

**THE ECONOMICS OF HEALTH CARE:**  
**An Assessment of Health Care Financing by Households**

*Dissertation submitted in partial fulfillment of the requirements for the  
Degree of Master of Philosophy in Applied Economics of the  
Jawaharlal Nehru University*

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**M.Phil Programme in Applied Economics**

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June, 2007**


*I hereby affirm that the work for the dissertation, 'The Economics of Health Care: An Assessment of Health Care Financing by Households', being submitted as part of the requirements of the M. Phil. Programme in Applied Economics of the Jawaharlal Nehru University, was carried out entirely by myself. I also affirm that it was not a part of any other programme of study and has not been submitted to any other University for the award of any degree.*


June 20, 2007

  
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Certified that this study is the bona fide work of Shalini Rudra, carried out under our supervision at the Centre for Development Studies.

  
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*To*

*My Beloved Sister Kanan*

*&*

*My Brother Deepak*

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Abstract of the Dissertation

**THE ECONOMICS OF HEALTH CARE:  
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The health sector reforms have marked a significant policy shift in the development of the health systems in India. The World Bank, a proponent of these reforms, aims at maintaining efficiency despite cutting of the subsidies swathe through structural adjustment programmes in the developing nations. However in practice the positive benefits envisaged through the market-friendly reforms did not materialise and were overshadowed by increased costs and inequitable distribution of health services.

Health care payments amidst increasing costs severely constrain an individual's or a household's welfare, mainly by squeezing the expenditure share on consumption. These payments become catastrophic when a household undergoes distress and is constrained to sell off its assets or borrow from future potential earnings due to episodes of illness. The study is motivated by observing the worrisome and inequitable distribution of health expenditure due to the unequal access to financial resources that households have borne the arduous costs of ill health. It is against this background that this study attempts to understand the dimensions of the problem and to measure the extent of inequality among the population in their ability to make payments to health services across different states in India, on the basis of evidence available from the Health and Morbidity Survey, 60<sup>th</sup> round, of the National Sample Survey. This exercise ought to be seen as an assessment of "equity in health care payments" which has an inbuilt component of "equity in health care utilization". In this study a measure of Fairness in Financial Contribution is used, which shares a common concern of protecting households from making excessive financial losses due to ill health. In addition, it helps comprehending the vertical and horizontal distribution of impoverishment due to health payments.

The study finds that the low-income households are constrained to spend twice the share of income for health care as do high-income households and that direct out-of-pocket spending is particularly regressive. Component decomposition of pecuniary cost reveals that expenditure on drugs forms the largest chunk of the annual household health care expenses and that diagnostics form the second largest component. All the Indian states represent almost similar levels of contribution to the health care system, proportional to the capacity to pay. At the same time the state's health systems are irresponsive to the capacity to pay, though the percentage of households incurring catastrophic payments differs in all the states. To conclude, this study argues for health coverage extended to all sections of the society, particularly to the poor, in order to escape the vicious circle of ill health and poverty.

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## ACRONYMS USED

ATP	Ability to Pay
CHC	Community Health Centre
CMH	Commission of Microeconomics and Health
CMP	Common Minimum Program
GDP	Gross Domestic Product
ICMR	Indian Council for Medical Research
NHP	National Health Policy
NSS	National Sample Survey
OoP	Out Of Pocket
PHC	Primary Health Centre
SAP	Structural Adjustment Program
UNDP	United Nations Development Program
UPA	United Progressive Alliance

## CHAPTER ONE

# INTRODUCTION

### 1.1 Motivation

Demographic and epidemiological changes taking place across developing nations are steadily increasing the need for health care provision over a varied range of diseases. Such a need has put tremendous pressure on health care systems at a time when public spending cannot be increased, when they are curtailed in the name of sectoral reforms. In this context, apprehension regarding the welfare content of public health policy with special reference to the health care as a commodity market surfaces as research problem. Indisputably, the concept of 'Welfare State' is embodied with justification of state action and intervention in health care, to improve and influence health outcomes. The notion of public provisioning of health services, apart from the welfare criterion, has sufficient support in economic theory. Health qualifies to be a merit good and is considered intrinsically desirable for a society as it creates significant positive externalities by generating much larger social benefits than costs incurred, in producing and distributing them (Musgrove, 2004). In his seminal contribution, Arrow (1963) emphasized the problems of information asymmetry and adverse selection in health care markets which further point out the importance for government interventions in this area for achieving the desirable objectives of efficiency and equity in health care provision.

Nevertheless, agencies such as the World Bank and the World Health Organisation (WHO) have questioned the role of state provision of health care (Anne Mills, 1995). The World Development Report (1993) identifies that the primary objective of public policy should be to promote competition among providers, which should result in increased consumer choices and satisfaction and should drive down costs by increasing efficiency. Alternatively, private provisioning is perceived to act as a compensatory mechanism to redeem systemic imperfections like little-funded, low-quality and desolate public provision. With these views, health sector reforms were initiated to encourage competition among providers by retaining public financing, control of costs and improved quality in government provisioning (World Bank, 1993a).

In practice the positive benefits envisaged through the reforms did not materialise and were overshadowed by increased costs in production and inequitable distribution of health services (Sagar and Qadeer, 2003). This failure has led to the awakening of consciousness among the policy-makers in developing countries regarding the objectives and performances of the health care system. Decision-makers in low and middle income countries are often faced with challenges regarding design or reform of the health care system and its intrinsic goals. The historical evolution of any health care system reveals its goals and objectives. Lack of an evidence-base and a consummate framework to evaluate accountability of different actors has added to the complexities in the system. Therefore, there is a need to consider the public and private roles in the health service delivery system from the perspective of the population in need and to contemplate on the issues related to the subsidization of health care (Maynard and Bloor, 1995; Collins et al, 1999).

The need arises from the widely known fact that ill health can cause impoverishing effects and can bring down the utilization of health care services. The situation for the developing countries further worsens as health and morbidity surveys increasingly demonstrate higher levels of sickness due to the preventable causes. Good health is a universally desirable state and a priority goal in its own right. Ill health or disease is recognized as a significant indicator of human ill-being and a determinant of poverty (Gumber, 1997). Healthy life helps to maximize individual productivity instead of compromising with adversities of illness and injury (Stern et al, 1982). Given the capital and labour stock of a country, better health and educational profile of the population contributes to higher economic growth (Barro and Sala-i-Martin, 2004). In an attempt to find causality between health and growth performances of countries, Bloom et al (2004) reported that health showed positive and significant effects on the rate of growth, and that there is a strong case for considering this relationship as a bi-directional one (Pritchett and Summers, 1996; Bhargava et al, 2001). In this regard, various scholars argue that investments in health prove to be a central input into poverty reduction and economic development as it deciphers into higher labour productivity (Behrman and Deolalikar, 1988; Castro-Leal et al, 2000).

In the past, several studies have highlighted the health-poverty gradient and established that life years lost due to illness holds grave significance for low-income households. The uncertain and unwieldy health care costs extorted out from the minuscule incomes of the households often poses a threat to the household's subsistence needs and pushes it further into poverty (Mackino et al, 2003). Adversities also get manifested in the form of significant loss of opportunity cost in terms of foregone labour income as well as decreased long-run earning capacity in the highly unorganised labour market of a developing economy. In this regard, it is imperative to evaluate the current scenario in respect to the level of utilization of health care services and its outcome, as there exists very high levels of morbidity alongside worrisome poverty levels in developing countries. Over the past fifty years, WHO has undertaken a major effort to quantify, measure and evaluate the health care systems and to improve their performances in many nations around the globe. As health care is an issue of high priority in most developing nations, the evaluation of the health care systems stems from the emphasis of embedding the goal of equity in the formulation of policies. Paucity of the knowledge about the utilisation of private care and the absence of safety nets therefore call for urgent reconsideration of the roles of the public and private health care delivery agencies from the perspective of the population in need and their affordability. Thus appropriate health care is widely regarded as a vital part of a decent social minimum that any nation should ensure to its citizens.

## **1.2 Health Care Financing: The Equity Dimension**

Equity is acknowledged as an important policy objective and is justified from the point of view of the social justice theory in health care (Wagstaff and van Doorsaler 2000). When it comes to financing health care, the equity principle appears to be prominent in several countries. The ongoing challenge faced by all countries is to adjust or develop the mix of financing methods best suited to their respective macroeconomic conditions, socio-cultural environments and disease burdens. This requires a financing system that generates adequate resources to meet the costs of current and projected health needs and priorities. The financing system is deemed to be equitable if the resources are raised according to ability to pay (vertical equity) while access to services is based on one's need rather than income or

contribution (horizontal equity). The efficiency dimension is analysed (at the macro and the micro levels) in terms of purchasing services that provide the best value for the money. While these criteria may satisfy the necessary conditions for a good financing system, policy makers all around the world are grappling with the challenges of drawing on theoretical postulates and testing empirical data to resolve the debate over financing methods that secure these and other sufficient conditions.

The appraisal of health payments made by individuals in the space of income and of the burden of households is based on the principles of Public finance. Although the analysis of health payments indicates a case of subsidies, and user fees as well as for progressivity and income redistribution, it may be argued that health financing by itself is not sought as a mode of redistribution of income; it is but an arrangement for payments within the society in a fairer way (Murray et al., 2003). The purports based on the burden principle deal with the questions of frequency, intensity and the persistence of the impact of idiosyncratic shocks, which result into consumption shortfalls. However, the income approach signifies to the redistributive effects of health payments such that they should not offset the benefits delivered by the health care system. It is focused on the marginal impact of the health care system payments, these payments are believed to alter the income distribution in any economy. But it is worth mentioning that the '*consumption*' of the health care is not the same across various income groups in the society; therefore the income approach fails to capture the dimension of the progressivity, whereas the burden approach identifies any reduction in the household's resources due to episodes of illness.

The issue whether health care financing impedes access to and use of health care services needs to be discussed keeping the different epidemiological profiles of the states in mind. Since the outcome (i.e. the hospitalisation rate) varies widely across states, it is evident that lack of resources to seek medical treatment prevents households and individuals from seeking health care. The utilisation of health services is low among poor and the access to the facilities in the public or private sectors are mostly enjoyed by the better off. Also, it's in the wake up that public provision of rationed health care is shrinking in the country, besides government, therefore increasing provision of care is coming up from the private sources.



Several studies have reported the inequitable distribution of the burden of illness across income groups and states.

### **1.3 Research Problem**

The research gap accrues from country's prevailing health conditions, which if compactly put together would show startling paradoxes, a matter that is disquieting for researchers. Firstly, although the Out of Pocket (OoP) expenditure is much talked of, it's not being analysed in terms of its components, where it can be crucial prerequisite of defining the problem and setting the priority goal for the state in order to ensure good health at low costs. The studies pertaining to the analysis of OoP expenditure are generally disease-specific. However, the current interest in catastrophic expenditures is only disease-specific too, in general, investigating the level of catastrophe for minor ailments in health status, which however, might not reflect the unanticipated shock and the actual degree of impoverishment. Also, only a few of these studies have looked into the impact of medical expenditures on household livelihoods and well-being from the equity perspective as the financing of major illness does not expose different households to the high degree of risk of destitution as done by an episode of hospitalisation.

Secondly, the health care systems of the various Indian states seem to differ widely among themselves. The most discernible differences are in the degree to which people below the poverty line finance hospitalization expenses through borrowing or selling away assets. Even though fees for public hospital admissions are minimal or nonexistent, hospitalization is costly because patients often have to pay for diagnostic services or drugs. This demonstrates that the failure to provide financial protection to the poor to meet the costs of hospitalization is significant across the country, even in the presence of public sector hospitals that supposedly provide nominally free care.

The fairness in the financing arrangements of the health care system depends on the attainment of the goals and the efficiency of the system. Information on financial protection in India suggests that overall financial contributions to health care is regressive (World Bank, 2001), that the financial risk from serious illness affects nearly all income groups, with people

from the poorest quintiles depending on loans and sale of assets to pay for hospitalization. The lack of prepayment systems for health care has put Indians at great financial risk in the event of hospitalization, and most of their total expenditures are in fact incurred on hospitalization. The use of public hospitals reduces this risk only marginally. Furthermore, the poor are at the additional disadvantage of being able to afford only less care and of lower quality. Cost remains a significant barrier to use of health care, particularly for the poor. Therefore, the economic assessment of health care financing and of its consequent inequality becomes imperative. Such an assessment facilitates the understanding of the domains within which different agents function under the prevailing health care conditions and contributes toward building policy initiatives for a more affordable health care.

#### **1.4 Objectives of the Study**

The present study is an attempt towards comprehending the dimensions of the financial distress, and the degree of inequality among the population in India, in making payments to health services, across different states in India. This exercise consists of an assessment of 'equity in health care payments' which has an inbuilt component of 'equity in health care utilization'. The study deploys a measure of Fairness Financial Contribution (FFC), (World Health Organisation, 2000). This particular approach measures a common concern of protecting households from making excessive financial losses due to ill health; at the same time it helps us to understand the vertical and the horizontal distribution of the impoverishment due to health payments.

The specific objectives of the study are:

- To ascertain the extent, and the components, of the pecuniary costs of care across different states.
- To use an appropriate instrument to measure the degree of inequality among the population caused by making health care payments and to ascertain fairness in health care payments across different states.
- To relate the obtained results to the differentials in income, preferences for seeking treatment and availability of health care facilities in the different states of India, undergoing health transition.

## 1.5 Data Source

The National Sample Survey Organisation's (NSSO) 60th Round, the 'Morbidity and Health Care Survey', forms the basis of the empirical investigation, which is a nationally representative household survey with a subject coverage of Consumer Expenditure Survey (CES), Employment-Unemployment Situation (EUS) and Morbidity and Health Care (MAS). The collected information comes in succession of the 42nd Round (1986-87) and 52nd Round (1995-96) surveys but unlike previous morbidity surveys it has a detailed information on expenditure caused by illness. The data is collected for all states and union territories. Although the 60th Round was carried on in the period of six months from 1st January 2004 up to 30th June 2004, this special round of NSSO collected comprehensive information relating to general morbidity, utilisation of medical services, the nature of treatment undergone, the extent of utilisation of public health services and the services of private medical agencies, expenditure on medical treatment separately for inpatient and for outpatient care and the means of financing the expenses through a 'schedule 25.0'.

The survey is worthwhile for such investigation as it includes details on care received through health care institutions and self-treatment (or non-medical treatment) and reasons for not opting for treatment. The expenditure part of the survey furnishes information on direct and indirect costs incurred by households on medical treatment and the sources of financing the expenses. The direct costs pertaining to total expenditure for medical treatment include consultation charges, cost of drugs, diagnostic tests, bed, ward, and services of the attendants, acquisition of personal medical appliances, food, acquisition of blood, oxygen cylinder and sundry items like bandage, and plaster, and payment for operation theatre charges and transport, etc. Indirect costs include all other incidental charges and expenses incurred due to health impairment like telephone charges made from PCO, costs of items like soap, towel, toothpaste, transport costs incurred by the household for procuring medicines, blood, oxygen, etc. for the treatment, of the patient and escort(s).

The study uses unit level record from the National Sample Survey Organization's (NSSO) 'Morbidity & Health Care survey' (60th Round) for the in-patient illness episodes. The unit of the study is 'household'. Based on the belief that the basic spending unit is the household and

not the individual, since the welfare of each individual member within the household is dependent on the welfare of all the other members, expenditure per household rather than per capita is the appropriate unit of analysis. The *raison d'être* for considering only the in-patient episodes for the analysis is that hospitalisation is a form of major illness and is one of the most sizable and least predictable shocks to the economic opportunities of a household. The cost associated with the illness is of two types: the cost of diagnosis, treatment and rehabilitation and the loss of income to the household consequent on reduced labour supply and productivity. The magnitude and the unpredictability of costs for in-patient care suggest that households may not be able to insure smoothed consumption over periods of illnesses. Recognizing this, the study uses spells of hospitalisation and expenditure incurred on them for analysing the catastrophic nature of the illness. Also, the study intends to capture the resultant inability of the households to ensure consumption in the face of illnesses.

A total of 750 cases of the deceased who had received inpatient care, which constitute 2.3 percent of the hospitalised cases, have been dropped to avoid complexities and maintain simplicity in the analysis. In addition, this study has not taken into consideration the cases which received reimbursement of the expenses either from employers or from insurance agencies. The analysis is restricted to the 17 major states of India for assessing the burden of OoP and for evaluating fairness in making payments for the hospitalisation spell by the households.

The survey covered a total of 32665 individual cases of hospitalisation. After removing the 750 cases of deceased as well as those households which received reimbursement hospitalisation the sample remained 31915 individuals. These 31915 individuals were from 27156 households of all India. The criterion of selection of the states is based on the sample size of the households. States having less than 500 sampled households having hospitalisation in the reference period are excluded due to the insufficiency of the sample. The sample size of surveyed households ranged from a maximum 9309 in Uttar Pradesh to a minimum of 1400 in Haryana. In addition, for determining the subsistence expenditure there was a need to create a food-based poverty line. For this purpose the NSS 60th Round Consumer Expenditure Survey was used, which is a thin round and provides comprehensive details of

the expenditure incurred on a range of commodities. The methodology section will deliberate upon the construction of the variables.

## 1.6 Methodology

To accomplish the above-mentioned objectives, this study is formulated in two steps. Firstly, to undertake an analysis of the characteristic and component decomposition of the cost of care for episodes of use of in-patient care, using the 60th Round of NSS on morbidity, and secondly, to evaluate the health care systems on the basis of fairness or equity in making health payments using the same data. The total expenses incurred on all the spells of ailments occurred during the reference period are clubbed for all the members at the household level, to obtain a figure of OoP health expenditure on inpatient care. The total OoP expenditure<sup>1</sup> incurred in seeking inpatient care of a household  $i$  is represented by the Annual Health Expenditure  $HE_i$  and is obtained directly from the data.

The study deploys the framework given by Xu et al, (2001) for assessing the performance of different health care systems in terms of the payments made by the households. A health care system is defined as a system comprising personal medical and non-personal health services, excluding inter-sectoral actions such as sanitation and water supply, designed to improve health of the population. The health care systems around the world are focused on outcomes such as equity, which reduces health inequalities among populations. But the concern in the methodology, which is followed in the study, is equity in health payments which is captured through index on fairness. In order to document the evolution of financial protection, this study develops and analyzes indicators of absolute and relative impoverishment resulting from health spending and the equity of the health care system financing.

### 1.6.1 Construction of Variables

All the variables related to expenditures (health expenditures and households' monthly expenditures) are converted to annual figures. The cost of care for the hospitalized cases is

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<sup>1</sup> The definition of OoP follows from the literature: Summation of spending done on procuring bed, services, appliances like oxygen cylinder, blood, and drugs and consultation/user fees and the expenditure incurred for laboratory examinations viz x-ray, EEG, ECG and other diagnostics including pathological tests, such as testing urine, stool, blood, sputum, tears, biopsy, and tests for eyes, audiogram for testing loss of hearing etc.

analysed using simple measures like cross tabs, percentages, and proportions. The concern over the catastrophic health expenditure arises from the fact that illness is an unforeseen and unsolicited 'shock' which can be sufficiently costly to represent a threat to the household's ability to flourish. Using the framework developed by Wagstaff and Doorslaer, 2001 the study try to evaluate health spending by constructing relevant variables to represent the situation.

#### **a) Capacity to Pay**

Catastrophe is observed only when households spend more than some predefined ratio of OoP to the income of the households. For expediency, catastrophic expenditure is defined in relation to the households' capacity to pay. Capacity to pay is defined as household non-subsistence effective income; therefore, income net of subsistence forms capacity to pay of the household.

#### **b) Subsistence Expenditure**

The subsistence spending of a household is its minimum requirement to maintain basic sustenance in a society. A poverty line is used in the analysis as the minimum required level of subsistence spending. Subsistence needs are defined separately for each state to allow for the different consumption patterns and the differentials in prices across states. There are many ways to define poverty. None of them are perfect considering the soundness in theory and feasibility in practice. The one used in the study is food share based poverty line for estimating household subsistence. This poverty line is defined as the food expenditure of the household whose food expenditure share of the total household expenditure is at the 50<sup>th</sup> percentile in the state. In order to minimize measurement error, the average food expenditures over essential commodities (which form the basic minimum subsistence requirement for serving adequate meals) of households whose food expenditure share of total household expenditure is within the 45th and 55th percentile of the total sample is taken on the equivalence scale to reflect the poverty line. Considering the economy scale of household consumption, the household equivalence scale is used rather than actual household size. The rationale behind the use of equivalence scale is based on the simple fact that, as a result of economies of scale in consumption at the household level, an additional family member does not cause a proportionate increase in expenditure; for example a six-member family does not need six times the resources required for one member; to reach the

same level of welfare., it is enough if a six-member family spends much less than what six single member families would have to spend.

### **c) Catastrophic Expenditure**

The cost of health care or health spending is viewed as catastrophic when there is forced attenuation on subsistence expenses by a household which in turn reduces the welfare of its members over a certain period of time in order to cope with the shock of medical expenses. Catastrophic health expenditure is observed only when households spend more than some predefined ratio of OoP to income. Expenditure for medical care becomes financially catastrophic when it endangers the family's ability to maintain its customary standard of living.

### **d) Threshold Levels**

There is no consensus in the literature as to how to fix this minimum threshold. Thus the threshold at which a level of out-of-pocket expenditure becomes financially catastrophic should be defined relative to household's income.' the study uses different thresholds. The characteristics of the households are analysed at different threshold levels.

### **e) Effective Income**

Following the income-related approach in defining catastrophic expenditures the study uses different threshold as a ratio of OoP to the household income taking into account not only permanent income but also value of assets deemed available to pay for care. Household consumption is used as a proxy of permanent income of the household and is advanced into the annual income of the household. This annual income is used to estimate effective income<sup>2</sup>. The means to finance the health expenditure during the illness episode, are taken as a proxy of the effective income, thereby including in it borrowings (on the prospective income) savings and money raised by selling of assets like gold, land, and animals. The choice of these variables to ascertain effective income is based on the consideration that instruments for raising money forms the endowment set. Therefore, the means of financing the expenses on hospitalisation form the basis for ascertaining the effective income of the

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<sup>2</sup> The effective income in the life cycle perspective is defined as the level of smoothed consumption by the household  $i$ , which includes the sum total of stock variables like assets, savings and prospective gains from borrowings, apart from the permanent income, denoted by  $Ey_i$ .

household. Health care spending is examined by income; for this purpose, all the households are assigned to five groups called Quintiles on the basis of household consumption expenditure.

The basis of the normative claim of such a kind of analysis is that the households bearing burden of paying unfair shares of income deserve protection against financial risk. This consideration raises concerns regarding devising mechanisms to protect households from catastrophic financial payments and subsequent impoverishment. The study is a modest attempt of cross-sectional analysis of inequality issues within the limitations of the methodology used for the analysis.

## **1.7 Chapter Scheme**

The study is organized in the following way. Chapter One presents a prologue to the problem at hand. In the light of the existing studies, the research gaps and the motivation to undertake the study are stated. The objectives of the study are also stated in this chapter. The concluding sections of this chapter discuss in detail the data sources and the methodology used for the analysis. Chapter Two presents a review of the literature on a variety of health scenarios across the Indian states, and raises concerns regarding the squeeze on public expenditure and the rise of OoP expenses. The subsequent sections in the chapter look into the principle of equity in the context of health care.

Chapter Three looks into the characteristics and components of OoP expenditure and the issues relating to the catastrophic payments to the health care sector. Section 3.1 introduces the concept of the cost of care. The section that follows, deals with the evidence on high and increasing OoP expenditure and rising cost of diagnosis as the main components of expenditure. Section 3.3 deals with defining the indicators as proportions of income, at which level health care expenditure becomes catastrophic. Section 3.4 presents the result of the analysis for all-India and the states separately on components of OoP. Section 3.5 discusses the means to finance these pecuniary costs of care. The conclusions of the discussions in the end of the chapter are drawn in the final section.



Chapter Four analyses fairness issues associated with the high costs of hospitalisation at the sub-national level. After introducing the concepts involved in section 4.1, the burden approach to health care payments is discussed in the Section 4.2. The next section discusses the fairness concepts as a normative claim. The subsequent sections define fairness in greater detail and discuss the methodology adopted for the analysis. Section 4.4 presents the results obtained for the different states. This section is followed by a discussion on the main issues regarding poverty, the structure of health care payments and catastrophic payments. In the concluding chapter of the study, the summary of the study as well as its main results are presented. The chapter further provides suggestions for possible policy interventions. It concludes with a short reference to the limitations of the study and the possibilities of further improvement.

## CHAPTER TWO

### REVIEW OF LITERATURE

#### 2.1 Health Scenario in India

India has achieved substantial gains in its health care and poverty alleviations efforts as is reflected in increase in life expectancy, reduction in infant and child mortality rates, reduction in the disability-adjusted life years (DALYs) and decrease in the head count of poverty, etc. Nevertheless, these achievements are only mediocre by international standards as well as by the experience of its neighbours like China, and Sri Lanka. (NHP 2002; Mahal et al., 2000). The life expectancy hovers around 70 years for China and 73 years for Sri Lanka; similarly the infant mortality rate for Sri Lanka is less than one-quarter of that of India (World Bank, 1997). Again there exists a vast difference in these respects among the states in India. For instance, Kerala has infant mortality rates comparable to those of many developed countries, while states such as Madhya Pradesh, Orissa and Rajasthan have infant mortality rates of well over 70 per 1,000 live births, in their rural areas. Epidemiological assessment of causes of mortality has shown that 50 per cent of deaths are due to causes preventable through effective public health service delivery (GOI, 2000). This proportion was 49 per cent in 1985 (RGI, 1991) Shariff, et al., (1995) reported that 34 per cent to 37 per cent of deaths incurred in 1993 were due to fevers. To remove the doubt and ambivalence in the indicators it is essential to look at the infant mortality rates (IMR) over time. It took almost three quarters of a century (1911 to 1985) to achieve a significant reduction in IMR from 204 to 97 per 1000 live births. The rate of change was so sluggish that it took another 20 years to achieve a further 30 per cent reduction (Sagar, 2004). Table 2.1 shows the still existing wide disparity in the death rate among infants, as between the rural and the urban areas of India, during as late as 2005.

**Table 2.1 Infant Mortality by Sex and Place of Residence**

<i>Rural</i>			<i>Urban</i>		
<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
64	63	64	39	40	40

*Source:* Sample Registration System, 2006

Table 2.2 shows the major causes of death in India during 1998, and their proportions to deaths of the world population (16.7 percent). India has high levels of deaths due to traditional childhood infectious diseases such as acute lower respiratory infections (pneumonia), diarrhoea, measles, tuberculosis and tetanus. Such disparities occur because of the preponderance of childhood diseases which are common at the early stages of epidemiological transition; nevertheless, chronic diseases of adulthood, notably heart disease and depression, as well as injuries, are also playing an increasingly important role in India's burden of disease, a characteristic typical to countries which have already undergone epidemiological transition.

**Table 2.2 Top 10 Specific Causes of Death in India, 1998**

<i>Causes of Death</i>	<i>India</i>		<i>World</i>
	<i>No. of cases (in 000)</i>	<i>percent</i>	<i>percent</i>
Ischemic heart disease	1,471	15.8	19.9
Acute lower respiratory infections	969	10.4	28.1
Diarrhoeal diseases	711	7.6	32.1
Cerebrovascular disease	557	6.0	10.9
Tuberculosis	421	4.5	28.1
Road traffic injury	217	2.3	18.5
Measles 21.4	190	2.0	21.4
HIV/AIDS	179	1.9	7.8
Tetanus	165	1.8	40.3
Chronic obstructive pulmonary disease	153	1.6	6.8
Total deaths	9,337	100.0	17.3
Total population	982,223	100.0	16.7

*Source:* World Health Organization 1999

Morbidity has remained a major cause of the loss of income to the households. A growing volume of evidence suggests that as much as 22 lakh persons of India suffer from economic losses due to morbidity annually, most of them living marginally above the poverty line, owing to a combination of incomes losses on account of inability to work and declined non-medical expenditure, a misfortune which poses a threat to their survival (Mahal and

Duraisamy, 2005). Moreover, the situation has become alarmingly bad as poverty ratios, according to the nutrition-adjusted poverty line, have shown increase (Karan and Mahal, 2005). This might have relevance to the adjustment with food expenditure due to an unprecedented health shock. It is estimated that at least 24 per cent of all Indians hospitalized are pushed down to below poverty line because of the catastrophe, and that OoP spending on hospital care raised the proportion of the population in poverty by 2 per cent.

## **2.2 Government Intervention in the Health Sector**

Health is determined by factors like individual preferences, socioeconomic circumstances, income, and the price of health care and other consumables (Grossman, 1972). By influencing these factors the government plays quite a substantial role in improving the health status of the population. For instance, the provision of subsidised health services or health insurance is the modes through which the government mitigates the inequity-enhancing effects of illness. Therefore, health care systems work under a coherent framework of inputs, processes and evaluation of outcomes, in which the financing of health services forms the core of the framework.

Under the federal character of Indian governance, the constitution has provided for a division of responsibility between the government at the centre and the state governments. The financing and the provision and regulation of services like public health, sanitation, hospital care, dispensaries, drugs, medical profession and education come under the concurrent list, and are therefore under the state's jurisdiction. In India, the recent health spending is estimated to fall in the range of 4.5 to 6 per cent of GDP. This is higher than in most developing countries including China and several Latin American countries, which spend 3.5-4.5 per cent and close to that of developed countries like Japan and the west European countries that spends in the range of 5.5 to 8 per cent (UNDP 2002). However, the public share (0.9 per cent of GDP) of expenditure on health in India is perhaps the lowest in the world. According to the estimates of the *Commission on Macroeconomics and Health* - which simulated the costs of essential services that state must provide –per capita public spending in low income countries should lie within the range of US\$30 to US\$45 (CMH, 2002) while the per capita spending in India is estimated to be US\$23.

The resource crunch and the adoption of the structural adjustment programmes as a part of overall macroeconomic stabilization, led the state to reconsider the demand for, the utilization of and the cost recovery from, health services. With the initiation of sectoral reforms the policy focus of the government has changed in a way that the expenditure on the social services is drastically curtailed. The impact of the falling share of central grants has been more pronounced in poorer states, which are unable to raise local resources to compensate for this loss of revenue (Duggal et al, 1995).

**Table 2.3: Total public health expenditure (revenue + capital) trends 1975-2003 and selected ratios**

<i>Year</i>	<i>Total public health expenditure (rupees in billions)</i>	<i>Percent of GDP</i>	<i>Percent of total government expenditure</i>	<i>Per capita (rupees)</i>	<i>Capital as ratio to revenue expenditure</i>
1975-76	6.78	0.9	3.13	11.16	0.11
1980-81	12.86	0.99	2.96	18.94	0.08
1981-82	-	-	-	-	-
1985-86	29.66	1.19	3.29	39.28	0.09
1987-88	-	-	-	-	-
1991-92	56.4	0.96	2.96	65.89	0.08
1992-93	64.64	0.74	2.71	74.13	0.04
1993-94	76.81	0.98	2.89	86.21	0.04
1994-95	85.65	0.93	2.33	94.33	0.05
1995-96	96.01	0.89	2.47	103.57	0.04
1996-97	109.35	0.88	2.43	115.96	0.04
1997-98	127.21	0.92	2.5	132.65	0.05
1998-99	151.13	0.94	2.66	155.01	0.04
1999-00	172.16	0.96	2.61	173.72	0.05
2000-01	186.13	0.98	2.69	182.66	0.04
2001-02 RE	211.06	1.02	2.72	203.53	0.05
2002-03 BE	219.59	1	2.6	208.54	0.05

Source: Duggal, 2005

Capital expenditure has borne the brunt of the phasing out of health subsidies; as a result which the health infrastructure development has turned inadequate in several states including Bihar, Uttar Pradesh, Madhya Pradesh and Orissa. The ratio of capital to revenue expenditure showed decline since 1991-92 (Table 2.3). In the pre-reforms period (1974-82), grants to the States from the Central government for the health sector accounted for 19.9 per cent of the

States' health expenditure. However, during the post-reforms period, central grants fell to 5.8 per cent during 1982–89 and further to 3.3 per cent in 1992–93 (Duggal, 1988). In India, the decline in health subsidies is often attributed to the growing fiscal deficit (Govt. of India, Ministry of Finance, 1997). Even the introduction of user fee as a mode to raise revenue proved ineffective in improving the services and compensating for the shrinking subsidies swathe.

In a scenario in which the role of the state in developing countries is shifting from one of Welfare State to protecting the population from abject poverty, the lower levels of public funding leave the individual unprotected from the risk of facing catastrophe caused by financing health episodes (Dror, 2003). The current level of government funding<sup>3</sup> to the sector is grossly inadequate as has been brought by different studies, but the question remains unanswered as to how judiciously the allocated funds should be utilized. The National CMP adopted by the UPA in 2004 at the Centre, agreed to increase public expenditure on health care from 2 to 3 per cent of GDP. The central government's budget estimates for 2005-06 for outlays on health and family welfare, show an increase of 18 billion over the previous year, from Rs. 84.20 billion to Rs. 102.80 billion. But by merely increasing budget outlays on health care, no solution to the problem is likely to be reached. For arriving at a solution a thorough scrutiny of the demand for and the supply of the health care services is needed. It however demands a thorough examination of the demand and supply of the health services.

The increase in the budgetary provision will be worthwhile under certain conditions only when issues of equitable distribution are taken care of and the efficiency of health systems is improved. The arguments raised against the efficiency of the public health systems are:

- 1) Abysmally low levels of public health expenditure have always been cited as the root cause of the poor performance of the health care system in India;
- 2) Some of the most cost-effective measures (such as immunization, ante-natal and post-natal care, and treatment of common infectious diseases) which improve health (curative measure) are not prioritised or delivered with caution;

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<sup>3</sup> The funding here includes all the funds that flow to the state government, centre government, local government and Local Self government.

3) The wasteful and inefficient utilization of available resources further aggravates the inefficiency in the delivery of primary health care services which even if provided are observed to be of poor quality.

A study by ICMR, 1991 showed that PHCs were grossly underutilized primarily due to inadequate staff, medicine, equipment, and transport, and because the entire focus and much of the orientations of the public health spending of the health programme through PHC was on family planning (Gupta J.P. et al 1992; Gill and Kadavi, 1999). The public health systems, even by providing marginally priced care, do not prove to be an effective alternative for households against catastrophically<sup>4</sup> expensive health shocks<sup>5</sup>. This is because the waived off components of user fees are often miniscule and are not enough to offset bulk payments – often called as OoP expenditures – essentially incurred on non-subsidized components such as diagnostics and drugs (Frederick, M., et al, 2002). Indeed, recent studies suggest that health care benefits at the tertiary level, in the form of subsidies, help only an affluent minority thereby resulting in widespread socio-economic inequalities (Castro-Leal et al, 2000; Hjortsberg, 2003; Dilip and Duggal, 2002).

With regard to the public-private shares in the health care market, the evidence indicates that public health service is preferred for inpatient care irrespective of the place of living (Sheriff et al., 1999; Gumber, 1997). For outpatient care, however, private facilities are more often used, particularly in the urban parts of India (Naylor et al. 1999). The share of private health care providers for outpatient care increases with rise in the economic status of the population. It has been observed that with growth in income and expansion of the middle class urban India has witnessed a tremendous growth in the private health care system (Sundar 1992, World Bank 1993; Bhat and Jain, 2004). The 42<sup>nd</sup> and 52<sup>nd</sup> Rounds of NSS data confirm the findings by the studies by Sheriff in 1999 that state-financed inpatient care is increasingly used by the well-off. The shares of the subsidies are such that, the urban residents enjoy 31 per cent,

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<sup>4</sup> Catastrophe is an indicator of the financial distress to the household, generally associated with the direct cost of care, that causes levels of consumption and investment on basic necessities (e.g., on food and education) to go below minimum levels of needs in the short run.

<sup>5</sup> Irrespective of modest fees being charged at public facilities, there is growing evidence of private care utilization by low income households which suggests that consultation charges themselves are not critical in determining the choice of the health service provider (Dilip and Duggal, 2004; Kunhikanan and Arvindan, 2000; Yesudian, 1994).

which is nearly three times the share of the poorest 20 per cent of the population (Mahal et al., 2000).

Some of the inequality in the allocation of public health subsidies is explained by income-related differences in utilisation patterns of public facilities, with the rich using more care. It is often argued that the rich, as a consequence of greater wealth status, have higher ability to afford travel expenses, that stay in urban places provides them an advantage and that; therefore, they reap the benefits of the public health services more than the poor. The NSS Rounds may be used to make utilization estimates; a comparison of two official estimates for 1986–87 and 1995–96 on utilization of health care facilities indicates that the utilization of government sources for treatment (including public hospitals, PHC/CHC, public dispensaries, etc.) declined from 26 per cent to 19 per cent in rural India and from 28 per cent to 20 per cent in urban India. For hospitalized treatment (inpatient care), the decline in utilization of government sources was from 59.7 per cent to 43.8 per cent (15.9 percentage points) in rural areas and from 60.3 per cent to 43 per cent (17.3 percentage points) in urban areas. Untreated ailments showed a rise in rural areas and among the lowest expenditure quintile, which is articulated in terms of inaccessibility and financial constraints. Further, the percentage distribution of patients who opted for non-hospitalized treatment indicates that there has been a declining reliance on public sector providers. As per NSSO estimates between 1986–87 and 1995–96, the richest quintiles accounted for higher utilization rates of public health services for inpatient care than the poorest quintiles. Most of health care provision for outpatient care came from private providers, as shown by NSSO estimates, which accounted for 82 per cent.

Recent empirical studies in India have focused on measuring the burden of ill-health in terms of Disability Adjusted Life Years (DALYs) or the cost per episode of illness (according to place of residence and expenditure quintiles). However, the studies on health care costs have invited attention, most notably to public and private costs of care and the burden of ill-health for the poorest quintiles. The two key elements of the cost of care are health sector direct cost and indirect cost. Direct cost represents the value of resources used to prevent, detect, treat and rehabilitate health impairments, including payments made at the point of receiving



health services from within the health sector (diagnostics, transportation, purchase of drugs & appliances etc). In addition, often non-health-sector direct costs are incurred, which range from expenses for structural modification for patient's needs to institutional costs like administration costs in emergency assistance, costs of litigation etc. Indirect costs have a more implicit bearing on the household as they are not directly connected to treatment but are indefinite expenses necessitated by the impairment, like loss of earnings by the household, unperformed housekeeping or entrepreneurial services and extra burden borne by household in connection with hospitalization.

With more than 71 per cent of health care expenditure being financed privately, India has one of the highest levels of OoP expenditure for health care in the world. According to the 52<sup>nd</sup> round of the NSS 1995-96, OoP expenditures for the bottom quintile of the income distribution accounted for nearly 12 per cent of household income and for the top quintile around 14 per cent. With thin and missing health insurance markets, illness results in chronic poverty as households bear the costs of illness by selling off productive assets or taking on debilitating loans. Those who fall sick face the consequence of significant financial costs of treatment in the absence of insurance, with possible catastrophic effects on living standards. Therefore governments in developing countries are grappling with challenges of controlling costs incurred on the provision of health care.

### 2.3 Health Payments: The Elicited Concern

The health care systems all around the world are confronting problems of disproportionate financial losses to households which suffer from privation due to their catastrophic shocks (Wyszewianski, 1986; Wagstaff & Doorslaer, 2001). Several studies have demonstrated the conditions under which health care payments become arduous to households<sup>6</sup>. When faced with a sudden contingency like ill-health and medical costs, households incur costs and sacrifices depending upon their opportunity costs of meeting these costs. Apart from other socio-economic and background variables, costs of care and ability to pay (ATP) have been acknowledged as influential factors affecting the propensity to utilize health services.

<sup>6</sup> These studies, in a nutshell, are concerned about the catastrophic nature, impoverishment and unpredictability attached to financing of health impairments. For instance see, Berki, S. E., 1986; Leon Wyszewianski, 1986; Waddington and Enyimayew 1989; Abel-Smith and Rawal 1992.



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Moreover a households' ATP for meeting expenditures for health care corresponds to its willingness to pay (WTP) (Hjortsberg, 2003; Russell, 1996). Since ATP is founded on the principles of opportunity cost, health care payments are explained as a strategy of prioritising consumption, of foregoing unnecessary expenditures and devoting those resources for consumption of health care. It is iniquitous to the poor on whom the disease burden falls largely disproportionately, and who are more susceptible to diseases and are likely to be pushed into the poverty trap (Gumber, 1997; Visaria and Gumber, 1994). The financing of OoP payments often severely constrains the individual's or the household's near-future consumption. The restraint is preferably a squeeze on the non-food, welfare oriented expenditures and on the capacity for repaying loans, for raising savings, etc. Several studies have revealed that due to scanty insurance coverage, households are able to meet subsequent health shocks only by relying upon informal coping strategies such as drawing on savings, selling assets, transfers from their families and social support networks, and borrowing from local credit markets (Robert M. Townsend, 1995; Anjini Kochar, 1995; Mugisha Frederick, 2002).

The expenditures on health care by government and households are often taken as complementary expenditures. But the private providers have long relinquished efforts at synchronization. Increasingly the health care markets in developing countries is characterised as market in which expenditure on health care is a function of economic background rather than the intensity of the ailment. Moreover, most OoP expenditures incurred on hospitalization do not go to the hospital; they go for diagnostic tests, drugs, materials, and other items all of which often have to be purchased by the household concerned. The average expenditure on the episode of inpatient care treatment increases with the economic status of the households (Table 2.4). The bulk of earlier studies have confirmed wide variations in treatment costs and the burdens depending on the type of facility used. These expenditures are components of direct cost that involve a component of progressivity, in the sense that health is a merit good, but increasingly becoming a luxury as the quality, urgency etc of services depend upon the capacity to pay of households, displaying very high

expenditure elasticity<sup>7</sup>. Failure to reach this aspect of progressivity may underestimate the results with at the same time; inclusion of indirect costs would inflate the results.

**Table 2.4** Average Expenditure (in Rupees) by MPCE Quartiles per Inpatient Care Treatment by Type of Facility used and The Duration on Hospitalisation, Urban India, 1995-96.

<i>Duration of Hospitalisation</i>	<i>Source of Treatment</i>	<i>MPCE Quartile Groups</i>				<i>Total</i>
		<i>0-25</i>	<i>25-50</i>	<i>50-75</i>	<i>75-100</i>	
1-4 Days	Public	389	509	990	1342	712
	Private	868	1492	1602	3337	2020
	Total	593	1079	1389	2853	1511
5-9 Days	Public	666	953	1619	3445	1452
	Private	1643	2650	3305	6733	4071
	Total	1081	1916	2655	5893	1520
10+ Days	Public	1140	2205	2889	11236	4265
	Private	3475	5097	6696	19526	12212
	Total	1842	3275	4800	16687	8165
Total	Public	704	1235	1860	6259	2198
	Private	1681	2574	3396	9789	5347
	Total	1087	1928	2778	8789	3990

Source: Dilip & Duggal, 2002

In most developing countries, financial protection of households remains segmented and fragmented; hence the resultant is augmentation of financing of health by households with considerable impoverishment as consequence, due to catastrophe. The over-reliance on the OoP expenditure for financing the health systems is considered the least efficient and the least equitable form of financing (Hesketh and Zhu, 1997; WHO, 2000; Murray et al., 2000a; 2000b). The proportion of the health sector expenditures, which is financed by households through OoP spending, is seen to be an important indicator of the lack of financial protection.

There exists a growing body of literature, which suggests that such kind of financing of health care leads to distress, provokes catastrophe and impoverishment and entrenches poverty. Often these payments are not opted as a function of income, for the reason that under stress

<sup>7</sup> Concerning the effect of per capita income, one major question of health economics (and applied econometrics) is the value of income elasticity of health care expenditures. If this elasticity is greater than unity, health care is a luxury good and its increase is a natural outcome of economic growth.

and anxiety (of disease) people have no choice but to incur huge expenses irrespective of their economic disposition and statuses (Russell, 1996). The resources used to pay for health care may otherwise have been used for welfare; thus expenditure for health services is made at considerable social cost to the households concerned and hardly could it be said to represent “willingness” to pay (Waddington and Enyimayew, 1989). However, the situation is more complex in the context of major ailments or hospitalisation, because of their consequential severity. It has been widely acknowledged that despite its inherent limits on spending by the poor, the nature of the distribution of OoP expenditures is regressive (Russell, 1995). For the poor, the risk of catastrophic health payments and medical indigence is real.

However the precariousness and the inequitable effects of illness-related expenditure deserve to be looked into more intensively. The inequity often portrays unequal burden in health spending; it also articulates overall inequality. The partial insurance coverage enhances inequity in the system by leaving the worse-off to the low quality public system for both primary and secondary care. The aftermath of the health shock has adverse implications for the households concerned if falling into the debt trap, which could even bring a high-income household to below the poverty line (World Bank, 2001). Thus, high expenditures for health care borne by households have the greatest impact on their budgets on both their current situation and their situation in the near future.

Moreover, the availability of the health care at differential prices and quality of services from private and public providers, compounds the inefficiencies in the health care sector. Large household surveys have clearly established the supremacy of the private sector in the provision of health care. The 57<sup>th</sup> Round of NSS on unorganised service sector enterprises in India identified 13 lakh such enterprises providing health services. These are two types of enterprises namely, Own Account Enterprises (OAEs) and establishments like dispensaries, hospitals etc (Table 2.5). They employ roughly a workforce of 20 lakh skilled, semi-skilled or unskilled persons, and most of them function as unregistered establishments. A regulatory mechanism is badly needed, as they are a bane of the health sector in India, causing untold misery to poor health seekers. Despite having established an enormous primary health care

machinery, India doesn't seem to be doing well in terms of performance, across states and socioeconomic groups (Dreze and Sen 1995; Mahal, Srivastava and Sanan 2000)

**Table 2.5 Distribution of Enterprises in Unorganized Health Service Sector, 2001-02**

<i>Indicator</i>	<i>Rural</i>		<i>Urban</i>	
	<i>OAE</i>	<i>Establishments</i>	<i>OAE</i>	<i>Establishments</i>
Number of Enterprises	812689	65048	264658	165256
Per cent of Enterprises	92.59	7.41	61.56	38.44
Per cent of Workers Employed	80.64	19.36	30.10	69.90
Per cent Registered under Medical Act			54.76	
Per cent Unregistered (Under Any Act)			36.69	

Source: NCMH (2005)

The way health care expenditures are financed has important implications for the health care system. A study by the World Bank (2001) showed the differential behaviour of households with differential poverty levels, in raising the resources for financing health care expenditure. Rapid increase in OoP expenditure on health care is also a reflection of a serious market failure problem, which this sector is seriously exposed to. These trends pose serious problems to the sustainability of the system. Given the existing linkages between income and private health expenditures, a private health insurance system might magnify the vulnerabilities of the health care system making it costlier and affordable by only the high-income groups and leaving the poor to the mercy of desolated and depleted public services.

The long-run consequences of these unabated patterns of OoP financing of health care can become disastrous to an extent, since with the minimal financial protection they receives, the poverty levels caused due to health shock would become difficult to manage and major ailments could go untreated till the conditions worsen. However, this question calls for thorough investigation into medical spending, net economic status and ill-health effects in order to understand the priority settings. Although impoverishment is a critical policy question, the large administrative and informational capacities required for assessing a

minimum threshold above which the health payments become arduous, poses serious problems in developing countries.

The sustainability of these expenditures can have several undesirable consequences making the health system highly costly, unaffordable, and vulnerable to the provider payment system. Therefore an economic assessment of health care financing by households and its consequent precariousness to which these households get subjugated becomes imperative. Such an assessment facilitates an understanding of the domains within which different agents function under the prevailing health conditions. The analysis of the economic impact of restoration of the health leads to the question the magnitude of gains which recipients obtain, as against the impoverishments caused to the household due to arduous burden of health care payments.

#### **2.4 Interstate Variations: Case of Hospitalisation**

A common refrain which runs through all the above-mentioned studies is that health care costs are on the rise and that rise is large enough to push households marginally above poverty line into poverty and the debt trap. Furthermore, there exist wide interstate variations in terms of utilization of health care and OoP expenditures incurred including the risk of falling into indebtedness after hospitalization. Seeking inpatient care is associated with the severity of illness, which is often a last option for poor households as it is conditional upon the cost of care. Many studies have highlighted the concerns about the differential levels of hospitalisation of the population across different states in India. Often they are attributed to the different stages of health and the epidemiological transition which these states are undergoing. But the latest report on NSS rounds suggests the existence of huge diversities in sought annual inpatient care across states. Often hospitalisation rate is responsive to persistence of poverty levels; the poor have an additional disadvantage in being able to afford only less care, as cost of treatment poses a significant barrier to the use of health care. The reason for not seeking health care was strongly associated with poverty. Often poverty conditions are aggravated due to access difficulties; therefore poor are left either untreated or they bear sudden and sporadic spurts of medical cost of private health care that is bound to have their impact on deprivation among households with poor and unstable livelihoods and progressive impoverishment. Spending on health care has always remained the greatest

precursor to poverty among low-income households and the greatest impediment to maintenance of household solvency.

A Study by World Bank, in 2001 on the 52<sup>nd</sup> Round of NSS, showed that the proportions of public sector hospitalizations vary greatly across states, ranging from 2 per 1,000 in Bihar to 29 per 1,000 in Kerala. The pro-rich bias in hospitalization also varies across states, with Bihar having the most pro-rich distribution, Kerala being the only state to have higher public sector hospitalization rates among the poor than among the rich. Some states perform well on one dimension of the achievement but less well on the other. Orissa, for example, has a higher public sector hospitalization rate than Tamil Nadu, but hospitalization in the former is heavily concentrated among the well off. As a result, its achievement in public sector hospitalization is in fact lower than Tamil Nadu's. Of course, in many Indian states, a sizeable proportion of hospitalizations is in the private sector. In Tamil Nadu, for example, only 40 percent of hospitalizations is in the public sector (in Orissa the corresponding figure is nearly 90 percent). The achievement of Tamil Nadu's small but relatively equitable public sector hospitalisation is reinforced by a fairly large private sector presence, while the lack of achievement of Orissa's large but inequitable public sector is compounded by the fact that there exists only a very small private sector in that state.

Many studies have noted the fact that the achievement in regard to key health indicators is impressive but in many respects, uneven across States. In spite of better achievement at the overall level, it is a mixed record of social development, failing in devolving development to people below the state level. As a consequence of huge disparities among states, the polarization has become stagnant (Bhat, 2000). The poor living in remoter parts or resource lean pockets or as members of backward classes in backward States have suffered the most due to lack or denial of access or social exclusion of both. The achievements have got polarised to the southern states. There is enough evidence to suggest that differences across states are larger than within states. Not only are the distances between the better performing and the other States wide but in some cases they have been widening rapidly during the nineties. Large differences also exist among districts within the State. South Indian states are

much ahead with better preventive measures, improved nutrition, better infrastructure and better service delivery.

Since the measures of central tendencies of performance hide wide variations among States, there is need to analyse the state-related specificities. The lack of prepayment systems for health care has put Indians at great financial risk in the event of hospitalization, and most of their total expenditures are in fact incurred on hospitalization. The use of public hospitals reduces this risk only marginally.

Despite due importance accorded to the issues of equity in expenditure by households, there seems have happened considerable violation of this norms. The latest National Health Accounts (NHA) reports that in India, the proportion of the cost of illness funded by households is as high as 72 per cent of total health expenditure (THE). According to World Development Report, 2000-01, out of the 6 per cent of the GDP spent on health, private sector accounts for a mere 4.7 per cent, (which is as high as 78.5 per cent of the THE) out of which households accounts for 4.5 per cent and the rest 0.2 per cent the comprises contribution by private employers etc.

Consistent with the notion of equity, although health payments affect only a relatively small proportion of households, yet they account for substantial share of the national health expenditure. The high income variability is a chronic feature of vulnerability and impoverishment due to health shocks. It necessitated the concurrent evolution of debates of classifying expenditures into burden or shocks. The analysis based on burden principles are concerned about frequency, intensity and the persistence of the impact of idiosyncratic shocks, which result into consumption shortfalls. However, the income approach signifies the redistributive effects of health payments in such a way that it does not offset the benefits delivered by the health system. The income approach is focused on the marginal impact of the health system payments. The health system payments are believed to alter the income distribution in the economy. But it is worth mentioning that the consumption of health care is not the same across various income groups in the society. Therefore the income approach fails to capture the dimension of progressivity, whereas the burden approach identifies the reduction in household's resources due to illness.



## CHAPTER THREE

### **CHARACTERISTICS AND COMPONENTS OF OUT OF POCKET EXPENDITURE ON INPATIENT CARE**

#### **3.1 Introduction**

The rising expenses on medical care have raised two important concerns; of protecting the low-income households against OoP expenditures that are financially catastrophic and of providing services at low costs in an attempt to prevent untreated ailment. The goal of protecting everyone against financially catastrophic health care expenditures has been on the national policy agenda for several decades. The current interest in rising OoP and its coverage is only the latest in a long line of developments that include health insurance programmes. The general nomenclature of the various items of expenditures incurred in availing the health services is OoP expenditure for the simple reason that these payments are part of the disposable income of households. The expenditures involve two types of cost, direct costs and indirect costs; while the former represent the value of resources used to obtain care, the latter include costs that extend from expenses on structural modification of place of living to institutional costs like administration cost in emergency assistance, cost of litigation for claiming money etc. The most important costs involved in seeking health care is the 'opportunity' costs.

Like most of the developing nations, India too has introduced user fee as a mode of financing government health services, in response to severe problems in financing the health care services, after reforms. The adjustment programme resulted in an unprecedented assault on public health facilities and decline in government allotment to the health sector. But that in no respect alone is the cause of the exorbitant OoP burden of the health expenditures. Hence one has to be careful in defining OoP expenditure which comprises, in general, expenditure associated with the illness, incorporating also complementary expenses which do not relate to prevention, detection, treatment or rehabilitation of impairments. This practice is indeed questionable for the simple reason that by incorporating the indirect components of expenditures, a component of progressivity is built into the calculation. As a consequence of

higher wealth status, the rich inevitably has greater ability to afford travel expenses. Hence they are indifferent towards complementary expenditures which inflate the final expenditure figures. Therefore one has to be cautious in taking these figures of OoP expenditures on their face value.

**Table 3.1: Private health expenditure (PHE) as per cent of per capita income (PCI) in different periods**

<i>Period</i>	<i>Average Increase (in percent)</i>
1961 to 1970	2.71
1971 to 1980	3.27
1981 to 1990	3.72
1991 to 2000	3.26
2001 to 2003	5.53

Source: Bhat and Jain, 2004

A study by Bhat and Jain, 2004 shows that on the assumption that private health expenditure (PHE) is distributed in conformity with the distribution of the average per capita income, the average per capita private health expenditure, as per cent of per capita income, has almost doubled since 1961 (Table 3.1). PHE as per cent of PCI increased from 2.71 per cent during 1961-70 to 5.53 per cent during 2001-03. it is important to note that this particular study has used the information from National Account Statistics which has its own limitation, nonetheless, it concludes that the private health expenditure (PHE) has grown faster than per capita income (PCI) over the years.

**Table 3.2: Growth Rates of Private Health Expenditure, Per Capita Income And Private Final Consumption During Various Sub-Periods**

<i>Variable</i>	<i>1961 – 2003</i>	<i>1961 – 1970</i>	<i>1971 – 1980</i>	<i>1981 – 1990</i>	<i>1991 – 2003</i>
PHE <sub>n</sub> <sup>+</sup>	11.30	9.91	13.70	7.62	17.92
PHE <sub>r</sub> <sup>*</sup>	3.44	2.54	5.84	-0.01	10.88
PCI <sub>n</sub>	10.22	8.73	8.89	10.74	10.83
PCI <sub>r</sub>	2.36	1.37	1.03	3.11	3.76
PCE <sub>n</sub>	9.21	7.86	8.24	9.17	10.29
PCE <sub>r</sub>	1.35	0.50	0.37	1.54	3.22

\*Subscripts 'n' and 'r' denote variables expressed in nominal and real terms respectively

Source: Bhat and Jain, 2004

Similarly, the study has calculated the growth rates of PHE, PCI and private consumption expenditure during the different periods and finds that the growth in private health

expenditures has been much higher than income growth or private final consumption expenditures (Table 3.2).

In India, government expenditure on health increased from Rs. 28 billion in 1987 to Rs. 169 billion in 2003 at current prices. The private expenditure on health rose from Rs. 95 billion in 1987 to Rs.1282 billion in 2003 at current prices. It was confirmed time and again by the different Rounds of the National Sample Survey (NSS), that medical expenditure was the fastest growing category of household expenses, at different rates in rural and urban areas. (NSS Report, 60<sup>th</sup> Round). The average expenditures on medical care seem to have been rising along with increase in monthly per capita income of the household (Table 3.3).

**Table 3.3: Average household expenditure on health care (in Rupees) per year among different income groups, NSSO 52<sup>nd</sup> round, 1995-96.**

<i>Income groups (Deciles)</i>	<i>Acute Illness</i>		<i>Chronic Illness</i>	
	<i>Rural</i>	<i>Urban</i>	<i>Rural</i>	<i>Urban</i>
Top 10 per cent	1029.76	1885.51	599.74	540.60
Bottom 10 per cent	3382.64	4026.15	12139.37	8699.41

Source: Gupta (2003)

Catastrophic expenditure is an indicator of the financial inequality of a system. Just one incidence of illness is enough to slash the economic position of a substantial proportion of the population located just above the poverty line and possibly driving large proportions of them to below the poverty line. A different explanation could be that since both private health expenditure and income show skewed distribution patterns, the rates of change are lop-sided. Although, households are able to finance unanticipated expenditures by disposing their core assets, they tend to be exposed to serious crises in consequence.

Very few studies have systematically examined the impact of large medical expenditures on household livelihood and well-being. Dearth of empirical knowledge and the lack of theoretical formulations on household coping strategies in the event of precariousness have been discussed by Russell (1996). The need for a better understanding of how households cope with high medical expenditures and design appropriate strategies for protecting themselves against impoverishment is apparent.

Also, the method of accounting of OoP expenditures needs sophistication and to be further improved. Studies on household healthcare expenditures in general review expenditures associated with the direct costs of illness, ignoring complementary expenses. The economic impact of healthcare, considering all expenditures resulting from treatment and loss of income, may be very high *vis-a-vis* household income levels. It may constitute an economic barrier for the search, acceptance, and continuity of treatment, which in turn affects opportunities and the handling of patients. The choice of the type of health services also undergoes changes. The available data substantiate this hypothesis, as private providers are seen to be more popular among the population. The reason attributed for such a choice is the poor quality of care, the length of waiting time involved, inefficiency and inadequacy of staff and shortage of medicines at the public health services.

**Table 3.4 Statewise Distribution Of Median Health Expenditure And Health Expenditure As Percentage Of Income, By Expenditure Quintiles, 2004**

States	Q1		Q2		Q3		Q4		Q5	
	MHE	PHE	MHE	PHE	MHE	PHE	MHE	PHE	MHE	PHE
	(Rs.)	(%)	(Rs.)	(%)	(Rs.)	(%)	(Rs.)	(%)	(Rs.)	(%)
Andhra P.	2000	10	2225	8	3380	11	2275	6	4500	8
Assam	1100	5	1200	4	1140	3	1705	4	3350	6
Bihar	2800	13	3500	12	2950	10	4000	11	6000	13
Chhattisgarh	2500	16	2500	13	3500	15	4000	13	2140	4
Gujarat	1570	6	3000	8	2950	6	3400	6	6000	8
Haryana	4820	14	5730	14	3000	6	7500	13	8000	10
Jharkhand	1000	5	2545	8	1600	5	3200	8	2750	4
Karnataka	1455	7	2500	10	2500	8	2100	5	5000	8
Kerala	1600	7	2000	6	2250	6	2420	6	4500	7
Maharashtra	1600	7	2500	8	4150	12	4177	7	7100	10
Madhya P.	2000	11	2000	8	3000	10	3000	7	4000	7
Orissa	1500	12	1950	11	2220	10	2720	9	4290	9
Punjab	6000	17	9000	21	7900	15	5190	7	10000	12
Rajasthan	3500	15	4500	13	5000	12	5000	10	5000	7
Tamil Nadu	800	4	1250	5	1450	5	2500	7	5500	9
Uttar P.	3500	14	4035	11	5500	13	5200	11	5700	9
West Bengal	1020	5	1320	5	2000	6	2990	8	5400	8

Source: Calculated using unit level data from 60th Round of NSS

\* MHE = Median Health Expenditure

\*\*PHE= Ratio of Health Expenditure to Income (in Per Cent)

The statewise distribution of average expenditure on hospitalisation shows a highly diversified picture. The median health expenditures reported in Table 3.4 show that the median expenditures are highest in all the income quintiles for the northern states in India, namely Punjab, Haryana, Uttar Pradesh and Rajasthan. States like Gujarat, Maharashtra and Bihar show higher median expenditure for the upper Quintiles. Although the available literature has raised core concerns such as the issues of under utilisation of health services, and overburdening of the households sector which pay for health services, there still exist a gap relating to the issues highlighted above. Such gaps in research, as well as the crucial need for curbing the alarming increase in OoP, call for in-depth research into the health care expenditure of households.

### 3.2 Components of Out-of-Pocket Expenditure

Out of the large amounts currently being spent OoP by households on health care, a larger share goes for procuring drugs and diagnostics. There exist increasing evidence to show that the expenditure on drugs and diagnostics has shot up in the recent times.

**Table 3.5 Proportions of Patients Getting Diagnostics Free or By Payment Mechanism, All India, 1986-87 and 1995-96.**

<i>Care type and the place of living</i>	<i>1986-87</i>			<i>1995-96</i>		
	<i>(%) Receiving</i>			<i>(%) Receiving</i>		
	<i>Diagnostic</i>	<i>Free</i>	<i>On Payment</i>	<i>Diagnostic</i>	<i>Free</i>	<i>On Payment</i>
<b>Outpatient</b>						
Rural	2.9	21.58	73.14	3.61	9.14	90.51
Urban	5.47	29.16	65.35	6.34	11.16	87.75
Total	3.57	24.63	70.01	4.41	9.69	89.76
<b>Inpatient</b>						
Rural	33.63	39.69	57.19	43.06	35.75	53.68
Urban	45.16	46.22	50.08	52.07	41.94	44.37
Total	36.82	41.91	54.78	46.39	38.01	50.28

Source: NSSO household surveys of 1986–87 and 1995–96 given in the Report by the Commission of Macroeconomics and Health

Nevertheless, people are paying often for diagnostic services with the net result that the overall share of diagnostic care spending (which is the result of some mix of increased use and increased payment) in total household budget also increases over time (Table 3.5). The

ratio of the expenditure on diagnostics to total household expenditure has almost doubled during the period 1993-94 to 1999-2000 for all the three categories, namely inpatient, outpatient and the total for both. The proportions of diagnostic expenditure to total inpatient and to total outpatient expenditure have disproportionately risen for urban areas (Table 3.6). There has been a decline in 'free diagnostic service', which necessitates public policy to ensure access, because expenditure on diagnostics is a prerequisite to start treatment.

Although the data correspond to two different time periods, and explain the increase using different set of indicators, it is clear that the (i) the use of diagnostic medical devices is increasing over time, and (ii) that people often make payments for diagnostic services; and (iii) that the net result of these tendencies is that the overall share of diagnostic care spending (which is the result of some mix of increased use and increased payment) in total household budgets is increasing over time.

**Table 3.6 Cost of Diagnostics, Health Expenditure and Total Expenditure of Households, 1993–94 and 1999–2000**

<i>Expenditure categories</i>	<i>1993-94</i>			<i>1999-2000</i>		
	<i>(%)</i>			<i>(%)</i>		
	<i>Rural</i>	<i>Urban</i>	<i>Total</i>	<i>Rural</i>	<i>Urban</i>	<i>Total</i>
<b>Inpatient</b>						
Diagnostic Exp/Total HH Exp	0.5	0.5	0.5	0.09	0.1	0.1
Diagnostic Exp/Total IP Exp	5.47	3.99	4.85	6.82	7.16	6.95
Total IP Exp/Total HH Exp	0.89	1.19	1	1.37	1.44	1.4
<b>Outpatient</b>						
Diagnostic Exp/Total HH Exp	0.06	0.09	0.07	0.15	0.15	0.15
Diagnostic Exp/Total OP Exp	1.23	2.52	1.6	3.08	4.21	3.43
Total OP Exp/Total HH Exp	4.55	3.42	4.15	4.72	3.62	4.31
<b>Outpatient + Inpatient</b>						
Diagnostic Exp/Total HH Exp	0.1	0.13	0.11	0.24	0.26	0.25
Diagnostic Exp/Total Health Exp	1.92	2.9	2.23	3.92	5.05	4.29
Total Exp/Total HH Exp	5.44	4.6	5.15	6.09	5.06	5.71

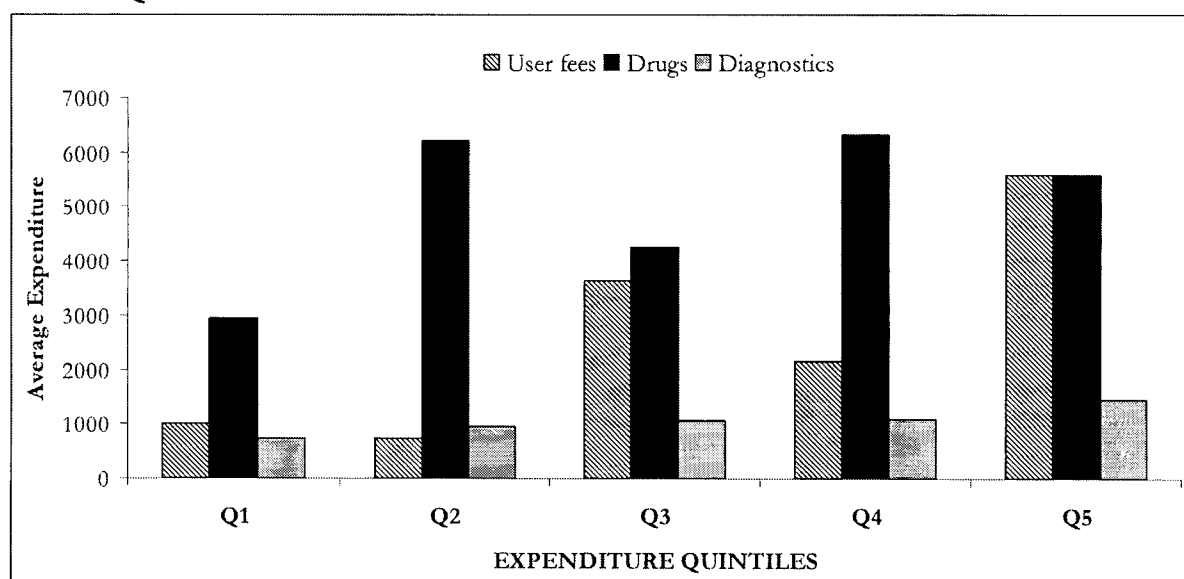
Source: NSSO Consumer Expenditure Surveys of 1993–94 and 1999–00 Given in Report of Commission of Macroeconomics and Health

Note: IP, Inpatient; OP, Outpatient

Performance targets for consultants in corporate/private hospitals may also result in overuse because of internal referrals. One study suggests that an average of 10 per cent of the total expenditure of diagnostic service providers is supported by 'business development' payments to doctors and that the share may be as high as 30 per cent for high-end diagnostics such as MRI and CT scans.

Drugs are one of the three cost drivers of the health care system<sup>8</sup> (Figure 3.1). Drugs and medicines form a substantial portion of the OoP expenditure by households in India. Estimates from the National Sample Survey (NSS) for the year 1999-2000 suggest that about one-half of the total OoP expenditure is incurred on drugs. In rural India, the share of drugs in the total OoP is estimated to be nearly 83 per cent, while in urban India, the corresponding figure is 77 per cent. The shares of drugs in total inpatient treatment costs are around 56 per cent for rural areas and 47 per cent for the urban areas in India for the same period. On the other hand, the proportion of the expenditure on drugs and medicines is a mere 10 per cent of the overall budget of both the Central and the State Governments. The share of expenditure on drugs in the total health budget of the central government is about 12 per cent.

**Figure 3.1 Average Expenditure on Different Components of cost of Health Care by Income Quintiles**



<sup>8</sup> Statewise decomposition of the out-of-pocket expenditures is given in the Appendix 3A.

### 3.3 Characteristics of Catastrophic Households

The threshold at which a level of OoP expenditure becomes financially catastrophic should be defined relative to households' income. Therefore health care expenses exceeding the annual household income is the most appropriate indicator to quantify the catastrophe (Berki, 1986). Before presenting the analysis, two caveats are necessary at this point. First, the analysis examines medical expenditures in relation to family income rather than per capita income. Based on the belief that the basic spending unit is the household and not the individual (since the welfare of each individual within the household is interdependent), expenditures per household rather than per capita are the appropriate units of analysis and of policy formulation.

Households' incomes therefore enable a more detailed examination of households' financial burdens as a function household income and service availed of by their members. Therefore the impact at the household level affects the individual level welfare. Second, the focus is on catastrophic expenses associated with the use of acute medical care services only. Although the use of outpatient care may absorb a greater share of households' resources, the analysis presented indicates that a larger number of households experience sizable financial burdens from hospitalisation alone. The hospitalisation rate differs highly across states (Table 3.6) due to the fact that the states in India remain at different stages of health transition.

**Table 3.7 Statewise Annual Hospitalisation Rate**

<i>States</i>		<i>Total</i>	
Andhra Pradesh	2.7	Madhya Pradesh	2.3
Assam	1.2	Maharashtra	3.8
Bihar	1.1	Orissa	2.6
Chhattisgarh	1.7	Punjab	3.3
Gujarat	3.6	Rajasthan	2.2
Haryana	3.9	Tamil Nadu	4.2
Jharkhand	1.2	Uttar Pradesh	1.6
Karnataka	2.5	West Bengal	2.8
Kerala	12.6		

Source: Calculated using unit level data from 60<sup>th</sup> Round of NSS

Note: Annual Hospitalisation Rate refers to proportion of total population hospitalized in last one year.



The poorer states not only report fewer illnesses, but they obtain treatment for a smaller proportion of those reported, compared to the richer states. The states with higher monthly per capita consumption show higher rates of hospitalisation, with Kerala as an exception. Some of the inequality in the allocation of public health subsidies is explained by income-related differences in utilisation patterns of public facilities, with the rich using more care, assuming that health care is a normal good. There is no doubt that substantial scope for improvement remains, whether in terms of inter-state equity, or distributions of public subsidies within states.

### 3.3.1 Households with Catastrophic Expenditures

Catastrophic illnesses, or, more precisely, financially catastrophic illnesses, affects a relatively small percentage of the population, yet they accounts for a substantial share of the national health expenditures. Between the 52<sup>nd</sup> and the 60<sup>th</sup> Rounds of National Sample Survey (NSS), medical expenditure was the fastest growing category of household expenses, the increase being 43 per cent in rural areas and 56 per cent in urban areas. (NSS Report, 60<sup>th</sup> Round).

**Table 3.8 Percent Distribution Of Households by Intervals of Annual OoP Expenditure for Hospitalisation as a Proportion of Total Household Annual Income**

<i>Share of OoP Expenditure in Annual Income</i>	<i>Distribution of Households</i>
	(%)
0.0 to 4.9	38.5
5.0 to 9.9	18.0
10.0 to 19.9	17.2
20.0 to 29.9	8.1
30.0 to 39.9	4.6
40.0 to 49.9	2.9
50 to 59.9	1.7
60 or more	6.2
unknown *	2.7
Total	100

\* Households with zero net income or unknown OoP expenditures

Source: Calculated using unit level data from the 60<sup>th</sup> Round of NSS

Relative to the few households facing catastrophic health payments in 52<sup>nd</sup> Round of NSS, the contemporary data reveal a vastly different picture. Nearly 39 per cent of all households had OoP expenditure less than 5 per cent of their income (Table 3.8), and OoP expenditures ranged between 10 to 20 per cent of income for 17.2 per cent of the households. The total expenditures of the households for hospitalisation represent payments made within the health sector at the point of receiving health services. It has been termed as the ‘direct costs of care’. The proportion of households, which have incurred OoP expenditure which amount to more than 60 per cent of their income, is 6.2 per cent. However this is to be viewed in relation to the economic status of such households, as it is a forfeit for the low-income households under the scenario of segmented insurance coverage. The national magnitude of the problem depends entirely on how one defines a catastrophic level of expenditure, and who incurs the expense.

From the society’s perspective, a disease may have catastrophic financial implications if it results in high productivity losses, which economists call the indirect costs of illness, resulting from premature mortality and high morbidity in the working age population. It is important, therefore, to distinguish between high cost and financially catastrophic illness and to identify both the bearer of cost for whom financial catastrophe is implied as well as the point at which expenditures become catastrophic. Therefore in order to grasp out-of-pocket expenses completely, one has to measure it at different thresholds. This study, as defined earlier, uses five thresholds and concentrates on that subset of households whose out-of-pocket expenses exceeded 40 per cent, 50 per cent, and 60 per cent of their annual household income respectively. This study, therefore, examines the incidence of out-of-pocket expenditures and some of the characteristics of households that incurred medical expenditures in 2004 that exceeded 40 per cent, 50 per cent, and 60 per cent respectively of their households’ income.

Insurance coverage accrues only to a negligible 0.5 per cent of the total sample (Table 3.9). Out of the total number of households reporting hospitalisation during the reference period, only 6.3 per cent are shielded against pecuniary expenditures either by— free services (which include employer-provided free medical care *viz.*, in Railways, Army, etc.) or by insurance.

**Table 3.9 Total Annual Health Services Expenditures Incurred By Households at Different Threshold Levels**

<i>Share of OoP Expenditure in Annual Income</i>	(%)	(%)	(%)
	<i>Total Households</i>	<i>Households with Insurance Coverage</i>	<i>Households Having Shielding (Reimbursement, Free Medical Care, etc.)</i>
10 Per cent or more	45.7	0.4	11.9
20 Per cent or more	26.4	0.2	7.8
40 Per cent or more	12.2	0.11	4.3
50 Per cent or more	8.9	0.07	3.3
60 Per cent or more	6.8	0.05	2.8
Overall	--	0.5	6.3

Source: Calculated using unit level data from 60<sup>th</sup> Round of NSS

The percentage distribution of households at different threshold levels of expenditure denotes that almost 6.2 per cent of households spend a disproportionately high share of their income on hospitalisation (Table 3.8). These are the households, which are supposed to be depleting their endowments to meet such high expenditures. These households essentially end up in indebtedness. The proportion of households with insurance coverage is seen to be similar irrespective of the threshold of OoP expenditures (Table 3.9). On the other hand, it is seen that as the threshold increases the proportion of households entitled to free services and reimbursement for treatment increases. Among the households incurring more than 10 per cent of their income as OoP, 11.9 per cent of households were shielded against the high costs of care, viz free services or reimbursement; whereas of the households with more than 60 per cent of OoP expenditure, only 2.8 per cent were shielded. One of the likely reasons for the impoverishment is that the households with disproportionately higher shares of health expenditures have inadequate insurance coverage.

The income statuses of households at different thresholds show a similar trend (Table 3.10). Of the households incurring more than 10 per cent of their annual income on hospitalisation, 22.4 and 23.4 per cent are from I and II MPCE quintiles respectively. The situation does not seem to have changed much even for the top-most quintile. The highest threshold, i.e. households with more than 60 per cent of the income spent as OoP, shows a similar pattern. Out of the overall of 6.8 per cent of households at the highest threshold of OoP in relation

to income, 18.7 per cent represents the top 10 per cent of MPCE and 24 percent the bottom 10 per cent of MPCE. The burden of health payments is disproportionately higher for low-income households.

**Table 3.10 Distribution of Households at Different Threshold Levels By Income Status**

<i>Monthly Per Capita Expenditure (MPCE) Quintiles</i>	<i>Share of OoP Expenditure in Annual Income</i>				
	<i>(%)</i>	<i>(%)</i>	<i>(%)</i>	<i>(%)</i>	<i>(%)</i>
	<i>10 Per cent or more</i>	<i>20 Per cent or more</i>	<i>40 Per cent or more</i>	<i>50 Per cent or more</i>	<i>60 Per cent or more</i>
I	22.4	23.7	24.0	23.7	23.9
II	23.4	24.6	24.6	24.5	24.0
III	15.5	14.6	14.3	13.7	12.9
IV	19.9	19.2	19.7	19.8	20.7
V	18.8	17.8	17.5	18.4	18.7
Overall	45.7	26.4	12.2	8.9	6.8

Source: Calculated using unit level data from the 60<sup>th</sup> Round of NSS

But it is necessary to examine the pattern of the type of services used by households in the different MPCE categories. The ratio of out-of-pocket spending as a proportion of mean expenditure is higher in the richer quintiles. The argument revolves in general around the excessive utilization of publicly funded services by the rich. Hence it becomes imperative to analyse the behaviour of the households in terms of service use.

### 3.3.2 Type of Services Used: Revealed Preferences

Given that the ratio of out-of-pocket spending as a proportion of mean expenditure is higher in the richer quintiles, it seems that the financial burden of health care is not too inequitably distributed. There exist, however, debates on the way out-of-pocket spending on health is measured. Secondly, the burden of out-of-pocket spending does not include the adverse effects on long-term health that might result from delaying treatment.

Moreover, large subsidies to the rich and to the urban centre might be a reason of finding large disparities in the ratio of OoP expenditure to the income. Regarding the use of subsidies, Mahal et al. (2000) find that 31 per cent of public subsidies on health accrued to urban

residents, somewhat higher than their share in the total population which comes to about 25 per cent. There were substantial differences in the degree of inequality, with the southern high-income states such as Kerala, Tamil Nadu and Andhra Pradesh, and the western states of Maharashtra and Gujarat enjoying a much more equitable distribution than the rest of the country. Similar was the case with respect to the use of subsidies in the form of public health centre for the more sophisticated technology-oriented uses. Therefore it would be useful to observe the pattern of type of services used by the income as well as by the severity of burden of catastrophe.

**Table 3.11 Distribution of Households at Different Threshold Levels According to Income Status By Type of Service Used**

<i>Monthly Per Capita Expenditure (MPCE) Quintiles</i>	<i>Share of OoP Expenditure in Annual Income</i>									
	<i>(%)</i>		<i>(%)</i>		<i>(%)</i>		<i>(%)</i>		<i>(%)</i>	
	<i>10 Per cent or more</i>		<i>20 Per cent or more</i>		<i>40 Per cent or more</i>		<i>50 Per cent or more</i>		<i>60 Per cent or more</i>	
	<i>Pub.</i>	<i>Pvt.</i>	<i>Pub.</i>	<i>Pvt.</i>	<i>Pub.</i>	<i>Pvt.</i>	<i>Pub.</i>	<i>Pvt.</i>	<i>Pub.</i>	<i>Pvt.</i>
I	35.3	18.6	39.0	19.9	41.8	20.3	44.3	19.4	46.5	19.2
II	26.1	22.5	26.5	24.0	24.3	24.5	22.1	24.7	19.5	24.6
III	13.9	15.9	11.9	15.3	11.2	15.0	9.3	14.7	8.7	13.7
IV	14.8	21.4	13.9	20.6	13.3	21.1	15.1	20.9	15.8	21.8
V	9.8	21.6	8.7	20.1	9.5	19.2	9.2	20.3	9.5	20.6

Source: Calculated using unit level data from the 60<sup>th</sup> Round of NSS

The classification of the type of service into public and private shows startling differences (Table 3.11). A disproportionately large proportion of the bottom 10 per cent households with the highest OoP expenditure relative to income used public services (47 per cent). Correspondingly, a smaller proportion of the bottom 10 per cent households at the same threshold used private services (19 per cent). Whereas almost 21 per cent the households used private services among the top 10 per cent households, the corresponding proportions for the households with the lowest OoP expenditure relative to income is 22 per cent. This Table also shows that there exists preference for private services on the part households at the top income levels, and households suffering from increasingly severe and financially catastrophic expenditures, preferred public services to private ones.

### 3.3.3 Source of Financing

Given their income levels, households with higher OoP expenditures rely not only on own resources but also on contributions from friends and relatives. However, it is worrisome to observe that as the threshold of out-of-pocket payments increases, households draw upon debt-creating instruments. Higher levels of borrowings as well as finance through other sources, leave the households concerned vulnerable to future shocks. These mainly include, distress sale of physical assets such as land and other household assets and ornaments as well as cattle.

**Table 3.12 Distribution of Households at Different Threshold Levels By Sources of Financing**

<i>Source of Finance</i>	<i>Share of OoP Expenditure in Annual Income</i>				
	<i>(%)</i>	<i>(%)</i>	<i>(%)</i>	<i>(%)</i>	<i>(%)</i>
	<i>10 Per cent or more</i>	<i>20 Per cent or more</i>	<i>40 Per cent or more</i>	<i>50 Per cent or more</i>	<i>60 Per cent or more</i>
Income/Savings	84.7	83.6	84.0	84.2	84.2
Borrowings	56.8	60.5	65.0	64.4	64.8
Contribution *	26.7	28.8	30.0	30.9	31.6
Other sources **	9.1	11.1	13.3	15.5	16.6

\* Contributions from relatives and friends

\*\* Other sources include sale of physical assets like land, property, draught animals and ornaments.

Source: Calculated using unit level data from the 60<sup>th</sup> Round of NSS

Table 3.12 shows that households with the 60 percent threshold households tend to finance health care through drawing finance from all possible sources. This trend increases with the threshold levels of payments thus impoverishing large number of households with greater OoP expenditures. This also indicates that most of the households, irrespective of their poverty status, are not prepared to encounter such uncertain health shocks and therefore are left with no other option than to resort to distress sale of assets.

### **3.4 Conclusion:**

In recent times, private health expenditure has increased significantly of which the major share is spent on drugs and diagnostics. The foregoing descriptive analysis suggests that the less developed states continue to report lower levels of ailments and account for lower hospitalisation rates primarily owing to their lower levels of awareness as well as to income constraints. Owing to negligible levels of insurance coverage, the number of households making catastrophic health payments has increased. Consequently, many households are required to draw upon resources from all possible sources including distress sale of household assets and property. After reforms, the degree of utilisation of health services by private providers has increased with clear distinctions across economic strata. The share of the expenses made on drugs and diagnostics is higher. Although the user fees forms nearly the second component of the OoP expenditure, but the economic class wise distribution of the use of public and private services reveals that user fees is higher for those households which are dependent upon the private services. The surprising findings suggest that irrespective of the threshold level the dependence upon the private services is same for the all income classes. But rich primarily utilises private services for out-patient care whereas the poor continue to depend upon both the facilities.

In the light of the foregoing findings, it is seen that the use of the private services has increased the burden to the low-income households. Therefore from the policy point of view, it is necessary to estimate the unit costs of services and to offer suggestions for legislations to fix price ranges within which the public and the private sectors may be permitted to operate. In other words, unit cost estimations provide benchmarks with which to compare the extent to which private pricing is unreasonable or exploitative. Such an exercise would also help spread awareness of how 'free' is 'free health care' and make choices in favour of investments that benefit the poor.

**APPENDIX - 3A**

**Table 3A. 1 Statewise Average Expenditure on User Fee (Consultations) By Income Quintiles**

<i>States</i>	<i>n</i>	<i>Q1</i>	<i>n</i>	<i>Q2</i>	<i>n</i>	<i>Q3</i>	<i>n</i>	<i>Q4</i>	<i>n</i>	<i>Q5</i>
Andhra Pradesh.	55320	1059	49172	1399	41955	3004	73911	3084	43370	3636
Assam	981	650	1803	3375	629	8915	3288	2698	8772	4668
Bihar	9690	1426	11483	898	12575	930	20103	1196	15250	2291
Chhatisgarh	820	225	968	958	1077	1771	2146	538	1070	3879
Gujarat	6786	6777	16108	3565	7514	2462	19081	4624	14293	9183
Haryana	9597	2389	7390	500	431	2750	5038	4313	8988	7983
Jharkhand	6581	560	18510	1820	11585	1795	9535	1131	10163	1731
Karnataka	42979	734	46241	1782	51075	975	32112	1883	39173	4256
Kerala	104106	648	153194	872	67819	643	128394	766	105464	2325
Maharashtra	38022	3672	53337	3280	73632	3445	70883	2463	50601	4967
Madhya Pradesh	15571	1387	21029	1616	21434	1032	18242	3031	21763	4309
Orissa	9375	698	2872	1795	4243	10073	4652	1357	19549	2666
Punjab	1530	638	6158	1616	4254	5955	6805	4571	5560	4130
Rajasthan	7697	1008	18905	731	6175	3644	11692	2160	15804	5601
Tamil Nadu	108189	223	86547	365	97742	459	90671	2185	93539	8018
Uttar Pradesh	20273	4413	15269	2811	27509	3793	9801	6113	25715	12728
West Bengal	4155	615	16475	2021	7518	1909	27664	2419	31805	3906

Source: 60<sup>th</sup> Round of NSS



**Table 3A. 2 Statewise Average Expenditure On Drugs (Medicines) By Income Quintiles**

<i>States</i>	<i>n</i>	<i>Q1</i>	<i>n</i>	<i>Q2</i>	<i>n</i>	<i>Q3</i>	<i>n</i>	<i>Q4</i>	<i>n</i>	<i>Q5</i>
Andhra Pradesh	76134	1145	78336	1530	86066	2404	96264	2884	56507	2794
Assam	10242	1041	10035	1455	5797	1229	9084	1642	11725	3036
Bihar	9235	3384	8114	3122	11203	2793	20079	5365	20435	5070
Chhatisgarh	10442	9515	6489	4187	2315	3209	3721	4695	3703	3724
Gujarat	27082	1664	29695	1471	32726	1340	60676	4278	51375	7763
Haryana	14442	3423	19536	2964	4287	2041	19333	6036	11612	6154
Jharkhand	7430	1347	19391	2564	11876	2182	7912	2884	6266	4994
Karnataka	50488	502	54524	2073	55398	1728	51082	1354	43307	2468
Kerala	206695	1012	282793	1431	159552	2571	252882	1362	153303	2446
Maharashtra	95387	4155	93477	3186	148284	1795	79106	1712	55879	4266
Madhya Pradesh	38215	2308	38203	1736	46100	3116	44962	2776	40456	4985
Orissa	29991	1084	21621	2219	20270	3217	16513	2397	13826	4822
Punjab	13262	2577	18848	3198	26441	4181	9709	2168	12920	4978
Rajasthan	14675	2934	30404	6224	17316	4254	22742	6319	19256	2782
Tamil Nadu	110003	1027	94786	935	101677	1178	92385	1656	113678	4860
Uttar Pradesh	66264	3338	47391	3260	55879	5878	49960	5267	19377	7372
West Bengal	99840	1281	70326	2131	65893	3721	75567	1649	48155	2948

Source: 60<sup>th</sup> Round of NSS

**Table 3A.3 Statewise Average Expenditure On Diagnostics By Income Quintiles**

<i>States</i>	<i>n</i>	<i>Q1</i>	<i>n</i>	<i>Q2</i>	<i>n</i>	<i>Q3</i>	<i>n</i>	<i>Q4</i>	<i>n</i>	<i>Q5</i>
Andhra Pradesh	173406	398	161886	381	195807	812	153310	695	166862	872
Assam	10821	840	27656	463	24764	920	36684	588	27614	1644
Bihar	69767	513	61671	848	65473	733	75724	1240	79958	1872
Chhatisgarh	12299	1900	8293	362	6141	385	18069	759	21324	462
Gujarat	67065	454	76842	483	87651	422	146428	773	146731	676
Haryana	36561	773	45328	574	27773	2652	46077	2106	52830	1896
Jharkhand	21960	372	33719	458	25018	275	19865	678	17042	1083
Karnataka	87721	146	79642	308	89793	341	91981	306	75753	1695
Kerala	300511	355	359210	715	312322	551	373669	720	327638	859
Maharashtra	172815	434	166490	727	281458	581	198928	961	178571	1042
Madhya Pradesh	77351	512	65128	358	93358	680	97541	627	113220	851
Orissa	73815	367	98439	346	103571	557	99502	475	83773	656
Punjab	32913	908	26831	443	31714	1061	18549	430	24451	2414
Rajasthan	92063	728	11695	952	56414	1077	77932	1093	87506	1457
Tamil Nadu	299175	119	278702	144	265148	211	255714	410	218147	2745
Uttar Pradesh	141147	577	131078	717	143398	1067	110333	829	115627	1296
West Bengal	129285	427	139632	613	165719	1025	189255	1057	196045	1786

Source: 60<sup>th</sup> Round of NSS

**Table 3A.4 Statewise use of the type of facility among the Top and Bottom 20 per cent of expenditure classes (in percentage)**

<i>States</i>	<i>Lowest 20 per cent</i>		<i>Highest 20 per cent</i>	
	<i>Public</i>	<i>Private</i>	<i>Public</i>	<i>Private</i>
Andhra Pradesh	37	63	16	84
Assam	81	19	57	43
Bihar	11	89	18	82
Chhatisgarh	49	51	46	54
Gujarat	43	57	17	83
Haryana	20	80	23	77
Jharkhand	35	65	20	80
Karnataka	44	56	12	88
Kerala	43	57	14	86
Maharashtra	42	58	15	85
Madhya Pradesh	63	37	34	66
Orissa	80	20	67	33
Punjab	33	67	26	74
Rajasthan	56	44	52	48
Tamil Nadu	49	51	17	83
Uttar Pradesh	31	69	22	78
West Bengal	92	8	42	58

Source: 60<sup>th</sup> Round of NSS

**Table. 3A.5 Statewise Details of Household Spending more than 50 per cent of their Capacity To Pay on Health Care**

<i>States</i>	<i>Proportion of Households</i>
Andhra Pradesh	0.62
Assam	0.43
Bihar	0.79
Chhattisgarh	0.71
Gujarat	0.59
Haryana	0.79
Jharkhand	0.61
Karnataka	0.62
Kerala	0.57
Madhya Pradesh	0.64
Maharashtra	0.64
Orissa	0.70
Punjab	0.76
Rajasthan	0.73
Tamil Nadu	0.53
Uttar Pradesh	0.72
West Bengal	0.64

Source: 60<sup>th</sup> Round of NSS

## CHAPTER FOUR

### FAIRNESS IN HEALTH CARE PAYMENTS ON INPATIENT CARE

#### 4.1 Introduction

The health care systems all around the world are confronting with the problems of disproportionate financial losses to households which force privation to them due to catastrophic blow<sup>1</sup> (Wyszewianski, 1986; Wagstaff & Doorslaer, 2001). Several studies have demonstrated the conditions under which health care payments become hazardous to households. Whether or not the expenditures prove financially catastrophic to households depends on health care coverage and, more generally, health care expenditures are in accordance to their ability to pay for the care (Hjortsberg, 2003; Russell, 1996).

In the developing countries, a single incident of illness may pose threat to economic opportunities of the household in terms of loss of income associated with reduced productivity and the cost of diagnosing, treating and rehabilitating health impairments. Often a significant loss of opportunity cost makes the health care 'unaffordable' because of the potential loss in welfare as other basic needs are sacrificed. However, contemporary studies in relation to the catastrophe associated with health care payments are focused either on minor ailments or on particular diseases. A key limitation of the available studies is that they not reflect unanticipated shock and actual impoverishment that occur due to unexpected onset of major illnesses or hospitalisation events in households. Importantly, very few studies have examined the impact of such medical expenditures on livelihoods and well-being, from the equity perspective as the financing of major illnesses do not expose different households to one and the same level of risk of destitution. The notion of equity<sup>2</sup> in health financing prescribes health systems to achieve fairness in the distribution of the health payment burden (WHO, 2000).

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<sup>1</sup> Catastrophe is an indicator of the financial distress to the household, generally associated with the direct cost of care, that causes levels of consumption and investment on basic necessity (e.g., on food and education) to go below minimum needs in the short run.

<sup>2</sup> The concept of equity here subscribes to the egalitarian viewpoints of vertical and horizontal equity. Vertical equity means that individuals or households with unequal ability to pay should make appropriately dissimilar payments for healthcare. Horizontal equity means that individuals or households with same ability to pay should make the same contribution.

The public health systems, even by providing marginally priced care do not prove to be an effective alternative for households against catastrophically expensive health shocks<sup>3</sup>. This is so because waived-off components (user fees\consultation charges) are often miniscule and not enough to offset bulk payments. The expenditure necessarily concentrates on non-subsidized components such as diagnostics and drugs (Frederick, M., et al, 2002). Indeed, recent studies suggest that health care benefits at the tertiary level, in the form of subsidies benefit only the affluent minority thereby resulting in widespread socio-economic inequalities (Castro-Leal et al, 2000; Hjortsberg, 2003; Mahal et al, 2000; Dilip and Duggal, 2002).

Several studies have showed that, because of underlying scanty insurance coverage, households often rely upon informal coping strategies to meet expenditure requirements of health shocks. These strategies include drawing on savings, sale of assets, transfers from families and social support networks and borrowing from local credit markets (Robert M. Townsend, 1995; Kochar, 1995; Mugisha, 2002). However the precarious and inequitable effects of illness-related expenditure deserve to be further studied. Equity imposes unequal burden of health spending on households but it also results in overall inequality. Partial insurance coverage entrenches inequality in the system by leaving the worse-off to the low quality public system of primary and secondary care. The aftermaths of the health shock could have adverse implications such as huge debt burdens, which could even bring high-income households to below the poverty line.

Let us assume that the burden imposed by medical expenses is a function of household income. Enormous OoP expenditure may mean catastrophe to anyone, but even small OoP expenditure may become catastrophic to households with limited resources. Such a conclusion is supported by the results of discussions in the previous chapter, where expenditure on drugs and diagnostics were found to have varied much across income groups. Nevertheless, deciding the share of income that constitutes financial catastrophe is a question of social justice and fairness values. There are two ways of defining catastrophe, first as

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<sup>3</sup> Irrespective of modest fees being charged at public facilities, there is growing evidence of private care utilization by low income households which suggests that consultation charges by themselves are not critical in determining the choice of the health service provider (Dilip and Duggal, 2004; Kunhikandan and Arvindan, 2000, Yesudian, 1994).

expenses that threaten a person's existing standard of living and second, as expenses that threaten some 'reasonable' standard of living. In the first case, health expenditure shares might vary with people's circumstances and with their incomes. But in the second case, the consideration is regarding the minimum expenditure, which would not jeopardize the living standard of a low-income household.

Expenses of 30 to 40 percent of income are typically defined to belong to the catastrophic range. But it would be more meaningful if catastrophic is defined in relation to the poverty line. The scale to evaluate impoverishment has to differ for households with different levels of resources that are called upon to meet health care expenditure. Analysis of the economic significance of the provision of health, leads one to examine the magnitude of gains which recipients expect to obtain. This exercise appositely defines the inequity in expenditures on hospitalisation across the Indian states, to adjudge the extent of progressivity in the system.

## 4.2 Conceptual framework

Use of simple measures of economic conditions - such as household's monthly consumption expenditure does not provide a holistic summary of the household's well-being. To overcome such problems in the measurement of fairness, World Health Organisation (WHO) has stipulated a framework for assessing the performance of health systems. In this framework fairness of the health systems forms a part of the spelt out intrinsic goals. This concept of '*fairness*' in financial contribution is based on the principle of equal burden<sup>4</sup>. It advocates that in the process of raising X per cent of GDP for the health system, all the households should share the burden equally. 'Burden' is measured in this context in terms of the ratio of the household's total payments to the health system, to its capacity to pay<sup>5</sup>.

The original concept of the WHO however has since been revised substantially to make it more meaningful and interpretable. Still the main concept cannot directly be applied in the developing country context, since the data regarding tax devolution for the social sector are highly defective. Hence, for the application of the original concept a clear vision is needed to

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<sup>4</sup> Fairness in the philosophical literature is often associated with the concept of impartiality.

<sup>5</sup> The concept of fairness however reckons only distribution and not the level of health spending.

be incorporated. The original concept follows from that of Xu et al (2003) and Wagstaff (1997), with some modifications to provide more acceptable inferences regarding the existence of inequality in developing countries.

This study mainly focuses upon expenditure on hospitalisation; therefore it assumes a universal access and utilization. Hence this exercise ought to be seen as an assessment of 'equity in health care payments', which has an inbuilt component of 'equity in health care utilization'. At the same time it determines the consequences of the health system contributions by households in terms of catastrophic payments reckoned from the burden approach perspective. Since the study is based upon the expenses incurred on inpatient care, which has a component of severity, households experiencing illness may persist in paying for care by mobilizing resources (Russell, 1996).

In order to comprehend the inequality involved in health payments, subsistence expenditure is calculated from a nationally representative consumer expenditure survey conducted by the National Sample Survey Organisation as discussed in chapter one. The subsistence expenditure on food consists of only essential items and thus controls for progressivity in food expenditure<sup>6</sup>. In this study, the capacity to pay (CTP) is defined as to be equal to a household's income minus subsistence expenditure. As it is simply not a function of current income alone but of assets and endowments as well and is defined in terms of effective income of a household. Effective income may be considered the income that households would believe to be the basis for making consumption decisions. In that respect it is akin to permanent income. Hence a theoretical explanation for assessing variations in the observed health payments across socioeconomic groups is provided with the borrowed concept of fairness (from Xu et al, 2005; Wagstaff, 2002, Murray et al, 2000; WHO, 2000) which is a methodology proposed for appraisal of the impact of health system payments.

### **4.3 Concept of Equal Burden**

A household's consumption pattern is a function of its income, but the minimum subsistence expenditure is a complicated function since income alone is not the necessary determinant.

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<sup>6</sup> Since the food expenditure on all items for the rich does not represent subsistence spending, income net of subsistence might underestimate capacity to pay.



Households are assumed to smooth out their consumption over the life cycle when faced with unpredictable fluctuations. Consumption is smoothed out to become equal in all subsequent time periods by falling back upon mean savings, non-saving assets, borrowing and future earnings potential. Expenditure on the health is incurred only after meeting consumption such that the minimum expected consumption doesn't get compromised. The utility of household  $i$  before ( $U_i$ ) and after health payments ( $U'_i$ ) may be written as:

$$U_i = \ln(C_i - S_i) \quad \dots [1]$$

$$U'_i = \ln(C_i - S_i - HE_i) \quad \dots [2]$$

where,  $C_i$  is household consumption, and  $S_i$  is the minimum consumption required on subsistence. Subsistence minimally includes expenditure on food, basic shelter and minimal clothing. This definition of subsistence addresses the important problem of using definitions that are comparable across populations.  $HE_i$  is the total household contribution to the health system. Clearly, subsistence expenditure for the purpose of defining HFC should not include expenditure on health even if it is seen as essential. The reduction in utility for household  $i$  ( $\Delta U_i$ ) due to the household's payments to the health care system is given by:

$$\Delta U_i = U_i - U'_i = \ln(C_i - S_i) - \ln(C_i - S_i - HE_i) \quad \dots [3]$$

The second step is defining CTP, which is consumption net of subsistence, i.e., the remaining income after meeting minimum subsistence. There is an extensive literature on basic needs addressing this question (Sen, A. 1981, 1984, 1985; Streeten, P. et al. 1981) and is given by:

$$\Delta U_i = \ln(CTP_i) - \ln(CTP_i - CTP_i \cdot HFC_i) \quad \dots [4]$$

where,  $CTP_i$  is capacity to pay; total household health contribution  $HE_i$  can be written as the household CTP multiplied by household financial contribution ( $HFC_i$ ). Apart from fee-for-service spending, OoP spending on health forms the part of the collection and pooling of sources for financing health services; therefore it is termed as the Health System Contribution. Further, the disutility due to making health payments is given by:

$$\Delta U_i = \ln \left[ \frac{CTP_i}{CTP_i(1 - HFC_i)} \right] = \ln \left[ \frac{1}{1 - HFC_i} \right] \quad \dots [5]$$

Therefore, according to the equal burden principle, health payment represents a loss of utility at every income level. Everyone sacrifices the same amount of utility if each person pays the same percentage. Hence the disutility function for household  $i, j, \dots, n$  in the society should be:

$$\ln\left[\frac{1}{1-HFC_i}\right] = \ln\left[\frac{1}{1-HFC_j}\right] = \dots = \ln\left[\frac{1}{1-HFC_n}\right] \quad \dots [6]$$

which means that the burden of the financial contribution should be same across households. In other words, equalizing HFC across households can be justified as the basis for assessing fairness in the financial contribution on the premise that the loss of utility or disutility due to financing the system should be equalized across households.

$$HFC_i = HFC_j = \dots = HFC_n = HFC_0 \quad \dots [7]$$

The most important objective of health systems should be the minimization of the aggregate contribution ( $HFC_0$ ) of the society. This means that health payments should be distributed so as to minimize the total loss of utility summed over all households. The overall measure  $HFC_0$  is the aggregated contribution or the health financial contribution all households would pay under the equal burden principle and will represent the norm given by:

$$HFC_0 = \frac{\sum HE_i}{\sum CTP_i} \quad \dots [8]$$

Towards better understanding of health spending and inequality among income groups,  $HFC_0$  may be treated as a 'norm'. The norm represents population aggregated ratio of health payments to CTP for the households in a state. The graphical representation of the financial contribution apprehends the horizontal as well the vertical distribution of equity. In order to operationalise fairness it is assumed that a health system raises a certain amount of revenue (THE) from the society in the following sense:

$$THE = HFC_i CTP_i + HFC_j CTP_j + \dots + HFC_n CTP_n$$

Therefore to facilitate the assessment of overall performance, comparisons of the different health systems is possible by a summary measure. The most appropriate summary measure, is defined as:

$$FFC=1-\sqrt[n]{\frac{\sum_{i=1}^n |HFC_i-HFC_o|^3}{n}} \quad [9]$$

The index encapsulates fairness in all pecuniary contributions attributable to the household through taxes, social-security contributions, private insurance, and direct OoP payments. But in the present study the health payments in relation to the sought in-patient care, as well as the '*Sought Annual In-Patient Care*', are analysed for the reference period of 365 days. Household CTP [10] is defined as the effective income net of subsistence expenditure, given by:

$$CTP_i = E_{y_i} - SE_i \quad [10]$$

where,  $E_{y_i}$  is the effective income and  $SE_i$  is defined as the subsistence expenditure. Subsistence expenditure [11] typically includes equalised spending on food, taking into account the household size, which is given by:

$$SE_i = pl * eqsize_i \quad [11]$$

$$eqsize_i = hsize_i^{0.56} \quad [12]$$

where,  $pl$  is poverty line<sup>7</sup> and  $eqsize_i$  is the size of the household on the equalized scale.

There are many ways of defining the poverty line, but for the purpose of the present analysis, the food-based poverty line has been incorporated, which is given by:

$$Pl = \frac{\sum w_i * eqzfood_i}{\sum w_i} \quad [13]$$

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<sup>7</sup> The use of the poverty line for defining of subsistence expenditure, implies spending for the minimum requirement

where, 
$$eqzfoodi = \frac{foodi}{eqsizei} \quad [14]$$

$$food45 < foodexpi < food55 \quad [15]$$

The poverty line is taken to be the weighted ( $w_i$ ) average of the food expenditure of the households whose food expenditure share in the total household expenditure is between the 45<sup>th</sup> and the 55<sup>th</sup> percentiles<sup>8</sup> [15]. Considering the economies of scale in household consumption, food expenditure is taken on the equivalence scale [12] rather than on actuals per head of consumption<sup>9</sup>, which is given by:

$$eqsize_i = hsize_i^\beta$$

where  $\beta = 0.56$  [16]

The incidence of the catastrophic payments in different states is calculated as the percentage of households with health payments equalling or exceeding 40 per cent of the threshold of capacity to pay. This value of 40 per cent of the threshold of CTP is taken arbitrarily.

$$Cata_i = OoP_i / CTP_i \geq 0.4$$

Looking at the subsistence expenditure of the household poverty status can be ascertained, the percentage of which will give the proportion of households below the poverty line. Therefore the particular households are regarded as poor, which have a bearing upon impoverishment, since they existed below the poverty line even before making health payments. A household is regarded as *poor<sub>b</sub>* when its total household expenditure is smaller than its subsistence spending, a condition which may be written as:

$$poor_b = 1 \text{ if } exp_b < SE_i$$

$$poor_b = 0 \text{ if } exp_b \geq SE_i$$

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<sup>8</sup> As there is bound to be variations across households, the weighted average of the median food shares is taken to minimize error.

<sup>9</sup> The full illustration of the rationale behind using the equalized size may be obtained from Deaton, Angus and Christina H. Paxson (1998), "Economies of Scale, Household Size and the demand for food" *Journal of Ppolitical Economy*, **106** [5], 897-30 and Deaton, Angus and Christina H. Paxson, (1998), "Aging and inequality in income and health," *American Economic Review, papers and proceedings*, **88**, 248-53.

In a similar context, a household is considered impoverished in terms of the relationship of its health expenditure to the total monthly expenditure.

$$Impov_i = (exp_i \geq SE_i) \text{ and } (exp_i - OoP_i) < SE_i$$

where, the relative expenditures imply that the household monthly consumption expenditure is equal to or higher than subsistence spending but is lower than subsistence spending net of OoP health payments. This means that a non-poor household is impoverished by an incidence of illness through making health payments despite the fact that it is difficult for the households to spend even for its subsistence, after paying for health services.

#### 4.4 Results

The measure of the distribution of household financial contribution (HFC), HFC-norm, Fairness in Financial Contribution (FFC) and threshold is given in Table 4.1. The subsequent distribution of HFC in the fairness index is shown in Figure 4.1 (a), (b) and (c). The FFC index is observed to have ranged between 0.594 in Jharkhand to 0.751 in Assam. Among the states, a high level of fairness is seen in Assam, Gujarat, Punjab, Andhra Pradesh, Tamil Nadu and Kerala. Most of the fairer systems belong to the high income states, the exception being the state of Assam which is relatively a low income and a less developed state in India.

The graphical representation shows the distribution of  $HFC_i$  for the states. The higher concentration of low HFC shares (at the left-hand side of the  $x$ -axis distribution), signifies an egalitarian distribution of health payments and hence makes the distribution less responsive to the Capacity to Pay. The tail of the curve indicates the nature of the distribution. Visually, a very long right hand tail indicates more unequal distribution and potentially catastrophic payments for households. The more equitable states do not show a thick right hand tail because FFC index is highly sensitive to the right hand tail.

The result of a high degree of fairness goes well along the lines of the threshold (per cent of total household poor and per cent of non-low income households facing catastrophic payments) during spells of illness and hospitalisation. The fairer states namely Assam,

Gujarat, Andhra Pradesh, Kerala and Tamil Nadu, show small proportions of households 'poor'<sup>10</sup> as well as facing 'catastrophe'<sup>11</sup> due to financing of episodes of hospitalisation.

**Table 4.1** Fairness in financial contribution and catastrophic payments

State	Distribution		Threshold	
	Fairness in financial contribution	Aggregated financial contribution	Households with Monthly expenditure < SE	Non-poor Household with catastrophic payments (%)
	<i>FFC</i>	<i>HCF<sub>o</sub></i>	<i>%POOR</i>	<i>%CAT</i>
Jharkhand	0.594	0.192	12.1	25.50
Orissa	0.623	0.207	13.4	31.60
West Bengal	0.638	0.185	11.8	23.50
Chhattisgarh	0.640	0.241	11.2	31.60
Haryana	0.645	0.212	10.0	23.70
Madhya Pradesh	0.656	0.175	8.50	18.60
Rajasthan	0.657	0.198	7.60	25.70
Maharashtra	0.670	0.2	7.30	23.10
Uttar Pradesh	0.687	0.208	4.20	22.30
Karnataka	0.693	0.185	4.90	17.80
Bihar	0.695	0.281	5.10	29.1
Kerala	0.708	0.13	4.00	09.90
Tamil Nadu	0.710	0.23	5.70	17.10
Andhra Pradesh	0.715	0.212	3.90	19.10
Punjab	0.717	0.245	2.50	24.50
Gujarat	0.721	0.16	3.80	12.30
Assam	0.751	0.151	5.90	10.40

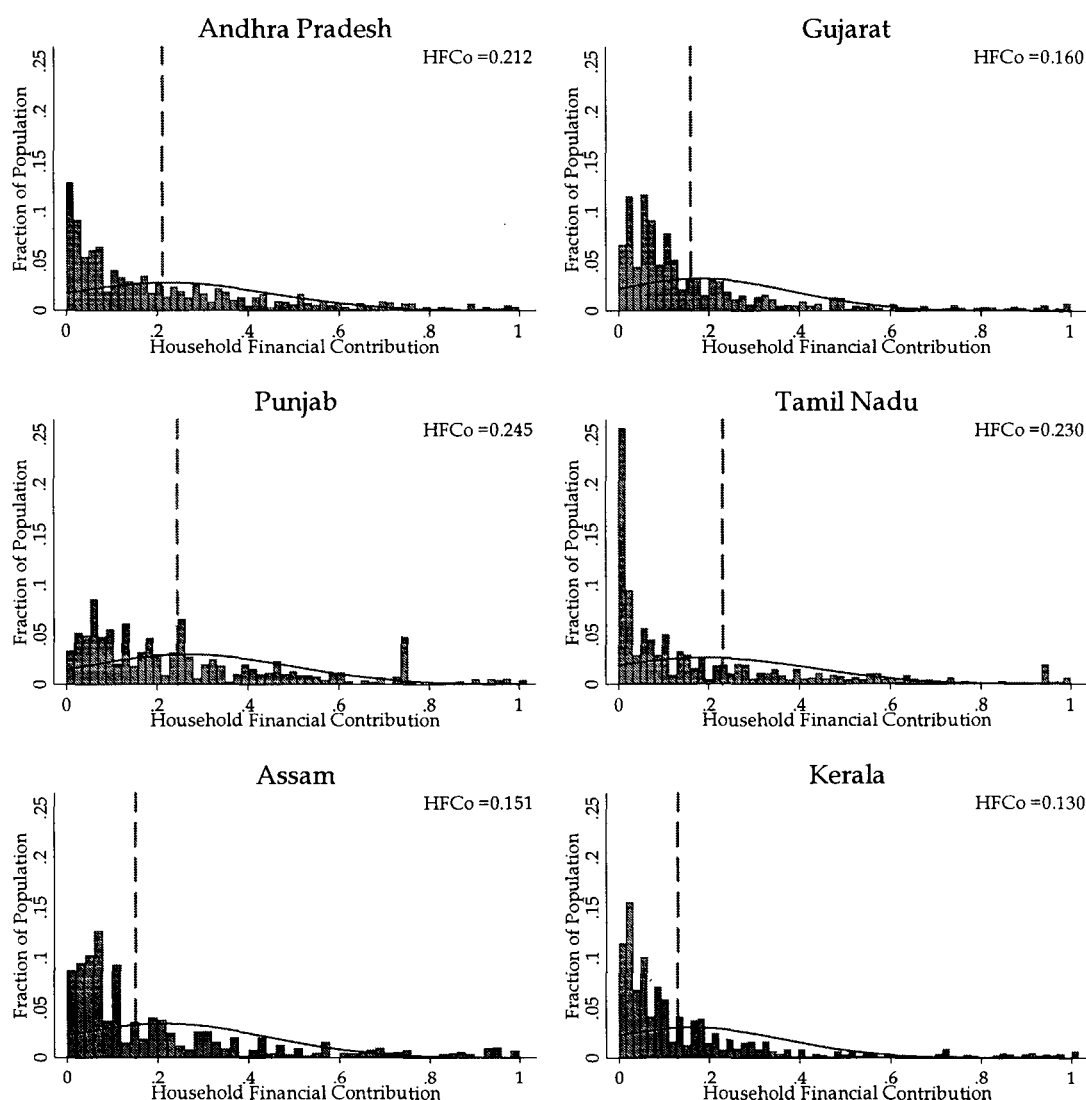
The state of Tamil Nadu shows the highest concentration of low HFC shares (at the left-hand side of the  $x$ -axis distribution), signifying egalitarian distribution of health payments, an observation which deserves a thorough examination, followed by Kerala and Jharkhand. Among the states, catastrophe is the highest in Punjab, where the use of private services even by the lowest 20 per cent stratum is high a fact which seemingly causes higher per cent of

<sup>10</sup> Households with total expenditure lower than the estimated subsistence expenditure, using food-based poverty line.

<sup>11</sup> Non-poor households pushed below the poverty line consequent on making health payments.

households facing catastrophe although the proportion of households living below the poverty line is low.

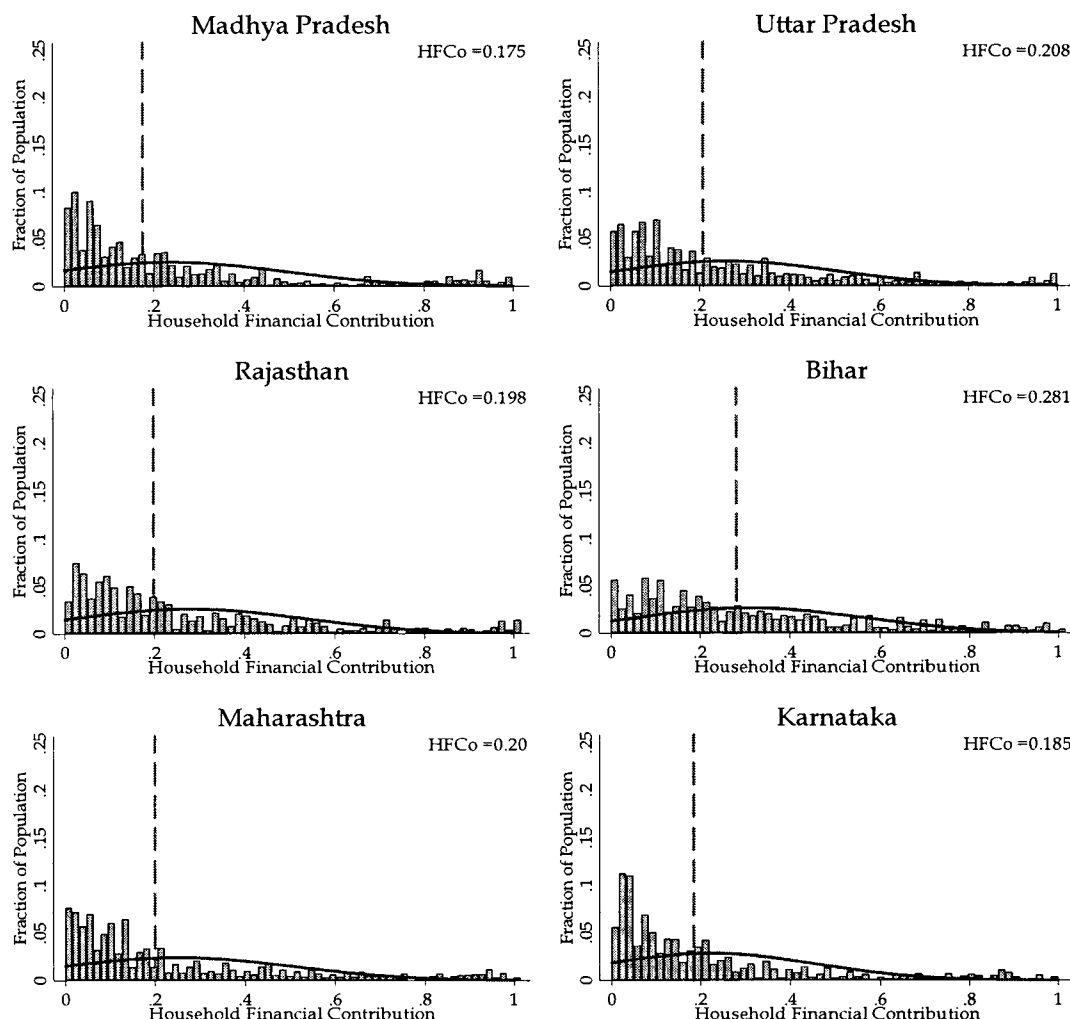
**Figure 4.1 (a)** Distribution of Household Financial Contribution (HFC)



A moderate degree of fairness is observed in the states of Maharashtra, Karnataka, Uttar Pradesh and Bihar, ranging from 0.670 in Maharashtra to 0.695 in Bihar. The right hand tail is thick in Bihar, Rajasthan and Uttar Pradesh, indicating thereby that inequity as well as substantial catastrophe at the household level. The threshold, among these states, indicates the highest catastrophe in the state of Bihar with 30 per cent of the households coerced below poverty line. Although, all the four states have nearly the same proportion of low income households, Bihar seems to be outwitting all the other states in terms of the HFC-

norm, which is the population-aggregated ratio of health expenditures and total their capacity to pay. The health service utilization pattern suggests that Bihar is the only state where the use of private health care services is popular.

**Figure 4.1 (b)** Distribution of Household Financial Contribution (HFC)

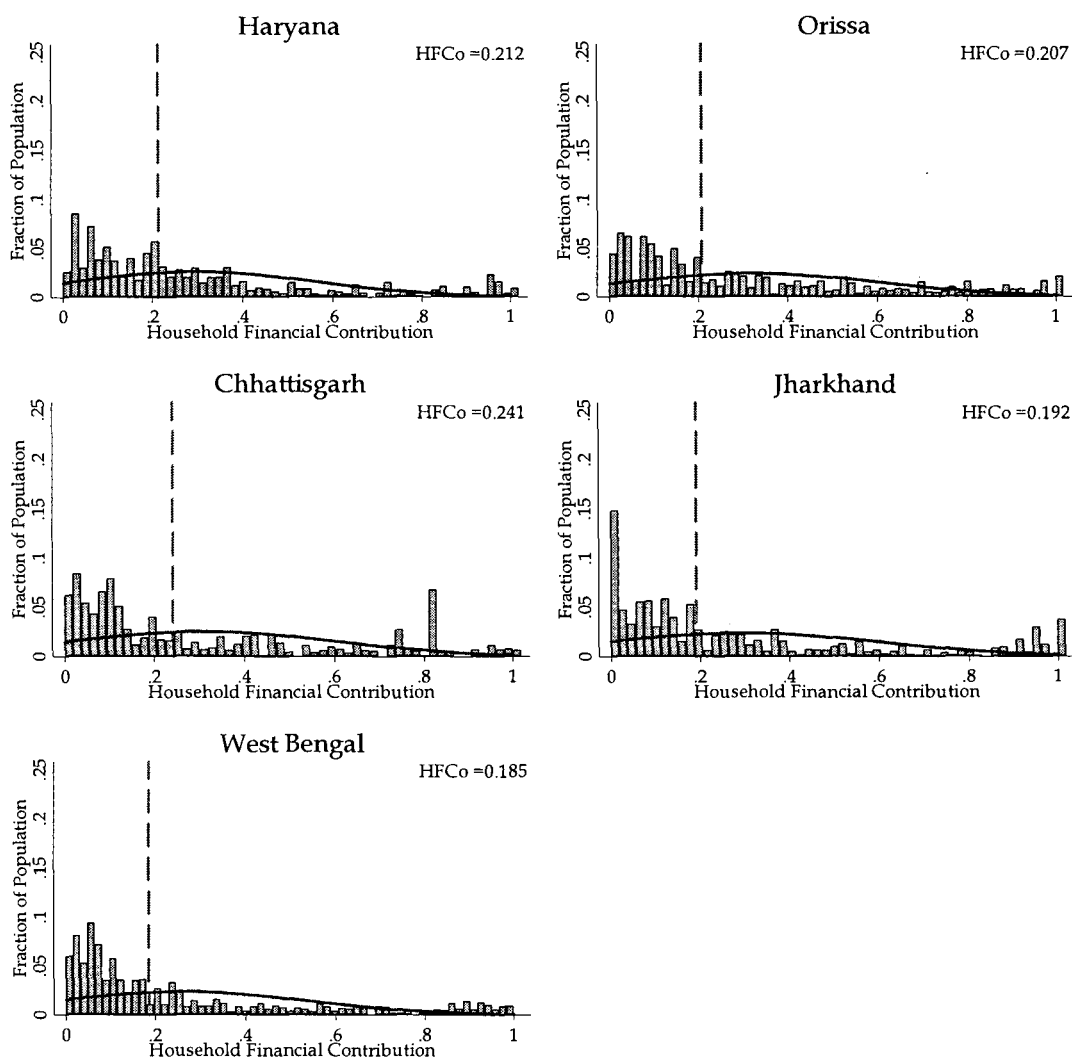


The fact that the states with the lowest scores of FFC also have high proportions of households with catastrophic spending reflects the general finding that there is a strong negative correlation between these two measures indicating the negative relation that exists between fairness in the system and catastrophe at the household level. The exception is Punjab, with a better scoring of FFC; but the burden of catastrophe in Punjab is spread over 25 per cent of the households. The third category comprises states with poor FFC scores,



and relatively unfair health system such as Jharkhand, Orissa, West Bengal, Chhattisgarh and Haryana.

**Figure 4.1 (c) Distribution of Household Financial Contribution (HFC)**



The overall distribution of the threshold is alarmingly high for almost all the states in India excepting Kerala, Gujarat and Assam, in which states around 10 per cent of the households end up making catastrophic payments involving more than 40 per cent of their capacity to pay. Looking at  $HFC_o$ , one may say that, since it is the total capacity to pay of the aggregated population, it represents the norm; but almost all the states show wider distribution patterns of the HFC. The reason for the existence of such a heterogeneous expenditure pattern, by households for receiving health care, is that the output of health costs is from multiplicity of

diseases which by no means can be aggregated. The expenditure is clubbed in such a fashion in order to facilitate comparisons of the cost of care across states. Further the composition of services rendered and disease patterns are different in the states, given the fact that the states remain at different stages of health transition.

#### **4.5 Discussion**

From the egalitarian view, access to health care is every citizen's right and ought not to be influenced by income and wealth (Williams; 1993). The egalitarian viewpoint suggests that a publicly financed system should predominate with health care distributed according to need and financed according to ATP. The foregoing discussion above has put forth a cogent reason to believe that health financing in developing nations relies heavily upon expenditures incurred by the households. The equality in the sharing of burden has culminated in the use of private insurance by the middle and the upper-middle classes, leaving the uninsured at the mercy of an inefficient public health system. With improvements achieved in the general health status of the population, India seems to have entered a new stage of health transition.

The prevalence of life style diseases indicates the growing needs of the population calling for a new set of provisions of specialty care, which will have significant consequences on the financial costs of health care. Another likelihood is that impoverishment due to illness will spread as we have opened up opportunities for international commercial suppliers of health services and insurance under the 1995 General Agreement on Trade in Services (GATS). The poor would thereby be forced to seek care from the private sector. In order to counter such an eventuality, a much more effective regulatory, coherent and holistic policy approach to the health sector than has been the case so far, is required. The great question that policies must confront first and foremost is whether such inequalities are desirable? After all, these are economic choices about the quality and the quantity of health care services as there exist multiple providers of health care services in our midst. Even the egalitarian philosophy assigns market-led interplay a role in the determination of who will use what type of facility, and makes efforts to recalibrate or maintain balance health care distribution through rationing of health care for the worse-off.

This exercise offers valuable insights regarding the extent of fairness in health spending in India given that individual households contribute a significant share of this spending. The observed differential fairness in health spending across states in India is to some extent indicative of differential access in provision as well as public-private share in such provision. However, in the current scenario of shrinking public provision, understanding of fairness in health spending assumes relevance towards streamlining public provision to make health spending equitable across income classes. This assessment of fairness in health spending puts certain states fairer than others, which is indicative of the provisioning in the system that does induce an adverse pattern in health spending vis-à-vis income levels. Such an understanding of fairness in health spending not only describes the departure from an ideal but also helps designing the kind of alternative strategies in provisioning towards attaining fairness in the system. Although a preliminary attempt at an empirical illustration of examining fairness in health spending in India, the results unfold further systematic inquiry into specifics of health provisioning to recognize what is unfair about it.

## APPENDIX 4A

### **Graphical Representation of HFC**

The household financial contribution (HFC) represents the household's financial burden due to health care system payments after meeting subsistent requirements. Ideally  $HFC_i$  is defined over a period of one month, a unit of time that encompasses many predictable fluctuations in income and expenditure for a single household. The summation of HFCs for households  $i, j, \dots, n$  gives the crude aggregated contribution to the health systems by the households, which is the total capacity to pay. The representation of the distribution of the proportion of financial contribution by the proportion of households is done so that the  $x$ -axis shows the household financial contribution, HFC, and the  $y$ -axis shows the fractions of households. On the  $x$ -axis, the normalized values of the ratio of health care payments to CTP are plotted, to avoid cases of health care expenses exceeding CTP i.e. negative contributions, because the health care system contributions can only be made from positive capacities to pay. Hence the population aggregated measure of the household financial contribution. The  $HFC_o$  norm can be represented by a vertical line in the representation of the HFC proportion versus population proportion in the graphs showing the total health care expenditure incurred by the society. Hence the  $x$ -axis represents the ascending capacities to pay by fractions of population on the vertical axis.

The FFC index ranges between 0 and 1; it approaches the minimum value of Zero, when households with lower financial contributions to health form the larger CTP and vice versa. The larger the share of the summed CTP belonging to households with zero contribution, the more unfair is the system. The FFC becomes smaller, approaching its lowest value of zero, when virtually all CTP belong to households which contribute nothing to the health system. Since the higher CTP is appropriated by better off households, the system would be raising revenues from low income households.

## CHAPTER FIVE

### SUMMARY AND CONCLUSIONS

#### 5.1 Summary and Conclusion of the Study

The study began with the aim of investigating the components and the structure of the cost of treatment which is essentially borne by households, evaluating the health system performance in different states of India and examining the link between income and preferences of the people with different economic statuses. Three major approaches were used to sought the relationship, namely the component decomposition of OoP expenditure, the characteristics of households under various threshold levels and finally the methodology of measuring fairness in the health payment mechanism, developed by WHO.

The basic objective of health care systems around the world is to meet people's health needs in an equitable and efficient manner. At the same time it is to be ensured that the health systems remain financially sustainable. Each system, given its historical evolution of health care systems, has embarked on different strategies to achieve this goal. The historical development of the health systems achieved a break though in the mid-1980s, during the crisis as a consequence of which reforms were introduced. During the period of reforms, the World Bank was visualized as a proprietary of health sector reforms in developing nations. These reforms were experimental in nature. They were introduced with the aim of ensuring that despite structural adjustments, the health sector should not lose its efficiency. This consideration led to significant growth of the private sector, which has been a common characteristic of health care systems in developing countries. In some countries, private sector participation was encouraged due to shortage of resources, inadequacy of systems to manage the delivery of care effectively and lack of political commitment and the passive disengagement of states from health provision. These were the countries in which health care needs were significant and were out of reach of the affordability of the masses, as the expenditure requirements to sustain health are considerable. Over the years, it has also become clear that public expenditures in these countries cannot cope up with these growing demands.

As a result, the private sector has become a major player in the health sector either because of government policy or lack of it. In India the share of health expenditure by the private sector is around 88 per cent. Similarly a large number of functioning health facilities are in the private sector. About 13 lakh of unorganised service sector enterprises are identified providing health services in India. They employ a workforce of roughly 20 lakh skilled, semi-skilled or unskilled persons, most of them are in the unregistered sector. They are the bane of the health service sector in India, causing untold misery to poor health seekers. Apart from filling up the gap left by the public sector (as it does not have adequate resources) no clear-cut policies are followed by them; the huge opportunities which remain untapped have been the potential attraction for higher degree of participation of the private sector in health care sector.

This has led firstly, to the emergence of a hybrid system in India, having both the public and the private sectors, with different incentive systems and provider payment mechanisms. These systems sometimes complement each other and in some areas compete with each other. Secondly, there is the significant presence of huge informal and less-qualified providers rendering various types of services to the population. Thirdly, private sector growth has taken place in an environment devoid of any effective regulatory mechanism in place. Fourthly, the division into public and private has come about on the basis of demand and supply conditions; given the financing position of governments, the public sector reflects more of the supply side conditions whereas the private sector represents demand side factors. This is because the government, by verticalising<sup>1</sup> programmes, is the decision-maker on questions like, how much to spend, on whom to spend, and also who will be allowed to consume. On the other hand the private sector is a more market-driven system in which consumer is the supreme demanding force. This is because consumers are not acquainted with the producers and do not have complete information about their own illnesses and the kind of health services offered to them (Rosenthal and Newbrander 1997). Fifthly, in most situations the most preferred provider payment systems is fee for services rendered with very little insurance coverage, a situation which has led to significant hikes of cost of care to unprecedentedly high levels.

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<sup>1</sup> The term coined by Sagar, 2003, Alternative Economic Survey, 2003-04.

There are obviously both positive and negative aspects to the role of the private health care sector. On the negative side, various concerns arising out of the growth of private sector focus on equity and efficiency. With the growth of the private sector, one of the concerns that arise is the scale at which private health care services are produced. Since scale of production is considered to have significant effect on cost and quality. In a competitive market, the scale of operations is expected to be optimized by employing the optimum number and the appropriate mix of services. Such optimization should minimize the overall cost of operations and enhance cost efficiency and effectiveness. The data on the private sector suggest that enterprises that provide healthcare facilities are quite small in size. These enterprises are small and may not be the most efficient size to optimize the mix of resources and minimize the cost.

Considering the direct expenditure on hospitalisation, the study suggests that efficiency is more in the operations than in the allocation of the care. This means that the health care market in the states is increasingly used by the well-off, depending on the economic background of the households and not on the ailments concerned. The public inpatient services are offered only to those who can afford them, like households with higher economic status. For households with higher economic status, the task of meeting the per capita expenditure on health care is not very difficult, as most of such households would depend upon their incomes or savings. But households with lower economic status have been depleting all their financing means to finance their hospitalisation episodes.

It's seen that private health expenditure is as high as two-thirds of total health expenditure. The burden is more among the sections that don't have any shielding, in terms of the insurance, reimbursement or free services. Insurance coverage for health care expenditure is very limited in India. About 4 to 5 per cent of total health expenditure is reimbursable under insurance or reimbursement schemes. Although the government initiated comprehensive health insurance schemes for employees in the government and the formal private sectors, the data show that these schemes cover only a small proportion of workers. Most of the informal sector remains inadequately covered.

The poorer group of states reported fewer hospitalisation episodes. But many studies have shown that poorer states bear higher burden of illnesses as they are at lower stages of health transition. The obtained treatment is only for a smaller proportion of the sick, as most of the illnesses remain untreated. The state with the highest monthly per capita consumption shows higher rates of hospitalisation, whereas Kerala remains an exception. Some of the inequality in the allocation of public health subsidies is explained by income-related differences in utilisation patterns of public facilities, with the rich using more care, if health care is considered a normal good.

Also, there exists a vast difference among the states in India, in the financing mechanism. Some states seem to be following egalitarian principles for providing services, with almost the same amount of contribution from the households in the same ability to pay echelon. Four reasons can be offered for high private health expenditures by households in different states. These are differences in

- financing mechanisms including provider payment system
- demographic trends and epidemiological transition
- production function of private health services delivery system
- dwindling financing support to the public health care system

The way health care expenditures are financed has important implications for the health care system. Illness imposes a heavy burden on the poor. A recent study estimated, for the poorest tenth of the population that the burden amounted to between 10 per cent (in Kerala) and 230 per cent (Uttar Pradesh, Punjab, Rajasthan and Bihar) the value of annual per capita consumption expenditure. The top 10 percent of the population, however, bore a relatively lighter burden, as the average cost of treatment was between 5 percent and 40 per cent of annual per capita consumption expenditure of that class (World Bank, 2001).

Regarding the components of the costs of care, the drugs and diagnostics formed the larger chunk of the pecuniary costs. Therefore it is argued that government should participate in modulating the costs of drugs ad diagnostics. Studies made earlier too have shown rise in the expenditure on drugs and diagnostics. Expenditures on diagnostics forms part of the inquiry. The high costs of diagnostics act as a deterrent to households seeking treatment. Households



then turn to rely upon traditional healers, which don't require diagnosis through modern methods, of diseases.

The study has shown that in the absence of reimbursement mechanisms, people borrow substantial amounts to finance health care. In some individual cases, borrowing has been as high as their annual incomes. The concern is that the relatively large amounts of OoP costs incurred by households, often causes cuts in consumption expenditure ultimately cutting edges on welfare of households and proving to be catastrophe to the households concerned due to the high financial burden.

Given its morbidity and mortality conditions, India certainly needs more resources to meet the health needs of its population. In the absence of any regulation and monitoring of the performance of private sector health spending, it is possible that additional income would buy costlier treatments, but households at the margin who bear the brunt of health care costs of sectoral reforms on health outcomes may benefit. The private provision of health care also diverts resources from important health needs, as they tend to function for their own interests. The different epidemiological conditions prevailing in different states demand proactive measures of the state.

The effects of government action get reflected to some extent in the vertical programmes run by government, but they need to be clubbed together. The study suggests that the high private expenditure implies that people do not buy "cure" but buy "care". Since more than 40 per cent of the disease burden comes from communicable diseases. It's predominantly the government's role to provide curative care to the population. However, the role of supply side factors in the growth of private health sector cannot be neglected. High expenditure by this sector may be also driven by the higher investments in technology. For example, the analysis does not makes it clear whether higher private expenditures on health care are driven by income alone or there is an impact of the technology required to cure diseases like malignancy, hypertension and angina pectoris which necessitate costly treatment and high technology. Many studies have found that the substantial investment in medical technology is certainly one of the factors which would have fuelled the rise of private sector spending.

## 5.2 Suggestions for Policy

The relationship between private health expenditures and incomes is considered important not only because it helps us understand the linkages between the real economy and the health sector but also because it needs to be ensured that the relationship remains sustainable in the long-run. Admitting the positive externalities of the private health care sector, there is still need to improve and strengthen the public services of health care, since protecting the poor and bringing about equity have remained the top priority goal of government.

The private participation in the health care sector has the potential to provide high quality services, the externalities of which the public sector could also utilize, if needed. It also imposes responsibility for government as customers by themselves may not have sufficient information about the quality of services offered by the private sector. Given the negative aspects of the private sector, such as information asymmetry, competition with the public sector for quality personnel and resources, preference predominantly of the urban middle and high income groups for treatment, there's immense scope for the public services to improve its strengths.

The need for the strong presence of the public sector cannot be ignored, since there may arise several undesirable outcomes fueled by the increase in private health care expenditures, market failures and things of that sort. The role of the government, therefore, to mitigate the negative consequences of private sector growth becomes important, particularly given the relationship between income and private health. At the same time, it is necessary to estimate unit costs of services and fix price ranges within which the public and the private sector should operate. In other words, benchmarks should be provided to compare the extent to which private pricing is unreasonable or exploitative. Such an exercise would also help spread awareness of how 'free' is 'free health care' and make choices in favour of investments that benefit the poor.

Regarding the mitigation of the exploitive rise in the price of drugs and diagnostics, measures of regulation and monitoring of drug quality, efficacy and safety, monitoring, pricing and rational use of drugs have to be streamlined by the formation of a federal drugs authority, as

already recommended by the Mashelkar Committee in 2002. Establishing autonomous bodies like the Tamil Nadu Medical Services Corporation (TNMSC) at the State levels for expanding public procurement systems and saving, cost heavily to the exchequer. Another area of concern is increasing R&D activity in the field of drug production and medical technology. Incorporating R&D would bring self-sufficiency and stability and would prevent use of irrational drugs in the country.

Given the existing linkages between income and private health expenditures, the private health insurance system might magnify the vulnerabilities of the health care system making it highly costly and affordable by only high income groups. The sheer size of health expenditures, once they have risen to high levels would make it impossible to control such expenditures. This is so particularly in countries in which the need for spending on health care is high; when most of these expenditures are OoP, insurance mechanisms cover but a small segment of the population, provider payment systems are based on fee-for-services, and the public and professional regulation and accountability systems are weak and non-functioning in many ways. . The high growth of private health expenditures is a cause of concern. It is not sure whether these expenditures are sustainable as they may result in several undesirable consequences making the health care system prohibitively costly, unaffordable high cost, unaffordable, and vulnerable to a provider payment system.

### **5.3 Limitations of the Study**

The limitations of the study need to be mentioned, as it has been an exercise worth doing. The health care expenditure used for the study excludes expenditure on financing the health care services of government at different levels. It is difficult to arrive at the relevant figures without a comprehensive knowledge of the rationale of the tax structures and of the data availability, in developing countries. Further, since the study is based on sought for annual in-patient care, it essentially ignores a huge bulk of payments made to health systems for out-patient medical care. Since the multiple frequencies of the visits make the exercise a cumbersome process and the criterion of the combining expenditures could be questioned on the ground that every out-patient visit does not essentially result in recovery from illness, but only leads to some sense of satisfaction to the patients concerned.

The FFC index reflects *both* vertical *and* horizontal inequity. The index is less sensitive in identifying the violation of the principle either of horizontal equity or of vertical equity or both. Although there are means to segregate both the effects; they do not seem to be scientific as the value of FFC is obtained by cubing. Secondly, it is worth noting that the index treats progressivity and regressiveness symmetrically. The index is based on the premise that *any* violation of the vertical equity principle is undesirable. A value of FFC below unity could arise because the better-off who pay a larger proportion of their ATP than the poor (the case of progressive payments), or because the poor pay a larger proportion of their ATP than the better-off (the case of regressive payments). The index does not help identify between the vertical and horizontal inequities. Thirdly, as the index is the difference between the populations averaged financial contribution it has properties of variations distinct from those of the average and therefore cannot be compared across diversified regions as the averages themselves differ.

#### **5.4 Scope for Further Research**

This work has developed and applied a variety of indicators; nevertheless several issues remain unresolved. First, it is necessary to refine the indicators in terms of the time period over which they are defined. The existing analysis does not consider the duration and periodicity of the expenditures. Further, the time period over which impoverishing health expenditure is defined may be endogenous to the level of income of the family. For a wealthy family, the appropriate period may be much longer depending on its ability to borrow against lifetime income. For a family living in absolute poverty and close to the margin of survival, the period considered may be as short as a week.

Another area requiring further research is the analysis of the cutoff points for defining the indicators in terms of the proportion of income at which health expenditure turns catastrophic, the poverty line and the amount of health spending that causes a worsening of poverty. Sensitivity analysis is one route currently under study, but this should be complemented with more behavioural analysis of the impact on household decisions and consumption.

Still another issue that remains to be explored relates to the definition of income loss from health care incidents. In terms of the projections and simulation exercises, the results for expansion at the sub-national level and by category of expenditure, suggests future work on developing cost-benefit or effectiveness measures, for financial protection. The costs of coverage are likely to vary substantially and make it possible to produce estimates for the policy-maker, of the tradeoffs of covering areas of the country and components of the package of services.

The results of the econometric analysis would suggest various avenues for future research as the implementation phase unfold itself. In the absence of longitudinal data it is impossible now to separate the effects of health reform from poverty, or to definitively evaluate the impact of policy changes such as the public health investment. It is important to highlight the need for longitudinal, programme evaluation work in order to effectively analyze the impact of health reform and to track health spending in relation to permanent income. Very few longitudinal data bases on health care spending exist, and collection of this type of data should be a priority to be built into the design of the formal evaluation of reform, as well as for strengthening health policy analysis at the international level.

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