of urban household. Average

annual household health expenditure of respondents corresponding to the categories of caste is not significantly different from that of the reference category (OBC). The household expenditure of poor families is low in the district. Similarly, the nature of diseases have substantially influenced on the household expenditure on health. The percentage of household budget allocated to health expenditure is also substantially influenced by the nature of diseases and income.

The major constraints related to household expenditure on health are as follows:- (1) inadequate saving of the households (2) poor cooperation of the head of household in health care (3) inadequate health consciousness (4) inadequate insurance participation (5) poor information on health care facilities of state government (6) inadequate support from the government in health care (monetary and non-monetary) (7) inadequate infrastructure and maintenance in government hospitals and primary health centres (8) inadequate financing options to health care and (9) poor collateral of poor households (10) high debt position of households and (11) inadequate insurance penetration. High debt position, inadequate saving and poor insurance penetration are the major obstacles of the household in health expenditure in rural and urban areas of the district.

8.3. Recommendations and Policy Implications

The analysis revealed major determinants and constraints of the public and household spending on health. Based on the findings, the study put forward the following policy implications.

1. The public expenditure on health should be increased to enhance the household expenditure on health in India. It will enhance the quantity and quality of health capital formation in India. More specifically, public expenditure should be enhanced on the marginalised sections of the society.

2. The government should make urgent measures to appoint a committee to examine the various types of disparity on health expenditure in India. The matters under consideration may be the disparity of expenditure on health in terms of geography, gender, religion, caste, and income.

3. Regional disparity in expenditure on health is obvious in the analysis. Therefore, central government should take urgent measures to compensate the problems of poor states and poor performers in health indicators. This aspect may be incorporated in the recommendations of finance commission. National health

expenditure policy should give special attention into the problems of government sector in the context of neo-liberal policies. Further, an effective mechanism is necessary to regulate the private health institutions in India.

4. Government expenditure is very important in determining the household expenditure on health. Both of these variables will enhance the monetary income in India as well as in Kerala. Therefore, Government should encourage household expenditure on health and regulate private medical institutions in India.

5. The study highlights the importance of mutual-coexistence of household and public expenditure on health in India as well as in Kerala.

6. Spending on health per-capita expenditure in very crucial in a populated country like India.

7. In Kerala, the government should support Non-Resident Indians (NRIs) through various measures such as health cards, pension schemes, and speedy processes for migration. It will positively influence the state income. Further, it will have positive spill-over effects and externalities in the health system of the state. However, state should measures to regulate the administration of private medical institutions which is funded by remittances.

8. At the micro level, household have faced various constraints. Among these constraints, inadequate health education is obvious. Health education is a prerequisite for good health. It will reduce gender inequality of the bottom most sections of the society. Effective incorporation of health education in the education system will produce healthy children.

9. The role of voluntary prepayment in expenditure on health is immense. Therefore, government should allocate more funds to the health insurance scheme of the poor families.

10. Government should take urgent initiatives to start various health schemes to improve the savings position of the households in the area of health expenditure.

11. Government should make some urgent measures to improve the quality and quantity of infrastructure in government hospitals in Kerala especially in the context of Covid-19.

12. Health-card to the poor patients in the private hospitals will be a viable option to converge the services of government and private medical institutions in the state.

13. Preventive-disease mechanisms such as nutritious food pattern, provision of clean drinking water, insurance-inclusion, free-check up and incentives to workout in households and workplaces would positively influence the health capital formation.

14. Environment has a critical role in determining the health of the population. Therefore government must take some urgent and mandatory measures to invest in waste management and environmental protection and up-gradation. The role of households in health capital will enhance through the effective incentive-framework of the regulatory bodies.

8.4. Area of Further Research

The determinants of household expenditure on health are limited to limited some variables due to the non-availability time series data and constraints of resources. The determinants of expenditure on health and returns from expenditure on health may be extended by incorporating more variables both at the all-India and state level. The impact of health expenditure on health is a multi-faceted and a timeless concept. Therefore, the non-monetary aspect of household expenditure as well as public expenditure on health is also may be incorporated in advanced research. An inter-state and intra-district analysis may be executed by incorporating elevated data sets and rigorous statistical tool based on both quantitative and qualitative data.

8.5. Concluding Observations

Public expenditure on health is the first and foremost variable in determining the human capital formation through improvement in health-capital. However, optimum-mixture of public and household expenditure on health is inevitable to improve the productivity of the population in an equitable and sustainable manner. Conceptually speaking, investment in health and education will lead to non-diminishing growth of a nation through technological advancement and elevated quality of human capital. In India, the public expenditure on health is comparatively low when compared to household expenditure on health. Among major states in India, Kerala is far ahead both in terms of expenditure on health and parameters of health. However, the morbidity rate is high in Kerala. Further, the inequality is visible in expenditure with respect to gender, geography, income, education and income. In this context, the present study attempts to analyze the determinants of household expenditure on health in Kerala.

The study has adopted a combination various statistical methods for the collection and analysis of data. The analysis indicates that the following variables can influence substantially in determining the household expenditure on health in India and Kerala. The determinants at the aggregate level are: (1) per-capita public expenditure in India (2) Gross Domestic Product of India (3) per-capita Gross Domestic Product of India (4) public expenditure on health in India (5) per-capita government expenditure on health in Kerala (6) GSDP of Kerala (7) remittances to Kerala and (8) medical institutions in Kerala. Apart from the determinants at the macro level, some of the deterrents are also observed which hinders the optimum household expenditure on health in Kerala.

The study found that household has faced various constraints with respect to expenditure on health. These constraints are categorized into following domains:- (1) inadequate saving of the households (2) poor cooperation of the head of household in health care (3) inadequate health consciousness (4) inadequate insurance participation (5) poor information on health care facilities of state government (6) inadequate support from the government in health care (monetary and non-monetary) (7) inadequate infrastructure and maintenance in government hospitals and primary health centers (8) inadequate financing options to health care and (9) poor collateral of poor households (10) high debt position of households and (11) inadequate insurance penetration. These constraints and determinants are very crucial to give insights for the policy formulation and addition into the stock of knowledge in the area of health economics in particular and human capital in general. Based on these findings the present study argues that policy execution both at the household and government levels are inevitable and urgent. Optimum level of public expenditure on health along with an equity concern will optimize the household health expenditure in an equitable and sustainable manner.

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APPENDICES
Appendix 1
QUESTIONNAIRE
1. DESCRIPTIVE IDENTIFICATION OF SAMPLE HOUSEHOLD

Name of the head of household:

Name of informant:

Ward:

House Number:

1. Type of Locality:

Rural	
Urban	

2. Type of House:

Pucca	
Kuchcha	

3. Occupancy Status:

Own	
Rental	
Others	

4. Religion:

Hinduism	
Islam	
Christianity	

5. Caste:

General	
SC/ST	
OBC	

6. Income Status:

BPL	
APL	

7. Source of Drinking Water:

Own	
Public Own	
Public Tap	
Others	

8. Source of Energy for Cooking:

LPG	
Firewood	
Bio –Gas	
Electricity	
Others	

9. Type of Latrine:

Connected to septic tank	
Biogas toilet	
Open pit latrine	

10. Solid waste disposal:

Burial	
Dumping	
Burning	
Composting	
Biogas plant	
Collected by agency	
No method	
Others	
No response	

11. Liquid waste disposal:

Soakage pits	
Connected to sewerage system	
Drainage to outside drain	
Open drainage	
Others	
No response	

12. Type of water storage:

Protected water tank	
Unprotected water tank	
Protected sump	
Unprotected sump	
Utensils	
No specific storage	
Others	
No response	

2.HOUSEHOLD INFORMATION

Sl.No	Age	Gender	Marital Status	Nature of diseases	Type of treatment	Episodes of hospitalisation	Category of Services received	Payment Category of Services received	Average expenditure

Gender:

Male	1
Female	2
Transgender	3

Marital Status:

Never married	1
Married	2
Divorced/ Widowed	3

Educational Qualification:

Under 10	1
+ 2	2
Graduate or above	3
Professional Degree	4

Category of workers:

Regular salaried	1
Self employed	2
Casual wage labourers	3

Category of services received	
Surgery	1
Medicine	2
X-ray/ ECG/EEG/Scan	3
Other diagnostic services	4

Payment category of services received	
Free	1
Partly free	2
On payment	3

3. HOUSEHOLD EXPENDITURE AND FAMILY BUDGET

Item	Expenditure
Food	
Housing	
Education	
Transport and entertainment	
Health	
Fuel and Energy	
Clothing and Footwear	
Others	
Total	

Immunization status:

Fully immunized for age	
Partially immunized	
Unimmunized	

Health insurance scheme:

Health Insurance Scheme	
Government funded	
Arranged by households	
Employer (not Govt.) supported health protection	
Others	
Average	

EXPENDITURE ON TREATMENT

Average expenditure	Before hospitalisation	After hospitalisation
Package Component		
Doctors Fee		
Diagnostic Tests		
Medicines		
Bed Charges		
Others		
Total		

DETAILS OF ANTE-NATAL AND POST - NATAL CARE:

	Public	Private	Expenditure
Mothers who were given/purchased iron and folic acid tablets			
Mothers who had Blood pressure check up during pregnancy			
Mothers who had at least two TT injections			
Mothers who had abdominal check up during pregnancy			
Delivery and Postnatal care received in			

SOURCE OF FINANCE FOR EXPENSES:

Household income/ savings	
Borrowings	
Sale of physical assets	
Sale of financial assets	
Contributions from friends and relatives	
Any allowances from the govt	
Reimbursement of insurance company	
Other sources	

CONSTRAINTS RELATED TO HEALTH EXPENDITURE

Accessibility of Governmentt Health Programmes
Financing problems
Insurance problems
Information problem
Infrastructure problem
Problem related to govt. Hospital
Medicine related problem:
Food and life style diseases problem

Communicable Diseases
Typhoid, malaria, cholera
gastroenteritis, jaundice,
mumps, measles, chicken-pox
and TB

Non-Communicable Diseases
Arthritis, rheumatism, CVDs,
diabetes, kidney problems,
asthma, cancer, anemia,
disorders
Respiratory infections, fever, skin diseases,
eye diseases, headache, body ache,
stomach problems, diarrheal diseases,
indigestion, gas acidity.

Table 1

Sample Framework for Primary Data Collection of Thrissur District in Kerala

Area	Block Panchayath	Grama Panchayath	No. of Selected Wards	No. of Selected Households from Each Ward	Total Households
Rural	Chowannur	Kadavallur	1	28	28
	Cherpu	Avinissery	1	28	28
	Wadakkancherry	Velur	1	28	28
	Thalikulam	Nattika	1	28	28
Total (Rural)					112
Urban		Chavakkad Municipality	2	28	56
		Chalakkudy Municipality	2	28	56
		Kodungallur Municipality	2	28	56
		Thrissur Corporation	2	28	56
Total (Urban)					224
Grand Total (Rural + Urban)					336