IMPACT OF MICRO HEALTH INSURANCE-CASE STUDY OF SAMPOORNA SURAKSHA PROGRAMME IN KARNATAKA

THESIS

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By

SAVITHA

(Reg.No.: 081043HM08P03)

DEPARTMENT OF HUMANITIES, SOCIAL SCIENCES AND MANAGEMENT

NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA,

SURATHKAL, MANGALORE -575025

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DECLARATION

I hereby ***declare*** that the Research Thesis entitled '**IMPACT OF MICRO HEALTH INSURANCE- CASE STUDY OF SAMPOORNA SURAKSHA PROGRAMME IN KARNATAKA**' which is being submitted to the ***National Institute of Technology Karnataka, Surathkal*** in partial fulfillment of the requirements for the award of the Degree of ***Doctor of Philosophy*** in ***Humanities, Social Sciences and Management*** is a ***bonafide report of the research work carried out by me.*** The material contained in this Research Thesis has not been submitted to any University or Institution for the award of any degree.

(Signature of the Research Scholar)

Name : **Savitha**

Reg.No. : **081043HM08P03**

Department : **Humanities, Social Sciences and Management**

Place : **NITK, Surathkal**

Date :

CERTIFICATE

This is to *certify* that the Research Thesis entitled '**IMPACT OF MICRO HEALTH INSURANCE- CASE STUDY OF SAMPOORNA SURAKSHA PROGRAMME IN KARNATAKA'** submitted by **Savitha** (Register number: **081043HM08P03**) as the record of the research work carried out by her, is *accepted as the Research Thesis submission* in partial fulfillment of the requirements for the award of degree of **Doctor of Philosophy**.

Dr.K.B.Kiran

Research Guide

(Signature with Date and Seal)

Chairman-DRPC

(Signature with Date and Seal)

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ABSTRACT

Micro health insurance (MHI) is a pivotal and innovative health financing mechanism that mitigates iatrogenic poverty thereby providing financial protection to the informal sector. However, the limited evidence from India does raise research questions regarding the effectiveness of MHI schemes in achieving these objectives. Thus, this thesis focuses on this area of research gap in MHI to evaluate its impact on (i) financial protection, (ii) social inclusion, (iii) resource mobilization, and (iv) the role of scheme characteristics on its performance. Sampoorna Suraksha Programme (SSP), a MHI scheme in Karnataka was chosen to study the research gap on impact and performance using a descriptive survey research methodology using self-administered validated questionnaire. Multi-stage, clustering design with random selection procedures was adopted to collect quantitative data from 416 insured, 366 newly insured and 364 uninsured self-help group (SHG) households of Dakshina Kannada, Uttara Kannada and Gadag districts in Karnataka State. Qualitative data was collected using in-depth interviews with network hospital staff, field staff and administrators of SSP, and focus group discussion with the members of SHG households.

The results on financial protection indicated a lower out of pocket expenditure and catastrophic health expenditure, higher utilisation of inpatient services, desired health-seeking behaviour and decreased borrowing for the insured households. There was no impact on access to care and social inclusion in enrolment. On the contrary, the inadequate resource mobilization evident from the study resulting from high claims ratio and lower premium collection would pose a threat to the long-term financial sustainability of SSP. The study indentified certain design features that influenced the outcome of SSP. The findings of this study provide adequate evidence to substantiate the effectiveness and positive impact of SSP on financial protection and MHI certainly is advocated as a financing alternative to mitigate iatrogenic poverty.

Key words: Micro health insurance, impact, financial protection, health financing, catastrophic.

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ABBREVIATIONS

BPL	Below poverty line
CHE	Catastrophic health expenditure
FGD	Focus group discussions
FP	Financial Protection
FS	Financial sustainability
HI	Health insurance
HSB	Health seeking behavior
ILO	International Labour Organization
IRDA	Insurance Regulatory and Development Authority
MDGs	Millennium Development Goals
MFI	Micro finance institution
MHI	Micro health insurance
MHO	Mutual health organizations
NCMS	New Cooperative Medical Scheme
NGO	Non-government organization
NSSO	National Sample Survey Organization
NCMH	National Commission on Macroeconomics and Health
OOPE	Out of pocket expenditure
RM	Resource mobilization
RMHC	Rural Mutual Health Care
RSBY	Rashtriya Swasthya Bhima Yojana
SEWA	Self- Employed Women's Association
SI	Social inclusion
SHG	Self help group
SKDRDP	Shri Kshetra Dharmasthala Rural Development Project
SSP	Sampoorna Suraksha Programme
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Background

The poor face a wide variety of health and non-health related risks that include death, unemployment, natural disasters, fire outbreak and death of livestock. Illness is the second most frequent risk after crop failure in rural areas and the most common shock faced by poor in urban areas that jeopardizes normal life of people with long-term negative effect (Dercon 2004). Ill health causes poverty through loss of wages, catastrophic expenses and repeated medical treatment (World Bank 2004). Spiraling health care expenses often lead to impoverishment of poor households who have to borrow money, mortgage or sell assets to pay for healthcare expenses, or just forgo treatment (Wang et al. 2005). On the other side, poverty is associated with ill health due to low income, high debt and social expenses (Krishna 2005). There is an intricate connection between poverty and ill health resulting in indebtedness and impoverishment. Hence, health has highest priority in international development goals as an issue of economic growth and not just a medical issue (WHO 2000). Realising fundamental association between health and development, Millennium Development Goals (MDGs) considered the achievement of an equitable provision of health care as one of the priorities for all the nations, especially the developing countries. Health security should be an integral part of any poverty reduction programme. This is more important in developing countries since majority of the population lives in rural areas with scanty health infrastructure or work in informal sector. These countries account for 84 percent of the world's population, 90 percent of the worldwide burden of disease, 20 percent of the global gross domestic product and 12 percent of the global health spending (Gottret and Schieber 2006). International Labour Organisation (2005) highlights the gloomy picture of 1.3 billion people lacking access to affordable and effective health care facilities and 44 million households facing financial difficulties due to high medical expenditure. Many nations promised to adopt Alma Ata declaration 'Health-for-all' of 1978 that urged countries all over the world to provide universal access to quality health care to their population by the year 2000. Such an intervention can reduce medical illness induced poverty, known as iatrogenic poverty by curtailing negative impact of ill health on the life of people.

The performance of the Government of India in the health sector is unsatisfactory. India has 16 percent of the world's population, 18 percent of the world's mortality, 20 percent of the world's morbidity but its healthcare expenditure is a miniscule one percent of global health expenditure (WHO 2004). The health care expenditure is 3.6 percent of GDP in 2006; almost 75 percent of total health spending in India is private expenditure, and 25 percent is public expenditure (WHO 2009). Of the total private expenditure, 91.4 percent is the out-of-pocket expenses (OOPE) and point-of-service expenditure. Global comparison reveals a dismal picture in terms of central government outlay as a percent of total outlay in the social sector. In 2003, India's outlay was 1.63 percent whereas Sri Lanka (5.1%), Nepal (5.44%), Tunisia (5.7%) and other comparable underdeveloped countries had higher outlay for health (NCMH 2005). At about 1.36 percent of the GDP in 2008, India's public health spending appears even poorer in comparison with China, Sri Lanka and Thailand (1.95%, 1.8% and 3.06% respectively) (WHO 2009).

Insufficient funding for health care by governments, inadequate health financing mechanisms, poor delivery of health care especially in public facilities (Patel 2010) and excessive reliance on unregulated high cost private providers has resulted in massive OOPE and consequent impoverishment of the poor. Poor families have to resort to desperate measures such as borrowing, sale of assets or postpone care when sick. In fact, 40 percent of the families hospitalised borrowed money or sold assets, which establishes the inimical position of the poor due to lack of effective health insurance system (Peters et al. 2002). Poorest were 2.6 times more likely to forgo the health services than the richest and one quarter of Indians seeking care plummets below the poverty line (Peters et al. 2002). In 1995-96, 15 percent of rural ailments were untreated that increased to 28 percent in 2004. The story is no different in urban areas. The percent of ailments untreated due to the financial barriers was 10 percent in 1995-96 and 20 percent in 2004 (NSSO 2004**).** In addition, indirect cost of care is high in rural areas due to travelling to nearby providers in city or towns and loss of wages, as most of them are daily labourers (Sodani 1999). Thus, high medical cost and OOPE has given rise to iatrogenic poverty (Messen 2003). Managing the health risks has been a challenging task for the poor households in India.

There are different ways of reducing the OOPE related to use of health services namely government provision of health services, social insurance, private health insurance and micro health insurance (MHI) schemes. In India, successive governments gave least importance to health expenditure in their budgets. The government spending on health as a proportion of GDP was 1.17 percent in 2009, which is very low compared to other countries (WHO 2009). India's Five-Year Plan Programme targets to achieve a high rate of growth in all sectors. However, the government has decreased its plan outlay on health rather than increasing it (Planning commission of India 2010). Public sector cannot mobilise the required resources to provide free health care due to large informal sector consisting of low-income population. In addition, rich have squandered government health subsidy aimed at the poor. World Health Organisation's report observed only one tenth of it going to the poorest while the richest reap one third of the subsidy (Ramachandran and Rajalakshmi 2009). Hence, the performance of the government in the provision of health services is inadequate.

Another health financing mechanism is Social Health Insurance (SHI). Main reasons for choosing SHI as a method of health care financing are that SHI can provide a stable source of revenue, a visible flow of funds into the health sector and a combination of risk pooling with mutual support. Nevertheless, it is not a solution to plethora of health financing problems in India due to a large share of informal sector in the economy. In fact, organised sector employs only 9.4 percent of the total workforce in India and the rest of working population is in unorganised sector (Datt 1997) that does not have social security benefits including Employees' State Insurance and Central Government Health Scheme. Therefore, scaling up of SHI in India is limited. Hence, a large proportion of total health expenditure is private health expenditure. It was 78.43 percent in 1975-76, 77.8 percent in 1998 and 75 percent in 2009 (WHO 2009). The OOPE exposes poorer section of the society to impoverishment and low quality of life. Thus, private or micro health insurance as an important mechanism to reduce household catastrophic payments has emerged (Xu et al 2003; WHO 2000).

Health insurance provides coverage against unexpected events that causes financial loss. Based on the principle of risk pooling, it compensates economic loss such as medical charges and income loss of daily labour due to illness for insured individuals. Since mid-80s when health insurance got the recognition as a separate industry, it became an important mechanism to pool risks faced by the people. In addition, socio-economic changes such as increased awareness, higher literacy rates and brand development by insurance companies contributed to the growth of the industry. TPAs (Third Party Administrators) have revolutionised the administration of policies, settlement of claims, servicing of policyholders, technical support and customer services.

In 1987, private health insurance (PHI) in India took birth with Mediclaim policy. Despite 25 years of its existence, the coverage of PHI is limited to less than 5 percent of population (Data monitor 2005). It is the fastest growing segment of the non-life industry in India. It is almost one fifth of the total non-life insurance market and is the second biggest component of the total non-life premium in the country (Mayur, 2009). However, it is underdeveloped and lacks deep penetration especially in rural market. The main reasons for the slow development of rural insurance market were i) high administration costs, ii) lack of regulation and control on provider behaviour, iii) unaffordable premiums, iv) high claim ratios, v) exclusion of many diseases from the coverage and vi) co-variate risks (NCMH 2005). Private insurance, being expensive and urban-centric is unaffordable by majority of population working in informal sector. Thus, inadequate government spending on health services, ineligibility to avail social health insurance and exorbitant private health insurance narrow the options available to the poor in informal sector to either MHI or OOPE. The World Bank and other multilateral and bilateral agencies have stressed the need of PHI for better-off section of the society and MHI for those below the poverty line. Thus, micro health insurance has emerged as a viable option to protect the poor from iatrogenic poverty, improve access to health care and better health status.

1.2 Micro Health Insurance

Micro health insurance is a type of micro insurance that finances health care expenses through the principle of risk pooling. MHI is different from the PHI, i) individuals can not choose a coverage level at a given price (usually low premium), ii) premium is based on community rating and iii) group contract distributed through nodal agency such as non-government organisation (NGO) or micro finance institution (MFI). MHI, community health funds (CHF), mutual health organisations (MHO), community based health insurance (CBHI), rural health insurance, revolving drugs funds, and community involvement in user-fee management have been referred as community-based financing (Preker et al. 2002). MHI is any not-for-profit insurance scheme aimed primarily at the informal sector and formed based on a collective pooling of health risks, in which the members participate in its management (Musau 1999). MHI broadly covers financing schemes that have three key features; community control, voluntary membership, and prepayment for health care by community members (Hsiao 2004). These schemes target low-income households living in the same district or the members of MFIs. The membership is usually voluntary unlike SHI.

As a health financing mechanism, MHI aims to provide adequate financial resources to ensure timely access to health care services and help individuals escape from the poverty trap caused by illness. MHI schemes require small contributions from the community members to provide the pooling benefits according to the local needs of the people. These tailor-made products cannot offer generous benefit package due to the resource constraints owing to low income of the target population. However, MHI schemes intend to provide financial protection to poor families and safeguard them from falling into indebtedness or impoverishment. Additional benefits are low transaction costs and better health behaviour through the health education. MHI has the advantage of scientific organisation of the private insurance and advantages of local knowledge and trust enjoyed by NGOs at the grass-root level. Hence, the design and implementation depends on the local context. MHI brings down the burden of health care expenditure on poor, improves the health status, increases utilisation of services and reduces the financial barriers to access health care

while balancing the local requirements and affordability (Preker et al. 2002). Due to considerable flexibility in the contract with the insurance companies and the hospitals, scaling up of MHI is easier.

MHI deals with the information asymmetry problems with efficacy through certain design features and implementation mechanisms. Due to the constant flow of information among the people in rural communities, information asymmetry will be less prevalent and much lesser the possibility of adverse selection. Over-utilisation by some members results in higher premiums and cost shifting to other members who would disallow moral hazard practices. Generally, NGO initiated MHIs connect the community and formal insurance companies and hence, improve the participation and efficiency. Despite these advantages, limitation of small pool due to modest size of membership, inadequate benefit packages, lack of external subsidies, non-financial barriers to access health care, limited management capacity and lack of awareness inhibit the successful working of such schemes (Ranson 2003).

The evolution of MHI began in Africa with Bamako initiative in 1987, followed by Germany and Japan in which MHI preceded the establishment of SHI. The poorer countries in the world are still experimenting with this mechanism. In 1952, MHI activities started in India with Student's Health Home scheme in West Bengal. Since then, a few micro insurance schemes were designed and implemented by NGOs or MFIs adopting different models of MHI as an extension of the existing micro-credit activities. Insurance Regulatory and Development Authority (Micro-Insurance Regulations 2005) require the private/public health insurance companies to develop and distribute micro insurance products to rural areas. These insurance companies tied up with the NGOs to meet the regulatory requirements in order to reduce the transaction costs and overcome informational disadvantage. This promoted NGO mediated health insurance schemes for the low-income people in India. Sampoorna Suraksha Programme (SSP), VHS (Voluntary Health Services), BAIF (Bharat Agro Industries Foundation), DHAN (Development of Human Action), RAHA (Rajgarh Ambikapur Health Association), SEWA (Self Employed Women's Association), ACCORD (Action for Community Organisation, Rehabilitation and Development), Karuna Trust, Yeshasvini Trust, and Navsarjan are some of the

successful MHI schemes. A comparison of SSP with other MHI reveals that except Karuna, Yeshasvini and SSP, most of the MHI schemes require co-payments from insured individuals (Table 1.1). Moreover, southern states of India dominate in terms of the number of operating schemes in India because of superior social organisation. Most of the MHI schemes exclude certain diseases from risk coverage except VHS and Karuna Trust.

There are three models of MHI namely the provider model, insurer model and linked (partner agent) model. In the provider model (Types I), the hospital provides insurance facility along with the delivery of health services. In the insurer model (Types II), voluntary organisation or NGO offers the insurance and purchases health services from the hospitals. In the partner agent model (Types III), NGO or voluntary organisation purchases the insurance from the insurance companies and health services from the providers. Partner-agent model appears to be the dominant institutional arrangement for the delivery of the MHI in India. This model enables access to existing target market, educate and encourage preventive measures, collection of premium, disbursement of the claim amount, use of existing distribution channels and combines credit/ savings activities with insurance to realise economies of scale and scope. Economies of scale mean decline in the ratio of expenses to premium as the volume of premium increases due to increase in branches and informational advantages (Hensely 1962). Property and liability insurance companies were found to have economies of scale until an optimum size of premium volume due to the ability to attract better management talent and better use of resources (Hammond et al. 1971). Economies of scope refer to reduction in the average cost (sharing of inputs, brand names, managerial expertise, shared marketing) due to diversity of products offered (Cummins et al. 2007).

Table 1.1 Comparisons of Micro Health Insurance Schemes in India

Name, acronym, location, year	Target population	Types of MHI	Unit of enrolment	Premium per person (₹)	Coverage (% of target population)	Ceiling on benefit (₹)	Provider payment	Benefit package
Student Health Home, West Bengal (1952)	Full time students	Provider	School or college	4 per student	5 lakh students	Unlimited	Third party	Inpatient
VHS, Tamil Nadu (1972)	Population of catchment area	Provider	Family	Sliding scale 80	12%	Unlimited	Third party	Inpatient
RAHA, Chhattisgarh (1980)	Poor living in catchment area	Insurer	Individual	20	58%	1200	Third party	Inpatient
ACCORD, Tamil Nadu (1992)	Scheduled tribe	Provider	Individual	22	36%	1500	Third party	Inpatient
SEWA, Gujarat (1992)	SEWA Union members	Linked	Individual	100	10%	2000	Insurance company	Inpatient
DHAN foundation, Tamil Nadu (2000)	Members of community banking scheme	Insurer	Individual	100	40%	10000	KKVS reimburses patients	Inpatient
BAIF, Maharashtra (2001)	Members of community banking scheme	Linked	Individual	225	58%	5000	Insurance company reimburses	Inpatient
Karuna Trust, Karnataka (2002)	Scheduled tribes and scheduled caste	Linked	Individual	30	31%	2500	Third party payment	Inpatient
Yeshasvini, Karnataka (2003)	Members of co-operative societies	Insurer	Individual	120	48% in 2009	200000	Cashless treatment	Surgery Outpatient
SSP, Karnataka (2004)	SHG members of SKDRDP	Linked	Family	350	32% in 2011	5000	Cashless treatment	Inpatient

Source: Devadasan et al (2006), Own compilation

1.3 Statement of the Problem and Research Questions

Health care has been a problem area for India, a nation with a large population that has a substantial portion living below the poverty line. Consequently, health care access and equity have become the major thrust areas. Owing to inadequate approach of successive governments, public sector continues to face the problems of poorly motivated work force, inadequate funding and other issues, especially in rural and remote areas. These factors force the poor people to rely on expensive private sector health care providers. Moreover, PHI is underdeveloped in India, the world's 5th largest economy. Hence, an effective financing policies are crucial to mitigate iatrogenic poverty caused by high OOPE and it is highly imperative to undertake studies to evaluate its effectiveness.

MHI is a poverty reduction strategy in developing countries but the empirical evidence on the effect of such schemes on the household strategies to finance medical expenditures is limited. While there is a reason to believe that households in different contexts cope with health shocks differently, determining the pattern across countries is conceivably of great interest. It becomes important to understand the risk coping mechanism employed by the people in the face of major health adversity in India, as socio-economic factors are different from other countries.

In India, the success of microcredit operations motivated NGO initiated MFIs to diversify the product portfolio into the micro insurance sector. Promulgation of such schemes on a large scale necessitates constant evaluation of existing programmes. However, far too little attention was given on the effectiveness of the MHI schemes in providing financial protection and reducing impoverishment. Advocates of MHI highlight its potential of increasing access and utilisation of care, reducing OOPE, catastrophic health expenditure (CHE) and lesser reliance on ex-post risk coping strategies (termed as financial protection). MHI is expected to include the poorest as members (social inclusion) and be financially sustainable (depends on the resource mobilisation). Strategic purchasing, technical design features, management and organisational characteristics of MHI schemes determine the performance in terms of financial protection, social inclusion and resource mobilisation. Little research has been carried out to test these propositions in the Indian context. The

efficacy of MHI has to be established before promoting them on a pan-India basis.

Sustainability of MHI schemes increases if the policymakers extend financial support in the form of subsidies, technical assistance and links to more formal financing arrangements. This is possible only if they are convinced of the benefits and problems faced by MHI schemes. Because of paucity of evidence on the impact of MHI; existing schemes, policy makers and regulators cannot push MHI as a viable mechanism to achieve health system goals.

There is an increasing concern that enrolment in MHI schemes remains low. The low level of enrolment in the MHI schemes may be due to the absence of evidence on the effectiveness of MHI in reducing iatrogenic poverty. Certain scheme characteristics may negatively affect enrolment, financial protection, social inclusion and mobilisation of resources. An understanding and assessment of the contribution of various characteristics of MHI schemes on its performance facilitates the definition of critical success factors and the need to consider certain characteristics as constraints while designing community-financing schemes. Identification and modification of such characteristics is required to keep MHI as a sustainable and viable health financing mechanism. This would help existing MHI schemes and newer schemes to design and modify the benefit package for better impact.

In the international literature, majority of studies were on the schemes that were supported by the governments, large or international organisations and not NGO initiated MHIs. Moreover, the available literature on financial protection is mainly from Africa and recently from China. The application of the findings of these studies to the Indian context is undesirable since the context and the environment in which MHI operates differs all across the world. Moreover, the schemes in Africa (known as MHOs) are different from the Indian schemes. NGOs in India initiated many schemes along with a broader development programme that leverages the trust, a crucial element for the success of the MHIs. Most of the MHI models are linked models, not found in Sub-Saharan Africa and other countries. In addition, the community does not participate in overall decision-making process; instead, the professionals perform technical functions. MHI is the most promising health care financing alternative and it is highly relevant to assess its impact on members and the effect of characteristics on

the outcome achieved by the schemes. To study the impact of MHI, we have chosen a case of Sampoorna Suraksha Programme, a MHI programme in Karnataka and identified the following questions.

1. What is the impact of SSP on financial protection of members?
2. What is the impact of SSP on risk coping strategies?
3. What is the effect of SSP on social inclusion of the poor?
4. What is the impact of SSP on resource mobilisation?
5. Do SSP characteristics influence its outcome?

1.4 Research Objectives

The purpose of this research is to assess the impact of MHI on the members and add to the existing knowledge that would help policymakers and scheme administrators to bring about desirable changes in the scheme to realise better outcome. The research questions are addressed by specific research objectives.

1. *To assess effect of SSP on financial protection.*
   1.1 To learn the impact on access to health care.
   1.2 To study the impact on health seeking behaviour of members.
   1.3 To understand the effect on health care utilisation.
   1.4 To assess the impact on out of pocket expenses.
   1.5 To know the effect on catastrophic health expenditure.
2. *To evaluate the impact of SSP on risk coping strategies of households.*
   2.1To understand the impact of SSP on coping strategies used by the households to meet health expenditure.
   2.2 To assess the effect of SSP on medical cost induced borrowing.
   2.3 To know the effect of SSP on the use of savings to meet medical expenses.
   2.4 To learn the impact of SSP on the sale of assets to pay for medical expenses.
3. *To study the impact on social inclusion of the poor.*
   3.1 To look into the determinants of enrolment in SSP.
   3.2 To understand the inclusion of the poor in SSP.
   3.3 To explore the reasons for joining SSP.
   3.4 To study adverse selection in SSP.

4. To analyse the impact of SSP on resource mobilisation.

4.1 To identify the amount of resource mobilised by SSP.

4.2 To assess financial sustainability of SSP.

4.3 To explore the impact of SSP on patient perceived quality of care.

5. To explore the effect of characteristics of SSP on financial protection (FP), enrolment and resource mobilisation (RM).

5.1 To study the role of technical characteristics and the performance of SSP in terms of FP, enrolment and RM.

5.2 To explore the management related factors and its influence on enrolment and RM.

5.3 To learn about the relationship between the organisational characteristics and financial sustainability.

5.4 To understand the role of institutional characteristics on the viability of SSP.

1.5 Research Hypothesis

Based on the extensive literature review pertaining to the current field of investigation, the study hypothesises the following for further investigation.

1. H1: SSP increases access to care for insured individuals compared to uninsured and newly insured individuals.

Insured need not incur high OOPE for treatment that reduces the financial barriers to access care. Income acts as a major barrier to access care that prevents low-income people from seeking care when they fall sick (Gotsadze 2005). Since SSP compensates low income by the insurance coverage, insured individuals can access timely care.

2.*H2: Insured members seek care from formal private sector providers than other providers (including public facilities or informal care) compared to newly insured members and uninsured individuals.*

SSP insured individuals would seek care at the private facilities due to superior quality of the network hospitals and higher level of awareness owing to frequent health education programmes conducted by SSP. Network hospitals are expected to provide quality care at agreed price to insured members as per the

contractual agreement between the hospitals and SSP. Treatment in these hospitals would be less expensive that reduces financial barrier to access care.

3. H3: SSP increases hospitalisation among insured members of SSP compared to uninsured and newly insured individuals.

SSP covers hospitalisation expenses, insured need not incur higher expenses compared to uninsured and newly insured individuals. Hence, SSP removes the financial barriers to utilisation resulting in higher hospitalisation.

4. H4: SSP reduces OOPE associated with illness for insured members due to claim benefits.

By providing financial assistance during hospitalisation, SSP reduces OOPE.

5. H5: SSP reduces CHE for insured individuals compared to newly insured and uninsured individuals.

SSP reduces the direct cost of treatment; there would be lower incidence of CHE for insured individuals.

6. H6: SSP reduces the reliance on other strategies with negative consequences (borrowing, use of savings and sale of assets) for insured individuals compared to newly insured and uninsured individuals.

SSP meets the major part of the total medical cost and stabilizes the expenditure that fluctuates due to illness. Hence, the need for additional finance was less for SSP members.

7. H7a: Incidence of borrowing would be less for SSP insured compared to uninsured and newly insured individuals.

SSP provides financial benefits to insured; hence, the need to borrow would be less for insured individuals compared to uninsured and newly insured individuals.

8. H7b: Insured individuals compared to uninsured and newly insured individuals would borrow lower amount.

Since SSP covers hospitalisation expenses, the amount of borrowing would be lower for insured compared to uninsured and newly insured individuals.

9. H8a: Incidence of use of savings will be less for insured compared to uninsured and newly insured individuals.

SSP covers most of the direct expenses of hospitalisation; hence, insured use savings less compared to uninsured and newly insured individuals.

10. H8b: Insured use lesser amount of savings compared to uninsured and newly insured individuals.

Due to financial claim from SSP, members have to spend small amount to meet indirect expenses or outpatient expenses.

11. H9: SSP insured sell fewer assets compared to uninsured and newly insured individuals.

Owing to SSP, the need to sell assets for insured was not as much as that for uninsured or newly insured individuals since SSP covers most of hospitalisation expenses.

12. H10: SSP includes the poorest as members

Social inclusion is one of the main objectives of any health care financing mechanism including MHI. SKDRDP (Shri Kshetra Dharmasthala Rural Development Project), a socio-economic development programme launched SSP targeted at poor households in the informal sector. Hence, larger percent of poorest would be SSP members.

13. H11: SSP does have adverse selection

SSP enrols entire household as the unit of enrolment. However, lack of medical examination of prospective members and waiting period exposes SSP to adverse selection. Moreover, the upper age limit for enrolment is 80 years that encourages older high-risk individuals to enrol in SSP.

1.6 Scope of the Study

Recent developments in health financing have heightened the need for MHI to achieve universal health coverage in India. We do not have adequate empirical evidence to support such schemes, both the impact on members and wider implications for the society in India. Hence, this study focuses on the impact of SSP on financial protection and social inclusion. It also aims to know demand and supply factors that determine enrolment. Other aspects looked into were resource

mobilisation by SSP and the influence of technical, management, organisational and institutional factors on financial protection, social inclusion and enrolment. The questionnaire was designed to collect information on the basic socio-economic characteristics, access and utilization of health services, health-seeking behavior, cost of treatment, quality of care and risk coping methods. Qualitative data includes barriers to access health care and enrolment and participation in scheme management. Premium and claims data was obtained from annual reports and SSP head office. Cross-sectional survey was carried out in Karnataka to collect qualitative and quantitative data from 416 insured households, 366 newly insured household and 364 uninsured households of SKDRDP in the first half of the year 2011. The outcome of the present study would guide the policymakers and the scheme administrators to provide more impetus to expand and scale up MHI schemes, especially when government of India is focusing on universal access to health care by 2015.

1.7 Organisation of Thesis

The thesis is structured into 7 chapters. Chapter 1 explicates background information, context and relevance, research problem, objectives and hypothesis. Chapter 2 reviews the literature on financial protection, social inclusion, resource mobilisation and design characteristics influencing outcome. Chapter 3 explains the research methodology, study settings and Sampoorna Suraksha Programme. Chapter 4 describes the socio-economic characteristics of sample households and explains the impact of SSP on access to care, health seeking behaviour, utilisation of care, OOPE, CHE, and risk coping strategies (Objective 1 and 2) . Chapter 5 investigates the social inclusion, determinants of enrolment and analyses adverse selection in SSP (Objective 3). Resource mobilisation and the association of features of SSP and its performance is the theme of chapter 6 (Objective 4 and 5). The last chapter summarises the thesis findings and provides policy implications.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

This chapter explains the concepts used in the study and reviews the relevant literature with a view to derive conceptual map and design research methodology. Firstly, a description of the role of MHI in achieving health system goals highlights the relevance of the study. Next section discusses the review of literature on selected themes such as financial protection (including risk coping strategies), social inclusion, adverse selection, resource mobilisation and determinants of performance of MHI.

2.2 Health System Goals and the Role of Micro Health Insurance

Universal coverage of health services is the main agenda of many nations' development programmes including India. It requires access to an affordable health care to all without regard to one's ability to pay. This idea of equity in access and financing stipulates health care system in any country to achieve better health status and health equality, to be responsive to people's non-medical expectations and to ensure fairness in financial contribution (WHO 2000). This broad objective can be broken down to equity in utilisation, financial protection and sustainability. Equity is interpreted in relation to both income and gender equality of access to health care. Health system performs four main functions namely i) provision of health services, ii) resource generation (investment and training), iii) health financing (risk pooling) and iv) government stewardship (governance and oversight) to achieve these objectives (WHO 2000).

Among these main functions, health-financing sub function is to be prioritised in India due to its impoverishing effects on the poor. MHI is one of the health-financing mechanisms that involve the provision of adequate financial resources to ensure timely access to public and private health care services. The functions of MHI include revenue collection, risk pooling and strategic purchasing (WHO 2000). In the revenue collection function, determination and mobilisation of the financial resources from the households, enterprises and other organisations takes place that in turn depends on enrolment and ratio of prepayment. Enrolment depends on affordability of premium, unit of membership, timing of the collection of premium, quality of care offered, and geographical location of the household (Carrin et al. 2005). The pooling function allows the sharing of financial resources between healthy and sick that

involves accumulation and management of contributions of members to spread the risk of illness among the members. Strategic purchasing happens when a continuous search to buy the best health services, contract with best providers, use best payment methods and contracting arrangements (WHO 2000) exists.

By performing these functions, MHI aims to achieve three independent goals namely mobilisation of resources, protecting the households from financial consequences of illness and the inclusion of the poorest by making them active participants in health care system which ultimately contributes to the objectives of the health system. Resource mobilisation denotes cost recovery ratio, amount of resources raised through community-financing arrangements as a share of the country's total health revenues and indirectly by efficiency and quality impact on health care and moral hazard effects (Ekman 2004). Financial protection is the reduction in annual health expenditure as a percent of total annual household income. It denotes reduction in OOPE, access to health care and utilisation of health care. The size of poorest members in a scheme measures the social inclusion (Jakab and Krishnan 2001). Also demand side factors (income, size of family, education and gender of head of the household) and supply side factors (scheme design and implementation) determine enrolment and social inclusion.

The performance of functions of MHI to achieve its objectives depends upon the design of the schemes in terms of technical, management, organisational and institutional characteristics (Preker et al. 2002). Technical characteristics namely benefit packages, structure of premium, purchasing of health services and allocation mechanisms determine revenue collection, risk pooling and enrolment. The level of pre-payment, types of contribution (compulsory or voluntary), degree to which contributions is progressive, tools to address adverse selection, flexibility in the payment of premium and provision of subsidies affect the revenue collection (Preker et al. 2004). Size of the insurance scheme, trust and confidence in the management of MHI and moral hazard control mechanisms affect the risk pooling. Provider payment mechanisms, referral systems, waiting period provisions, contents of benefit package, and contract specifications in health services are factors that determine the extent of strategic purchasing (Carrin et al. 2005). Management characteristics include staff

(leadership, extent of capacity building), culture (management style, structure), and access to information (financial, health information, resources, and behaviour). Organisational characteristics include organisational forms, incentive regime (degree of autonomy, accountability, financial responsibility), and linkages with health care providers. Institutional characteristics are stewardship (government and donor support), governance, insurance markets, and factor and product markets (Preker et al. 2002). Figure 2.1 depicts the broad conceptual framework of the study.

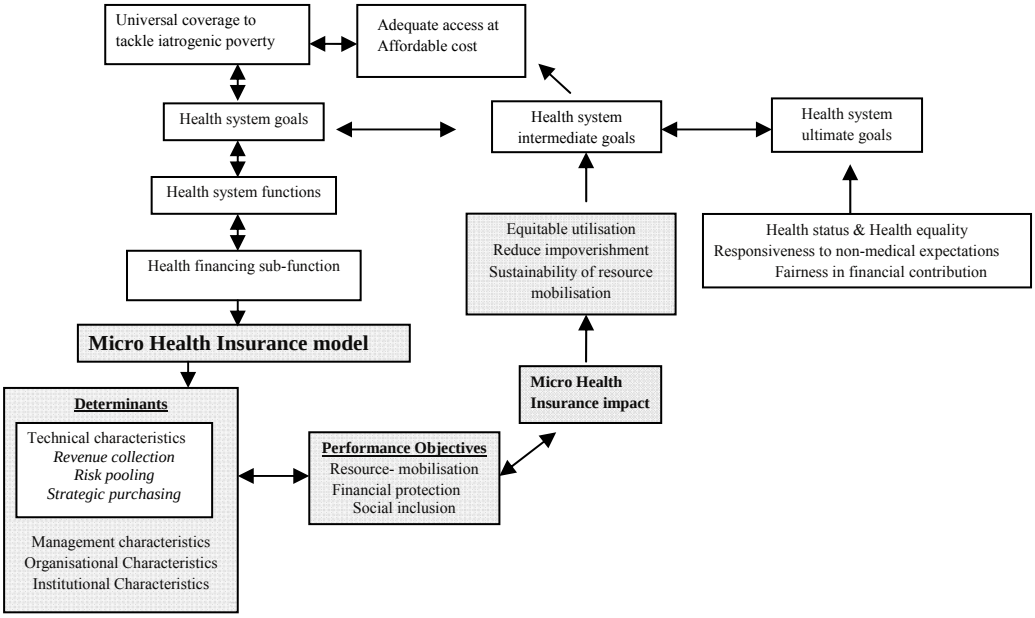


Figure 2.1 Basic Conceptual Framework Linking MHI Characteristics, Performance and Health System Goals

A systematic assessment of any program intervention requires reliable and generally agreed upon performance indicators that ensures good quality of body of evidence. A set of variables as proposed by Ekman (2004), Jakab and Krishnan (2001) and Preker (2002) are used to evaluate the impact of MHI on members that ultimately contributes to the achievement of health system goals. The following section reviews the available literature on determinants of performance and impact of MHI as given in the basic conceptual framework (Figure 2.1)

2.3 Review of Literature on the Impact of Micro Health Insurance

A review of 45 published and unpublished reports and conference proceedings by Preker (2002) advocated an important role of community financing as it provides financial protection against cost of illness, improves access to care by the poor and promotes efficient use of scarce health care resources. The review of available literature on financial protection, social inclusion, resource mobilisation and effect of characteristics on the performance of the scheme highlights the research gap.

2.4 Financial Protection

Resource mobilisation, reduction in impoverishment (financial protection) and equitable utilisation (social inclusion) measures the performance of MHI in realising universal coverage. Fair (financial) contribution denotes distribution of cost of illness based on the ability to pay. In the literature, due to the absence of any relevant validated instrument, financial protection acts as a proxy. Reduction in OOPE and CHE, access and utilisation of health care measure financial protection (Ekman 2004). In addition to these measures, risk coping strategies represent a comprehensive measure of financial protection.

2.4.1. Access to Health Care Services

Access to health services refers to the entry into the health care system determined by the need to improve current health status and the capacity to benefit from health care. Individual's perception of the need depends on the knowledge of health care. It also depends on the perception of what is 'normal' with regard to their health. Sometimes there is a need but no demand, which denotes unmet need. Information deficiencies, supply factor (lack of health services) and demand factors (income and prices of health care) are the causes of unmet need (Morris et al. 2007). In addition, financial constraints or non-financial constraints limit one's ability to obtain health services when needed (Liu et al. 2002). Health provider's diagnosis is termed as evaluated need (Aday and Awe 1997). Perceived need depends on health status, illness symptoms and days of disability whereas evaluated need relies on diagnosis, surgery or urgency of presenting conditions to a physician. These needs differ depending on the diverse factors that influence the entry to health system and organisation of the system to give care (Aday and Andersen 1974).

Through time and age, health depreciates that can be improved by seeking care and investing time, effort and money. Hence, demand for health services is a derived demand to improve health (Morris et al. 2007). The most important factors determining the demand for health care are price, income, price of substitutes/complementary goods, tastes and trends. Consumer choice theory predicts higher demand when the price falls, *ceteris paribus*. Nevertheless, demand for the health services by an individual is a special case that would not follow this established relationship between price and demand. Even if the price falls, a person may not take treatment. However, a cumulative addition of individual demand results in the market demand that would be downward sloping with respect to price (Morris et al. 2007). When the price reduces, there will be a movement along the demand curve. Thus, demand for health care depends on ability and willingness to pay for the care. In this context, affordable health care is defined as expenses that do not reduce the consumption or investment in essential commodities below levels that may affect either future health, earning capacity or future expenditures (Russell, 1996). Since health insurance reduces the price of care, insured individuals move downwards along the demand curve and use more services.

Access to care or propensity to use care is to be distinguished from utilisation of care or volume of utilisation once in health care system (Newbold et al. 1995). Individual characteristics and demand-side factors determine access to care whereas patient role and health care system or provider behaviour decide utilisation (Alberts et al. 1997). Access is one's ability to obtain health services when needed or the likelihood of visiting a health provider that is contingent upon two conditions: financial constraints and non-financial constraints (Liu et al. 2002).

Yip (2007) studied the success of Rural Mutual Health Care (RMHC in China), a MHI scheme, in achieving the objective of improving access to health care while Msuya and others (2004) made an observation of higher access to curative health care in Tanzania as the members of the community health funds (CHF) were financially better protected against health shocks. Devadasan (2005) from his study on ACCORD demonstrated a positive impact of MHI as insured access health care more than the uninsured and highlighted the importance of trust in health insurance

enrolment. Gotsadze (2005) demonstrated that people with less financial resources postpone seeking care or spend a higher proportion of monthly expenditure on health due to financial barriers in Georgia. These barriers hindered access to medicines and fostered inequalities in access to basic care in Tajikistan (Tediosi et al. 2008). Non-financial barriers include area of residence (Auchincloss et al. 2001), mismanagement of the scheme and contract with ineffective health care providers (Jutting 2003; Dror et al. 2005). Furthermore, income, education, position at work and access to outpatient care/ diagnostic technology determines access to care (Liu et al. 2002).

2.4.2 Health Seeking Behaviour

The pattern of actual utilisation is the end process of access to care that differs in terms of types, site, purpose and time interval (Andersen and Newman 1973). Types of service can be hospital, physician (clinics) and pharmacist. Site refers to a place of care namely outpatient departments, clinics, casualty or emergency room and hospital wards. The purpose of care can be preventive or curative. This in turn would determine treatment-seeking behaviour. Time interval means whether or not visit to health care facility takes place in time of illness, frequency of visits and the process of receiving care.

Considering population at risk as unit of analysis, Aday and Anderson (1974) label predisposing factors (demographics), enabling factors (income, area of residence, distance to hospitals and health insurance) and need factors (either perceived by individuals or evaluated by health delivery system) as determinants of access and utilisation of care. Research on utilisation of health services differentiates policy variables from control variables. Health insurance, income, source of care, ease of getting care, general health care attitudes and knowledge of health care are amenable to change. Age, sex, marital status, education, religion, size of family and area of residence are control variables (Aday and Andersen 1974). Thus, MHI is an enabling variable viable to alteration by a suitable health policy to affect access and utilisation of care by poor population.

The types of service availed or health-seeking behavior is one of the characteristics of utilization behaviour. It is an activity undertaken by individuals with a health problem to find an appropriate remedy (Ward et al. 1997). This is shaped by a

number of factors including historical pattern of use, illness types and severity, pre-existing lay beliefs about illness causation, range and accessibility of therapeutic options and their perceived efficacy, convenience, opportunity costs, quality of service, staff attitudes as well as age, gender and social circumstances of the sick individual (Tipping and Segall 1995). Considering direct and indirect cost involved in seeking care, the effective decision for the very poor may be not to seek care at all or to go to traditional healers or resort to partial treatment (Russell 1996). Efficiency of healthcare system would be negatively affected when people resort to self- treatment including self-prescription when drugs are freely available in the market and seeking care directly from specialists' while by–passing primary care providers (Gotsadze et al. 2005). Self-medication has been associated with lack of access to professional healthcare, lack of government-sponsored health insurance coverage and socio-economic status related to lower education, living in rural areas, lower income, and fewer assets (Pag´an et al. 2006). Ahmed (2003) carried out a study on gender related changes in health seeking behaviour and report formal care to depend on gender (men more than women), geographic location, greater socio-economic status and serious illness of long duration. A study from Vietnam found low income people substituting drug vendors for formal care in health facilities in order to save time and money (Deolalikar 2002). This study observed a large proportion of public subsidies being captured by elite class. Falkingham (2004) documented the tendency of the poor to use home remedies, primary care facilities and providers, whereas the better off approached high cost polyclinic and hospital care in Tajikistan.

Health insurance has an incentive effect as insured tend to use inpatient facilities and public providers more than uninsured in Vietnam (Jowett 2004). As health insurance removes any financial barriers to access care in good quality hospitals, insured would use inpatient facilities and private providers more than uninsured that may reduce the demand for self-medication and change the perceptions about the benefits of modern medicine (Pagan et al. 2006). Mutual health organisations (MHO) members were more likely to seek formal health care in Ghana and Mali, although this result was not confirmed in Senegal (Chankova et al. 2008). It has been found in Tanzania that members of a community health fund were more

likely to seek formal medical care when ill than non-members (Msuya et al. 2004). Schneider (2001) documented a shift of demand for care from traditional to modern health sector by MHO members. Ahmed (2000) showed women from BRAC member households to use qualified allopathic care than women from poor non-member households. Contrary to these findings, impact on health seeking behaviour has been negligible in Senegal (Jutting and Tine 2000). Hence, evidence base provides inconclusive evidence on the impact of MHI, albeit majority of studies document positive impact. Only a few studies were household data based that used statistical analysis whereas the rest were descriptive based on facility data.

2.4.3 Utilisation of Health Services

Utilisation of health services can be described in terms of site or place where actual care is received, which can be outpatient departments, clinics, emergency room, and inpatient treatment in hospitals. Utilisation refers to guaranteeing an effective and needed health services for the promotion of health, prevention and treatment of illnesses and rehabilitation of good health. Need, enabling and predisposing factors determine utilisation of health services. The use of health care facilities or the length of stay in hospitals can also measure utilisation of health services during a period of illness.

Demand for health services is price inelastic (McPake 1993), however, poorer display more elastic demand than rich people (McPake et al 2002). RAND Health Insurance experiment in US and in other settings estimated the elasticity of demand for health services to lie between 0.1 and 0.7 (Morris et al. 2007). The elasticity of demand for health care is income elastic (more than 1), hence any increase in income (notional) due to 'income effect' of decrease in price of care would enhance the use despite health services being a necessity, especially by low-income households. Thus, any rise in income results in more than proportionate increase in the use of health services (Morris et al. 2007). In addition, non-price access costs (transport and time) determine demand for health services.

A review study concluded that a minority of MHI schemes paid explicit attention to utilisation. Out of the 258 schemes reviewed, 14 studies, of which only one study with internal validity, found a positive impact of MHI on utilisation of

health care services (Baeza et al.2002). In our review, twenty studies on utilisation impact of MHI from different parts of the world reported positive impact and five documented negative impact. Studies from China (Bogg et al.1996; Wagstaff et al. 2008a), Congo (Criel and Kegels 1997), Ghana (Atim 1999), Kenya (Musau 1999), Tanzania (Msuya et al. 2004) and Senegal (Ju¨tting 2003) revealed increased utilisation of health services in those schemes that cover hospital inpatient care. However, moral hazard and cost escalation have been observed in schemes that cover inpatient care (Bennett et al. 1998). In micro insurance units in Philippines, higher rates of professionally-attended deliveries, lower rates of delivery at home, a higher frequency of primary-care physician encounters as well as diagnosed chronic diseases, and better drug compliance among chronically ill was observed (Dror et al. 2005). Studies from Senegal, West, Central and East Africa confirm the positive effect on hospital utilisation due to MHO coverage (Atim 1999; Ju¨tting 2003). Rao (2009) found positive impact of community health funds in Afghanistan on the utilisation of health services, due to reduction in financial barrier. A study on MHOs in Mali by Franco (2008) found positive effect on utilisation of priority health services, although it could not achieve complete coverage of the poorest.

There are reports in literature which document the absence of impact on utilisation from Ghana (Chankova et al. 2008), India (Ranson 2001), Jordan (Ekman 2007a) and China (Yip et al. 2007). Chankova and colleagues (2008) found inconclusive evidence on the positive impact of MHO membership on utilisation in Africa. Higher utilisation was observed in Mali and Senegal but not in Ghana. A study from India confirms these findings as SEWA (Self- Employed Women's Association, India) members' utilisation of health care services did not increase compared to uninsured (Ranson 2001; Gumber 2001). Another study carried out in Jordan found no significant impact on the probability of utilising health care (Ekman 2007a). A study on RMHC in China found an increase in utilisation of village clinic but no impact on hospitalisation or outpatient utilisation (Liu et al. 2002).

Soucat and others (1997) have reported increased utilisation of health services after the introduction of Bamako Initiative which is attributed to the availability of drugs and improved quality of services brought about by the community involvement.

This finding is supported by other researchers (Schneider and Diop 2001; Jutting, 2003, Dror et al. 2005). Moreover, location of the residence, distance to healthcare provider, occupation. (Liu et. al. 2009), income and education, inconvenience caused to the family, domestic responsibilities borne by women, lack of awareness of benefits of insurance (Sinha et al. 2005) also influence utilisation of health care services.

Studies from China found rich members benefiting more than poor members (Wang et al. 2005). In contrast, a study from Philippines found that insured households across all income groups use hospitalisation and consultations equitably (Dror et al. 2005). In spite of the growing literature, the evidence is inconclusive and the question whether members of MHI are financially better protected than uninsured still remains. Lack of such evidence stems from the paucity of large studies based on household/individual level data, and only few studies utilised rigorous statistical methodology such as quantitative techniques, in particular regression analysis.

2.4.4 Out-of –Pocket and Catastrophic Expenditure

Financial protection means reduction in the proportion of income spent as health expenditure due to health insurance. It means the household is not required to contribute directly or indirectly more than acceptable proportion of its total income in order to gain access to adequate health services (Baeza et al. 2002). In addition, absence of financial protection exists when excessive health expenditure reduces households' consumption to below the poverty line. There are different methods of defining financial protection. One preliminary method is to use specific or arbitrary limits on health expenditure for the lowest income quintiles. Usually, this method sets excessive expenditure at a level of certain proportion of total household income equivalent to the cost of a standardized package of services. Another approach defines a limit on health expenditure as a proportion of disposable income available to household after deducting the expenditure for the consumption of other goods, and services (Baeza et al. 2002). OOPE were used as a direct measure of financial protection in earlier studies, which has been disapproved by Baeza et al (2002) who suggested the use of catastrophic health expenditure (CHE) as validated direct impact indicator of financial protection. In this context, World Health Organisation proposed health expenditure (non-food expenditure) to be considered catastrophic when it is

above 40 percent of the capacity to pay (Kawabata et al. 2002, Xu et al. 2003). Another definition of CHE is a health expenditure that is more than 10 percent of total household income (Pradhan and Prescott 2002; Ranson 2002).

The value of health insurance depends on the value of expensive health care that becomes affordable. Health insurance, thus, is expected to reduce the burden of cost of care. Litvack and Bodart (1992) postulate the beneficial effect of community based health insurance that facilitate access to care for low-income populations who otherwise have no financial protection against the cost of illness. There are reports of improved financial protection in terms of reduction in OOPE (Jütting and Tine 2000; Schneider and Diop 2001). In addition, households with access to micro-finance loans reported lower OOPE per reported illness (Dekker and Wilms 2009). A recent study from India found substantial financial protection provided to the members by reducing the need to borrow money or sell assets to meet medical expenses (Aggarwal 2010). However, there are studies which had documented 'marginal' or 'limited' impact (Jütting 2001; Carrin et al. 1999; Wagstaff et al. 2008b; Yip et al.2007; Rao et al.2009). The study on the impact of SEWA Scheme in India found the burden of seeking care on the household budget to be higher among SEWA members than among those insured by other mechanisms (Gumber 2001) and uninsured members (Ranson 2002). A study on RMHC found no impact on OOPE for outpatient treatment or hospitalisation (Yip et al. 2007). MHO membership was observed to provide protection against OOPE related to hospitalisation in West Africa (Chankova et al. 2008) but it did not have a positive effect on curative outpatient care. Study on NCMS, a public health insurance scheme by Lie and Lin (2009) found that insurance scheme membership neither decreases OOPE nor increases utilisation of formal medical service or improves health status (as measured by self-reported health status) but changes the health seeking behaviour from traditional Chinese folk doctors to formal preventive care.

The literature on the impact on CHE provides conflicting evidence. Ranson (2002) and Devadasan (2007) using the facility data showed positive yet partial effect of MHI on CHE. A study on Universal Insurance in Mexico found evidence of reduction in probability of CHE and a reduction of expenditure on medicines and

outpatient care among insured families (Galarraga et al. 2010). Pradhan and Prescott (2002) indicate the absence of positive impact on CHE for community-financing members in Indonesia due to low benefit coverage. NCMS in China could only provide partial protection because of high medical costs, low effective reimbursement levels, inadequate benefit package, policies on co-payment, ceilings and deductibles and complex reimbursement procedure (Zhang et al. 2009).

Ekman's (2007b) investigation provides contrary evidence of lack of impact in Zambia. In his study, health insurance was found to increase risk of catastrophic payments due to expensive medical care as insured accessed care at later stages of illness. This study recommends the consideration of health care needs, in addition to health care utilisation patterns and expenditures when analysing the effects of health insurance. Wagstaff and colleagues (2008b) confirm these findings from his study on NCMS in China. He argues that health insurance increases the risk of high and catastrophic spending as it encourages people to seek care from higher-level providers. Another study by the same author on Health Care Fund for the Poor (HCF) suggests that the scheme substantially increased inpatient service utilisation and reduced the risk of catastrophic spending. Nevertheless, it was not successful in reducing out-of-pocket spending, and had negligible impact on utilisation among the poorest deciles (Wagstaff 2007). The conflicting evidence reflects the diverse socio-economic, political and cultural settings of these studies. Many of these studies were descriptive based on facility data without rigorous statistical analysis (Table 2.1).

While designing MHI scheme, ignorance of various factors that contribute to CHE and high OOPE would result in partial effect. These factors are household size, incidence of illness, presence of 'smokers or drinkers' in the household (Kawabata et al. 2002, Arhin-Tenkorang 2001), high medical costs and low effective reimbursement levels (Zhang et al. 2010). Effective financial protection depends on the reasonable balance of funds maintained by the scheme, which is critical to ensure that the schemes are sustainable and effective in offering financial protection to members.

2.5 Ex-Post Risk Coping Strategies

The most common risk faced by poor is health shock which is defined as unpredictable illnesses that diminish health status (Leive and Xu 2008). Risk management strategies would ensure a steady income that mitigates health shocks. Negative effect of health shock may be transient if the affected household has certain ex-ante and ex-post measures to tackle health risks. Ex-ante strategies are diversification or entry into low risk- low return activities and reduced average consumption spending due to precautionary savings (Dercon 2004). Coping strategies used after the health shock (ex-post) can be divided into, (i) behaviour-based strategies (less consumption or increase labour supply) (ii) asset-based strategies (use savings, assets, borrowing money), (iii) assistance from informal or public sources (Heltberg and Lund 2009; Dercon 2004) and iv) self-insurance. These strategies rely on formal or informal coping instruments that could have harmful consequences for the households who already consume less, have low savings and face barriers to non-exploitative credit (Heltberg and Lund 2009). Self-insurance can occur in two ways; i) use of savings or building up suitable liquid assets in good years that can be depleted during a bad year ii) informal risk sharing arrangements, based on reciprocal gifts or contingent credit within family, friends or neighbours for consumption smoothing during the episode of illness (Dercon 2004). In addition, survival strategies such as sacrifice of human capital (sending additional household member for work), sale of productive assets, borrowing from banks and charity were usually used in times of health crisis (Dercon 2002). However, some of these strategies have adverse impact on future household consumption as they would have less income due to sale of productive assets and repayment of loan.

The strategies with negative consequences such as use of savings, sale of assets, borrowing and reduction in consumption may lead to iatrogenic poverty and worsening of health status (Gotsadze et al. 2005; Msuya et al.2004). These strategies increase the vulnerability to future health shocks, reduces asset base for future wealth creation and adversely affects nutrition and human capital (Dercon 2002). Some strategies such as engagement in activities other than normal work or selling labour

(Sauerborn, et al. 1996) especially sending school going children for work (Mutangadura et al. 1999) may have adverse consequences.

Of the available resources to deal with risks, cash at hand, access to a loan from either a MFI or community and savings deposits are used by the households first and the more productive and protective assets are used as a last resort (Sebstad and Cohen 2002). Borrowing ability and financial capacity to repay a loan, existence of social capital and availability of assets determine coping strategies of the households. Wilms (2006) observed the size and degree of uncertainty of loss to be the determinants of the use of savings and credit. Smaller the size and degree of uncertainty, savings may be more appropriate. Although borrowing is a preferred strategy to cope with financial shocks, it has negative consequences that vary directly with income of the household (Wilms 2006). Number of shocks experienced and the resultant health expenditure of the household, cost of the shock, household size and area of residence determine the likelihood of selling assets (Wagstaff 2006). Leive and Xu (2008) documented asset based strategies used by African households to cope with inpatient medical bills. In the same study, current income and savings financed outpatient spending. A study on informal risk sharing arrangements in a rural area of North-Western Burkina Faso found asset sale to be an important health financing strategy and relatives were the first resort in terms of financial arrangements (Sommerfield et al. 2002).

Poor households had to sell land and other assets, exchange food or labour for cash, take loans or use common property to deal with health shocks (Russell 1996). In Burkina Faso, selling livestock, grain and borrowing was the common strategy used by households (Sauerborn et al. 1996). In a study of coping strategies in Uganda, Leliveld (2006) observed that households sold land, cattle, or goats or used their savings to respond to illness. This may jeopardize the future economic status of household through indebtedness and deprive the future income generated by the use of the productive assets (Scheil-Adlung et al. 2006). A study on adaptive behaviour of people in Tbilisi in response to high medical bills found that borrowing money and selling assets were frequently resorted that resulted in impoverishment and worsening health status (Gotsadze et al. 2005). Heltberg and Lund (2009) found economic

shocks financed by savings and natural or agricultural shocks were coped with borrowing in Pakistan.

Given the inadequacy of ex-post measures in fully protecting the households, ex-ante measures especially health insurance need to be a part of a comprehensive system of protection against risk (Dercon et al. 2004). The difference between actual loss after insurance indemnification and what would have been lost without it measures the impact of health insurance. Health insurance enhances the welfare of the household by providing financial protection, shortening the duration of illness and improving health (Young et al. 2006). It reduces the use of impoverishing risk coping strategies (Dekker and Wilms 2009) and makes the poor less vulnerable to poverty induced by health shocks (Wilms 2006). One way to achieve this is to link credit and health insurance, which not only helps in building assets but also increases the ability to cope with health shocks (Dercon 2002). Another way is to provide health insurance at subsidised rates to poor population (Dercon et al. 2004).

Aggarwal (2010) in his recent study from India on Yeshasvini programme, show that insured borrowed less or sold fewer assets compared to uninsured to meet surgical expenses, thereby insured experienced substantial financial protection. In case of hospitalisation, there was no effect on borrowing or sale of assets. Dekker and Wilms (2009) found MHO members to rely less on risk coping strategies in Uganda. Insured households were less likely to sell assets to finance health expenditure and the value of sold assets was lower. Insured households did borrow or sold assets but lesser amount per illness episode compared uninsured (Dekker and Wilms 2009). There is dearth of literature on the impact of MHI on risk coping strategies used by the poor, especially from India.

2.6 Social Inclusion

Equity has been considered as a major objective of health care policy in international community. Social exclusion refers to inadequate or unequal participation in social life or exclusion from a place in the consumer society, often linked to social role of employment or work (Duffy 1995). Moreover, income and self-rated health is linked and the very poor are most likely to report bad health compared to high income earners (Subramanian et al. 2003). Considering this, health

financing interventions have been advocated to reduce socio-economic inequalities in health to alleviate poverty among individuals (Weich et al. 2002). Thus, social inclusion is one of the objectives of health financing mechanisms including MHI. In this regard, MHI schemes aim to include the poorest as members to lower health expenditure (Jowett 2002).

Some researchers suggest that the poorest of the poor and socially disadvantageous groups were excluded in community-based initiatives for financing of health care (Jutting 2003). Payment of premium can be a significant barrier to social inclusion. Jutting and Tine (2000) highlight the problem of social exclusion in which the community's poorest members had no opportunity to participate due to lack of resources to pay the required premium. His finding was supported by other studies (Sinha et al. 2005; Msuya et al. 2004; Schneider and Diop 2001) carried out in different settings. An extensive review of literature on the impact of community health insurance found strong indications that these schemes exclude the poorest and have little effect on access to care (Ekman 2004). Exclusion of poor in the MHI scheme is a major limitation that affects equitable access to health care system. Any health financing mechanism that aims to include the poor has to get external funds especially when the internal funds are inadequate. However, MHI schemes nested within a larger organisation (like MFIs) that address other needs of the poor and charges affordable premium will be able to meet the goal of social inclusion (Ranson 2002).

2.6.1 Demand for Health Insurance

Seminal paper by Arrow (1963) highlighted the role of risk aversion and uncertainty of future health as motivators for the purchase of health insurance (HI). On the other hand, Pauly (1968) put forward a proposition that consumers will be worse off with HI that had deductibles and coinsurance rates. A recent theory by Nyman (2003) refutes utility function of Neumann and Morgenstern and contradicts the theory of Pauly. According to him, consumer compares expected utility lost from the payment of premium and expected utility gained from insurance claim if ill. The consumer demands HI in order to obtain a transfer of income from the healthy if she were to become ill. Gaining access to unaffordable health care services during illness

is highly valuable to the consumer that motivates the purchase of HI. This theory is more applicable in India since unaffordable medical care restricts access to care to the poor. Hence, HI can be advocated as a mechanism to provide health security and better access to care.

Demand for HI or enrolment in a MHI scheme determines not only social inclusion but also resource mobilisation and hence, sustainability of the scheme in the long run. Renewal and enrolment of members has been identified as one of the challenges faced by MHIs in most of the countries (Ahmed et al. 2005) that reflects member satisfaction, and trust in the programme (Supakankunti 2004). Enrolment in a scheme depends on household income that can be paid as premium (Msuya et al. 2004; Jutting and Tine 2000) and inability to pay premium, even a small amount, acts as a major barrier to enrolment in MHOs in West Africa (Chankova et al. 2008). In their review of 83 HI schemes for the informal sector, Bennett and others (1998) found that very few schemes adopted sliding scales or exemptions for poor despite being aware of the problem of affordability. Most schemes relied on flat-rate premiums and several schemes charged unaffordable premiums which acted as a major deterrent to participation.

A study from Rwanda found household characteristics such as the district of residence, education level of household head, family size, distance to the health facility, trust and radio ownership influence enrolment in a scheme but did not find evidence on the role of health and economic indicators in enrolment decisions (Schneider and Diop 2001). Research work in West Africa on the impact of MHOs found that gender and education of the household head and economic status of the household to be positively associated with MHO membership (Chankova et al. 2008). Lack of involvement in the management of the scheme, difficulties to get specified families enrolled as per scheme guidelines, long distance from the provider's facilities, unattractive benefit package were the reasons for low enrolment in Uganda (Basaza et al. 2008) (Table 2.2).

Sinha and others (2007) propose demand-side factors (characteristics of individuals, households or groups in the target population) and supply-side factors (characteristics of the MHI scheme) that determine enrolment in a scheme. On the

demand-side are the factors that underlie the likelihood of benefits perceived by the members. These include age, education, health status, trust in the scheme, previous claim experience and participation in the scheme by friends and neighbours. On the supply-side, factors such as opportunity to enrol, knowledge of the scheme, additional services offered by the organisation, frequency of contact with the members, education provided regarding insurance and opportunity provided by the scheme to renew like accurate and up-to-date records of members for determine enrolment (Sinha et al. 2007).

2.6.2 Adverse Selection and Moral Hazard

Selection bias or adverse selection is the phenomenon in which people who anticipate high medical care costs would purchase health insurance (Rothschild and Stiglitz 1976). Adverse selection leads to financial un-sustainability as the premium set will be lower compared to the average risk of the population covered (Cutler and Zeckhauser1999; Pauly and Nicholson 1999). It also denotes inadequate pooling (Cutler and Zeckhauser 1999) because healthier may not be interested to enrol and less healthy may be interested to sign up resulting in higher healthcare costs and financial loss to the scheme. Due to asymmetric information, buyers of insurance know their own risk levels but sellers are unable to distinguish between risks (Rothschild and Stiglitz 1976). Thus, heterogeneity in health risk faced by individuals gives rise to selection bias. Many insurance companies adopt strict selection criterion to screen applicants who are suspected to use expensive medical care which includes refusal to issue or renew a policy and exclusion of pre-existing illness from the coverage, waiting period, mandatory reference system and family enrolment (Dercon et al, 2004). Also, collective membership, social cohesion and high penetration of target group can eliminate adverse selection (Atim 1998).

Evidence of adverse selection in insurance market in developed countries is ample (Cutler and Zeckhauser 1999; Savage and Wright 2003). But, the evidence on adverse selection in MHI shows mixed results (Atim 1998; Jakab and Krishnan 2001). A study on SEWA in India reports a positive association between older age and higher frequency of illness and membership in SEWA's insurance scheme (Ranson 2001). In their review of 82 schemes, Bennett and colleagues (1998) observed the

prevalence of adverse selection despite having waiting period and exclusion of pre-existing or chronic diseases from coverage which was found to be encouraged by scheme functionaries by allowing the households to insure the member who is most likely to fall ill. Kutzin and Barnum (1992) examined the impact of Bwamanda Hospital Community Financing Health on efficiency and equity in health sector and concluded the presence of moral hazard and adverse selection. RMHC, a social health insurance scheme in China reported individuals with worse health status to enrol more than individuals with better health status, especially from partially enrolled households. Although there was adverse selection, due to high enrolment rate it was not a threat to financial sustainability of the scheme (Wang et al. 2006). Absence of selection bias was demonstrated in MHI Units in Philippines (Dror et al. 2005) and in Senegal (Jutting and Tine 2000).

Moral hazard refers to the tendency for insured individuals to increase their consumption of health services (Nyman, 2003). Two behavioural changes due to insurance are ex- ante moral hazard which involves reduction in the use of preventive care (that increases the chance of falling ill) and ex-post moral hazard which means increase in the use of health care (especially expensive services once the person is ill) (Jowett 2004). Moreover, an expected future consumption of health services determines both health insurance choice and use of health care (Cameron et al. 1988).

Moral hazard has been a problem for the MHI schemes that include inpatient care in the benefit packages (Bennett et al. 1998). Abuse of the scheme has been reported in Ghana and Senegal as the identification of beneficiaries was not checked by the scheme managers, instead other agencies or hospital staff was entrusted with the job. Even the restriction on benefit package did not curtail moral hazard due to lack of reference system and provision of full coverage without co-payments stipulations. Cameron (1988) found higher utilisation of services because of both adverse selection and moral hazard in Australia. Savage and Wright (2003) support this finding as insured had longer duration of hospital stay by a factor of up to 3 due to private health insurance.

Empirical observations in Hong Kong found no evidence of moral hazard although insured had a higher probability of visiting a doctor or being admitted in the

hospital but did not incur more bed days which reflect that realised access was due to genuine health need than over-utilisation of services (Wong et al. 2006). A good practice is reported from South Borgou MHOs (Benin) and two CPH schemes in Nigeria, in which the manager was the first line in the reference system, and beneficiaries had to get slip from her before going to the facility (Atim 1998). It should be kept in mind that insurance purchase is motivated by the need to access necessary unaffordable care. Hence increased use of services cannot be considered as undesirable in developing countries (Nyman 2003). It may be welfare-promoting as it removes financial barriers to access care and results in higher utilisation which otherwise may not be possible for poorer people.

2.7 Resource Mobilisation

Resource mobilisation is directly measured by cost recovery ratio; amount of resources raised as a share of the country's total health revenues and indirectly by quality impact on health care and moral hazard effects (Ekman 2004). Ratio of prepayment to total healthcare costs indicates degree of financial protection and access to health services during the need (Carrin et al. 2005). Ekman (2004) found MHI to mobilise insufficient amounts of resources which was confirmed by Preker (2002) that MHI could not raise sufficient financial resources from the target population. Financial sustainability in MHI schemes is difficult due to low penetration of target populations and insufficient premium collection rates and low income of target population (Atim 1998; Bennet et al. 1998; Hsiao 2001; Jutting 2001) However, MHI could mobilise some resources which would have been not possible in its absence (Diop et al. 1995; Soucat et al. 1997). Among three models of MHI, provider-based schemes made modest contribution to resource mobilisation (Atim 1998) which stresses the need for external assistance for scheme sustainability.

2.7.1 Quality of Care

Quality of care denotes delivery of care that achieves favourable balance of medical risks and health benefits, performing interventions that are safe according to accepted standards of practice. Haddad (1998) identified four factors to assess quality of care as perceived by patients: healthcare delivery, health facility, interpersonal aspects of care and access to services. MHI can improve the quality of the services by

acting as a "strategic purchaser" of health care services (WHO 2000) and by stipulating the quality of prescriptions and treatment given to members through its empowerment of members and their discussion with health centre managers (Schneider and Diop 2001). A study on Latino population in USA found insured individuals perceiving better quality of care than uninsured individuals (Perez et al. 2006). However, despite the potential of influencing quality of care, MHOs neither engage in strategic purchasing nor address quality issues and pricing of the care (Atim 1998; and Ranson 2003). Lack of functional information systems seriously constrains the ability of purchasers to influence performance (Waters et al. 2004). Poor quality of care was the single most important contributor to low level of enrolment in Maliando scheme (Criel and Waelkens 2003).

2.8 Association between Characteristics of the Scheme and Outcome

The design of the schemes in terms of technical, management, organisational and institutional characteristics determines the performance of MHI in realizing the objectives of financial protection, resource mobilisation and social inclusion (Preker et al. 2002). Successful implementation and achievement of goals of MHI depends on effective design and management (Jakab and Krishnan 2001; Ahmed et al. 2005) that improves participation, higher cost recovery rates, and social inclusion of poorest members of the society (Wiesmann and Jutting 2001). In fact, Bennett and colleagues (1998) link the limited membership of CHF (Community health financing) with inadequate financial protection to the poor design of the schemes.

Factors that determine success are the mechanisms incorporated in the scheme to deal with adverse selection, accommodation of non-cash stream of income of members, ownership of the community, trained and competent management (Preker et al. 2002). Success of scheme also depends on the organisational linkages between the scheme and providers, donor support and government funding (Jakab and Krishnan 2001). Moreover, provider-based schemes have moderate positive effect on resource mobilisation and a limited positive effect on financial protection (Ekman 2004). Partner agent model is the best method of providing insurance to the poor (Dercon et al. 2004). Designing a scheme requires the consideration of benefit package, premium, information asymmetry problems in insurance market, accounting and

management and participation of members (Wiesmann and Jutting 2001). Survival of the scheme depends on the extent of risk-pooling and resource mobilisation it achieves (De Allegri et al. 2006) and mechanisms to control the problems of information asymmetry (Wiesmann and Jutting 2001). Literature on technical, management, organisational and institutional characteristics and their role in scheme shows the importance of scheme characteristics in shaping the performance of MHI.

2.8.1 Technical Characteristics

Technical expertise in the management of the scheme in the form of design of benefit packages, revenue collection, pooling and health care purchase mechanism is essential to improve the efficiency of MHIs (Preker et al. 2004). It also depends on the adequacy of the benefit package, policies on co-payment, ceilings, deductibles, and reimbursement procedure adopted by the scheme (Zhang et al. 2010). Revenue collection appears to be more successful when the contribution scheme takes into account the nature of the target population's income (Jakab and Krishnan 2001). Annual contributions, collected at the time of harvest of cash crops, seem to be prevalent among schemes in rural areas (Bennett et al. 1998). Flexibility in the payment of premium in terms of amount or kind and the time of payment would contribute to better scheme performance (Wiesmann and Jutting 2001). Certain technical design features such as affordability of premiums, unit of enrolment, timing of collection of premium and quality of care offered by the providers influence the enrolment in a scheme (Carrin et al.2005).

Ratio of prepaid contributions to healthcare costs determines revenue collection and thereby resource mobilisation (Carrin et al. 2005). While calculating prepaid contributions, all stakeholders that contribute including central and local governments, corporation and donors are to be included (Carrin et al. 2005). A review study carried out by Baeza and colleagues (2002) found that most of the schemes did not bear the bulk of financial risk. In most of the schemes, central and local government covered the larger part of the cost of health services.

The degree of financial protection provided by an individual MHI scheme depends upon the extent to which the benefit package offered covers a comprehensive package of services particularly high cost services and co-payment (Bennett 2004).

Moreover, family enrolment as a unit of membership and waiting period provisions can curtail adverse selection. Referral system is another component of strategic purchasing which can curtail moral hazard and improves efficiency (Carrin et al, 2005). Practice of strategic purchasing can improve the quality of the services (WHO, 2000) through negotiation with providers, checking the prescriptions and quality of care provided to their members before effecting payment, and helping to set up revolving drug funds. A review on the MHI impact concluded that out of 62 schemes for which information was available, ten schemes had some form of strategic purchasing (Baeza et al. 2002). Atim (1998) observed lack of experience and managerial skills and low levels of negotiating power of MHOs in relation to health care providers that resulted in ineffective purchasing of health care services. MHOs do not negotiate with providers or check their prescriptions owing to lack of required medical and pharmaceutical skills, but it represents an important shortcoming.

Payment and reimbursement methods for hospitals are a part of strategic purchasing. The most common method of payment is line item and global budgets in low and middle-income countries (Wouters 1999). Paying claims directly to the providers increases efficiency (improving the administrative cost ratio) and is far superior for clients than any method of reimbursement (McCord and Osinde2005). Fee-for-service payment is another method, which is retrospective, and provides strong incentive for quality in the sense that they encourage the production of additional services but it may lead to the overproduction of services (Alvarez et al. 2000). Payment systems influence quality of care. Retrospective rather than prospective and variable rather than fixed payment method allows for the greatest flexibility for purchasers to incorporate quality standards in purchasing arrangements (Waters et al. 2004).

2.8.2 Management Characteristics

Second important characteristics is the management of schemes that include staff (leadership, extent of capacity building), culture (management style, structure), and access to information (financial, health information, resources, and behaviour) (Preker et al. 2004). Strong management of the scheme is necessary due to the possibility of misuse or overuse of insurance claim by members (Jakab and Krishnan

2001; Ahmed et al. 2005). Sinha and colleagues (2005) linked member orientation and strong community networks, good management practices, systems of planning and implementation, and the commitment of the management to the success of MHI performance. In addition, local management, accountability and monitoring are crucial in implementing equitable and accountable CHF schemes (Polonsky et al. 2008).

Top-down interference with the design and management of the schemes has negative effect on their function and sustainability (Preker et al. 2002). The bias or priority of management and the board determines effective management and development of an insurance product. Management capacity is another important factor that helps in running the scheme effectively and making necessary adjustments (Musau 1999). Major hindrances to success of the scheme found by Atim (1998) were lack of skills in setting premium rates, determining benefits packages, marketing and communication, contracting with providers, accounting, monitoring and evaluation, and collecting dues.

Community involvement in scheme management leads to improvements in revenue collection, cost containment, membership and quality of services (Hsiao 2004) and the absence of community involvement in management may lead to provider capture and monopoly pricing (Jakab and Krishnan 2001). Schemes providing better information would improve subscribers' confidence and enrolment rates and involvement in decision-making has a significant impact on subscribers' values (Ouimet et al. 2007). Hence, members should participate in decision making for better performance of the scheme (Wiesmann and Jutting 2001).

2.8.3 Organisational Characteristics

Organisational characteristics include linkages in the form of vertical and horizontal integration, strategic alliances, administrative capacity and enlarged risk pools. In addition, organisational forms, incentive regime (degree of autonomy, accountability, financial responsibility), and linkages with providers determine success of the scheme **(**Preker et al. 2004).

Vertical integration depends on the stipulations regarding the nature and scope of the products supplied by the health care providers (Zweifel 2004). Organisational

linkages such as those between schemes and providers and between schemes themselves (including national government health system and/or social security system) are a critical determinant of performance of MHIs (Jakab and Krishnan 2001). However, vertical links with NGOs may increase dependence of the scheme on external party (Mladovsky and Mossialos 2007) that endanger its sustainability in the end.

2.8.4 Institutional Characteristics

The key institutional characteristics namely the degree of congruence between the scheme's operating rules and participating population's normal behaviour patterns and health care providers' past experience with third-party payments has a significant influence on the nature and extent of community participation in any given scheme, as well as the quality of its management (Preker et al. 2004). Additional institutional characteristics include stewardship (government and donor support), governance, insurance markets, and factor and product markets **(**Preker et al. 2002). Regarding governance structures, two key issues for consideration are the strength and the quality of these overseeing structures. A strong management board with knowledgeable people and balance of priorities is essential for the long-term sustainability of MHI schemes (McCord and Osinde 2005).

Community-financing schemes compete in the factor markets with other organisations involved in financing and providing health care. Negotiation skills to conclude the contract with providers and other market players determine the performance (Jakab and Krishnan2001). In any health market, government plays stewardship role by creating an enabling legal environment, transferring resources in the form of subsidies to the poor members of the scheme (Bennett et al. 2004) and regulating and monitoring MHI schemes. However, minimal government regulation of MHI has been advocated sighting adverse effect of government subsidies in the form of cream skimming and adverse selection (Pauly et al. 2006). Public subsidies work best when administrative structures in MHI intersect with local political structures to facilitate bureaucrats' loyalty and enthusiasm to become ''embedded'' in schemes and put their energy into making them work (Mladovsky and Mossialos 2008).

Indian studies on the factors that determine success or failure of MHI schemes stresses economic condition of the society (Dave Sen 1997); income adjusted fee schedule and waiting period to avail benefits (Dave 1993); subsidy in premium payment (Prasad 1998); strong and dynamic leadership (Dave Sen 1997) and trust in the management of the scheme. The theoretical framework for research methodology was derived from the literature review (Figure 2.2). When individuals have illness, they either seek care or postpone treatment due to financial and non-financial barriers. If individuals decide to access care, there are different facilities or place where the health services are provided namely public and private facilities (hospitals, nursing homes and clinics), traditional treatment (ayurvedic and homeopathic) and informal providers (quacks, pharmacists and home medicine). Treatment at these facilities can take place as either outpatient or inpatient that leads to OOPE and CHE. Individuals adopt various risk coping strategies such as borrowing, savings, sale of assets, substitution of labour and reduction in consumption to meet the cost of illness. Undesirable and unforeseen consequences of OOPE, CHE and risk coping methods can be reduced or eliminated by enrolling in a MHI scheme. However, enrolment in MHI depends on various household socio-economic and demographic factors that including adverse selection factors. Enrolment affects volume of premium collection and cost recovery and indirectly determines resource mobilisation of the scheme. Resource mobilisation also depends on the quality of care as perceived by MHI members. Higher resource mobilization enables a scheme to protect members from negative financial consequences of OOPE and CHE and ensures financial sustainability. However, financial protection (as measured by access to care, utilization of care, cost of care and financial consequences), social inclusion (as measured by enrolment) and resource mobilization (revenue collection, cost recovery and quality of care) is influenced by various technical, management, organizational and institutional characteristics of the MHI scheme. These factors act as catalysts or inhibitors to achieve the objectives of MHI scheme.

2.9 Summary

The existing literature focuses more on economic outcome of MHI schemes than social and scheme characteristics. Review of literature points at a number of

research gaps in the knowledge base on the impact of MHI in India. Although there are few studies on financial protection of MHI, the findings are inconclusive. Two studies on SEWA of Gujarat (Ranson 2001, 2002; Gumber 2001) focussed mainly on financial protection in terms of OOPE as well as utilisation and Yeshasvini of Karnataka (Aggarwal 2010) on risk coping behaviour. Hence, the data currently available in the literature on the impact of existing MHI schemes in India and the factors that determine the success of a scheme are limited. The literature on the impact of MHI on health seeking behaviour, access to care, catastrophic health expenditure and adverse selection is also scanty in India.

Table 2.1 Literature on Financial Protection

Author	Scheme	Findings
Soucat et al. 1997	Bamako Initiative Programme, Nigeria	Increased utilization
Criel and Kegels 1997	Bwamanda	Increased hospital utilization
Criel1998	Rwanda,Congo	Increased utilisation of health services
Musau 1999	Kenya	Increased hospital utilization
Jütting and Tine 2000	'Les mutuelles de sante'', Thiès, Sénégal	Decrease in OOPE,higher utilisation
Gumber 2001	SEWA, India	Marginal effect on FP
Schneider and Diop 2001	PPS, Rwanda	Impact on OOPE, utilisation was positive
Yip and Burman 2001	Egypt	Middle-class children benefited more
Jowett 2002	VHS, Vietnam	Reduction in health expenditures more for the poor
Ranson 2001,2002	SEWA, India	No effect on utilisation of care and OOPE
Liu et al 2002	RMHC, China	Diverted health care resources from expensive IP care to OP care
Deolalikar 2002	VLSS, Vietnam	Low income people substituting drug vendors for formal care
Jutting 2003	'Les mutuelles de santé'', Thiès,Sénégal	Decrease in OOPE, higher utilisation
Msuya et al. 2004	CHF, Tanzania	Improved access to care; higher utilisation; exclude the poor
Dror et al. 2005	MIUs, Philippines	Improve access; higher utilisation
Wang et al. 2005	RCMS, China	Rich members benefiting more than poor members
Devadasan et al. 2007	ACCORD, India	Partial protection against CHE
Yip et al. 2007	RMHC, China	No impact on OOPE for OP or IP treatment

Ekman 2007a	PPS, Zambia	Health insurance fails to protect the member
Yip et al. 2007	RMHC, China	Substituted self-medication for formal health care services
Chankova et al. 2008	MHOs in Ghana, Senegal, Mali	Protection against CHE for IP, no positive effect on OOPE
Dror et al.2009	BAIF, Up Lift, Nidan, India	Higher & equal utilisation among insured
Wagstaff et al. 2008b	NCMS, China	Health insurance increases the risk of high catastrophic spending
Franco et al. 2008	MHOs in Mali	Increased hospital utilisation of priority health services
Chankova et al. 2008	MHOs in Ghana, Senegal, Mali	Inconclusive evidence on utilisation; poorest included
Polonsky et al. 2008	CHI, Armenia	Poorest included
Lie &Lin 2009	NCMS, China	No impact on OOPE or utilisation of formal medical service
Rao et al. 2009	CHF, Afghanistan	No evidence of reduced OOPE; but higher utilization Low enrolment due to high premium, low quality of health care
Zhang et al. 2010	NCMS, China	Inclusion of the poor

Table 2.2 Literature on Determinants of Enrolment

Author	Country	Factors
Jutting,J and Tine J 2000	Senegal, HH survey	Benefit package, contracts with providers, availability of quality health care provider ; active engagement of local people; prevalence of trust and solidarity
Schneider and Diop 2001	Rwanda, HH survey	Education level of household head, family size, distance to the health facility, trust and sentiments of ownership and radio ownership
Criel and Waelkens 2003	West Africa, MHO	Decrease in enrolment due to low quality of care offered
Msuya et al. 2004	Tanzania, HH survey	Household income was a found to be a significant determinant
Schneider 2005	Rwanda, HH survey	Benefit coverage and the availability of medicines influences quality perceptions
Basaza et al. 2008	Uganda, HH survey	Ability to pay the premium, quality of health service, distance
Chankova et al. 2008	West Africa, HH survey	Gender and education of the head of household and economic status Inability to pay premium, even when small, acts as a major barrier to enrolment
Franco et al.2008	Mali, HH survey	Enrolment not significantly associated with socio-economic status

MHO Mutual Health Organisation
RMHC Rural Mutual Health Care
CHI Community Health Insurance
NCMS New Cooperative Medical Scheme
PPS Prepayment scheme
VLSS Vietnam Living Standards Survey
MIUs Micro Insurance Units
IP Inpatient
VHS Voluntary Health Scheme
CHF Community Health Fund
RCMS- Rural Cooperative Medical System
OP Oupatient
HH Household

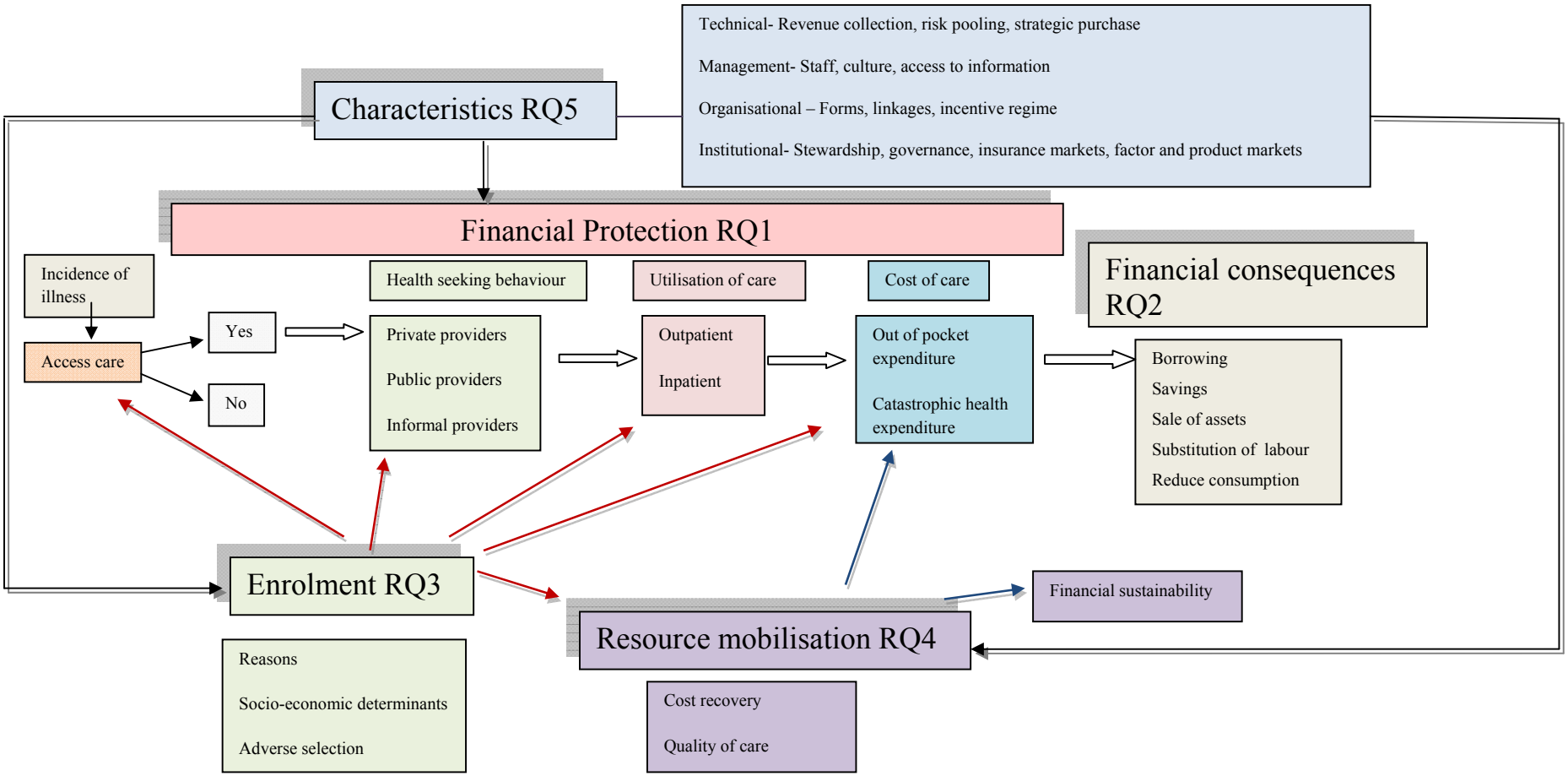


Figure 2.2 Research Framework on the Impact of Micro Health Insurance

Table 2.3 Definition of the Concepts Used in the Study

Concept	*Variable*	*Working definition*
Access to health care (Liu et al. 2002)	Number of visits to health provider	One's ability to obtain health services when needed. Likelihood of visiting a health provider.
Out of Pocket expenses (Gumber 2001)	Direct - fees, medicines, diagnostic tests, surgery, bed charges; Other costs- transportation, food expenses; Indirect costs- income/wage loss of the patient, interest payments on medical borrowing	Ratio of total medical expenses to aggregate household annual expenditure
Catastrophic Health Expenditure (Ranson 2002b)	Expenses incurred on hospitalisation and outpatient treatment	Ratio of total illness related expenses to annual per capita household income; Catastrophic if household expenditure for treatment exceeds 10% of the total annual per capita household income.
Utilisation of health services (Andersen & Newman 1973)	Inpatient care	Measured by the use of a inpatient health care facilities
Health Seeking Behaviour (Ward et al. 1997)	Types of providers – formal or informal	Activity undertaken by individuals who perceive to have a health problem or to be ill, for the purpose of finding an appropriate remedy
Horizontal equity (Liu et al. 2002)	Inter-group income class and gender equity	Effect on low income class/women in insured group more than similar class in uninsured group; distribution of benefits across groups of people of similar socio-economic status
Vertical equity (Liu et al. 2002)	Intra-group income and gender equity	People with the greatest need be given the most care; distribution of benefits across groups of people differing in socio-economic status
Moral hazard (Wong et al. 2006)	Duration of stay at hospital	Longer stay at hospital than expected

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology of the study. The first section explains research methods and second section deals with data collection and sources of data. Third section describes sampling design and fourth section briefly explains the study settings and Sampoorna Suraksha Programme. The literature review provided theoretical basis for designing the study and collection of data. The nature of research problem led to the choice of case study method and use of quantitative and qualitative methodology.

3.2 Research Approach

Case study method is suitable when complex issue requires in-depth analysis, especially the effectiveness of a programme intended for the socio-economic development of the community. This method emphasises detailed contextual analysis of quantitative and qualitative data to explain both the process and outcome of a programme, a phenomenon or an entity (Tellis 1997). It is an empirical inquiry into a phenomenon within its real-life context in which multiple sources of evidence is used (Yin 1984). The researchers mistake case study to be a qualitative research. However, it is suitable to collect quantitative evidence especially numerical and categorical responses of subjects of the study (Block 1986; Yin 1984). "How" and "why" related to a phenomenon are explored through this method. Researchers have used the case study method to investigate the effectiveness of CHI schemes in different settings (Ranson 2001; Jutting 2003; Ekman 2007a; Chankova et al. 2008; Polonsky et al. 2008; Wagstaff 2008a; Zhang 2010; Aggarwal 2010). Hence, single case study approach was the suitable research method, keeping in mind potential audience for the final report and research questions.

To answer broad research questions, deductive or realist approach with precise objectives was the choice. In addition, inductive or constructive approach to answer refined questions that on scheme design features and its impact of the MHI is required. The study adopted a combination of both the approaches, starting with deductive and gradually moving to inductive approach. The design of the study was based on the research purpose and research approach. Objectives 1 to 4 were addressed through quantitative methodology whereas objective 5 required qualitative

methodology. However, certain aspects of objective one (access to care) and objective three (barriers to enrolment) used qualitative approach. Thus, triangulation reveals multiple aspects of a single empirical entity and provides knowledge that is more comprehensive. Both qualitative and quantitative data from multiple sources (persons and places) and methods (surveys, interviews and focus group discussions, documents) were gathered. The cross-sectional household survey data was the basis for assessing the objectives 1, 2 and 3. Focus group discussions (FGD) and interviews provided the data to study objective 1 through 5, but emphasis was on objective 5. Annual reports and interviews with administrators correspond to the objective 4 and 5.

The study adopted a descriptive research to describe the impact of health insurance. A mix of structured and unstructured approach facilitated a comprehensive understanding of the research problem. The structured approach pre-determined the objectives, sample design, tools of data collection and survey instruments. In addition, unstructured approach helped to understand the problems faced by the people while accessing health care, barriers to enrolment and association between design characteristics and outcome of the scheme.

Any impact study suffers from methodological problem of self-selection bias. It becomes difficult to attribute the positive findings to the programme impact alone when people self-select to be members. Voluntary membership thus poses a challenge in that those who enrol may have time invariant unobservable characteristics (endogenous variables) which influence the outcome. This problem either exaggerates the significance of findings or undermines the programme impact. If the enrollees have hidden health risks, they would join and use the health services leading to higher utilisation, wrongly construed as positive impact of the programme. In addition, due to high utilisation, out of pocket expenses would be high leading us to conclude that the programme does not decrease out of pocket expenses.

The present study tackles the problem of endogeneity (self-selection bias) in three ways. Firstly, a comparison of the newly enrolled Sampoorna Suraksha Programme members (SSP) (considered uninsured) and the renewed members (taken as insured) of the programme on various measures of outcome limited the bias. The

logic was that both members self-select into the programme so the unobservable characteristics would be homogeneous. In addition, both the groups were members of self-help groups; hence, observable characteristics would be similar. The renewed members were renewing their enrolment in the previous one or more years. A comparison of the renewed and newly insured members would control the unobservable characteristics that induce people to get insurance. In addition, a comparison of uninsured self-help group (SHG) members with the insured members corroborates the findings. Insured group consists of renewed members and uninsured group includes newly enrolled members of SSP and uninsured self-help group (SHG) members of SKDRDP (Shri Kshetra Dharmasthala Rural Development Project). Minimizing the contamination of the results due to the location of residence required the selection of newly insured, insured and uninsured households from the same location. Secondly, the study of adverse selection as a research problem would show the magnitude of self-selection bias. Thirdly, use of Durbin-Wu-Haussmann test controlled the self-selection bias statistically.

Research question on the inclusion of the poorest in MHI schemes requires the definition of poorest income class, measured by annual per capita household income. In this study, social inclusion means the inclusion of the poorest households as members of Sampoorna Suraksha Programme. The cutoff point of income to classify households to different income classes is difficult due to lack of consensus on the definition of poverty. The official line of poverty was ₹368 per person per month for rural areas and ₹559 per person per month for urban areas in 2010-11 (Planning Commission of India). This does not represent the real picture of poverty in India. Hence, this study adopts a simple classification of households based on annual per capita income. The classification relates to sample households only and not to entire target population.

The classification of households into five income groups considered the per capita annual income of the entire sample. The per capita annual income data was divided into five equal parts, after arranging them in an ascending order, as quintile 1(first 20%), quintile 2 (next 20%), quintile 3 (next 20%), quintile 4 (subsequent 20%) and quintile 5 (last 20%). Thus, we defined five dummy variables, one for

wealthy (quintile 5), non-poor (quintile 4), vulnerable non-poor (quintile 3), moderate poor (quintile 2) and extremely poor (quintile 1).

Analysis on the access and utilisation of care, health seeking behaviour, out of pocket expenditure, catastrophic health expenditure (objective 1) and risk coping strategies (objective 2) considered cases of households that reported illness in the previous year of the study. Analysis considered individual cases since more than one member in a family can fall sick. Analysis of the factors influencing utilisation of care, health-seeking behaviour, OOPE, CHE and risk coping strategies used logistic/multiple linear regression models. Enrolment in MHI depends on both supply and demand factors. Objective three dealt with demand side and investigated the influence of head of the household, household and community characteristics on enrolment. Objective five deals with factors (supply side) related to enrolment, design and implementation of the scheme.

3.3 Data Collection Methods and Data Sources

A small-scale pilot study using Kannada translated questionnaire in December 2010 gave the information on the relevance of questions, ease of administration and time required to fill the questionnaire. It facilitated the measurement of the validity and reliability of questionnaire. The sample size was 30 and the respondents were selected using convenience sampling method. After 15 days, retest on the 15 respondents using the same questionnaire confirmed the reliability. Subject experts scrutinised the content validity of the questionnaire. Kappa coefficient, Cronbach's alpha and intra-class correlation coefficient measured the reliability of various items on the questionnaire. It was re-drafted after making changes to wordings of the sentence, order of questions, range of answers on multiple-choice questions and removal of some questions that was unnecessary or ambiguous.

The questionnaires and interviews form the basis of data collection. The quantitative methods include questionnaire survey and data on financial performance of the scheme (objectives 1, 2, 3 and 4) (Table 3.1). The study collected data using questionnaire from households in Dakshina Kannada, Uttara Kannada and Gadag districts in Karnataka in the first half of the year 2011. The qualitative instruments included focus group discussions (FGDs) with insured and uninsured members and

interviews with health care providers and scheme administrators. FGD with members and non-members addressed the issues related to barriers to access care (financial and non-financial; objective 1), participation in management and non-enrolment (Objective 3). Interviews with the health providers provide the data on the strategic purchasing and the problems faced during administration of the care to members. Interviews with the managers of insurance administration department in the hospitals or doctors triangulated the data gathered from field staffs and scheme members regarding claim settlement and contribution of the scheme to the hospital revenue. The interview data collected from the field staffs helped to know the moral hazard, adverse selection, and claim settlement, quality of hospitals and members participation in management of the scheme. Interview with scheme administrator helped to know the objective of starting the programme, initial and current difficulties faced during implementation of the scheme, management and administration of the scheme, financing arrangements and performance, human resource policies, criterion for membership, rapport with providers and strategic purchasing, benefit package decisions and agreement with insurance companies (objective 5).

Table 3.1 Data Collected Using Questionnaire

Demographic characteristics	Age, gender, years of education and occupation.
Socio-economic characteristics	Amount and sources of income, assets and monthly expenditure of the household, household size- gender wise, caste and religion, place of residence.
Cost of illness, health care access and utilization	Episodes of illness, types of care sought, reasons for choosing providers, result of treatment, number of days of illness, direct and indirect cost of illness.
Risk coping methods	Risk coping strategy of household for illness, amount of money borrowed/savings used/asset sold.
Membership details	Years of membership, claim data, reasons for enrolment, mode of payment of premium.
Quality of hospitals	Cleanliness, expertise of doctors, care of nurses, treatment by other hospital staff, time taken for examination by doctors, availability of diagnostic facilities/medicines

This study chose the case of SSP initiated and implemented by SKDRDP in Karnataka. Information gathered from the members of the programme using questionnaires and focus group discussions forms the primary data of the study. The study collected data related to health behaviour and expenses in the previous year of the study, February 2010 to March 2011 (one-year recall period for inpatient care and three months for outpatient care). Secondary data sources were books on health insurance, periodicals, journals that helped in conceptual mapping and preparation of questionnaire. Annual reports, brochures, information pamphlets and list of hospitals in the network provided scheme related information.

The hypothesis driven analysis of the data used SPSS version 17.0 and applied logistic and multiple linear regression models to test the hypothesis. A p-value of 5 percent was the criterion for significant association. The FGDs were (Kannada language) videotaped, transcribed and translated into English.

3.4 Sampling Design

In 2010-11, nine districts had SSP operations that varied substantially in terms of income, education, geography, natural resources, disease pattern, sex ratio, economic development and health indicators. The data set consisted of three districts and three to five *taluks* in each district, the sampling included 10 *taluks* overall.

The population of study is the SHG members of SKDRDP who were newly insured, insured or uninsured. Districts, *taluks*, *valayas*[1]and *karyakeshtras*[2] were the clusters and each successive stage selected these clusters randomly. The list of member households in each *karyakshetra* formed the sample frame. Households formed the unit of the study. Head of the households or spouses were the respondents to provide general demographic, socio-economic data, illness related health seeking behaviour information.

While calculating sample size, level of precision, level of confidence and degree of variability in attributes are important considerations (Israel 1992). As the target population size was 8,92,740 households in 2011-12 (SSP households were 420302 that included insured and newly insured), 385 was considered a desirable

[1]*valaya* in Kannada means region[2]*karyakshetra* in Kannada means division of SSP

sample size per group given the confidence interval of 5 percent and confidence level of 95 percent. As the study intends to compare the performance of these three main groups across various dimensions, 385 members from each category was the desired sample size. Replacement of respondents unavailable for administering the questionnaire was not done.

3.4.1 Sampling Procedure

The sample was drawn using five-stage cluster design with random selection procedures. In the first stage, nine SSP districts in Karnataka wee listed and re-arranged in an ascending order based on human development index (HDI). A random selection of three districts namely Dakshina Kananda, Utatra Kannada and Gadag was done. In the next stage, *taluks* in these districts formed clusters. The list of *taluks* provided by the district websites formed the basis of selection of *taluks*. Using the list of *taluks* listed according to the literacy index, we selected 10 *taluks* randomly based on the probability proportion to population size sampling method (number of *taluks* selected depends on the total number of *taluks* in each district). In the third stage, list of *valayas* (obtained from the *taluk* SSP office) in the selected *taluks* was used to randomly select *valayas*. These *taluks* had 97 *valayas* and we chose twenty percent of *valayas* for the study (18). One or two *valayas* from each *taluk* were selected depending on the number of *valayas* in each *taluk*. In the fourth stage, from the list of *karyakshetras,* four to five *karyakshetras* were selected from each *valaya* using the probability proportional to the number of *karyakshetra* in each *valaya*. Thus, eleven percent of the total *karyakshetras* (84) formed another cluster.

In the next stage, using the list of households (insured, newly insured and uninsured) in each *karyakshetra*, desired number of sample was selected using systematic sampling method. Third and fourth stage relied on the probability proportional to population size. Fifth stage used systematic sampling method to select households (10-15) in each *karyakshetra*. Total sample size included additional five percent to deal with the problem of non-response or partly filled questionnaire. Therefore, 18 *valayas*, 84 *karyakshetras* were selected and 1260 sample size was determined taking into consideration the potential problem of non-response. Hence, a sample of 420 for each category of insured, newly insured and uninsured group was

considered. However, due to non-response and incomplete or wrongly filled questionnaire, data of 416 renewed insured, 366 newly insured and 364 uninsured households were used for further analysis.

SSP members who have been renewing their SSP status in the previous one or more years were classified as insured members. Those SHG members enrolled in 2011-12 were newly insured members and SHG members who did not buy health insurance formed uninsured group. Ten FGDs, one in each *taluk* comprising fifteen members from insured and uninsured/newly insured group collected qualitative data and each FGD lasted for 30 minutes. The group included both men and women to get an insight into the various issues related to SSP and health care seeking behaviour. Six in-depth interviews with providers in six *taluks* and interviews with administrators/office staff and field staff provided in-depth information on SSP operations. Purposeful sampling strategy was the basis for the selection of scheme administrators, health care providers for interviews and members for FGDs.

3.5 Study Setting

India is the second fastest growing major economy and is the tenth largest economy in the world by nominal GDP and fourth largest in purchasing power parity in 2011 (IMF 2010). There are 640 districts within 28 states and 7 union territories. In India, there are 7,000 towns and 6 lakh villages. Population and number of districts were highest in Uttara Pradesh and lowest in Sikkim and Daman and Diu. India has 17.5 percent of world population. Literacy rate for female is 65.46 percent and for male is 82.14 percent (Census of India 2011).

Economic reforms have been instrumental in accelerating the growth. However, India has failed to bring in policies to remove the obstacles in social development, especially in health sector. To provide quality health care facilities to people, especially to those below the poverty line, Government of India has initiated several health programmes. National Health Policy of India (2002) aims to achieve health system goals such as improvement in the health status of the population and health standards. National Rural Health Mission in 2005 has a similar objective of enhancing the availability and access to health care.

Karnataka, as a state in independent India covers an area of 191,976 sq. km. or 5.83 percent of the total geographical area of India. It ranks eighth largest Indian state by area, the ninth by population and seventh in terms of Net State Domestic Product. The Gross State Domestic Product (GSDP) of the state in 2010-11 was ₹271,956 crore (base year 1999-2000) (Directorate of Economics and Statistics, GoK). The per capita GSDP at current prices was ₹50,974 in 2009-10 and ₹51858 in 2010-11. It has the sixth highest per-capita GDP of all states (Economic survey of Karnataka, 2010-11).The state is the manufacturing hub for some of the largest public sector industries and premier science and technology research centres in India. It has emerged as the pan-India leader in the field of information technology.

The state receives external assistance to health sector from the central government (15%) and the remaining investment money comes from the state funds. However, the GSDP spent on health was 0.7 percent in 2004 and less than 4 percent of total budget expenditure went to health sector. The state failed to meet the targeted expenditure of 7 percent of total budget advocated in National Health Policy (2002). In addition, primary services received 50 percent of allocated funds, secondary services got 13 percent and tertiary services received 34 percent of funds. The health infrastructure in the state has skewed development as few cities like Bangalore, Mangalore and Manipal have excellent facilities whereas more than three fifth cities and towns lack basic health care infrastructure (Economic Survey of Karnataka 2010-11). There is a large disparity in inter-district performance in the health care infrastructure and indicators. The poor, especially in north Karnataka has to rely on public health care system, as private hospitals are expensive and not easily available.

SSP was active in nine districts namely Dakshina Kannada, Udupi, Kodagu, Uttara kannada, Chikmagalur, Shimoga, Gadag, Haveri and Dharwad in the year 2011-12. This study selected Dakshina Kannada, Uttara Kannada and Gadag districts using random sampling method.

3.5.1 Profile of Gadag

Gadag district is located in the western part of northern Karnataka. It has an area of 4651 sq. km with the density of population of 229 in 2011 (Directorate of Economics and Statistics, GoK 2008). It has 1.74 percent of total Karnataka population. Literacy rate was 71.4% and number of female per 1000 male was 978 in 2010-11. The city is popular for printing press and handloom. The district had net district income was ₹281,948 lakh at current prices in 2007-08 that constitutes 1.3 percent of GSDP. The district had per capita income of ₹21,600 (2007-08). It was ranked 15th in the state among other districts in terms of per capita income. It ranks at 13th place in terms of HDI in the state of Karnataka (KHDR 2005). It is one of the top five districts in the gross enrolment of children in the school and one of the bottom five districts in terms of life expectancy at birth (KHDR 2005). It has high value of education index in the state after Udupi (0.750), 15th place in terms of income index (0.525) and 22nd rank in health index (0.628). It has five *taluks* namely Gadag-Betageri (administrative headquarters), Shirhatti, Ron, Mundaragi, and Naragund. In the district, 43.3 percent of villages had sub-centres (total number of villages is 32), 21.9 percent had primary health centre, 43.8 percent had government health facility, 31.3 percent had doctors, 3.1 percent had ASHA (Accredited Social Health activist) workers, and all the villages had anganvady workers (National Family Health Survey 2005).

3.5.2 Profile of Dakshina Kannada

Dakshina kannada, also known as South Kanara, is the southern coastal district of Karnataka. It has five *taluks* namely Mangalore (administrative headquarters), Bantwal, Puttur, Sullia and Belthangady. It has an area of 4599 sq.km. Literacy rate was 88.62 percent, of which males literacy rate was 93.31 percent and that of females was 84.04 percent. The net district income was ₹674,352 lakh in 2007-08 and it contributed 4.6 percent of the GSDP (Directorate of Economics and Statistics, GoK). The district had per capita income of ₹33,154 and ranks second in terms of per capita income. It ranks second in terms of HDI in the state of Karnataka (KHDR 2005). It is one of the top five districts in the state in literacy rate, life expectancy at birth and per capita income (KHDR 2005). It occupies fifth place in

education index (0.707), 3rd place in health index (0.823) and 2nd place in income index (0.636) in the state (KHDR2005). In the district, 54.8 percent of villages (total number of villages is 31) had sub-centres, 12.9 percent had primary health centres, 64.5 percent had government health facility, 19.4 percent had doctors, 3.2 percent had ASHA workers, and all the villages had anganvady workers (National Family Health Survey 2005).

3.5.3 Profile of Uttara Kannada

Uttara Kannada, known as North Kanara, is one of the biggest districts with eleven *taluks*. It is in the northern coastal part of Karnataka. Uttara Kannada had a population of 14, 36,847 (Census of India 2001). It has area of 10,291 sq.km and the density of population was 140 per sq.km in 2011. Uttara kananda has eleven *taluks* namely Karwar, Kumta, Ankola, Honnavar, Bhatkal, Sirsi, Siddapur, Yellapur, Haliyal, Supa and Mudagod. The district had a per capita income of ₹12,043 in 2001 and occupied 11th rank in the state in terms of per capita income. It ranks at 7th place in terms of human development index in the state of Karnataka. It is one of the top five districts in literacy rate. It ranks 19th (0.632) in education index,4thin health index (0.781) and 11th in income index (0.546) among all the districts in Karnataka (KHDR 2005). Karwar is the district administrative headquarters. In the district, 40 percent of villages (total number of villages is 35) had sub-centres, 22.9 percent had primary health centres, 42.9 percent had government health facility, 17.1 percent had doctors, 11.4 percent had ASHA workers, and 91.4 percent of the villages had anganvady workers (NFHS 03).

3.6 Shri Kshetra Dharmasthala Rural Development Project

SKDRDP is a novel programme initiated in 1982 in Belthangady, Dakshina Kannada under the visionary leadership of Dharmadhikari Sri Veerendra Heggade of Sri Kshetra Dharmasthala to uplift the poor and transform poverty stricken households' better living through self-employment. It is registered under Charitable Trust Act in 1991.The well-known microfinance programme was started in 1995, with a shift from the concept of charity based development assistance to self-help groups model. The main focus of SKDRDP is rural development, community development and urban community development for which it has successfully implemented many

programmes namely livelihood promotion programmes, self-employment training, 'Pragathibandhu' (for small, marginal and landless labourers), agriculture development programmes, irrigation programmes, 'Siri' (provides market outlet to products of members), 'Sampoorna Suraksha' (micro-insurance) and 'Jnana Vikasa' (social empowerment). It grabbed 'Microfinance India Award' by Hong Kong based HSBC bank and Access Development Services in 2011. 'Pragathibandhu' and Sampoorna Suraksha,' were selected as one of the final best three models and have won the 'Change Makers Award'jointly promoted by US based Ashoka Foundation and Citi Bank in 2011. It also bagged'Ashden Golden Award' for Global Green energy in 2012.

3.6.1 Sampoorna Suraksha Programme

Sampoorna Suraksha, meaning total security (Kanishta Nirvahane, Garishta Bhadrate[1]) was started in 2004 to provide financial risk coverage to the SHG members of SKDRDP, staff and their families in case of unforeseen consequences of ill health, natural disasters and death.The programme also provides credit in case of excessive inpatient medical expenses to insured families. The benefit package includes cashless treatment for hospitalisation and delivery expenses, death compensation, and sickness allowances. Enrolment of members takes place through SHGs and field staff in the month of February of every year. Initially, it was offered in Uttara Kannada, Dakshina Kannada, Udupi in 2004, later it was extended to Chikkamagalur, Shimoga, Kodagu, Dharwad, Gadag and Haveri. It was introduced in Tumkur and Belgaum districts in 2011-12. The total coverage was 8000 villages and 41 towns.

3.6.2 Key Features of Sampoorna Suraksha Programme

As per IRDA (Micro-insurance) Regulations 2005, private insurance companies should mobilise seven percent of total premium from rural India in the sixth/seventh year of operations. Owing to high cost of transaction and serving rural population scattered in more than six lakh villages, these companies have tied up with micro - finance institutions (MFIs) to meet the statutory requirements of IRDA. Since 2004, well-known private-for-profit insurance companies and public sector companies

[1]In Kannada language, it means minimum management and maximum security

have offered group health insurance policies to SHGs through SSP model. SSP acts as community based aggregator and a TPA. It assumes the role of agent or insurance intermediary as it uses existing infrastructure and established channels of micro-credit and micro-savings to offer insurance products to the SHGs. The objective of SSP is to provide financial assistance to meet unexpected medical expenses to the stakeholders and their family, to facilitate access to the best hospitals and to provide medical facilities at lower cost (Sampoorna Suraksha Brochure, 2011). Organisation map of SSP depicts hierarchy structure (Figure 3.1). Following paragraphs briefly describe salient features of SSP.

i. Eligibility

The scheme is voluntary offered to SHG members and their family of SKDRDP, its staff and their family members in the age group of three months to 80 years. Family includes self, spouse, unmarried daughters, sisters, brothers, their wives and children living under the same roof, and cook in the same kitchen.

ii. Premium

The premium payable for the first member of a family was ₹ 350 in 2011-12. There has been a significant change in the premium contribution and marginal cost per additional member since 2007.

iii. Enrolment and premium payment procedure

Premium is to be paid yearly in the month of February of every year. Considering the seasonality of income of target population, a credit facility is provided to SHG members to pay the premium at a low interest rate. Field staffs (called in local language as *sevanirathas*) have to create awareness on the benefits of SSP prior to the enrolment month. Their responsibilities include filling the registration forms, collection of the premium from the members and issuing SSP card to the members. Supervisors have to monitor the enrolment in their villages and submit consolidated accounts of the subscription and premium to Project Officer of respective *valaya*, who in turn would send it to SSP head office. The office pays the premium to the insurance company for the term beginning from 1st March to 28th February. In 2011-12, maximum number of family members per policy was restricted to seven.

Table 3.2 Key Features of Sampoorna Suraksha Programme

Ownership and governance	Shree Kshetra Dharmasthala Rural Development Project (SKDRDP) Trust and Insurance Companies
Micro health insurance Model	Partner-agent model for hospitalisation benefit and full service model for special benefit cover
Insurance company	United Insurance Company Ltd., Oriental Insurance Company Ltd., New India Assurance Company Ltd., National Insurance Company Ltd. in 2011-12
Target population	Self Help Group (SHG) members of SKDRDP and their families
Enrolment	420,302 households, 1,660,185 members in 2011-12
Eligibility	Age group between 3 months to 80 years, only for SHGs of SKDRDP
Benefit package	Life, Health and Assets; ₹ 5000/ for hospitalisation per person in a family
Network hospitals	110 in 9 districts of SKDRDP and Bangalore and Hassan in 2011-12
Process of reimbursement	Cashless; payment directly to the hospital
Method of reimbursement to hospital	Paid by Real Time Gross Settlement
External funding	None
Nature of relationship with the provider	Contract basis
Role of government	None
Community involvement in scheme design and management	Feedback given at the annual or monthly meetings is used to improve the scheme design
Role of health care provider	Provision of health care services, no involvement in management or designing benefit package
Political context	No government involvement
Structure and performance of health care system	Multi-tier structure, private sector dominates

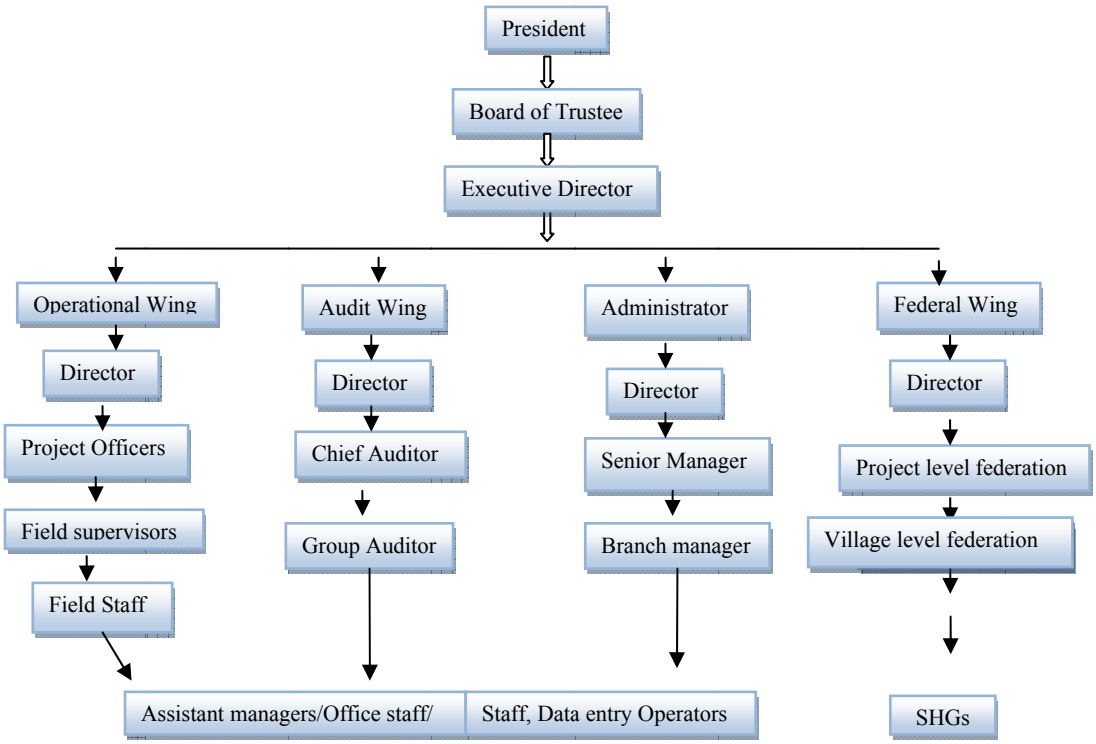


Figure 3.1 Organisation Structure of SSP

iv. Benefits

The benefits of Sampooran Suraksha covered in 2011-12 were medical benefits (health treatment) and special benefits (delivery allowances, death consolation, domiciliary treatment, rest allowance and consolation of natural calamities).

a. Medical benefits

Health benefits are provided as cashless treatment at network hospitals up to the sum assured (₹5,000/ per individual). The scheme offers a family floater cover and a multiple of ₹5,000 for seven members summing up to ₹35,000/. Outpatient treatment is excluded from coverage. Unlike a private for-profit company, SSP does not exclude pre-existing diseases. In addition, there is no waiting period and co-payment or deductibles to be paid by the policyholders. The coverage is provided only for general ward admissions in the network hospitals, however non-network hospital admissions are considered for reimbursement in special cases.

b. Special benefits

The members of the programme can avail special benefits in the nature of consolatory benefits to overcome liquidity constraints due to the risk of ill health, natural calamity or loss of life.

Maternity benefits

Maternity benefits cover the first two deliveries. SSP pays an amount of ₹ 2,500 for normal deliveries and ₹5,000 for caesarian section deliveries. Submission of the Form C along with medical bills and discharge summary of the hospital is required to avail this benefit.

Rest allowance

Rest allowance provides a maximum of ₹1,500 per week and a minimum of ₹ 50 per week for a maximum period of one month until 2010-11. Doctors' certificate, requisition letter citing the severity of illness, and number of working members in the family and Form C was required to avail the benefit.

Personal accident cover

A compensation of ₹12,500 to a primary member in the event of losing one of the major organs in an accident is given. In case of permanent disability, ₹25,000/ can be availed.

Death consolation

The benefit package includes a death consolation cover of ₹2,000 on natural death of any registered member and ₹5,000 in case of primary member of the family. ₹25,000 is paid on the accidental death of the primary member on the submission of first information report, investigation report, autopsy report and statements by the witness and family members along with the certificate of cause of death and a requisition letter.

v. Accessing medical care

Insured members can get medical treatment in any of the 110-network hospital, even without the referral letter from any doctor. Within 24 hours of admission, insured has to produce SSP card to the hospital registration section. The hospital has to send the pre-authorisation request to SSP head office. Medical officer will verify line of treatment planned investigation and total costs. The accounting

section will check the unclaimed balance and the previous claim record of the member. If approved, the office will send an online authorisation letter with the sanction limit to the hospital. Sampoorna Suraksha staff visits the hospital to verify the admission of the member. This mechanism prevents moral hazard and impersonation.

Within ten days of discharge, the hospital has to send the claim Form A with pre-authorisation number given by SSP office along with a photocopy of SSP card, discharge summary, investigation reports, laboratory reports and the total bill along with separate bills for the diagnostic and laboratory investigation. SSP office sends the sanctioned amount by RTGS (Real Time Gross Settlement) to the hospital. In case of treatment in non-network hospitals, insured can submit Form B for reimbursement.

vi. Claims adjudication and settlement

The network hospital has to send medical bills, discharge summary, reports (investigation and diagnostic such as X-ray, CT scan, MRI, laboratory) within ten days after the discharge of insured patient. Medical officers of SSP in the head office scrutinise pre-authorisation forms, claim applications, investigation reports and discharge summary. Office staff verifies the name, address and other details and unclaimed total amount of benefit. The settlement of the sanctioned claim takes place within 30 days of receipt of claim application using RTGS system.

The submission of Form C is required to claim special benefits. The Supervisors, Project Officers in the region verify/ endorse it and send it to SSP head office at Dharmasthala. The insurance company conducts audits and inspections. Project officers of respective regions send medical team from SSP office to ensure quality medical care to members of the scheme and take steps to prevent supplier and member moral hazard.

vii. Client servicing and claim management process

SSP adopts a combination of linked and full service model of micro insurance. It acts as an agent for a partner (insurance companies) in which agent takes the responsibility for the delivery and marketing of products to the clients whereas partner provides actuarial expertise and financial coverage and absorbs the risk of medical component of the programme. The basis of medical benefit component of SSP Linked model in which SSP collects premium, manages the claim processing and payment to providers. Special benefit is a full service model in which SSP provides risk coverage including claim management.

A Memorandum of Understanding between SKDRDP, insurance company and network hospitals specifies the role and responsibilities of each party. The insurance company issues a group health policy for a one time consolidated premium to SHGs who enrol in the programme. SSP issues a membership card to each policy holding family. The role of SSP in providing medical benefits are the registration of members, collection of the premium, maintenance subscription records, handing over subscription amount along with registration forms and consolidated statement to insurance companies. It has to forward the approved claim forms to the insurance

companies, coordinate the pre-authorisation with insurance companies and settle cashless claims with network hospitals. SSP office sends a debit note to the insurance company. A debit note should not exceed ₹10 lakh. If it exceeds, the submission of additional debit note for ₹10 lakh is required. In case of the shortage of funds to make payments to hospitals, micro finance division of SKDRDP extends a credit advance. The inter-transfer of funds between micro-finance and micro insurance is a special feature of SSP that highlights the advantage of nesting MHI in parent organisation. In providing special benefits, it has to scrutinise and verify treatment claims received from hospitals and reimburse the members. Figure 3.2 shows the client servicing and claim management process.

Network hospitals are included in SSP after the scrutinisation of the range and quality of services, cost of treatment, location and proximity to members, and preferences of members as voiced in monthly or annual meetings. Project Officers of SKDRDP would send a requisition form for inclusion in network to various hospitals. The form should be submitted by the hospitals detailing the total number of beds, general ward beds, special consultation facilities, diagnostic equipment, details of the doctors/ specialists, charity work of the hospital, and rate list (for different procedures, operation charges, investigation charges, and surgery charges). An undertaking by the head of the hospital to provide cashless treatment at concessional agreed rates to beneficiaries of the scheme is necessary to reach an agreement. Only after the hospitals send this consent, a Memorandum of Understanding between the programme and hospitals is possible. Every fortnight, SSP assistants report on the duration of stay in the hospital and unnecessary investigations. The report provides information to monitor the performance of the hospital by the project officer of the concerned *valaya*. In case, the reimbursement of amount spent for medicine bought from the outside pharmacy due to its unavailability in the hospital is required, the concerned hospital has to submit the bill along with claim form and discharge summary.

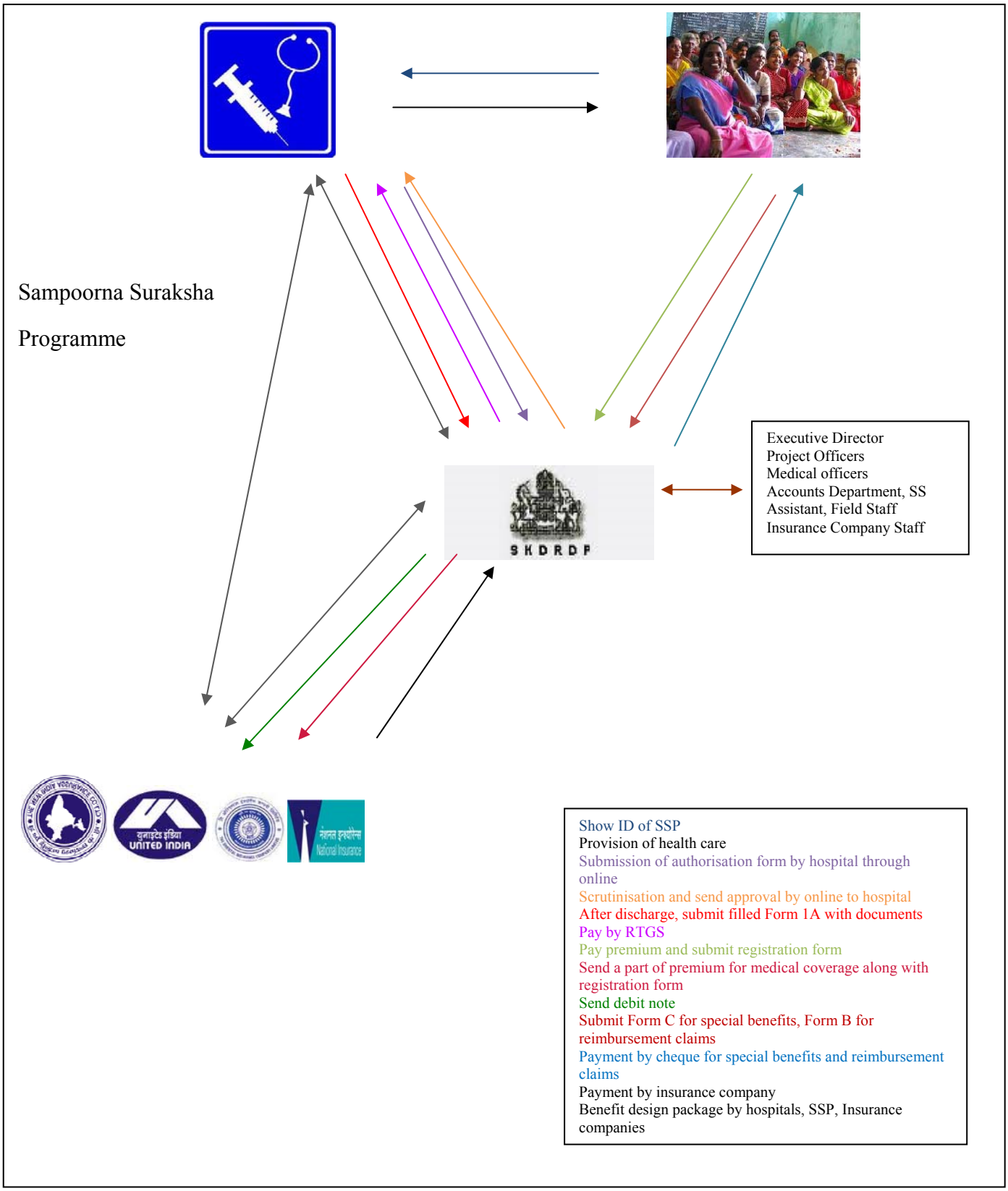


Figure 3.2 ClientServicing and Claim Management Process

viii. The role of information technology

The programme owes its success partly to information technology that has reduced a lot of paper work and helped the maintenance of member portfolio (household information, premium, past claim data, loan details) and preparation of cumulative reports at the project offices. All the records are computerized that includes members name, address, their claim records, balance amount that can be claimed, payment made to network hospitals, and forms submitted to insurance companies. The fax system replaced the online submission of scanned forms that reduced claim-processing time.

ix. Source of revenue

The main source of funds is the premium revenue collected from the members. SSP does not have any financial support from the government or other aid agencies.

x. Fraud prevention and detection mechanisms

SSP has implemented various fraud identification mechanisms namely computerized identity card, verification of medical bill, payment of premium in advance, visits to hospitals by Sampoorna Suraksha assistants to verify the admission of members and pre-authorisation sanction by SSP office.

xi. Recruitment of staff

SSP does not have its own staff except a few office staff and medical officers. Recruitment of the lower level field staff (*sevanirathas*) takes place once in a year. The criteria are the age between 18-25 years with minimum qualification of pre-university certificate course. The assessment of the candidates is based on the written test and interviews. The grades will be determined based on their performance that determines the selection of the suitable candidate, without any gender or caste discrimination. For specialized positions, lateral recruitments are used. Project Officers and Supervisors, based on 21 parameters, appraise the performance of field staff every year. An in-house training institute, 'Centre for Rural Excellence' provides training to overcome the weaknesses of the staffs as reflected in the appraisal. Project Officer, based on field visits, suitability of the planned programmes, implementation of new programmes and problem-solving skills, evaluate the supervisors.

CHAPTER 4

IMPACT OF SAMPOORNA SURAKSHA PROGRAMME ON FINANCIAL PROTECTION

4.1 DESCRIPTION OF SURVEYED HOUSEHOLDS

The study analysed the survey data collected from 1146 households that included information on 4961 individuals. The sample included 416 insured households (1850 individuals), 366 newly insured households (1594 individuals) and 364 uninsured households (1517 individuals). Socio-economic characteristics of the sample households did not differ except in terms of religion and distance to hospital. Almost 44 percent of the insured households had access to health care services within one kilometer of their residence compared to 29.6 percent of newly insured and 38.5 percent of uninsured households. Newly insured had a longer distance to travel (average of 3.3 km) compared to insured and uninsured households. It can be inferred from Table 4.1 that insured members live near the hospital than uninsured and newly insured households ($p<0.05$). Hindus formed the majority of target population, but newly insured had a higher percent of Muslims. Two fifths of insured households were from semi-urban areas compared to 30.6 percent of newly insured and almost 32 percent of uninsured households.

Socio-economic characteristics of the head of the sample households show homogeneity except the marital status. Nearly 85 percent of the head of the households was married. A comparison of widow or divorce status among the groups' shows that 18.4 percent of uninsured head of the households were widows/widowers/divorcees compared to the head of the households of insured (11.8 %) and newly insured (13.1%) families. One thirds of head of the households of insured sample, almost two fifths of newly enrolled and 42 percent of uninsured sample were in the age group of 41 to 50 years (Table 4.2). Men were the head of the 84 percent of insured households, 84.7 percent of the newly enrolled households and 79.9 percent of uninsured households. Forty-two percent of the head of the households completed the primary education (1^{st} standard to 7^{th} standard) and almost 26 percent had completed the secondary education. The main occupation of the head of the household was unskilled labour that included daily labour and rolling of beedi (41.4%). The head of the households in the insured group had a lower percent of unskilled labour and formal sector employment compared to

uninsured and newly insured members. The average annual income of the head of the household was ₹53,995 for the entire sample.

Annual income of the entire household for insured households was ₹116,850, for newly insured households ₹102,630 and ₹107,926 for uninsured households. There was no difference in the distribution of income in terms of the income quintile among sample groups. More than three fourths of insured households, almost two thirds in newly insured households and four fifths of uninsured households had a family size of 3 to 5 ($p<0.05$).

An analysis of assets owned by the sample households elucidates the economic conditions of the sample households. Table 4.3 depicts a higher percent (89.2%) of insured households owning the house compared to newly insured (84.9%) and uninsured households (83.8%). A large number of uninsured households had cemented red oxide flooring (73.9%) relative to newly insured (66.9%) and insured (63.5%) households. Newly insured had a higher percent of the mud flooring and insured households had ceramic tiles compared to the other two groups ($p=0.00$). The sample households used brick to construct the walls than mud; however, most of the insured households had mud walls than other two groups and more of the uninsured households had brick walls than mud ($p=0.00$). Clay tiles were the material used by almost four fifths of sample households followed by concrete slabs in a higher percent in insured households. Insured households had more rooms than uninsured and newly insured households. Almost half of insured households had 3 to 4 rooms, whereas 41.3 percent of newly insured had 1 to 2 rooms and 43.5 percent of uninsured had 3 to 4 rooms. Nearly 85 percent of the sample households owned mobile phones followed by fan and television.

Table 4.1 Socio-Economic Characteristics of Surveyed Households

	Insured	Newly insured	Uninsured	Test value
Number of households	416	366	364	
Mean per capita annual income (₹)	27024	24730	26216	1.6391[1]
SD	19160	11810	16550	
Income quintile (%)				4.5742[2]
Q1 <₹14100	18.5	20.5	21	
Q2 ₹14101-₹19010	20.9	20.5	22.3	
Q3 ₹19011- ₹24000	19	22	18.4	
Q4 ₹24001-₹34800	21.9	21.3	21.3	
Q5 >₹ 34800	19.7	15.7	17	
Mean size of households (SD)	4.5 (1.74)	4.36 (1.77)	4.2 (1.48)	9.1121[1]
Religion(%)				21.343*[3]
Hindu	95.7	82.2	94	
Christian	0.7	2.5	1.9	
Muslim	3.6	15.3	4.1	
Area of residence (%)				36.22[2]
Rural areas	52.2	55.2	56.2	
Urban areas	7.2	14.2	12.1	
Semi-urban areas	40.6	30.6	31.7	
Distance to hospital (km) Mean (SD)	2.3 (2.1)	3.3 (2.7)	2.4 (2.3)	42.647*[1]

[1]Kruskal Wallis test [2]Pearson chi square test [3]Fishers exact test

SD- Standard Deviation 1 US $= almost 61 Indian rupees (₹) in October 2013

*p<0.05

Table 4.2 Basic Socio-economic Characteristics of Heads of the Households

	Insured N=416	Newly insured N=366	Uninsured N=364	Test value
Age group: 20 to 30	6.2	6.2	3.6	12.022[1]
31 to 40	22.4	24.3	23.4	
41 to 50	33.4	38.5	42	
More than 50	38	31	31	
Marital Status: Married	86.5	86.1	81.6	16.9[2]*
Unmarried	1.7	0.8	0	
Widow/widower/divorcee	11.8	13.1	18.4	
Education: Illiterate	22.5	26.3	21.4	9.166[1]
Primary education	42.8	40.9	40.4	
Secondary education	23.6	23	25	
Pre-university or degree	10.1	8.8	12.3	
Vocational degree	1	1	0.9	
Occupation: Unskilled labourer	38.2	43.4	43.1	27.253[1]
Skilled labour	18	16.9	15.7	
Self-employment	10	5.4	8.5	
Formal sector employment	2.9	5.2	5.8	
Unemployed	18.4	17.9	15.6	
Unskilled salaried	5.8	5.2	5.2	
Skilled salaried (informal sector)	3.1	2.2	3.6	
Agriculture	3.6	3.8	2.5	
Annual Income: Mean (SD) (₹)	60200 (81235)	49867 (40454)	51054 (43889)	0.766[3]

[1]Pearson chi square test [2]Fishers exact test [3]Kruskal Wallis test

SD- Standard Deviation

*$p<0.05$

(In percentages)

Table 4.3 Assets Ownership of Surveyed Households

	Insured	Newly insured	Uninsured	Chi square value
House ownership (%)	89.2	84.9	83.8	4.356
Floor material (%)				24.565*
Mud	15.1	18	12.9	
Ceramic tiles	13.2	5.7	5.8	
Cement - red oxide	71.7	66.9	73.9	
Marble	8.2	9.3	7.4	
Wall construction (%)				20.632*
Mud	21.9	15	12.9	
Brick	72.8	79.8	85.2	
Cement blocks	5.3	5.2	1.9	
Roof material (%)				4.21
Thatched	0.5	0.3	0	
Clay tiles	79.3	77	79.1	
Metal tin	6	8.7	8	
Concrete	14.2	14	12.9	
Types of toilet used (%)				5.556
Open	7.2	9.8	10.7	
Private	92.3	88.8	88.8	
Public	0.5	1.4	0.5	
Source of water (%)				9.657
Piped into house	28.1	26.8	25.3	
Public tap	21.6	27.3	30.5	
Well	41.8	36.6	34.9	
River/spring	2.4	2.5	2.7	
Water tank	6	6.8	6.6	
Electricity connection (%)	85.1	79.5	82.4	0.122
Assets(%): Land	16.1	13.7	13.2	1.579
Radio	8.9	9.3	6.3	2.554
Television	66.1	61.7	69.2	4.58
Bicycle	9.6	8.2	8	0.801
Fan	82.2	72.1	75.3	11.786
Bike	21.2	18	17.6	1.95
Mobile phone	84.9	86.9	81	4.859
Refridgerator	13.5	8.2	11.3	5.495
Car	0.7	0.8	0.3	1.024

*$p<0.05$

4.2 IMPACT OF SAMPOORNA SURAKSHA PROGRAMME ON FINANCIAL PROTECTION- ACCESS TO CARE

4.2.1 Introduction

Financial protection denotes the reduction in medical expenses incurred by insured individuals while increasing utilisation of health services. This chapter focuses on the impact of SSP on financial protection provided to insured members. This study compares insured, newly insured and uninsured individuals on various dimensions of financial protection such as i) access to care, ii) health seeking behaviour, iii) utilisation of inpatient facilities, iv) out of pocket expenditure, v) catastrophic health expenditure and vi) risk coping strategies to assess the impact of SSP.

Access to care is one's ability to obtain the health services when required. Due to financial and non-financial barriers, people would not seek care during illness. Households in the informal economy usually do not make financial provision for illness due to low income of the individuals, unpredictability of the timing of illness and high cost of care. When these individuals become sick, they have to either borrow at high interest rate or postpone seeking care. The research question was whether SSP reduces the financial barriers to access care. Since SSP provides the financial coverage, financial risk associated with the cost of treatment would be lower. Health insurance coverage compensates the low income of these households such that insured can access timely care. Pre-determination of benefit package for each disease removes the psychological barriers related to uncertainty about medical bills. Hence, the study hypothesised that SSP increases access to care for insured individuals compared to uninsured and newly insured individuals. The analysis uses the data on the incidence of illness, types of treatment taken (outpatient and inpatient) and the socio-economic characteristics of sample households. Firstly, a comparison of the proportion of insured, newly insured and uninsured households who had reported sickness facilitates a better understanding of access to care. After the discussion on the incidence of illness, the analysis focused on the impact of SSP on access to care by comparing the proportion of individuals who sought care upon illness. Various socio-economic characteristics of households highlight

important variables that shape access to care and the incidence of illness (Table 4.4 and 4.5). A comparison of the frequency of visits to the health facility between insured, newly insured and uninsured individuals explicates the differences among these groups with regard to access to care. Barriers to access care were explored using the data from the focus group discussions (FGD).

4.2.2 Incidence of Illness in the Sample Households

In the total sample, 272 (65.4%) insured households, 256 (69.9 %) newly insured households and 281 (77 %) uninsured households did not report illness. Thus, insured households had a higher incidence of illness followed by newly insured households and uninsured households ($p<0.05$) (Table 4.4).

Ill persons in insured and uninsured group had an average age of 43 years, higher than that of newly insured (37 years) group. Types of illness was not a determinant of the access to care. Insured reported a higher percent of hospitalisation compared to newly insured and uninsured individuals. Households residing in rural areas reported higher illness than those in semi-urban or urban areas.

Table 4.4 Demographic and Health Related Characteristics of Ill Persons in the Sample

		Insured (N=161)	Newly insured (N=120)	Uninsured (N=90)	Test value
Mean age of ill person (in years)		43	37	43	5.461[1]
Gender of ill person (%)	Male	50.9	49.6	50.6	0.974[2]**
	Female	49.1	50.4	49.4	
Types of illness (%)	Acute	43.4	48.7	43.5	3.571[2]
	Chronic	54.1	45.5	51.8	
	Maternity	2.5	6	4.7	
Types of treatment (%)	Outpatient (N=76)	21.1	46.1	32.8	20.656[2]*
	In patient (N=285)	50.1	28.8	21.1	
	No treatment (N=10)	20	30	50	
Income quintile (%)	Q1	22.2	23	26.4	4.997[2]
	Q2	24.7	19.5	24.1	
	Q3	22.8	21.2	19.5	
	Q4	14.6	23	18.4	
	Q5	15.5	13.3	18.4	
Area of residence (%)	Urban	8.9	17.7	21.8	12.026[2]*
	Semi-urban	38.6	38.9	25.3	
	Rural	52.5	43.4	52.9	

[1]ANOVA test
[2]Pearson chi square test
*<0.05; **<0.1
(In percentages)

4.2.3 Access to Health Care

An analysis on access to care considered individual cases since there were instances of more than one family member being ill. Hence, further analysis considers 161 individuals in 144 insured households, 120 individuals in 110 newly insured households and 90 individuals in 83 uninsured households. Only two percent of the individuals reporting illness did not seek care. Thus, out of 371 individuals reporting sickness, 10 individuals did not seek treatment. Among 361 individuals who sought

treatment, 159 belonged to insured group, 117 to newly insured and 85 to uninsured group. Intra-group analysis of those who did not access care reveals that almost half of the individuals were from uninsured than insured or newly insured individuals (30%). This finding was not significant suggesting no relationship between health insurance and access to care ($p>0.05$). Hence, null hypothesis that SSP does not have any impact on access to care was accepted.

Mean age of ill persons who accessed care was 41 and of those who did not seek care was 44 years (Table 4.5). There was no gender difference in access to care in the sample households. Chronic illness (50.7%) motivated individuals to access health care than acute illness (45.1%). The duration of illness determines the access to care. Average duration of illness of care seeking individuals was 15 days ($p<0.05$). Most of individuals who sought care had men as the head of the households (82.5%) whereas 30 percent of individuals who did not seek care had female head. A majority of the individuals from low-income quintile (Q1, Q2 and Q3) did not seek care. The care-seeking individuals lived away from the hospitals (median 2 km) and most of rural residents did not seek care.

Higher number of visits (more than or equal to 2) was made by newly insured (31.5%) than insured (26%) and uninsured (17.6%) individuals. Mann Whitney U test suggests no difference between newly insured and insured group ($p>0.05$). However, the difference was statistically significant between uninsured and newly insured individuals ($p<0.05$) with majority of uninsured making one visit, rarely two or more visits.

Table 4.5 Socio-economic Characteristics and Access to Care

	Access to care		Test value
	No (N=10)	Yes (N=361)	
Health insurance status (%)			
Insured	20	44	4.121[1] Fisher's p =.156
Newly insured	30	32.5	
Uninsured	50	23.5	
Gender of ill person; Male (%)	50	50.4	0.111[1]
Age of ill person (in years)	44	41	0.706[2]
Types of illness (%)			
Acute	70	45.1	2.5581[1] Fisher's p =.335
Chronic	30	50.7	
Maternity	0	4.2	
Duration of illness (in days)	6	15	0.013[2*]
Gender of head of household; Male (%)	70	82.5	1.048[1]
Education of head of household (in years)	5	5	0.708[2]
Income quintile (%)			
Q1	30	23	
Q2	30	22.7	
Q3	0	21.6	
Q4	30	17.7	
Q5	10	15	
Distance of hospital (in km) Mean (SD)	1.6 (3.8)	2.6 (2.2)	0.164[2]
Area of residence (%)			2.493[1]
Urban	0	15	
Semi-urban	30	36.3	
Rural	70	48.7	

[1]Pearson chi square test
[2]Mann Whitney U test p value
* p <0.05

Further analysis to know the financing strategies adopted by the households showed that 57.2 percent of insured, 79.5 percent of newly insured and 75.2 percent of uninsured individuals borrowed to access care ($p<0.05$). Another strategy adopted by

insured, newly insured and uninsured individuals was to use the savings. Almost 32.7 percent of insured individuals, 24.7 percent of newly insured individuals and 35.3 percent of uninsured individuals used the savings to access care. When faced with illness, individuals sought care even if they did not have money to pay. They borrowed from informal sources such as friends, relatives or neighbours or from formal sources such as non-banking financial companies or MFIs.

4.2.4 Barriers to Access Care

Qualitative data gathered from FGDs with insured, newly insured and uninsured respondents revealed that several factors resulted in not seeking care when sick. The financial and non-financial factors are the broad categories of factors that act as barriers to access care.

Among non-financial factors, poor quality of care at the hospitals and distance to the hospitals were important,

"….bed for men and women are kept together…. there is no privacy..the ward is not clean…", "*..good hospitals are in Kumta (a city in UK district) which is far away…*", "*..doctors do not see us well, we have to go to Hubli or Manipal for good hospitals (far away city)..".*

Financial factors namely lack of money, high cost of health services and indirect cost of care inhibit access to care,

"*...we have too much loan to repay… We do not have money to pay….*", "*…we do not have much income….taxi is expensive...*", "*..hospital bills have gone up… its expensive...*". "*..we have six people in the family but father only earns… we do not have health card…...*". The other reasons were, "*…going to hospital means you have to take leave….one day's earning will be lost…*", "*…hospitals are too far…one day's income will be lost…we do not have money..we have too many loans already…..*".

Thus, lack of money to pay for health services, high indirect cost of care and expensive health services were financial reasons highlighted by respondents. Poor quality of care, long distance to hospital, lack of transport, and difficulty in absenting from work were non-financial barriers.

4.2.5 Summary

One striking finding was the higher incidence of illness among insured individuals compared to uninsured and newly insured individuals. This indicates the hidden motive of insured individuals to claim from SSP. The hypothesis driven analysis carried out in this section found no evidence to support the positive impact of SSP on access to care. In the absence of health insurance, uninsured and newly insured individuals borrowed or used savings to access to care. One more explanation for the absence of the positive impact of SSP on access care lies in the 'Jnana Vikasa' programme. SKDRDP conducts educational programme to impart the basic knowledge on various relevant issues including health education to its target population. Consequent higher level of awareness on the timely access to care among SHG members removed the non-financial barriers to access care. While there was no impact of SSP on access to care, frequency of visits was quite different for insured, uninsured and newly insured individuals. Insured and newly insured individuals had more number of visits than uninsured individuals. Some individuals who did not seek treatment stressed lack of good hospitals, high cost of treatment, lack of money, long distance to good hospitals and poor transportation facilities, especially in rural areas as the barriers to access care. Of the individuals who did not seek care, majority belonged to uninsured group. Thus, the study accepts the null hypothesis that SSP does not improve the access to health services. The question arises whether there is any difference in the treatment-seeking pattern of individuals. Hence, the next section compares the health seeking experience of insured, newly insured and uninsured individuals who accessed care during illness.

4.3 IMPACT OF SAMPOORNA SURAKSHA PROGRAMME ON HEALTH SEEKING BEHAVIOUR

4.3.1 Introduction

Health seeking behaviour (HSB) denotes visiting health care facility such as privately owned hospitals, public hospitals, private clinics, ayurvedic hospitals, nursing homes or home medicine. Desirable HSB is the visit to formally recognised health care facilities than self-care, traditional healers and unofficial medical channels. Formal health care facilities include the hospitals (private and public) and nursing homes, clinics and alternative systems of care such as ayurveda, homeopathy, and Unani. However, public hospitals are known for low quality, lack of accountability and poor infrastructure (Radwan L 2005; Mathiyazhgan 2006; Chuma et al. 2007; Klein 2011), prolonged waiting period, long distance, inconvenient location and inadequate facilities (Patel et al. 2010) in India. Hence, the present study assumes that public hospitals provide low quality of care and people seek care at private facilities than public hospitals.

Since SSP contracts with private hospitals, insured can get better services at an agreed price. In addition, SSP brings down the financial barriers to access formal care. Hence, SSP insured members would seek inpatient care from private facilities due to the accessibility (large network of hospitals), acceptability (quality of care) and affordability of care (claim benefits). Hence, insured individuals would be motivated to seek care from the private facility than public hospitals or other types of treatment. Therefore, the hypothesis was that insured members seek care from the private sector providers than other providers (including clinic, public or informal care) compared to newly insured and uninsured individuals.

This section analyses the findings of the study with an aim to understand the impact of SSP on HSB. Firstly, to assess the impact on the pattern of HSB in the first and second visits, treatment taken in different facilities was analysed. Home medicine, private clinics, ayurvedic hospitals, government hospitals, private hospitals and nursing home were the health care facilities visited by the sample individuals. Private hospital was classified as district hospital (<100 beds) and regional hospital (>100 beds). Secondly,

study hypothesis was tested using discriminant analysis. Lastly, determinants of hospitalisation in public or private hospitals were estimated using binary logistic regression analysis using the following regression equation,

Prob (hospitalisation in private facility >0 | ill) = $\beta_0+\beta_1 M_x +\beta_2 X_y+ \varepsilon$, where X_y are the variables that influence probability of hospitalisation in private hospitals; M_x represents the mode of payment (SSP).The binary logistic regression model underwent a number of specification and diagnostic tests, especially the Durbin-Wu-Hausman method as explained in the following paragraph.

Probability of enrolment was estimated using a logistic regression model that considered SSP status as a dependent variable and various instrumental variables as independent variable to get the residuals of SSP health insurance variable.

Prob (Membership>0) = $\beta_{0+}\beta_1 X_\beta +\varepsilon$

Residual of SSP variable was included as an independent variable along with other independent variables in HSB logistic regression.

Prob (Private >0 | hospitalised) = $\beta_1 M_x +\beta_2 X_y+ \beta_3 HI\_res+\varepsilon$, where X_y is a set of variables that influence the probability of seeking care at the private facility; M_x represents health insurance (HI). If β_3 is significantly different from zero, then regression is not consistent, making the coefficient of the health insurance biased (endogenous). Accepting the null hypothesis ($\beta_3=0$) suggests exogeneity of the health insurance in the model (Ekman 2007a; Jutting 2003).

4.3.2 HSB by Insurance Status

In the survey, 371 individuals reported sickness of which 10 persons did not seek treatment. Of 361 persons who sought treatment, 19 resorted to self-treatment (in the first visit) and the remaining 342 individuals availed health care services with one or more visits resulting in 429 visits (Figure 4.1). There were 384 visits made to the private health service providers, 37 public services and 8 visits to traditional services (ayurvedic medicine). Insured made 173 visits to private providers and 11 visits to public facilities. Thus, the highest number of visits was made to private providers of health care compared to public hospitals or ayurvedic treatment.

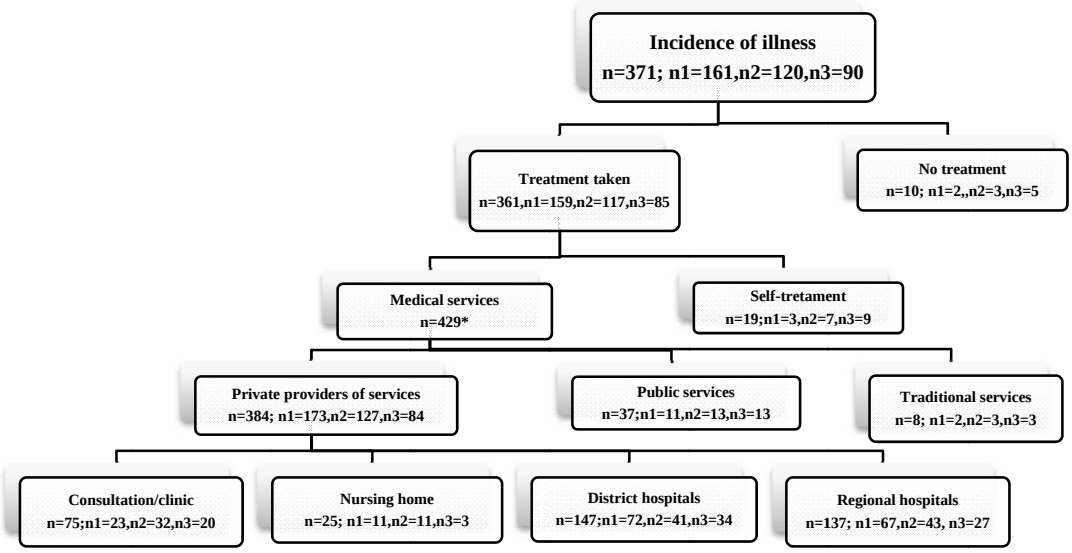


Figure 4.1 Overview of health care seeking behaviour of individuals
*Number of visits to health facility by ill persons; n=total; n1=insured; n2=newly insured; n3=uninsured

A comparison of insured, newly insured and uninsured regarding the HSB in the first and second visit (Table 4.6 and Table 4.7) shows strong evidence of the positive impact of SSP. In the first visit, large proportion of insured individuals visited nursing homes, district and regional hospitals. Uninsured individuals relied on self-treatment and government hospitals rather than nursing homes, district hospitals and regional hospitals. When the total visits were analysed, a large percent of uninsured individuals compared to insured and newly insured sought ayurvedic treatment (Figure 4.2). Least number of uninsured individuals visited nursing homes, which were usually expensive compared to the district or regional hospitals. Thus, there was a significant difference in HSB with insured accessing care at the private hospitals/ nursing homes than uninsured individuals ($p<0.05$).

Table 4.6 Health Seeking Behaviour in the First Visit: Comparison by Insurance Status

	Insured	Newly insured	Uninsured
Home medicine (N=19)	21.1	26.3	52.6
Clinic (N=64)	34.4	42.2	23.4
Nursing home (N=18)	55.6	38.9	5.5
Government hospital (N=31)	29	35.5	35.5
District hospital (N=118)	51.6	29.7	18.7
Regional hospital (N=108)	49.1	29.6	21.3
Ayurvedic hospital (N=5)	20	40	40

$\chi 2$ (12, N=361) =21.705, p=0.041
(Figures are percentages to total of each row)

Analysis of the data on the second visit to health facilities revealed a non-significant difference ($p>0.05$) in HSB of the surveyed individuals. Uninsured and newly insured more than insured individuals used clinic and government hospitals. A higher percent of insured individuals went to district and regional hospital compared to uninsured individuals (Table 4.7).

Table 4.7 Health Seeking Behaviour in the Second Visit: Comparison by Insurance Status

	Insured (N=27)	Newly insured (N=26)	Uninsured (N=12)
Clinic	3.7	15.4	25
Government hospital	7.5	7.8	16.6
District hospital	44.4	19.2	33.3
Regional hospital	44.4	42.4	16.7
Nursing home	0	11.5	0
Ayurveda hospital	0	3.8	8.4

(Figures are percentages to total of each column)

When the total visits were considered (Figure 4.2), a higher proportion of insured individuals were observed to visit the district hospitals (38.1%) and the regional hospitals

(35.5%) than newly insured (27.5% and 28.9 % respectively) and uninsured (31.2% and 24.8 % respectively) individuals ($p<0.05$). Nearly 9 percent of newly insured and 11.9 percent of uninsured compared to only 5.8 percent of insured individuals selected the government hospitals (including primary health centres).

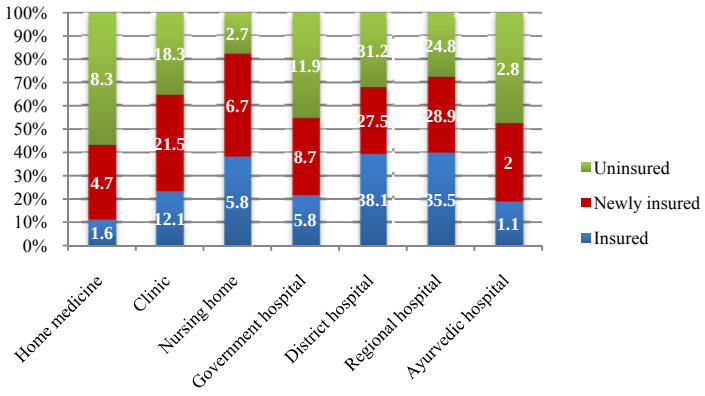


Figure 4.2 Health Seeking Behaviour of Surveyed Individuals

4.3.3 Sequence of health seeking behaviour

Not only the pattern of HSB was different but also the sequence of visits to health facilities in the first and subsequent visits was unique (Figure 4.3). Insured and newly insured who self-treated on illness visited private hospitals in their second line of treatment whereas uninsured consulted doctors at the clinic, visited government hospitals and district hospitals. A higher number of insured sought treatment in the district and the regional hospitals in their first visit compared to uninsured individuals. Uninsured and insured who consulted doctors at the clinic and nursing home first time sought care from the district/ regional hospitals and the nursing homes in the second or third time. Since only few individuals sought the treatment, ayurvedic hospital is not analysed (Figure 4.3). The government hospitals were the first choice for uninsured during illness. Analysis of the second visit reveals that insured individuals made 27 visits, newly insured had 26 visits and uninsured had 12 visits.

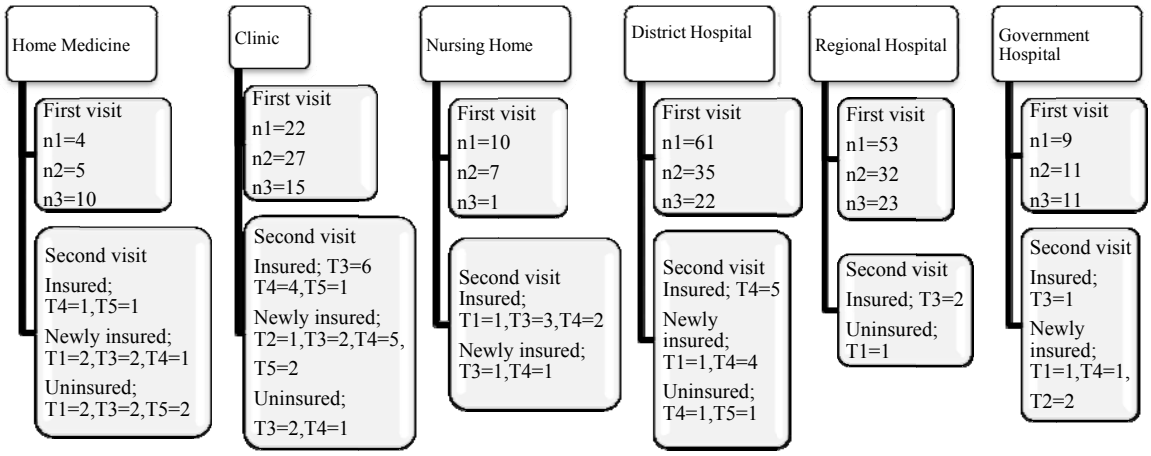


Figure 4.3 Sequence of Health Seeking Behaviour during Illness

n1=Insured individuals, n2=Newly insured individuals, n3=Uninsured individuals

T1=Clinic, T2=Nursing home, T3=District hospital, T4=Regional hospital, T5=Government hospital

4.3.4 Discriminant Analysis of Health Seeking Behaviour of Insured and Uninsured

The study hypothesises that insured use private facilities (nursing homes, district and regional hospitals) compared to newly insured and uninsured individuals. To test this hypothesis, discriminant analysis was carried out (Table4.8). Firstly, insured and uninsured (newly insured and uninsured) individuals were taken as group variables and types of treatment such as home medicine, clinics, government hospitals, district hospitals, regional hospitals, nursing homes and ayurvedic hospitals as predictor variables. The discriminant function revealed a significant association between the groups and all the predictors with Wilk's lambda p=0.008. Visits to the clinics, government hospitals and home medicine rather than accessing care at the district hospitals and regional hospitals differentiated uninsured from insured individuals. Insured had a higher visits to the private providers than public providers or clinic as they could get claim benefits from the network hospitals at the district or regional level. The cross-validated classification shows correct classification of overall 55.8 percent of cases. Thus,

there was positive impact of SSP in health seeking behaviour of insured who sought care at private hospitals than at government hospitals, clinics or self-treatment.

Secondly, structure matrix obtained by including insured and newly insured as a grouping variable and types of health care as predictor variables shows interesting results (Table 4.8). Visits to clinics, government hospitals, home medicine, and not accessing care at district hospitals differentiated newly insured from insured individuals. Hence, the study hypothesis that insured sought care at network hospitals than at government hospitals, clinics or home medicine compared to newly insured individuals was accepted. The cross-validated classification shows a high percent of cases being correctly classified (59.8 %).

Thirdly, an analysis taking insured and uninsured as a grouping variable and the types of health care as predictor variables corroborates earlier findings (Table 4.8). Visits to regional hospitals rather than government hospitals, home medicine and ayurvedic hospitals differentiated insured from the uninsured individuals. Insured had higher visits to district and regional hospitals than public providers, ayurvedic or home medicine. Hence, we reinforce the positive impact of SSP on health seeking behaviour of insured individuals that resulted in more visits to private hospitals than informal care such as home medicine or public hospitals. The cross-validated classification illustrates that 63.9 percent cases were correct classified.

Table 4.8 Discriminant Analysis of Health Seeking Behaviour

Insured and uninsured (both newly and uninsured) individuals[1]	Home medicine (.566), Government hospital (.399), Private clinic (.565), District hospitals (-.397), Regional hospitals (-.370), Nursing homes (.239) and Ayurvedic hospital -(.014)
Insured and newly insured individuals[2]	Home medicine (.414), Government hospital (.321), Private clinic (.703), District hospitals (-.462), Regional hospitals (-.237), Nursing homes (.197) and Ayurvedic hospital (.211)
Insured and uninsured individuals[3]	Home medicine (-.614), Government hospital (-.528), Private clinic (-.222), District hospitals (.175), Regional hospitals (.446), Nursing homes (.272) and Ayurvedic hospital (.034)

[1]Box's M 132.879, F 4.642, p=0.000; Wilk's lambda p=0.008
[2]Box's M 92.260, F 3.203, p=0.000; Wilk's lambda p=0.049
[3]Box's M 152.765, F 5.265, P=0.000; Wilk's lambda p=0.034

4.3.5 Discriminant Analysis of Underlying Reasons for Health Seeking Behaviour

Quality of treatment was the main reason for majority of insured (40.4%) to access care whereas trust in treatment was important reason for uninsured (33.3%) and newly insured (30%) individuals (Table 4.9). Accessibility was the least motivator for the selection of health facilities.

Table 4.9 Health Seeking Behaviour– Reasons Given by the Surveyed Individuals

	Insured (N=159)	Newly insured (N=117)	Uninsured (N=85)
Accessibility	5.1	2.5	1.1
Lack of improvement	5.1	8.3	2.2
Lack of money	9.5	9.2	12.2
Quality of treatment	40.4	25	26.7
Low cost of treatment	13	13.3	7.8
Trust in treatment	24.2	30	33.3
Near to home	23	18.3	18.9
Severity of illness	8.7	7.5	16.7
Nature of illness	6	6.7	6.7

(Figures are percentages to total of each subgroup given in column)

Discriminant analysis helped to understand the important reasons for selecting particular hospitals that could differentiate insured from uninsured and newly insured individuals. Insured and uninsured (including newly insured) individuals were taken as group variables. No improvement with treatment, lack of money, quality of treatment, low cost, trust in treatment and nearness to home, severity and nature of illness were the predictor variables. The discriminant function revealed a significant association between the groups and all predictors with Wilk's lambda p=0.02 (Box's M 69.020; F 2.414, p=0.00). Quality of treatment (.730) was the main factor that differentiated insured from newly insured and uninsured individuals, followed by lack of money (-.591) and trust in the treatment (-.368) provided by the health facility. This suggested a label of good quality of care, affordability and low level of trust in the health facility used by insured individuals. Near to home (.251), low cost of treatment (.148), severity of illness (-.097) and no improvement from the previous treatment (-.012) were not loaded on the discriminant function (59.8 percent of cases were correctly classified).

The discriminant analysis focused on the factors that differentiate the selection of hospitals by the surveyed individuals, regardless of the health insurance (Table 4.10). Predictor variables were accessibility, no improvement with treatment, lack of money, quality of treatment, low cost of treatment, trust in treatment, nearness to home, severity of illness, and the nature of illness. The aim was to investigate the factors that differentiate the selection of the private clinic, government hospitals, district hospitals, and regional hospitals to identify which reason contributed more to group separation.

Table 4.10 Discriminant Analysis of the Factors Determining the Choice of Health Facility

Private clinic[1]	Near to home (0.589), No improvement (0.556)
Government hospital[2]	Lack of money (0.812), Low cost of treatment (0.426)
District hospital[3]	Lack of money (-0.581), Severity of illness (0.478), Quality of treatment (0.408), Always available (0.335)
Regional hospital[4]	Referred to a specialist (0.680), Lack of money (-0.426), Nature of illness (0.426) Trust in treatment (-0.390)

[1]Box's M=184.961, F=2.648, p=0.000; Wilk's lambda p=0.000
[2]Box's M=165.463, F=3.341, p=0.00; Wilk's lambda p=0.000
[3]Box's M=222.102, F=3.254, p=0.000; Wilk's lambda p=0.016
[4]Box's M=113.187, F=1.656, p=0.000; Wilk's lambda p=0.02

i) Visit to private clinic was a dependent variable (yes or no). Structure matrix correlations revealed near to home and no improvement to have the highest loadings, which suggest a label of nearness and ineffective previous treatment as the function that discriminate those visiting clinic and those who do not. The cross-validated classification shows correct classification of 79.2 percent of the cases.

ii) Similarly, seeking care at the government hospitals was dependent variable (yes or no), predictor variables remaining the same. Discriminate function revealed lack of money (0.812) and low cost of treatment (0.426) to have the highest loadings which suggest a label of low income and low price of the health services as the function that discriminates those who visited government hospitals and those who did not (Table 4.10).

The cross-validated classification shows that 85.2 percent the cases were correctly classified.

iii) District hospitals were used for severity of illness, quality of treatment, accessibility and affordability (lack of money had negative loading). The results suggest correct classification of overall 65.2 percent of the cases.

iv) Visit to regional hospitals was taken as dependent variable (yes or no). Reference to a specialist, affordability (lack of money had negative loading), nature of illness and trust in treatment (negative loading) had the highest loadings which suggest a label of referrals, affordability, types of illness and low level of trust in the treatment of hospitals as the functions that discriminate those who visited the regional hospitals and those who did not. The cross-validated classification results suggest correct classification of overall 66.6 percent of the cases.

To sum up, nearness to home and lack of improvement from the previous treatment resulted in visits to private clinics and lack of money and low cost of treatment were reasons for visits to government hospitals. Affordability of treatment, severity of illness, good quality of the treatment and availability of services (for 24 hours in 7 days) decided the treatment at district hospitals (network hospitals). Reference by the doctors, high cost of care and nature of illness were the reasons for visits to the regional hospitals. However, individuals who were treated in regional hospitals had low level of trust in the treatment.

4.3.6 Econometric Estimation of HSB

The probability of hospitalisation in private facilities by insured, newly insured and uninsured individuals was estimated using logistic regression analysis. To analyse the impact of SSP on HSB towards the private hospitals, the study used binary logistic regression analysis with SSP individuals coded as '1' and newly insured individuals coded '2' and uninsured '3'. Individuals admitted in private hospitals were assigned a code of '1' and those in public hospitals had a code of '0'. Private health facilities included the admission in nursing homes, district and regional hospitals.

According to Birch's model (2007), availability, acceptability and affordability are the three A's that determine access to health care and choice of the types of care. Income class of the individuals measured affordability and the area of residence determined availability of health facilities. Gender of ill person acted as a proxy to measure the acceptability of care. Since the effect of a change in a variable depends on the values of all variables in the model in logistic models, these variables were included in the analysis in addition to SSP membership. The role of income class, gender of ill person and the area of residence on the decision to get admitted in the private or public facilities was assessed after classifying the individuals based on SSP membership status for their income class, gender of ill person and the area of residence.

4.3.6.1 Income Related Equity in Health Seeking Behaviour

Income of the family influences the care sought by the sick individuals in different health facilities. Usually, better-off people access private expensive care whereas poor choose public facilities. There was a positive relationship between the income quintile and HSB of insured individuals ($p<0.05$) (Table 4.11). A majority of insured Q5 individuals sought care from the private hospitals. Newly insured individuals from Q3, Q4 and Q5 and uninsured individuals (except Q5) accessed government hospitals in higher proportion compared to insured individuals in the respective income classes.

Table 4.11 Income Related Equity in Health Seeking Behaviour

		Q1	Q2	Q3	Q4	Q5
Insured[1]	Government	19.4	2.8	9.7	4.8	0
	Private	80.6	97.2	90.3	95.2	100
Newly insured[2]	Government	10	5	23.5	16	13.3
	Private	90	95	76.5	84	86.7
Uninsured[3]	Government	12.5	15.8	30.8	21.4	0
	Private	87.5	84.2	69.2	78.6	100

[1] χ^2 (4, N=159) =12.299, p=0.015 [2] χ^2 (4, N=117) =3.064, p=0.547 [3] χ^2 (4, N=85) =4.794, p=0.309
(Figures represent percentages to the total of each income quintile in insured, newly insured and uninsured groups)

4.3.6.2 Gender Related Equity in Health Seeking Behaviour

Women usually seek care from the informal providers than the formal health care system (Ahmed, 2003). However, participation in the micro-finance activities increases the gender equity in treatment seeking. At a glance, it appears that higher percent of insured women sought care from the private hospitals (94.4%) compared to newly insured and uninsured women (Table 4.12). However, there was no statistical difference between insured, newly insured and uninsured groups ($p>0.05$). Nevertheless, newly insured women were admitted in the government hospitals more than private ones compared to men of the same group ($p<0.05$).

Table 4.12 Gender of Ill Person and HSB in Private and Public Hospitals

		Male	Female
Insured[1]	Government facility	9.5	5.6
	Private facility	90.5	94.4
Newly insured[2]	Government facility	6	21.3
	Private facility	94	78.7
Uninsured[3]	Government facility	17.5	14.7
	Private facility	82.5	85.3

[1] χ^2 (1, N=159) =0.756, p=0.384
[2] χ^2 (1, N=117) =4.872, p=0.027
[3] χ^2 (1, N=85) =0.106, p=0.745
(Figures represent percentages to the total of male and female sub-group in sample groups)

4.3.6.3 Area Related Equity in Health Seeking Behaviour

HSB depends on the types of the health facility near the residence. Table 4.13 illustrates the HSB of insured, newly insured and uninsured residing in urban, semi-urban and rural areas. Insured and uninsured urban individuals visited government hospitals (15.4%) than residents in semi-urban (7%) and rural areas (6.7%). Urban individuals relied on public hospitals due to greater access compared to rural counterparts. However, a significant relationship between HSB and the area of residence for the studied groups was ruled out ($p>0.05$).

Table 4.13 Health Seeking Behaviour in the First Episode of Illness

		Urban	Semi-urban	Rural
Insured	Private facility	84.6	93	93.3
	Government facility	15.4	7	6.7
Newly insured	Private facility	94.1	89.7	80.5
	Government facility	5.9	10.3	19.5
Uninsured	Private facility	75	89.5	84.6
	Government facility	25	10.5	15.4

[1]χ^2 (2, N=159) =1.244, p=0.384 [2]χ^2 (2, N=117) =2.480, p=0.289
[3]χ^2 (2, N=85) =1.381, p=0.501
(Figures represent percentages to the total of each sub-group)

4.3.6.4 Results of Econometric Estimation

Binary logistic regression analysis was applied to estimate the probability of hospitalisation in private facilities conditional on being ill (model 1). The hypothesis was that SSP insured individuals seek care from the private hospitals than public hospitals. Admission of insured individuals in public hospitals was lower than (6.9%) newly insured (13.4%) and uninsured (16.2%) individuals. Sizeable percent of insured got care from the private hospitals (93.1%) compared to newly insured (86.6%) and uninsured (83.8%) individuals. Without considering the health insurance status, it was found that a higher (12.5%) proportion of women sought care from public hospitals compared to men (9.8%)($p>0.05$). Similarly, analysis of the income quintile irrespective of health insurance status revealed that almost 15 percent of individuals from Q1, 6.7 percent from Q2, 18 percent from Q3 visited public hospitals and almost 97 percent from Q4 and 89 percent from Q5 sought care from private hospitals ($p<0.1$). Irrespective of the health insurance, 84.8 percent of urban individuals, 91.3 percent of semi-urban individuals and 88.4 percent of rural individuals were hospitalised in private facilities ($p>0.05$). Income classes were coded into five dummy variables. SSP membership and area of residence was coded into three dummy variables (Table 4.14).

Table 4.14 Definition and Measurement of Variables

Variables	Description
Health insurance	1= SSP insured (reference) 2= Newly insured 3= Uninsured
Gender of ill person	1 = Male, 0 =Female (reference)
Income quintile	1=Q1. 2=Q2, 3=Q3, 4=Q4, 5=Q5 (reference)
Area of residence	1= Urban if individual lives in urban area 2= Semi-urban if individual lives in semi-urban area 3=Rural if individual lives in rural areas (reference)

The estimated result on the relationship between hospitalisation in private facilities and other independent variables is given in the Table 4.15. Evidence of insured individuals being more likely to get hospitalised in private facilities than public facilities compared to uninsured and newly insured individuals was found. The Odds Ratio (OR) for newly insured and uninsured individuals was significantly less than 1, which implied that newly insured and uninsured individuals were less likely to get admitted in private facilities. The results indicate that newly insured was almost 0.4 times less likely to get hospitalised in the private hospitals than public hospitals and uninsured was 0.373 times less likely to get hospitalised in private facilities compared to insured individuals. The odds of being admitted in private hospitals were higher (OR 4.676) if the individuals were in Q5 than Q1. Thus, the results from the model indicate that HSB behave according to theoretical expectations, especially income and health insurance. As the cost of care at the private hospitals is high, better-off individuals have higher likelihood to visit these facilities. Since SSP reduces the cost of care, insured are expected to visit the private facilities. The model was checked for robustness by using the omnibus test of model coefficients, Hosmer and Lemeshow test, -2 log likelihood ratios, Cox and Snell R square and Nagelkerke R square. The results of these tests show that the model is significant at the 0.05 leveland 88.9 percent of cases were correctly predicted by the model. The model was checked for the possible endogeneity using Durbin-Wu-Hausman

test. In this model, health insurance was found to be exogenous with prob (χ^2) =0.994. Residual analysis (specifically Cook's Distance statistic) showed no outliers and Hosmer and Lemeshow test value of 0.850 indicates good discrimination.

Table 4.15 Probability of Hospitalisation in Private Facilities (Model 1)

	B	S..E.	Wald	Df	Sig.	Exp(B)	95% C.I.	
Variables							Lower	Upper
Health insurance (base= SSP insured)			5.272	2	.072			
Newly insured	-.899	.469	3.672	1	.055	.407	.162	1.021
Uninsured	-.985	.474	4.324	1	.038	.373	.148	.945
Area of residence (base=rural)			.885	2	.643			
Urban	.169	.511	.109	1	.741	1.184	.435	3.222
Semi-urban	.408	.434	.884	1	.347	1.504	.642	3.525
Income quintile (base=Q1)			7.538	4	.110			
Q2	.956	.588	2.643	1	.104	2.602	.822	8.239
Q3	-.202	.498	.165	1	.685	.817	.308	2.167
Q4	.383	.540	.501	1	.479	1.466	.508	4.229
Q5	1.542	.810	3.627	1	.057	4.676	.956	22.872
Gender of ill person (base=female)	.258	.377	.468	1	.494	1.294	.618	2.709
Constant	2.205	.547	16.235	1	.000	9.069		

Number of observations: 285

Omnibus test model coefficient:Pearson chi square =18.56,df =10, p=0.046; -2 log likelihood = 201.982;

Cox and Snell R squared= 0.055; Nagelkerke R squared= 0.111

Hosmer and Lemeshow Pearson chi square =4.076, df =8, p=0.850

(Dependent variable: Hospitalisation in private facility; 1=yes)

4.3.7 Summary

Using the logistic regression analysis and discriminant analysis, the study assessed the influence of SSP on HSB of insured, newly insured and uninsured individuals. For insured individuals, health care was easily accessible due to the large network of hospitals, affordable due to the claim from SSP and acceptable because of the

contract based purchasing that stipulated good quality of care. So, insured were expected to choose private network hospitals rather than self- treatment or public hospitals.

Turning now to the evidence from the analysis of the data, we draw the following conclusions. Insured individuals took treatment from the private hospitals or nursing homes rather than home treatment, public hospitals or alternative treatment. Uninsured and newly insured individuals, on the other hand, relied more on self-treatment, public hospitals or private clinics. Logistic regression and discriminant analysis supported the hypothesis that insured individuals sought care at private facilities than public hospitals (H2). Income class was positively associated with the private care seeking behaviour. There are several possible explanations to this result. Accessibility to the network hospitals is one of the reasons to seek care at the district hospitals by insured individuals. Moreover, financial barriers to access care reduced due to the insurance claims making the private hospital care affordable. Unless, the private care is affordable, people seek care from the government hospitals, self-treat or forego care. Acceptability of the quality of care at the network hospitals (district and regional) was another factor that influenced hospitalisation in private facilities. In contrast, uninsured and newly insured individuals relied on the private clinics, home medicine and the government hospitals due to lack of money and low cost of treatment. Thus, insured members for affordability (made possible by SSP), acceptability (quality of treatment) and accessibility (always available) chose SSP hospitals. Hence, SSP enabled insured individuals to overcome the financial barriers to seek care at the private facilities.

When the choice had to be made among the different types of care, insured individuals chose private hospitals and nursing homes compared to uninsured and newly insured individuals in their first and later visits. However, newly insured and uninsured individuals sought treatment in the private hospitals than treatment in public hospitals or self-treatment in the second visits.

Equity in HSB was assessed based on the income class of the ill person. As SSP provides financial coverage, insured individuals could afford expensive yet good quality treatment in private hospitals. High-income people sought care at the district and regional

hospitals than self-treatment and treatment at public hospitals. Insured individuals from low-income class, except Q1, sought care at private facilities compared to same class of people in uninsured and newly insured group. Thus, SSP improved equity in access to care as lower income (Q2 and Q3) individuals could seek timely and efficient treatment in the private hospitals.

One disturbing finding was that large number of insured individuals in the lowest income class (Q1) went to public hospitals rather than private hospitals compared to those in uninsured and newly insured groups. Since SSP has not increased the benefit amount over the years even when the cost of treatment escalated in India, poor had to spend out of the pocket despite insurance. Further analysis revealed that poorest (in Q1) among uninsured and newly insured individuals sought care from the private hospitals and financed it through borrowing unlike insured individuals who borrowed less and relied on public hospitals. Overall, the removal of financial barriers to access formal care and good quality of care resulted in insured individuals visiting private providers rather than self-treatment or treatment from informal providers and public hospitals. The next issue related to the impact of SSP is utilisation of the health services by insured individuals. Hence, the next section delves into utilisation impact of SSP.

4.4 IMPACT OF SAMPOORNA SURAKSHA PROGRAMME ON UTILISATION OF HEALTH SERVICES

4.4.1 Introduction

Healthcare utilisation means the use of health care facilities. In this study, utilisation is the admission in the hospitals including nursing homes since SSP provides insurance coverage only for hospitalisation. As SSP covers hospitalisation expenses, insured need not incur higher expenses compared to uninsured and newly insured individuals. The research question was whether SSP improved hospitalisation of insured individuals compared to uninsured and newly insured individuals.

Health insurance reduces the cost of treatment that drives up demand for health services. There will be higher utilisation if SSP reduces the inpatient treatment cost. Moreover, higher utilisation is possible due to better quality of care at the network hospitals. SSP provides insurance coverage for inpatient treatment at 110 hospitals in 13 districts known for their quality of services, location and proximity to members. Hence, the hypothesis was that SSP increases hospitalisation of insured members compared to uninsured and newly insured individuals.

Framework given by Aday and Anderson (1974) helps to understand the determinants of utilisation of the health services. These include predisposing factors (gender of ill person, education and job status of the head and size of the household), enabling factors (income, area of residence and health insurance) and need factors (types of illness). This section evaluates the findings of the study on the impact of SSP on utilisation using the data of the individuals who sought care during illness. The analysis begins with the identification of the pattern of utilisation of insured, newly insured and uninsured individuals. Later analysis focuses on the effect of the treatment as perceived by the individuals. Lastly, probability of hospitalisation was estimated using binary logistic regression equation as given below.

Prob (hospitalisation>0 | ill) = $\beta_0+\beta_1 M_x +\beta_2 X_{y+}\varepsilon$

{1 if hospitalisation | Health Care Action>0, 0 otherwise}

X_y is a set of predisposing, enabling and need variables that influence probability of hospitalisation; M_x represents the mode of payment (SSP). The logistic model was subjected to a number of specification and diagnostic tests; especially the possible endogeneity was tested using the Durbin-Wu-Hausman test. Model specifications were changed to substantiate the findings.

4.4.2Utilisation of Health Services and Moral Hazard Behaviour

A higher percent of uninsured and newly insured individuals got treatment as outpatient compared to insured individuals. Of the 285 individuals who availed inpatient services, 143 belonged to insured group, 82 to newly insured group and 60 were uninsured individuals. Intergroup comparison shows a picture of higher hospitalisation by insured (88.8%) than newly insured (68.3%) or uninsured (66.7%). Outpatient treatment was availed by a lower percent of (9.9%) insured compared to 29.2 percent of newly insured and 27.8 percent of uninsured individuals. Thus, insured individuals were hospitalised more than uninsured and newly insured individuals (p=0.00). Insured individuals had higher probability of hospitalisation (0.34) than newly insured (0.22) and uninsured individuals (0.17).

Another finding that draws our attention is the higher hospitalisation by insured group despite homogeneity in the types of illness among the three groups. To check for over-utilisation or moral hazard, the study compared the number of days spent in the hospital by three groups. Insured spent more number of days on an average (19) than newly insured (15) and uninsured individuals (12). Nevertheless, absence of such a difference was proved by Kruskal Wallis test (p>0.05), hence there was no moral hazard in SSP despite the higher utilisation by insured individuals. Lower utilisation by uninsured and newly insured individuals suggests substantial barriers to hospitalisation, even for chronic illness.

4.4.3 Patient Perceived Effect of the Treatment

Analysis of the effect of the treatment as perceived by patients would strengthen the beneficial effect of SSP (Table 4.16). Almost half of the insured individuals felt better after the treatment compared to 29 percent of newly insured and 34.7 percent of uninsured individuals. However, almost 35 percent of insured did not feel better from the treatment compared to a lower percent of uninsured individuals (24.5%).

Table 4.16 Effect of the Treatment Perceived by the Individuals

	Better (N=224)	Slightly better (N=69)	Not better (N=49)
Insured	50.4	29	34.7
Newly insured	27.7	37.7	40.8
Uninsured	21.9	33.3	24.5

$\chi^2(4,N=342)=12.672$, $p=0.013$

(Figures in percentages)

4.4.4 Econometric Estimation of the Probability of Hospitalisation

To estimate the probability of hospitalisation by insured, newly insured and uninsured individuals, logistic regression analysis was used. SSP insured were assigned a code of '1'. Newly insured and uninsured individuals were assigned a code of '2' and '3' respectively. Hospitalised individuals were given a code of '1' and those who took outpatient treatment had a code of '0'. The effect of a change in an independent variable depends on the values of all variables in the model in binary logistic regression models. Hence, certain variables were included in the analysis as enabling, pre-disposing and need factors. Firstly, the role of types of illness, gender of ill persons, education and job status of the head of the household, size of the household, income class and the area of residence were analysed after classifying the individuals based on SSP membership. Secondly, binary logistic model estimated the probability of hospitalisation and models with different specifications substantiated the findings of the first (basic) model.

4.4.4.1 Need Factor Determining Utilisation

Types of illness, as evaluated by the health professional was taken as the need factor that would influence utilisation. Illness can be acute, chronic and maternity care. Inter-group analysis reveals that insured individuals sought inpatient care for these illnesses more than the other two groups, except maternity. Newly insured and uninsured individuals sought outpatient care for illnesses such as tuberculosis, dengue fever, injuries, heart disease and fractures that otherwise required admission. Overall, 42.7 percent of acute illness, and 54.5 percent of chronic illness required inpatient care (remaining was maternity). A higher percentage of chronically ill persons in insured (53.6%) and uninsured group (50%) had admission (Table 4.18). Nearly half of the acute patients in newly insured households chose hospitalisation. The logistic regression model did not consider the maternity care as that invariably required admission. Hence, it would contaminate the findings of the model. Relationship between the types of treatment and types of illness irrespective of health insurance was significant (p=0.032).

4.4.4.2 Predisposing Factors Determining Utilisation

a. Gender of Ill Person

Women face barriers to access care due to less control over family resources and restrictions due to the cultural factors and domestic responsibilities (Nanda 1999). SSP would remove the financial barriers; hence insured women were expected to use inpatient care at par with insured men. Uninsured and newly insured women may face financial barriers that would lead to gender inequality in access to care. Analysis on the types of treatment shows no statistical difference in access to care based on gender in insured and uninsured group but not newly insured group (Table 4.17). Women in these three groups had less hospitalisation and more of outpatient care than men.

Table 4.17 Gender of Ill Persons and Types of Treatment

		Male	Female
Insured[1]	Outpatient(N=16)	37.5	62.5
	Inpatient (N=143)	53.6	46.4
Newly insured[2]	Outpatient (N=35)	37.1	62.9
	Inpatient (N=82)	58.7	41.3
Uninsured[3]	Outpatient (N=25)	40	60
	Inpatient (N=60)	57.9	42.1

[1]$\chi^2(1,N=159)=1.486$, p=0.170 [2]$\chi^2(1,N=117)=4.428$, p=0.029 [3]$\chi^2(1,N=85)=2.231$, p=0.105
(Figures represent percentages to the total of each sub-group)

Irrespective of health insurance status, men were admitted in higher percent (56%) than women (44%) (p=0.014). When the analysis was confined to the treatment taken by women, it was observed that 62 percent of uninsured women, 58.5 percent of newly insured women and 86.7 percent of insured women were hospitalised ($p<0.05$). Mainly uninsured and newly insured women compared to insured women took outpatient treatment. Thus, SSP resulted in higher utilisation of insured women compared to newly insured and uninsured women.

b. Size of Household

Higher the number of members in a family, larger will be the probability of admissions, *ceteris paribus*. Admitted insured individuals had an average size of 5 (median 4) higher than that of uninsured and newly insured individuals (median of 4 each) (p=0.00).

4.4.4.3 Enabling Factors Determining Utilisation

a. Income Class of the Household

Income can be a barrier to seek inpatient treatment for illness. Since SSP removes this barrier, even the lowest income class can increase utilisation. However, the results depict a different picture. In insured and uninsured group, a higher percent of low-income class individuals (Q1 to Q3) sought admission. However, newly insured individuals from

all the income quintiles except Q5 got hospitalised (Table 4.18). Despite this finding, there was no association between the income class and hospitalisation by the individuals ($p>0.05$).

With regard to equity in utilisation based on the income quintile, vertical equity was absent. Insured individuals from the poorest quintile did not utilise inpatient care more than high-income individuals ($p>0.05$) (Table 4.18). Despite decrease in direct cost of care, the poorest did not utilise SSP in larger proportion than other income classes. This is due to indirect costs associated with seeking care, which can be sometimes high and unaffordable by the poorer individuals. Horizontal equity was observed since insured poor (Q1 and Q2 income quintile) was hospitalised in a higher proportion (93.1%) compared to those in uninsured (64.3%) and newly insured groups (76%) ($p=0.001$).

b. Education of the Head of the Household

Higher education would influence the types of treatment, especially inpatient care. To incorporate the effect of the education on utilisation, education of the head of the household was included in the model. Median education of the head of the households who accessed inpatient care was fifth standard for insured as well as uninsured individuals and 7th standard for newly insured households ($p>0.05$). This finding suggests no association between education and utilisation ($p>0.05$).

c. Job Status of Head of Household

Occupation of the head of the households determines the affordability of the inpatient care. Those in formal sector employment (even salaried in informal sector), and self-employed can afford expensive inpatient care compared to the wage earners, unemployed or agriculturists due to seasonality of income. However, there was no association between the job status and hospitalisation ($p>0.05$) (Table 4.18).

d. Area of Residence

Hospitalisation depends on the availability of the health care facilities such as nursing homes, government hospitals and private hospitals that are easily accessible, affordable and acceptable. Individuals living in rural areas have fewer hospitals to access care. Moreover, indirect costs (transportation charges, boarding and food expenses)

would deter the households from seeking care at semi-urban or urban areas. SSP insured households could claim the insurance benefit especially direct cost of seeking care that removed financial barriers. Hence, insured rural individuals from rural areas were expected to seek care in a higher proportion compared to those from uninsured and newly insured groups. However, contrary to our expectations, individuals living in rural aeas had higher admission compared to urban or semi urban areas (insured 51.8%, newly insured 46.7% and uninsured individuals 51.8%) (Table 4.18) ($p<0.05$).

Table 4.18 Description of Predisposing, Enabling and Need Factors

	Insured (N=143)	Newly insured (N=82)	Uninsured (N=60)
Types of illness[a]			
Acute illness	43.5	49.2	45.6
Chronic illness	54	45	50
Maternity care	2.5	5.8	4.4
Gender of ill person[b] Male	53.6	58.7	57.9
Job status[c]			
Unemployment	13.5	10.7	14.1
Labourer	57.4	66.9	57.6
Self employed	11.5	5.4	11.7
Agriculture	6.1	4.4	2.3
Formal sector	6.1	6.3	7.1
Salaried (informal sector)	5.4	6.3	7.2
Household size[d] Median	4	4	4
Income class[e]			
Q1	21.7	23.3	25.6
Q2	24.2	20	24.4
Q3	23	20	18.9
Q4	14.9	22.5	17.8
Q5	16.2	14.2	13.3
Area of residence[f]			
Urban	7.9	14.7	21.4
Semi-urban	40.3	38.7	26.8
Rural	51.8	46.6	51.8

Pearson chi square; a= 3.562, $p>0.05$; b=0.633, $p>0.05$; c=6.494, $p>0.05$;e=2.006, $p>0.05$; f=8.467 $p<0.1$, Kruskal Wallis chi square; d=4.131, $p>0.05$

4.4.4.4 Results of Econometric Estimation

Binary logistic regression analysis was carried out to estimate the probability of hospitalisation conditional on being ill. It was hypothesised that SSP increases utilisation of the health services due to the low cost of care, quality of services and wide network of the hospitals. Irrespective of the health insurance status, it was found that 80.6 percent of the individuals with chronic illness and 70.9 percent of the individuals suffering from acute illness got inpatient treatment ($p<0.05$). Median education of the head of the households who accessed outpatient and inpatient care was fifth standard ($p>0.05$). A higher percentage of the individuals in which the head of the household worked as agriculturist got hospitalised (84.4%), followed by formal sector employees (81.5%) and labourers (76.4%). Salaried in informal sector (71.4%), business (71.2%) and unemployed (71.2%) head of the households had lower proportion of admission ($p>0.05$). Analysis of the entire sample on the basis of income class revealed that almost 22.4 percent of the households from Q1, 24.3 percent from Q2, 20.6 percent from Q3 and almost 16.5 percent from Q4 and 16.2 percent from Q5 income quintile sought care as inpatients ($p>0.05$). Median size of the households seeking outpatient and inpatient care was four ($p>0.05$). The types of illness were coded into two dummy variables. Income classes were coded into five dummy variables. SSP membership status and area of residence was coded into three dummy variables. The gender was coded into two dummy variables and the job status of head of the household was coded into six dummy variables. Education of the head of the family was coded into four variables and size of the household was coded into three dummy variables (Table 4.19).

The binary logistic regression analysis was performed to predict the determinants of utilisation of health services. The basic model considered the cases of the ill individual (model 2a). Model specifications were changed and best fit (model 2b), adult model (model 2c) and women model (model 2d) were estimated to substantiate the findings of the basic model. Model 2b considered the significant variables as predicted by the model 2a. Model 2c took cases of the adults and model 2d considered the cases of women and used significant independent variables as estimated by model 2a.

Table 4.19 Definition and Measurement of Variables

Variables	Model 2a	2b, 2c, 2d
Health insurance SSP insured=1 (reference) Newly insured=2 Uninsured=3	✓	✓
Gender of ill person =1 if male, 0 if female (reference)	✓	✓
Types of illness =1 if chronic, 0 if acute (reference))	✓	✓
Occupation of the head of the household 1= Labourer if primary occupation is unskilled worker, being paid daily wage 2= Business if engaged in self-employment 3= Agriculture if farmer including dairy farmer 4=Salaried in informal sector if unskilled worker being paid monthly in unorganised sector 5=Formal sector if skilled worker employed in organised sector on a salary basis 0=Unemployed/not able to work(reference)	✓	
Income quintile 1=Q1, 2=Q2, 3=Q3, 4=Q4, 5=Q5 (reference)	✓	✓
Area of residence 1= Urban if individual lives in urban area 2= Semi-urban if individual lives in semi-urban area 3=Rural if individual lives in rural areas (reference)	✓	

The evidence of insured individuals being more likely to get admitted in case of illness compared to newly insured and uninsured individuals was established by the model 2a (Table 4.20). The Odds Ratio (OR) for newly insured and uninsured individuals was significantly smaller than 1, which implied that insured individuals were more likely to get admitted than newly insured and uninsured individuals. The odds of admission compared to outpatient treatment were less for newly insured (OR 0.271) and uninsured (OR 0.243) compared to insured individuals. Chronically ill individuals were 2.034 times more likely to get hospitalised compared to individuals with acute illness.

Men were 2.164 times more likely to get admitted than women. Income was a determinant of utilisation with lower income quintile individuals had higher probability of seeking outpatient treatment than higher income quintile. There was less likelihood of Q3 (OR 0.329; at 10% significance) and Q4 (OR 0.291) income quintile individuals being hospitalised compared to high income quintile (Q5) individuals. The education and job status of the head of the household, size of the household and area of residence were not associated with the probability of utilisation. Thus, SSP membership, types of illness, gender of ill persons and income class determined the likelihood of hospitalisation. Hence, the study accepts the hypothesis (H3) that SSP increases hospitalisation for insured individuals compared to both newly insured and uninsured individuals.

The omnibus test of model coefficient, Hosmer and Lemeshow test, and -2 log likelihood ratiosproved the robustness of the model. The results of these tests showed that the model correctly predicts 77.4 percent of the cases. Residual analysis (specifically Cook's Distance statistic) showed no outliers and the model fits the whole set of observation (Hosmer and Lemeshow test value of 0.717 indicates excellent discrimination). The endogeneity test using Durbin-Wu-Hausman test found exogeneity of health insurance (model 2a) with prob (chi^2) =0.273. This confirms the positive impact of SSP and the results are not due to any observable /unobservable characteristics that would increase utilisation of health services.

Table 4.20 Probability of Hospitalisation: Results of Model 2a

	B	S.E.	Wald	Df	Sig.	Exp (B)	95%CI Lower	Upper
Health insurance (base= SSP insured)			18.798	2	.000			
Newly insured	-1.306	.344	14.404	1	.000	.271	.138	.532
Uninsured	-1.416	.366	14.937	1	.000	.243	.118	.498
Gender of ill person (base=Female) Male	.772	.285	7.311	1	.007	2.164	1.237	3.785
Types of illness (base: Acute) Chronic	.710	.285	6.208	1	.013	2.034	1.164	3.555
Education of head (base :Illiterate)			5.796	3	.122			
Primary (1-7)	-1.299	1.201	1.171	1	.279	.273	.026	2.869
Secondary (8-12)	-.522	1.177	.197	1	.658	.593	.059	5.964
Graduate and above	-1.050	1.159	.820	1	.365	.350	.036	3.396
Occupation (base= Unemployed)			3.662	5	.599			
Labourer	.289	.381	.576	1	.448	1.336	.632	2.821
Business	-.531	.747	.505	1	.477	.588	.136	2.541
Agriculture	.799	.686	1.356	1	.244	2.223	.579	8.527
Salaried in informal sector	.751	.665	1.275	1	.259	2.120	.575	7.812
Formal sector	.786	.829	.897	1	.343	2.194	.432	11.147
Household size (base 1-3)			.709	2	.702			
4-6	.195	.556	.124	1	.725	1.216	.409	3.616
7 and above	.367	.511	.515	1	.473	1.443	.530	3.927
Income quintile (base=Q5)			5.309	4	.257			
Q1	-.992	.591	2.817	1	.093	.371	.116	1.181
Q2	-.762	.593	1.651	1	.199	.467	.146	1.492
Q3	-1.113	.575	3.754	1	.053	.329	.107	1.013
Q4	-1.235	.577	4.578	1	.032	.291	.094	.902
Area of residence (base=Rural area)			1.733	2	.420			
Urban	-.348	.400	.758	1	.384	.706	.323	1.545
Semi-urban	.211	.330	.407	1	.523	1.234	.646	2.358
Constant	2.508	1.299	3.726	1	.054	12.281		

Number of observations: 348; Omnibus test model coefficient:Pearson chi square =58.914, df =20 p=0.000;

-2 log likelihood = 335.843; Cox and Snell R squared= 0.152; Nagelkerke R squared= 0.227

Hosmer and Lemeshow Pearson chi square =6.196, df =8, p=0.625

(Dependent variable: Hospitalisation; 1=yes)

To confirm the above findings, the best-fit model that considers the significant variables predicted by model 2a such as health insurance status, income quintile, gender of ill persons and types of illness was estimated (Table 4.21). Again, the odds of being hospitalized was less if the individual was newly insured (OR 0.260) and uninsured (OR 0.246) compared to insured individuals. Men suffering from illness were 1.995 times likely to be hospitalised than women. Individuals suffering from chronic illness were 1.873 times likely to be admitted compared to individuals with acute illness. The odds of admission compared to outpatient treatment were high for high income (Q5) individuals (OR 2.520) compared to the low income (Q1) individuals, at 10 percent significance level. The model correctly predicts 77.3 percent of the cases.

Table 4.21 Probability of Hospitalisation: Results of Model 2b

	B	S.E.	Wald	Df	Sig.	Exp (B)	95% C.I.for Exp (B)	
							Lower	Upper
Health insurance (base= SSP insured)			21.073	2	.000			
Newly insured	-1.347	.329	16.764	1	.000	.260	.136	.496
Uninsured	-1.404	.346	16.423	1	.000	.246	.125	.484
Gender of ill person (base=Female) Male	.690	.272	6.452	1	.011	1.995	1.171	3.398
Types of illness (base= Acute) Chronic	.627	.269	5.423	1	.020	1.873	1.104	3.175
Income quintile (base=Q1)			4.763	4	.313			
Q2	.343	.392	.767	1	.381	1.409	.654	3.035
Q3	.019	.378	.002	1	.961	1.019	.486	2.136
Q4	-.106	.387	.075	1	.784	.899	.421	1.921
Q5	.924	.518	3.183	1	.074	2.520	.913	6.954
Constant	1.243	.384	10.486	1	.001	3.466		

Number of observations: 348

Omnibus test model coefficient:Pearson chi square =43.632, df =8, p=0.000; -2 log likelihood = 351.126

Cox and Snell R squared= 0.115; Nagelkerke R squared= 0.172

Hosmer and Lemeshow Pearson chi square =4.885, df =8, p=0.770

(Dependent variable: Hospitalisation; 1=yes)

Model 2c confirms the findings of models 2a and 2b by using the cases of adults, defined as ill persons aged more than 17 years. Of the total individuals who accessed care, 12 percent were children and 88 percent were adults. Table 4.22 illustrates the results of the model that shows significant relationship between SSP and utilisation. There was less likelihood of hospitalisation for newly insured individual (OR 0.249) and uninsured individuals compared to insured individuals (OR 0.256). The odds of hospitalisation were high if the individual was chronically ill rather than acute illness, controlling for other socio-economic variables (OR 1.91). The odds an individual from high income group (Q5) being hospitalised were 2.834 times the odds a low income group (Q1) individual admitted. The odds of the admission compared to the outpatient treatment was high for male (OR 1.686) than female, at 10 percent significance level. The model correctly predicts 73.1 percent of the cases.

Table 4.22 Probability of Hospitalisation: Results of Model 2c

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for Exp (B)	
							Lower	Upper
Health insurance (base= SSP insured)			19.631	2	.000			
Newly insured	-1.388	.347	15.972	1	.000	.249	.126	.493
Uninsured	-1.361	.356	14.631	1	.000	.256	.128	.515
Gender of ill person (base=Female) Male	.523	.286	3.328	1	.068	1.686	.962	2.956
Types of illness (base: Acute) Chronic	.647	.281	5.284	1	.022	1.910	1.100	3.316
Income quintile (base=Q1)			5.445	4	.245			
Q2	.531	.417	1.622	1	.203	1.701	.751	3.853
Q3	.195	.409	.228	1	.633	1.216	.545	2.711
Q4	.001	.410	.000	1	.997	1.001	.449	2.235
Q5	1.042	.537	3.860	1	.049	2.834	.989	8.120
Constant	1.131	.401	7.937	1	.005	3.097		

Number of observations: 315

Omnibus test model coefficient:Pearson chi square =39.573, df =8 p=0.000; -2 log likelihood = 316.967

Cox and Snell R squared= 0.117; Nagelkerke R squared= 0.174

Hosmer and Lemeshow Pearson chi square =3.300, df =8, p=0.914

(Dependent variable: Hospitalisation; 1=yes)

Model 2d considered the cases of women to substantiate earlier findings (Table 4.23). Newly insured (OR 0.258) and uninsured (0.240) women had lower likelihood of hospitalisation than insured. Income class and types of illness were not significantly associated with hospitalisation of women. The model correctly predicts 76.9 percent of the cases.

Table 4.23: Probability of Hospitalisation: Results of Model 2d

	B	S.E.	Wald	Df	Sig.	Exp(B)	95%C.I.for Exp (B)	
							Lower	Upper
Health insurance(base= SSP insured)			12.137	2	.002			
Newly insured	-1.353	.442	9.360	1	.002	.258	.109	.615
Uninsured	-1.426	.469	9.250	1	.002	.240	.096	.602
Types of illness (base: Acute) Chronic	.535	.362	2.189	1	.139	1.707	.840	3.469
Income quintile (base=Q1)			3.282	4	.512			
Q2	.615	.535	1.322	1	.250	1.850	.648	5.281
Q3	.342	.499	.469	1	.493	1.408	.529	3.746
Q4	.259	.536	.234	1	.629	1.296	.453	3.708
Q5	1.390	.849	2.683	1	.101	4.014	.761	21.176
Constant	1.052	.483	4.738	1	.029	2.863		

Number of observations: 171

Omnibus test model coefficient:Pearson chi square =22.389, df 7 p=0.002; -2 log likelihood = 186.015

Cox and Snell R squared= 0.123; Nagelkerke R squared= 0.174

Hosmer and Lemeshow Pearson chi square =2.765, df =8, p=0.948

(Dependent variable: Hospitalisation; 1=yes)

4.4.5 Summary

The positive impact of SSP on utilisation of health services was obvious from the results of the models 2a, 2b, 2c and 2d. The evidence of insured individuals being more likely to get admitted in case of illness compared to newly insured and uninsured individuals was established. By removing financial barriers to access care, SSP could make hospitalisation affordable. Chronic illness increased the likelihood of hospitalisation than acute illness. High-income class individuals had higher admissions

compared to the low-income individuals. The area of residence, household size, job status and education of head of household were not associated with utilisation. SSP membership, gender of ill person, types of illness and income class did influence the likelihood of hospitalisation. According to the likelihood ratio test (-2LL), model 2b is superior to all the models (2a,2c and 2d). Overall, these models predict higher utilisation of health services by insured individuals. Hence, the current study accepts the hypothesis (H3) that SSP increases utilisation of health services.

The results from these models indicate that insured individuals behave according to the theory. Demand for health services is price elastic; hence, any price decrease would enhance utilisation. SSP benefits reduce the price of care; there by increase utilisation of inpatient services. Moreover, certain design features such as availability of drugs in network hospitals, better quality of services at network hospitals, streamlined claim procedure and coverage of inpatient treatment in benefit package increases the utilisation of health services. Given the similarities in the pattern of illness, higher proportion of hospitalisation in insured group implies over-utilisation. The results of the study did not show over-utilisation defined as the number of days spent in the hospital. This was possible due to certain design features of SSP (strict monitoring by SSP assistants and pre-authorisation process) that curtailed moral hazard behaviour.

Of the various variables studied, income of the household was directly associated with hospitalisation. Elasticity of demand for health care is income elastic and high-income individuals have a higher propensity to use the health services. In this study, vertical equity in utilisation was absent; hence, higher proportion of insured poorest did not hospitalise compared to the higher income individuals. However, the horizontal equity was seen in which insured poorest were hospitalised more than their counterparts in uninsured and newly insured groups. Indirect cost of treatment might have prevented the poorest to utilise health services more than high-income individuals. Nevertheless, compared to individuals in similar income class in uninsured and newly insured group, insured poorest were hospitalised due to the claim benefits from SSP that reduced the financial burden of inpatient treatment.

Equity in utilisation based on the gender revealed a different picture. Although there was no gender related vertical equity in utilisation, the study found socially desirable result (horizontal equity) as evident from the model 2d. Insured women had more episodes of admissions compared to uninsured and newly insured women. As the financial barrier to access inpatient care was low, insured women had higher admissions. The study finding (model 2d) brings to light the positive impact of health insurance on the women empowerment in health. Regardless of insurance status, men were found to get hospitalised (model 2a and 2c) more than women, a general finding in India since women tend to ignore their health and postpone treatment or resort to home medicine (Asfaw, 2010).

The model findings reveal the role of evaluated and perceived need with chronically ill persons seeking hospitalisation. Chronic illness usually has longer duration resulting in bad health status. However, insured did seek inpatient treatment even for acute illness. On the contrary, uninsured individuals did not seek inpatient care even for chronic illness. At the end, positive effect of SSP on hospitalisation was evident owing to the risk coverage of inpatient treatment. Horizontal equity in utilisation based on the gender and income was present. Vertical equity in utilisation based on the income and gender was absent. Higher hospitalisation among insured individuals is due to the low cost of treatment made possible by SSP. To know the cost impact, further analysis on the impact of SSP needs to be undertaken. Hence, the next section concerns with the impact of SSP on the out of pocket expenses incurred for medical treatment.

4.5 IMPACT OF SAMPOORNA SURAKSHA PROGRAMME ON OUT OF POCKET EXPENDITURE

4.5.1 Introduction

One of the measures used to study the impact of MHI on financial protection is OOPE incurred by insured members. Medical expenses push the poor into poverty and impoverish the households. The research question was whether SSP reduced OOPE incurred for medical treatment for insured individuals compared to newly insured and uninsured individuals. By providing the financial assistance during hospitalisation, SSP reduces medical expenses. Hence, the hypothesis was that SSP reduces OOPE associated with illness due to the claim benefits. Testing of the hypothesis used the multiple linear regression analysis.

Direct cost of medical services on illness includes hospital expenses (registration fees, consultation fees, admission charges, and diet charges), medicine costs, diagnostic charges and laboratory or investigation charges. Other costs were food expenses, lodge charges and transportation expenses. Indirect cost of accessing care includes the lost wages due to illness (multiplying daily wages with number of working days lost) and interest amount paid on the loan taken to pay for medical expenses. Total expenses include direct and other expenses and indirect costs. Firstly, OOPE incurred by insured, newly insured and uninsured individuals was assessed considering total and direct cost before and after the claim from SSP to know the differences in OOPE owing to claim. Secondly, OOPE as a percentage of annual expenditure, before and after claim, was analysed for the studied groups. Lastly, determinants of OOPE were estimated using the multiple linear regression analysis.

$$\text{Log}\,(OOPE_i \mid HCA_i|ill) = \beta_0+\beta_1 M_x+\beta_2 X_y+\varepsilon$$

$OOPE_i \mid HCA_i$ is OOPE conditional on health care action upon illness. M_x represents the mode of payment (SSP). X_y is a set of variables that influence probability of OOPE. The model was subjected to a number of tests namely variance inflation factor, correlation matrix, Cook's D statistic and Dfits statistic.

The data of 361 individuals who sought the treatment on illness, which included 159 insured and 202 uninsured (117 newly insured and 85 uninsured individuals) was used for the analysis. Determinants of the OOPE mainly the types of illness and treatment, health insurance (SSP), days spent in the hospital, age and gender of ill persons, income class, size of family and area of residence were analysed.

4.5.2 Out of Pocket Expenditure Incurred for Health Care Services

Direct, indirect and total expenses incurred by insured, newly insured and uninsured individuals before and after the claim from SSP are given in Table 4.24. Before the claim, direct median cost incurred by uninsured and insured was ₹5000, which was higher than newly insured (₹4500). Direct cost as percent of the total treatment cost (excluding indirect cost) was 92.6 percent for insured, 92.5 percent for newly insured and 91.4 percent for uninsured individuals. Other expenses, on an average were ₹ 952 for insured, ₹1234 for newly insured and ₹1366 for uninsured individuals ($p>0.05$); however, the difference in the amount was not significant. Both uninsured and insured spent almost 35 percent of the total cost (direct, other cost and indirect cost) as indirect cost compared to newly insured individuals (40 %). Indirect cost had two components. Average wages lost due to illness including days of admission or outpatient visits were high for newly insured (₹9760) compared to insured (₹6913) and uninsured (₹6899) individuals ($p>0.05$). Mean interest payments on the loan taken to pay for medical bills was the highest for newly insured (₹1837) and uninsured (₹1602) and lowest for insured individuals (₹905) ($p<0.05$).

After the claim from SSP, median total OOPE for insured was much less (₹4950) than newly insured (₹8875) and uninsured (₹8375) ($p<0.00$). Direct cost of treatment was lower for insured (median ₹2800) compared to uninsured and newly insured individuals ($p=0.003$). Before the claim, there was similarity in the direct and total cost of illness between insured, newly insured and uninsured individuals. However, after the claim, there was a significant difference in OOPE incurred by these individuals.

Table 4.24 Cost of Medical Care

	Insured (₹)	Newly insured (₹)	Uninsured (₹)
Direct cost before claim[1]	12429(31164)	15678 (34453)	14600 (28567)
Total cost before claim[2]	22469(57550)	28533(50919)	24473(39271)
Direct cost after claim[3]	10202(31417)	15678(34453)	14600(28567)
Total cost after claim[4]	19099(56760)	28533(50919)	24473(39271)

[1]Kruskal Wallis χ^2 (2) =1.715, p =0.424
[2]Kruskal Wallis χ^2 (2) =1.232, p =0.540
[3]Kruskal Wallis χ^2 (2) =11.815, p =0.003
[4]Kruskal Wallis χ^2 (2) =19.222, p =0.000
Mean expenses (standard deviation in bracket)

4.5.3 Out of Pocket Expenses as a Percentage of Annual Consumption Expenditure

Understanding the impact of health expenses on household consumption requires the deliberation on the direct OOPE as a percentage of annual consumption expenditure. Figure 4.4 depicts the positive impact of SSP on OOPE incurred by insured members. The percentage of insured individuals who spent more than 15 percent of annual consumption expenditure on OOPE reduced drastically after the claim.

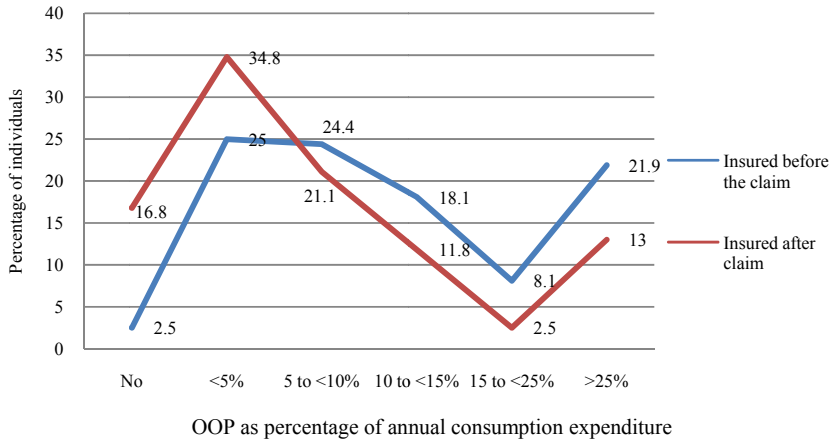
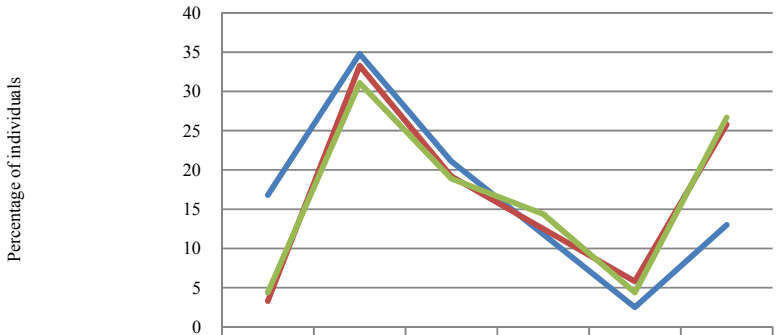


Figure 4.4 Direct Out of Pocket Expenses as a Percentage of the Annual Consumption Expenditure Incurred by Insured Members

A comparison of insured with newly insured and uninsured individuals shows lower percent of insured (13%) individuals allocating more than 25 percent of annual consumption expenditure for medical illness (Figure 4.5).



	0	<5%	5 to <10%	10 to <15%	15 to <25%	>25%
Insured after claim	16.8	34.8	21.1	11.8	2.5	13
Newly insured	3.3	33.3	19.2	12.5	5.8	25.8
Uninsured	4.4	31.1	18.9	14.4	4.4	26.7

Figure 4.5 Direct Out of Pocket Expenses as Percentage of the Annual Consumption Expenditure

From Figure 4.5, we infer that newly insured and uninsured groups had higher percentage of individuals who paid more than 15 percent compared to insured members. This corroborates the hypothesis of positive impact of SSP on OOPE (H4).

The next question was whether the total OOPE as a percentage of annual consumption expenditure was low for insured individuals after SSP claim. Confirmative positive reply to this question by Kruskal Wallis statistical tests (Table 4.25) proves a significant decrease in the total OOPE as a percentage of annual consumption expenditure for insured members ($p<0.00$) compared to uninsured and newly insured individuals (15%). Despite SSP, average total OOPE was 8 percent for insured individuals owing to high indirect costs in the form of lost wages and interest payments on the loan taken to meet the excessive medical expenses and outpatient treatment costs.

Table 4.25 Out of Pocket Expenses as a Percentage of the Annual Consumption Expenditure

	Insured	Newly insured	Uninsured
Direct cost before the claim[1]	7	7	6
Direct cost after claim[2]	4	7	6
Total cost before Claim[3]	12	15	15
Total cost after claim[4]	8	15	15

[1]Kruskal Wallis χ^2 (2) =2.504, p =0.286
[2]Kruskal Wallis χ^2 (2) =17.216, p =0.000
[3]Kruskal Wallis χ^2 (2) =2.165, p =0.339
[4]Kruskal Wallis χ^2 (2) =21.430, p =0.000

By providing financial coverage for hospitalisation, SSP could reduce the burden of health expenses for insured households who otherwise had to incur additional four percent of the annual consumption expenditure for medical treatment (reduced from 12 % to 8%).

4.5.4 Econometric Estimation of the Probability of Out of Pocket Expenses

To estimate the probability of OOPE by insured, newly insured and uninsured individuals, multiple regression analysis was used. The following sub-sections deal with the analysis of various characteristics of individual, household (size of the household and income class) and community (area of residence) determining OOPE, after classifying individuals based on SSP membership status.

4.5.4.1 Characteristics of Individuals

Some of characteristics of the sick individuals that influence OOPE were types of illness and treatment, health insurance, days spent in the hospital, age and gender of ill persons.

a. Age of the Ill Persons

The study expects younger individuals to have lower expenses than older persons. As age increases, people are more prone to illness; hence, the treatment related expenditure would be high. The results reveal mean age of uninsured ill persons to be the

highest (44 years) compared to newly insured (37 years) and insured individuals (43 years) ($p>0.05$).

b. Types of Illness

Chronic illness related OOPE are higher than acute illness and maternity expenses. However, including maternity as types of illness is a misnomer. In this study, it was included as maternity requires the admission and medical care just like any other illness and a person has to incur expenses to avail health services. The analysis on total OOPE related to the different types of illness points at a significant association for insured and newly insured individuals (Table 4.26). After the claim, insured individuals spent a median OOPE of ₹4630 for acute illness, ₹6100 for chronic illness and ₹1525 for maternity admission. Newly insured had ₹5420, ₹12875 and ₹6550 respectively and uninsured spent ₹6800, ₹10050 and ₹9775 respectively. Treatment of the chronic illness was expensive than acute illness or maternity care. After the claim, for insured families, maternity expenses reduced by 87 percent, chronic illness expenses by 16.4 percent and acute illness expenses reduced by 18 percent. Regardless of health insurance, chronic illness (₹33036) was associated with a higher average OOPE than acute illness (₹14363) or maternity expenses (₹6805) (Kruskal Wallis $\chi 2$ $p<0.05$).

Table 4.26 Total Expenses Incurred for Different Illness

	Insured (before claim) (₹)[1]	Insured (after claim) (₹)[2]	Newly insured (₹)[3]	Uninsured (₹)[4]
Acute	14526 (45867)	12158 (45868)	14641 (32871)	17727 (38401)
Chronic	26207 (66035)	25487 (64894)	46143 (63677)	31902 (40027)
Maternity	1031((2367)	1625 (1731)	9772 (7917)	6794 (7309)

[1]Kruskal Wallis χ^2 (2) =5.712, p =0.057
[2]Kruskal Wallis χ^2 (2) =6.536, p =0.038
[3]Kruskal Wallis χ^2 (2) =9.181, p =0.01
[4]Kruskal Wallis χ^2 (2) =4.596, p =0.1
Mean (Standard deviation in bracket)

c. Gender of Ill Persons

A positive association between the gender and median total expenses incurred with women (₹6300) spending lower amount than men (₹8478) ($p<0.05$) for insured group was found before the claim from SSP (Table 4.27). Newly insured and uninsured women spent a median OOPE of ₹7050 and ₹6900 respectively (newly insured men ₹ 10275 and uninsured men ₹8550). After the claim from SSP, women spent 25.3 percent lower (median ₹4180) than actual expenses compared to men (reduced by 10 %, median of ₹5678). Hence, the OOPE reduced more for insured women compared to men.

Table 4.27 Gender of Ill Persons and Total Out of Pocket Expenditure

	Insured (before claim) **(₹)**[1]	Insured (after claim) **(₹)**[2]	Newly insured **(₹)**[3]	Uninsured **(₹)**[4]
Male	30537 (76445)	27354 (76249)	31854 (54951)	28157 (47360)
Female	14095 (24200)	10530 (20622)	25212 (46770)	19419 (28088)

[1]Mann Whitney U test = 2643.5, Z=2.014, p =0.044
[2]Mann Whitney U test = 2759, Z=1.623, p =0.105
[3]Mann Whitney U test = 1622.5, Z=0.932, p =0.352
[4]Mann Whitney U test = 919.5, Z=1.241, p =0.215
Mean expenses (standard deviation in bracket)

Another matter that drew the attention was higher total expenses for insured men than women. Women had higher percent of chronic illness (53.2%) in contrast to higher percent of acute illness suffered by men (67.6%) ($p<0.05$). The fact that chronic illness gives way to high OOPE is inapplicable here. Further probe into this inciting issue revealed the cause to be the indirect costs. Prolonged illness (median 15 days) and subsequent loss of wages due to no work (median 30 days) raised OOPE for men. Almost 30 percent of the men were daily labourers. To meet the cost of illness, men borrowed (52.2%) in higher percent than women giving rise to larger interest payments. Subsequently, average indirect costs were more for men (₹11521) compared to the women (₹6854). Average direct medical costs were also higher for men (₹17704) than women (₹11435) as men spent more days (average15 days) in hospital than women (average of 10 days) (Mann Whitney U test $p <0.05$).

Inter-group analysis considering sick women to know the impact of SSP on OOPE for women shows no significant association before the claim (Kruskal Wallis $\chi 2$ $p > 0.05$). After the claim, insured women incurred lower OOPE than the other two groups (Kruskal Wallis $\chi 2$ $p < 0.05$) (Table 4.28). Average direct and indirect expense incurred by insured women was low compared to uninsured and newly insured women. Overall, horizontal equity was present since insured women spent less OOPE compared to uninsured and newly insured counterparts.

Table 4.28 Average Out of Pocket Expenses Incurred by Women

	Insured (after claim) **(₹)**	Newly insured **(₹)**	Uninsured **(₹)**
Direct cost	9958	11399	10200
Lost wages	1665	10331	7113
Interest on loan	625	1527	1084
Total cost[1]	10530	25212	19419

[1]Kruskal Wallis $\chi 2$ (2) =10.184, p =0.006

Median days of illness was the highest for uninsured women (30 days) and newly insured (15 days) than insured women (10 days). Though 34 percent of insured women borrowed compared to a lower percent of uninsured (26.4%), source of borrowing were informal such as relatives and friends and the borrowed amount was less. Newly insured women borrowed the most (38.8%) that gave rise to large interest payments. Consequently, indirect cost of care was more for uninsured and newly insured groups. SSP benefit and lower indirect expenses resulted in less OOPE for insured women. Regardless of the health insurance, men were found to have higher OOPE (₹24747) compared to women (₹17829) ($p < 0.05$).

d. Types of Treatment and the Duration of Illness

OOPE depends on the types of treatment taken. Inpatient treatment is usually expensive than outpatient treatment. Before the claim, median total expenses due to hospitalisation were more for newly insured (₹10275) and uninsured individuals (₹ 10300) compared to insured individuals (₹8450). There was a significant difference in the types of treatment and OOPE with outpatient treatment being less expensive than

inpatient treatment ($p<0.05$). The difference between outpatient and inpatient treatment costs for studied groups before the claim was also significant ($p < 0.00$) (Table 4.29). Strikingly, the discrepancy ceased to exist after the claim from SSP ($p>0.05$) and insured spent median total OOPE of ₹5200 for hospitalisation. This finding is noteworthy as profound burden of hospitalisation was low for insured members.

Table 4.29 Average Out of Pocket Expenses Incurred for Outpatient and Inpatient Treatment

	Insured (before claim) **(₹)**[1]	Insured (after claim) **(₹)**[2]	Newly insured **(₹)**[3]	Uninsured **(₹)**[4]
Outpatient	2606 (3655)	2606 (3628)	4040 (33858)	3588 (21848)
Inpatient	16106 (60691)	12394 (59957)	23019 (56937)	22280 (44825)

[1]Mann Whitney U test = 465.5, Z=3.885, p =0.000
[2]Mann Whitney U test = 844.5, Z=1.715, p =0.086
[3]Mann Whitney U test = 537.5, Z=5.344, p =0.000
[4]Mann Whitney U test = 386.5, Z=3.507, p =0.000
Mean expenses (standard deviation in bracket)

Irrespective of the health insurance, inpatient treatment (average ₹26426) was associated with higher OOPE than outpatient treatment (average ₹14581) (Mann Whitney U test p =0.017). Days spent in the hospital was another determinant of OOPE (Kruskal Wallis $\chi 2$ p =0.00). Insured spent more number of days in the hospital (average of 19 days) than newly insured (15 days) and uninsured (12 days) individuals. Despite that, insured incurred lower OOPE owing to the claim benefits from SSP.

4.5.4.2 Characteristics of Households

Income class and size of the household would determine OOPE.

a. Income Class

Individuals from the high-income class would have high OOPE, since these individuals can afford treatment at expensive private facilities. However, indirect expenses would be lower as they need not borrow. This study observed an insignificant relationship between income and OOPE (Table 4.30). Intra-income class analysis of insured group shows lack of equity before and after the claim ($p>0.05$). Before the claim from SSP, individuals from Q4 income quintile spent higher amount, median ₹9570,

followed by individuals from Q2 (₹7475), Q1 (₹7200), Q3 (₹7000) and Q5 (₹6900) ($p>0.05$). After the claim, there was a discernible, however non-significant, change in the OOPE incurred by various income quintiles ($p>0.05$). Individuals from Q4 had highest median OOPE (₹6270) followed by individuals from Q1 (₹5500), Q3 (₹4860), Q5 (₹ 4825) and Q2 (₹4325) class. On the equity in the distribution of claims, analysis of the percentage change in OOPE due to the claim in various income quintile helps in better understanding. Individuals from Q4 quintile claimed the most with 57 percent decrease in median OOPE followed by Q2 class. Individuals from Q5 class got the least claim followed by Q3. Hence, the study could not establish equity in claims from SSP, defined as the largest benefit to the poorest.

Table 4.30 Total Out of Pocket Expenses by Income Quintile

	Insured (before claim) **(₹)**[1]	Insured (after claim) **(₹)**[2]	Newly insured **(₹)**[3]	Uninsured **(₹)**[4]
Q1	32172 (70759)	29112 (71247)	10304 (10159)	20530 (25595)
Q2	12518 (19124)	9429 (17286)	41446 (70632)	25751 (31335)
Q3	21272 (44150)	16937 (38307)	27773 (40380)	22385 (43299)
Q4	13873 (14554)	9785 (12934)	34047 (54781)	26093 (57798)
Q5	33881 (35408)	31798 (28356)	32641 (61772)	19683 (41903)

[1]Kruskal Wallis χ^2 (4, N=361) =1.324, p =0.851
[2]Kruskal Wallis χ^2 (4, N=361) =2.215, p =0.696
[3]Kruskal Wallis χ^2 (4, N=361) =4.7, p =0.319
[4]Kruskal Wallis χ^2 (4, N=361) =1.132, p =0.889
Mean expenses (standard deviation in bracket)

To explore equity in OOPE, the study compared insured, newly insured and uninsured individuals in Q1 and Q2. There was no difference in OOPE incurred before SSP claims among the lowest income classes in these groups. After the claim, insured members had to pay a lower average OOPE (₹18738) compared to newly insured (₹ 24677) and uninsured individuals (₹24630) ($p<0.05$). Therefore, the impact of SSP in reducing the OOPE for the lowest income classes compared to those of newly insured and uninsured groups demonstrates horizontal equity in financial protection. Irrespective of the health insurance, a comparison of the income class and OOPE shows no

relationship between them (Kruskal Wallis $\chi 2$ $p>0.05$). Individuals from Q5 income quintile had the highest average OOPE (₹29891) followed by Q4 (₹24433), Q2 (₹ 24154), Q3 (₹21738) and lastly Q1 (₹21510) individuals.

b. Household Size

Size of the household determines OOPE since large families have to spend more than smaller ones. The median total cost of care for the households with less than three members was ₹6800. Five members households spent a median of ₹6370 and 10 members OOPE spent ₹7000. It was ₹8600 for more than 10 members households (Kruskal Wallis $\chi 2$ $p =0.860$).

4.5.4.3 Characteristics of the Community

a. Area of Residence

Residential area would determine the cost of care especially indirect and other expenses. Rural areas have fewer hospitals forcing the people to seek care from the hospitals situated in urban or semi-urban areas. This would increase indirect cost of care along with other expenses. After the claim, lower median OOPE was incurred by rural residents from insured (₹7825) group compared to uninsured (₹10280) and newly insured individuals (₹13125) ($p>0.05$). Even insured semi-urban residents (median of ₹ 4560) and urban residents (₹2775) had lower OOPE compared to newly insured (₹7263 and ₹5900 respectively) and uninsured group (₹6400 and ₹9150 respectively) in respective areas.

Table 4.31 Area of Residence and Total Out of Pocket Expenses

	Insured (before claim) (₹)[1]	Insured (after claim) (₹)[2]	Newly insured (₹)[3]	Uninsured (₹)[4]
Urban area	22936 (40470)	20219 (39316)	25931 (50806)	13862 (21438)
Semi-urban area	17862 (35408)	12977 (30450)	18632 (32490)	30287 (54797)
Rural area	25661 (71226)	23259 (71617)	39331 (63159)	25371 (34639)

[1]Kruskal Wallis χ^2 (2) =0.769, p =0.681
[2]Kruskal Wallis χ^2 (2) =2.039, p =0.361
[3]Kruskal Wallis χ^2 (2) =2.263, p =0.323
[4]Kruskal Wallis χ^2 (2) =2.552, p =0.279
Mean expenses (standard deviation in bracket)

After the claim, burden of OOPE for semi-urban residents decreased by 27.6 percent in contrast to a lower reduction for urban (9%) and rural areas (11.8%). Regardless of the health insurance, residents in rural areas (₹28301) had to spend a higher average total OOPE than urban (₹20204) or semi-urban areas (₹18047).

4.5.4.4 Results of Econometric Estimation

The study used multiple linear regression analysis to know the impact of SSP on OOPE. It was hypothesised that SSP decreases OOPE since insured individuals can claim from the programme for hospitalisation. The log transformed amount of OOPE, age of ill person and days spent in the hospital were used for the regression analysis. Dummy variables for the types of illness, types of treatment, gender of ill persons, size of households, area of residence, SSP status and income class were defined.

Model 3a used the cases of illness reported by all households, irrespective of health insurance status and model 3b took cases of hospitalisation. Results of model 3a are given in Table 4.32 with the significant results at the end of the Table. Backward elimination stepwise regression estimated the robust model at the 9th step after eliminating insignificant variables from the model. The analysis began with the full model considering the independent variables that included age and gender of ill persons, types of treatment and illness, days spent in the hospital, size of the household, income class, area of residence and health insurance status. In model 1a, OOPE would be 35 percent higher for newly insured individuals [exp (.302)=1.35] and 29.6 percent higher

for uninsured individuals [exp (.268)=1.296] than insured individuals. As given earlier, insured individuals spent less compared to newly insured and uninsured individuals. Moreover, OOPE would be 9.6 percent higher for men than women [exp (.095)=1.096]. Chronically ill individuals would have 41 percent more OOPE than individuals suffering from acute illness [exp (.134)=1.41]. A one percent increase in the length of stay in the hospitals would yield a .41 percent increase in OOPE. Semi urban individuals would have 17.8 percent less OOPE and rural individuals would have 16.2 percent more OOPE compared to urban individuals. Age of ill person, income class, and size of the household and area of residence did not contribute to the OOPE. The regression estimates confirmed the positive impact of SSP; hence, the finding proves the hypothesis that SSP reduces OOPE for insured individuals *compared* to newly insured and uninsured individuals (H4). Variance Inflation Factor did not suggest any multicollinearity since the value was one for all the significant independent variables, less than cut off 10. Correlation matrix did not show any significant correlation between independent variables. Cook's D statistic detected no outliers (all cases had values <0.014) and Dfits statistic (< 1.0) did not suggest any observation that strongly influenced the model. F value was 18.159 ($p < 0.05$).

Model 3b considered the cases of hospitalisation to explore the impact of SSP on OOPE (Table 4.33) taking all the variables included in model 3a. Backward elimination stepwise regression estimated the robust model by eliminating insignificant variables from the model at the 11^{th} step. The finding of the model is in conformity with model 3a. Since SSP covers IP services, it is not surprising to observe similar independent variables as predictors of OOPE in this model. OOPE would be 33 percent higher for newly insured individuals [exp (.288) =1.33] and 24.6 percent more for uninsured than insured individuals [exp (.220)=1.246]. Moreover, OOPE would be 10.6 percent higher for men than women [exp (.101=1.106]. Chronically ill individuals would have 13 percent more OOPE than individuals suffering from acute illness [exp (.123=1.13]. A one percent increase in the length of stay in the hospitals would yield a 0.455 percent increase in OOPE.

Table 4.32 Estimation of Model 3a: Health insurance and OOPE

	Model 3a	Standardized Coefficients Beta	t	Sig.
1	(Constant)		-1.845	.066
	Newly insured (=1, 0 otherwise) (base: insured)	.301	5.760	.000
	Uninsured (=1, 0 otherwise)	.261	5.053	.000
	Gender of head: Male (=1, 0 otherwise) (base: female)	.082	1.713	.088
	Semi urban (=1, 0 otherwise) (base: urban)	-.170	-1.896	.059
	Rural (=1, 0 otherwise)	.154	1.718	.087
	Household size 1-3 (=1, 0 otherwise) (base: 7 & above)	-.052	-.613	.540
	Household size 4-6 (=1, 0 otherwise)	-.100	-1.236	.217
	Q1 (=1, 0 otherwise) (base: Q5)	.037	.554	.580
	Q2 (=1, 0 otherwise)	.004	.064	.949
	Q3 (=1, 0 otherwise)	.027	.438	.662
	Q4 (=1, 0 otherwise)	-.014	-.228	.820
	Chronic (=1, 0 otherwise) (base: Acute)	.117	2.370	.018
	Maternity (=1, 0 otherwise)	-.062	-1.265	.207
	Log (Age of the head)	-.046	-.944	.346
	Log (Days spent in hospital)	.424	8.617	.000
9	(Constant)		-4.599	.000
	Newly insured	.302	5.961	.000
	Uninsured	.260	5.108	.000
	Male	.092	1.990	.047
	Semi urban area	-.164	-1.860	.064
	Rural area	.151	1.713	.088
	Chronic	.123	2.610	.009
	Log (Days spent in hospital)	.411	8.502	.000
	Adjusted R^2 Standard error of the estimate	.250 .865		

(Dependent variable in log transformed form)
Number of observations: 361

Table 4.33 Estimation of Model 3b: Health insurance and OOPE

	Model 3b	Standardized Coefficients Beta	t	Sig.
1	(Constant)		-1.547	.123
	Newly insured (=1, 0 otherwise) (base: insured)	.289	5.322	.000
	Uninsured (=1, 0 otherwise) (base: insured)	.210	3.894	.000
	Gender of head: Male (=1, 0 otherwise) (base: female)	.092	1.765	.079
	Semi urban (=1, 0 otherwise) (base: urban)	-.123	-1.224	.222
	Rural (=1, 0 otherwise)	.050	.496	.620
	Household size 1-3 (=1, 0 otherwise) (base: 7 & above)	-.103	-1.098	.273
	Household size 4-6 (=1, 0 otherwise)	-.135	-1.503	.134
	Q1 (=1, 0 otherwise) (base: Q5)	-.003	-.041	.968
	Q2 (=1, 0 otherwise)	-.011	-.153	.879
	Q3 (=1, 0 otherwise)	-.015	-.216	.829
	Q4 (=1, 0 otherwise)	-.047	-.713	.476
	Chronic (=1, 0 otherwise) (base: Acute)	.114	2.140	.033
	Maternity (=1, 0 otherwise)	-.052	-.954	.341
	Log (Age of the head)	-.047	-.894	.372
	Log (Days spent in hospital)	.471	8.931	.000
11	(Constant)		-6.484	.000
	Newly insured	.288	5.490	.000
	Uninsured	.220	4.215	.000
	Male	.101	2.038	.043
	Chronic	.123	2.448	.015
	Log (Days spent in hospital)	.455	9.027	.000
	Adjusted R^2 Standard error of the estimate	.314 .813		

(Dependent variable in log form; Hospitalisation only)

Number of observations: 282

4.5.5 Analysis of Sampoorna Suraksha Claims

The analysis on SSP claims using the household data shows average amount of claim to be ₹3447. The maximum amount reimbursed for the studied sample was ₹ 45,000. SSP has reimbursed ₹549,750 to the sample insured individuals. Out of the 159 ill persons, 16 persons got outpatient treatment (10%) and 57 inpatient treatment claims were rejected (36%). There were 143 inpatient admissions, of which 86 got cashless claim from the programme. The number of claims made by the entire insured (416 households) group in the life of the membership reveals that 21.4 percent did not claim at all. Almost 49 percent claimed once and 17.6 percent claimed twice. Twelve households surveyed claimed thrice or more times.

4.5.6 Summary

SSP decreased OOPE associated with treatment of illness compared to uninsured and newly insured groups. Without SSP benefits, insured individuals would have incurred high level of OOPE. Before the claim from SSP, there was no difference in direct cost, other expenses and indirect expenses among insured and both uninsured groups. Because of SSP, there was a reduction in the direct cost and lower burden of total OOPE on insured individuals. Regression analysis confirmed the result of Kruskal Wallis test that insured incurred lower OOPE compared to uninsured and newly insured individuals. Hence, study proves the hypothesis of positive impact of SSP on OOPE (H4).

OOPE calculated as a percentage of annual household expenditure confirms the positive impact of SSP. Of the ₹100 annual household expenditure, uninsured and newly insured had to spend ₹15 for medical expenses compared to just ₹8 of insured individuals. Due to the limitations of benefit package, that excluded outpatient treatment and certain diseases, reduction of eight rupees for insured individuals was not possible. Moreover, SSP excludes indirect costs (lost wages) or transportation expenses and has a ceiling on the risk covered (₹5000) which is too low, given the high cost of treatment.

Another noteworthy finding was the effect of the inpatient treatment on OOPE due to SSP membership. Before the claim, hospitalisation costs were incredibly large

causing similarity in OOPE for insured, uninsured, and newly insured individuals. By lowering OOPE related to hospitalisations, direct cost of treatment reduced along with removal of the differences in the outpatient and inpatient treatment costs. While uninsured still faced higher inpatient treatment costs, it was no longer a significant variable influencing OOPE for insured individuals. Regression model (3b) on hospitalised individuals confirms the positive impact of SSP on OOPE.

Days spent in the hospital, chronic illness and gender of ill persons influenced the amount of OOPE. Chronic illness was associated with more utilisation and high OOPE for insured, uninsured and newly insured individuals. SSP had minimal impact on the OOPE related to chronic illness. Due to fixed benefit package, individuals with chronic illness incurred higher OOPE than those with acute illness.

Another finding that needs deliberation was the absence of income related equity in OOPE for insured individuals. Lowest income individuals spent the most in nominal rupees compared to other income classes within insured group and the claim benefits went to those in the moderate poor (Q3) and non poor (Q4). Despite SSP, the poorest had high level of OOPE as a percentage of consumption expenditure compared to other income classes. Nevertheless, horizontal equity in the benefit of SSP was present. Insured poor had less burden of OOPE compared to their counterpart in newly insured and uninsured groups. The poor insured individuals might not have benefited from SSP compared to the high-income insured individuals (absence of vertical equity); however, they were better compared to the poor in uninsured and newly insured groups (presence of horizontal equity).

Gender related impact of SSP has two distinct parts. Firstly, men incurred higher expenses compared to women in the studied households. For insured individuals, the difference in OOPE between men and women disappeared after the claim from SSP. Moreover, the reduction in OOPE was high for women compared to men. Secondly, the study observed a lower OOPE for insured women compared to uninsured and newly insured women. In addition, insured women had lower indirect expenses (lost wages and interest payments) and borrowed from low cost informal sources of funds. Women and

poorest insured individuals had to pay lower OOPE compared to their counterparts in newly insured and uninsured groups.

Regarding the distribution of SSP benefits, urban insured individuals got the least benefit from SSP and semi-urban residents got the most. The explanation for this phenomenon relies on the discussion in section 4.3.6 that establishes difference in health seeking behaviour of individuals in different areas. Urban residents relied more on home medicine, clinics and government hospitals compared to residents of other areas. Larger number of semi-urban residents visited network hospitals; as a result, they got the maximum benefits.

The combination of findings (section 4.3.7 and 4.4.5) provides the support for the positive impact of SSP on the financial protection. One of the issues that emerge from these findings is the need to evaluate the relative impact of SSP that nullifies the differences in household size. Hence, the next section focuses on the catastrophic health expenditure, a relative measure of financial protection to assess the impact of SSP.

4.6 IMPACT OF SAMPOORNA SURAKSHA PROGRAMME ON CATASTROPHIC HEALTH EXPENDITURE

4.6.1 Introduction

Out of pocket expenses consider the absolute cost of treatment without regard to income of the households. The same amount of OOPE would be catastrophic for poorer than richer households. Hence, a relative measure to compare the impact of health expenses on insured, newly insured and uninsured households is required that uses a common denominator such as income. Given the positive impact of OOPE, we set out to determine the impact of SSP on the relative measure of financial protection, termed as catastrophic health expenditure (CHE). This study used annual per capita income to adjust for household size while calculating CHE. The research question was whether SSP reduces the incidence of CHE for insured individuals compared to newly insured and uninsured individuals.

As SSP reduces the direct cost of treatment, there would be lower incidence of CHE for insured individuals. Therefore, health expenses calculated as a percent of annual per capita income would be less for insured individuals. Hence, the hypothesis was that SSP reduces CHE for insured individuals compared to newly insured and uninsured individuals. Pearson chi square test and logistic regression analysis were used to test the hypothesis. Firstly, an analysis of the CHE incurred by insured, newly insured and uninsured individuals considered the total and direct cost before and after the claim from SSP. Secondly, the study explored an association between the number of visits to health facility and the CHE. Lastly, determinants of the CHE were estimated using binary logistic regression analysis.

$$\text{Prob}\,(CHE_i \mid HCA_i) = \beta_0 + \beta_1 M_x + \beta_2 X_y + \varepsilon$$

{1 if CHE $\mid$ HCA >0, 0 otherwise} $CHE_i \mid HCA_i$ is catastrophic health expenditure conditional on Health Care Action. M_x represents the mode of payment (SSP). X_y is a set of variables that influence probability of catastrophic payments.Substantiation of the basic model required changes in the specifications of the model resulting in four models of the study.

Catastrophic health expenditure has been defined in the literature as any health care payment that is more than 10 percent of annual income of the household (Ranson 2002; Pradhan and Prescott 2002). This study used this definition in classifying the households as experiencing CHE or not. Based on OOPE and annual income of the households, analysis at the individual level focused on the impact of SSP on CHE. There was considerable debate whether to take household or individual cases for the classification of CHE. There were children, homemakers and old parents who accessed health care facility for treatment. As they were not the earning members, it would be difficult to calculate catastrophic health expenses. Whenever a family member becomes sick, usually the other members collectively spend for treatment. Hence, household level analysis is justifiable. However, in case of the household with more than one member ill, classification of households into incurring the CHE or not becomes complicated. If the household was taken as a unit of analysis, explicit description of the factors associated with the CHE could not be analysed such as types of illness, number of visits, treatment taken and gender of ill persons, which were individual characteristics of sick person. Hence, the study used the data on sick individuals and household income. There was a possibility that adding the percentage of annual income spent on illness for each individual would result in the CHE for the entire family. However, non- CHE households did not face CHE even after adding the percentage of annual income spent for illness by each sick individual.

4.6.2 Catastrophic Expenditure among Insured and Uninsured Households

Analysis on the impact of SSP on CHE considered direct cost (hospital cost and transportation costs) and total cost of treatment at the hospitals. Before SSP claim, there was no association between CHE and health insurance status. Close to 45 percent of insured individuals would have felt CHE compared to a lower percent of newly insured (39.8%) and uninsured individuals (43%). Inclusion of claim data in the estimation of the CHE provides a contrasting result. The number of individuals who faced the CHE drastically reduced from 72 to 42 (from 44.8% to 26.5 %). Because of insurance, only one quarter of sick insured individuals incurred CHE compared to two fifths of uninsured

individuals (Table 4.34). Thus, there was a significant difference in the CHE incurred by insured and uninsured ($p<0.05$). CHE related to the direct expenses of illness confirms the above findings. Before the claim, there was no significant difference in the incidence of CHE among insured, uninsured, and newly insured individuals. SSP reduced the incidence of CHE for insured individuals by 42 percent and only 23.3 percent of them felt CHE after the claim ($p<0.05$).

The effect of insurance was partial as there were one fourth of the individuals facing CHE even with health insurance. Further analysis on individuals who experienced CHE despite insurance reveals that 10 percent of individuals took outpatient treatment, which was not claimable under the programme. Another eight percent of individuals suffered from diseases like heart attack, cancer, stroke and disorders that require huge money for treatment and the programme could give a maximum of ₹35000 on a family floater basis. Six percent of them had excluded diseases like fever, cholera, and diabetes related disorders.

Table 4.34 Catastrophic Health Expenditure by Insurance Status

	CHE	Insured (n=159)	Newly insured (n=117)	Uninsured (n=85)
Direct cost (Before claim)[1]	Yes	40.3	40.2	41.2
	No	59.7	59.8	58.8
Direct cost (After claim)[2]	Yes	23.3	40.2	41.2
	No	76.7	59.8	58.8
Total cost (Before claim)[3]	Yes	44.8	39.8	43
	No	55.2	60.2	57
Total cost (After claim)[4]	Yes	26.5	39.8	43
	No	73.5	60.2	57

[1] $\chi^2(2) = 0.025$, $p=0.988$
[2] $\chi^2(2) = 12.105$, $p=0.002$
[3] $\chi^2(2) = 0.19$, $p=0.91$
[4] $\chi^2(2) = 10.759$, $p=0.005$

4.6.3 Number of Visits to Health Care Facilities and CHE

When ill, people avail health care services one or more times depending on the effectiveness of the previous treatment and disease (Table 4.35). For the sample individuals, higher number of visits to health facilities increased the occurrence of CHE. An analysis of the number of visits and CHE before the claim for insured shows no significant relationship. However, after the claim a positive association between CHE and the number of visits exists. SSP did not have a visible impact on insured individuals who had second or third visits to health facility. Insured paid a average visit of 1.3, newly insured had 1.4 visits and uninsured had 1.2 visits but median was one for three groups ($p>0.05$). Despite the absence of any difference in the number of visits among these groups, number of insured with one visit had lower occurrence of CHE than uninsured and newly insured individuals (at 10 % significance level).

Table 4.35 Catastrophic Health Expenses and Number of Visits to Health Facility

	Insured (after claim)	Newly insured	Uninsured
First visit[1] (N=83)	32.5	33.7	33.7
Second visit[2] (N=41)	31.7	43.9	24.4
Third visit[3] (N=5)	40	60	-

[1] χ^2 (2, N=361) =5.481, p=0.065
[2] χ^2 (2, N=65) =4.195, p=0.123
[3] χ^2 (2, N=30) =0.625, p=0.429
(Figures represent only the cases of CHE in percentages of each subgroup)

4.6.4 Econometric Estimation of the Probability of CHE

Binary logistic regression analysis was used to estimate the probability of CHE incurred by insured, newly insured and uninsured individuals. Individuals with SSP were differentiated from those without it by assigning a code of '1' for SSP insured, '2' for newly insured and '3' for uninsured individuals. Individuals incurring CHE were assigned a code of '1' and those who did not have CHE had a code of '0'. Certain variables expected to determine CHE were included in the analysis. Firstly, analysis

focused on various characteristics of individual (health insurance, types of illness, duration and types of treatment and gender and age of ill person), household (job status of head of the household, size of the household and income class) and community (area of residence), after classifying individuals based on SSP membership status. Secondly, binary logistic model estimated the probability of incurring CHE.

4.6.4.1 Characteristics of Individuals

Some of characteristics of the sick individuals that influence CHE were health insurance, gender and age of ill persons, types of illness, duration of treatment and types of treatment.

a. Age of Ill Persons

Higher the age of the ill persons, larger would be the felt need to seek care. Hence, the likelihood to face CHE is high for the aged compared to younger persons. Irrespective of the health insurance status, median age of ill persons who incurred CHE was found to be 43 years, and for those without CHE was 41 years ($p>0.05$). Among the persons who incurred CHE, insured individuals had a median age of 46 years, higher than that of newly insured (42 years) and uninsured (40 years) individuals ($p>0.05$).

b. Gender of Ill Persons

Irrespective of health insurance status, a higher percent of men incurred CHE compared to women (Table 4.36). An analysis of data before and after the claim for insured individuals highlights that insurance reduced the incidence of CHE more for female members than for male members. Almost 57 percent of men had CHE compared to nearly 36 percent of women before the claim; this result was significant confirming a difference in CHE for men and women. After insurance claim, there was a reduction in CHE for men by 41 percent and for women by 43 percent. The difference in the episode of CHE for men and women was still observed at 10 percent significance level after the claim ($p<0.1$). The explanation for this lies in the indirect cost of illness. Men had to forego work due to illness; hence, they had to borrow in higher proportion due to the low income and absence from work. Even direct cost was high for them owing to prolonged days of admission in the hospitals compared to women. Regardless of these inherent

differences among men and women, SSP did reduce the occurrence of CHE for both the men and women.

Table 4.36 Catastrophic Health Expenditure and Gender of Ill Persons

	CHE	Male	Female
Insured (before claim)[1]	No	43.2	64.1
	Yes	56.8	35.9
Insured (after claim)[2]	No	66.7	79.5
	Yes	33.4	20.5
Newly insured[3]	No	52.6	61
	Yes	47.4	39
Uninsured[4]	No	55.8	57.1
	Yes	44.2	42.9

[1] χ^2 (1, N=159)=6.971, p=0.008
[2] χ^2 (1, N=159)=3.310, p=0.069
[3] χ^2 (1, N=117)=1.586, p=0.453
[4] χ^2 (1, N=85)=0.015, p=0.992

Analysis on the cases of men would help us to know the impact of illness on CHE among insured, newly insured and uninsured groups. Before the claim, 56.8 percent of insured men had CHE compared to a lower proportion of newly insured (47.4%) and uninsured men (44.2%) ($p>0.05$). After the claim, there was substantial decline in CHE for insured men (33.4%) ($p>0.05$). Insured women did benefit from SSP compared to their counterparts in newly insured and uninsured groups. They had lower occurrence of CHE before the claim ($p>0.05$) than other two groups (Table 4.36). After the claim, there was considerable drop in the event of CHE for insured women (reduced from 35.9% to 20.5%) that widened the disparity between them and newly insured/ uninsured women ($p<0.05$). Insured women had relatively lower expenses and they benefited from SSP compared to both insured men and newly insured/ uninsured women. Without the consideration of SSP membership status, men (62.8%) had to face CHE compared to women (37.2%) ($p<0.1$) (Table 4.44).

c. Types of Illness

Types of illness (acute, chronic and maternity related care) determine CHE. Intra-group analysis before the claim shows that nearly 48 percent of insured faced CHE due to acute illness, and 46.5 percent of individuals for chronic illness. After the claim, CHE due to acute illness reduced to 26.1 percent and chronic illness decreased to 29.1 percent (Table 4.37). Individuals experiencing CHE due to maternity got complete financial protection since there was cent percent reduction in CHE after the claim. A clear pattern emerged for the uninsured and newly insured individuals ($p<0.05$). Almost one thirds of acutely ill newly insured and one fifths of uninsured individuals ended in CHE and three fifths of chroniclly ill faced CHE. Even maternity caused 57.1 percent of newly insured individuals to incur CHE whereas it was zero for insured. Unlike uninsured and newly insured, chronic illnesses did not expose insured to undesirable consequences of CHE.

Table 4.37 Catastrophic Health Expenditure and Types of Illness

	CHE	Acute	Chronic	Maternity
Insured (Before claim)[1]	No	52.2	53.5	75
	Yes	47.8	46.5	25
Insured (After claim)[2]	No	73.9	70.9	100
	Yes	26.1	29.1	0
Newly insured[3]	No	78.9	37.7	42.9
	Yes	21.1	62.3	57.1
Uninsured[4]	No	67.6	40.9	100
	Yes	32.4	59.1	0

[1] χ^2 (2, N=159)=0.792, p=0.673
[2] χ^2 (2, N=159)=1.694, p=0.429
[3] χ^2 (2, N=117)=9.875, p=0.000
[4] χ^2 (2, N=85)=9.172, p=0.01

Inter-group analysis substantiated the positive impact of SSP on chronic illness and resultant CHE. Before the claim from SSP, chronic illness caused CHE for the studied individuals. After the claim, it was less for insured individuals ($p<0.05$) compared

to uninsured and newly insured individuals. Regardless of SSP, chronic illness caused CHE for majority of the studied individuals (64.9%) (Table 4.44).

d. Types of Treatment

Health expenditure depends on the types of treatment availed by ill persons. Inpatient treatment generally costs more that may cause CHE; however, there are exceptional cases. Sometimes, outpatient treatment also causes CHE. At a glance, it appears that inpatient treatment was associated with CHE for insured, uninsured, and newly insured individuals (Table 4.38). Intra-group analysis before the claim shows that almost half of individuals availing inpatient services incurred CHE. However, due to insurance claim, only 28.7 percent of hospitalised insured had to suffer from CHE whereas 53.7 percent of newly insured and 55 percent of uninsured inpatients had to deal with CHE. There was a reduction by 57 percent in the proportion of individuals experiencing CHE due to inpatient treatment ($p<0.05$). Not only insured used more of inpatient services as analysed earlier (section 4.4.5) but also they paid less and had lower incidence of CHE. Regardless of SSP, admitted individuals had higher percent of CHE (90.8%) than outpatient (Table 4.44) ($p<0.05$). Hence, hospitalisation determines CHE.

Table 4.38 Catastrophic Health Expenditure and Treatment

	CHE	Treatment	
		OP	IP
Insured (after claim)[2]	No	87.5	71.3
	Yes	12.5	28.7
Newly insured[3]	No	85.7	46.3
	Yes	14.3	53.7
Uninsured[4]	No	80	45
	Yes	20	55

[1] χ^2 (1, N=159) =8.286, p=0.004
[2] χ^2 (1, N=159) =1.907, p=0.167
[3] χ^2 (1, N=117) =15.623, p=0.000
[4] χ^2 (1, N=85) =8.745, p=0.003

e. Duration of the Treatment

The duration of treatment is the number of days spent in hospital (even for outpatient visits) by the ill persons. An increase in the duration of treatment would increase the risk of CHE. The result shows a positive association between the duration of treatment and CHE (Mann Whitney U test, p=0.00). Irrespective of SSP, the average duration of treatment for CHE incurring individuals was 19 days which was higher than that of non-CHE individuals (10days) ($p<0.05$).

4.6.4.2 Characteristics of the Household

Household characteristics such as job status of the head of the household, size of the household and income class would determine CHE. Each of these characteristics were analysed in detail to explicate their association with CHE.

a. Job Status of the Head of the Household

Irregularities in income and low earning capacity expose the households to higher incidence of CHE. Thus, working as a labourer, or in informal sector increases the possibility of CHE in contrast to employment in formal sector. Using the CHE based on total cost, Table 4.39 exhibits the job status of head of households incurring CHE (before the claim). Agriculturist head of the household in uninsured and newly insured households had the lowest incidence of CHE.

Table 4.39 Association between Job Status and CHE

	UN	L	SE	FE	IS	A
Insured (N=159)	13.2	63.2	2.6	7.9	7.9	5.2
Newly insured (N=117)	9.3	65.1	9.3	4.7	9.3	2.3
Uninsured (N=85)	13.9	47.2	19.4	5.6	11.1	2.8

UN-Unemployed
L- Wage labour (beedi roller, daily labourer)
SE- Self employment
FE- Formal sector employment
IS-Salaried (informal sector)
A-Agriculture
(Only cases of CHE given in percentages)

The study analysed the cases of unskilled labourer to explore the intensity of CHE among the households with head working as unskilled labourer. SSP brought down the incidence of CHE for labourers by 30 percent. Based on direct cost, almost 81 percent of insured had CHE before the claim, which reduced to 57.1 percent after the claim (Table 4.40). Consequently, insured individuals with head of household working as labourer had lower episodes of CHE compared to their counterparts in uninsured and newly insured group.

Table 4.40 Head of the Household as Unskilled Labourer and CHE

	Insured (N=83)	Newly insured (N=74)	Uninsured (N=46)
Direct cost (before claim) [1]	81.2	84	63
Direct cost (after claim) [2]	57.1	84	63
Total cost (after claim) [3]	29.8	42.7	47.8

[1] χ^2 (2, N=203)=8.108, p=0.017
[2] χ^2 (2, N=203)= 13.953, p=0.001
[3] χ^2 (2, N=203)=4.947, p=0.084
(Only cases of CHE given in percentages)

Irrespective of SSP, families with labourer head of the household had higher percent of CHE compared to other job status (Table 4.44) ($p>0.05$).

b. Household Size

Larger families would have more income than smaller families. Hence, they would incur less CHE than families with fewer members due to the pooling of resources. Regardless of SSP, families that incurred CHE had lower mean size (4) than families without CHE (average size 5) ($p<0.05$). Moreover, there was a significant difference in the family size of insured (mean 5) and newly insured (mean 4) and uninsured households (mean 4) ($p<0.05$) who experienced CHE.

c. Income Class of the Household

CHE may not be uniform across income classes. Analysis of intra-income class (Table 4.41) reveals a significant difference in the CHE experienced by different income classes with lower income classes (in Q1 and Q2) incurring CHE more than upper

income class individuals (Q3, Q4 and Q5). Three fourths of lowest income (Q1) insured individuals faced CHE compared to three fifths of uninsured individuals from the same class before the claim. A higher incidence of CHE for lowest income class and lower incidence of CHE for high-income class highlights the importance of affordability of care. Resource poor households usually have problems meeting the cost of treatment associated with illness compared to resource rich counterparts. To the contrary, high-income (Q5) individuals in newly insured households faced CHE in sizeable proportion compared to Q5 individuals in other two groups. The excessive medical expenses related to illnesses such as paralysis, heart attack, kidney failure and caner exposed six individuals in high-income class in newly insured group to CHE.

With the claim, incidence of CHE on the Q1 insured individuals reduced by 28 percent, for Q2 by 52.2 percent, for Q3 by 50 percent, for Q4 by 57 percent and no effect for Q5 individuals. Thus, reduction in CHE was larger for Q4 and Q2 individuals compared to the poorest (Q1) individuals.

Table 4.41 Catastrophic Health Expenditure: Intra-Income Class Comparison

	CHE	Q1	Q2	Q3	Q4	Q5
Insured (Without claim)[1]	No	26.5	39.5	62.2	70.8	88.5
	Yes	73.5	60.5	37.8	29.2	11.5
Insured (With claim)[2]	No	47.1	71.1	81.1	87.5	88.5
	Yes	52.9	28.9	18.9	12.5	11.5
Newly insured[3]	No	40.7	47.8	54.2	81.5	62.5
	Yes	59.3	52.2	45.8	18.5	37.5
Uninsured[4]	No	36.4	45	70.6	57.1	91.7
	Yes	63.6	55	29.4	42.9	8.3

[1] χ^2 (4, N=159)=29.804, p=0.000
[2] χ^2 (4, N=159)=18.854, p=0.001
[3] χ^2 (4, N=117)=10.598, p=0.032
[4] χ^2 (4, N=85)=12.117, p=0.017

An assessment of inter-income class impact of insurance involves a comparison of CHE experienced by different income classes within each sub-group (with and without CHE). The findings (Table 4.42) were in line with the expectation of a direct relationship between CHE and income class when SSP claim was not included in the analysis. When the claim data was included in the analysis, proportion of individuals experiencing CHE increased for the lowest (Q1) and highest income quintiles (Q5) and decreased for middle-income class individuals. So, Q2, Q3 and Q4 individuals benefited more than the poorest or rich income class.

Table 4.42 Catastrophic Health Expenditure: Inter-Income Class Comparison

	CHE	Q1	Q2	Q3	Q4	Q5
Insured (Without claim)[1]	No	10.3	17.2	26.6	19.5	26.4
	Yes	34.7	31.9	19.5	9.7	4.2
Insured (With claim)[2]	No	14.7	23.3	25	17.2	19.8
	Yes	39.5	25.6	18.6	9.3	7
Newly insured[3]	No	16.4	16.5	19.4	32.8	14.9
	Yes	32	24	22	10	12
Uninsured[4]	No	16.7	18.7	25	16.7	22.9
	Yes	37.8	29.8	13.5	16.2	2.7

(Figures represent percentages of each subgroup across income quintiles)

These results show that SSP does not provide financial protection to the lowest income individuals who need the greater benefits. However, SSP does include lower income individuals in Q2 and Q3 class who benefited the most with more than 50 percent reduction in CHE. In case of newly insured, those in Q5 had CHE more than Q4 whereas uninsured Q4 individuals had higher incidence of CHE than those in Q3. These were the exceptions to the result of direct association between CHE and income class. Irrespective of SSP, individuals from Q1 had high percent of (36.6%) CHE compared to 12.2 percent of Q4 and 7.7 percent of Q5 individuals ($p<0.05$) (Table 4.44).

4.6.4.3 Characteristics of the Community

Rural areas have less access to hospitals than urban and semi-urban areas in India (Gumber 2001). They usually travel to nearby towns, which would increase the total costs of care and CHE. Surprisingly, the chi square test did not show any significant difference between the area of residence and CHE experienced by insured and newly insured individuals (Table 4.43). However, higher percent of the uninsured individuals living in rural areas (59.5%) experienced CHE than those in urban areas (15.8%). Irrespective of SSP, semi-urban and rural area individuals tend to have higher incidence of CHE compared to individuals in urban areas, but this finding was not significant (Table 4.44).

Table 4.43 Catastrophic Health Expenditure and Area of Residence

	CHE	Urban	Semi-urban	Rural
Insured (Before claim)[1]	No	50	45	60
	Yes	50	55	40
Insured (After claim)[2]	No	78.6	68.3	75.3
	Yes	21.4	31.7	24.7
Newly insured[3]	No	61.9	57.4	57.1
	Yes	38.1	42.6	42.9
Uninsured[4]	No	84.2	58.3	40.5
	Yes	15.8	41.7	59.5

[1] χ^2 (1, N=159)=3.225, p=0.196
[2] χ^2 (1, N=159)=1.109, p=0.574
[3] χ^2 (1, N=117)=0.152, p=0.927
[4] χ^2 (1, N=85)=10.247, p=0.006

Another question related to community variable that drew our attention was the distance to hospital. Since the transportation and other costs determine the total cost, distance would contribute to CHE. The analysis revealed that mean distance to hospitals was 3.3 km for newly insured and 2.3 km for insured and 2.4 km for the uninsured individuals. For insured and uninsured individuals, distance to hospitals did not result in CHE. Newly insured individuals staying far away from hospitals faced CHE ($p<0.05$).

The finding was not surprising as those living away from hospitals had to incur higher transportation, lodging and food costs compared to those staying near the hospitals. Regardless of insurance status, an association between distance to hospital and CHE has been found ($p<0.05$). The average distance to hospitals for the individuals incurring CHE was 2.8 km and for those without CHE was 2.5 km.

Table 4.44 Independent Variables Included in CHE Binary Logistic Regression Model

CHE	No (N=231)	Yes (N=130)
Types of illness[a]		
Acute illness	53.4	32.1
Chronic illness	42	64.9
Maternity	4.6	3
Gender of ill person[b]		
Male	46.6	62.8
Female	53.4	37.2
Types of treatment[c]		
Outpatient	27.7	9.2
Inpatient	72.3	90.8
Job status[d]		
Unemployment	12.5	10.7
Labourer	54.2	60.2
Self employed	5	3.1
Agriculture	10	6.9
Formal sector	4.6	3.1
Salaried (informal sector)	7.1	8.4
Income class[e]		
Q1	15.8	36.6
Q2	21.7	25.2
Q3	22.5	18.3
Q4	21.3	12.2
Q5	18.7	7.7
Area of residence[f]		
Urban	74.1	25.9
Semi-urban	63.4	36.6
Rural	62.8	37.2

Pearson chi square; a= 15.761, p>0.05; b=3.310, p>0.05; c=17.083, p<0.05; d=3.256, p>0.05; e=27.858, p>0.05; f=3.7, p>0.05

4.6.4.4 Results of Econometric Estimation

Binary logistic regression analysis was carried out to estimate the probability of CHE. It was hypothesised that SSP decreased the cost of treatment; hence CHE would be less for insured individuals. Table 4.45 displays the coding of variables in total cost (model 4a), direct cost (model 4b), hospitalisation (model 4c), low income (model 4d) and women model (model 4e). Model 4a considered CHE based on the total cost (direct cost, other expenses and indirect cost) of treatment. Model 4b took CHE based on the direct cost of treatment. Model 4c used the cases of hospitalisation and calculated CHE based on the related direct cost while considering significant variables as estimated in model 4b. Model 4d took cases of low income (Q1 and Q2) to know the significance of the independent variables on CHE for poor and model 4e considered the cases of women and significant independent variables estimated by model 4a. Types of treatment and gender of ill person were coded into two dummy variables. Each SSP membership, types of illness, size of household and area of residence were coded into three dummy variables. The job status of the head of the household was coded into six dummy variables. Age of ill persons and duration of the treatment were continuous variables. Income quintiles were coded into five dummy variables.

Table 4.45 Measurement of Independent Variables: CHE Models

Variables	Model 4a, 4b	Model 4c	Model 4d	Model 4e
Individual characteristics				
Health insurance SSP insured=1 (reference) Newly insured=2 Uninsured=3	✓	✓	✓	✓
Gender of ill person =1 if male, 0 if female (reference)	✓			
Types of illness =1 if chronic, 2 if maternity, 0 if acute (reference)	✓	✓	✓	✓
Types of treatment =1if inpatient, 0 if outpatient	✓		✓	✓
Household characteristics				
Occupation of household head 1= Labourer if primary occupation is unskilled worker being paid daily wage 2= Business if engaged in self-employment 3= Agriculture if farmer including dairy farmer 4=Salaried in informal sector if unskilled worker being paid monthly in unorganised sector 5=Formal sector if skilled worker employed in organised sector on a salary basis 0=Unemployed/not able (reference)	✓			
Income quintile 1=Q1, 2=Q2, 3=Q3, 4=Q4, 5=Q5 (reference)	✓	✓		✓
Community characteristics Area of residence 1= Urban if individual lives in urban area 2= Semi-urban if individual lives in semi-urban area 3=Rural if individual lives in rural areas (reference)	✓			

A strong evidence for insured individuals being less likely to incur CHE due to illness compared to uninsured and newly insured individuals was found (Table 4.46).

The Odds Ratio (OR) for newly insured and uninsured individuals was significantly larger than 1, which implied that newly insured and uninsured individuals were more likely to experience CHE than insured individuals. The odds of CHE compared to not incurring CHE was high for newly insured (OR 3.725) and uninsured (OR 4.738) individuals compared to insured individuals. Hence, the study hypothesis (H5) that SSP decreases the likelihood of CHE for insured individuals compared to both newly insured and uninsured individuals is proven. Chronically ill individuals had higher likelihood of facing CHE compared to those with acute illness (OR 2.975). For each day of hospitalisation, the likelihood of CHE increased by 1.019 times. Outpatient treatment decreased the likelihood of CHE compared to hospitalisation (OR 0.193). The individuals living in urban areas had lower likelihood of CHE (OR 0.467) compared to those in rural areas, at 10 percent significance level. Income was a determinant of CHE with lower income quintile individuals had higher probability of incurring CHE than high income quintile. The odds of experiencing CHE compared to not facing it were high for Q1 (OR 9.195) and Q2 individuals (OR 3.102) compared to highest income quintile (Q5) individuals. SSP membership, chronic illness, longer days of treatment, inpatient treatment, lower income class and rural area of residence determines the likelihood of CHE. Age and gender of ill persons, job status of the head of the household and size of the household were not associated with the probability of CHE.

A number of specification and diagnostic tests checked the robustness of the model; especially the possible endogeneity has been tested using Durbin-Wu-Hausman test. In this model, health insurance was found to be exogenous with prob(χ^2) =0.867. The model fit was assessed using the omnibus test of model coefficients, Hosmer and Lemeshow test, -2 log likelihood ratio, Cox and Snell R square and Nagelkerke R square. The results of these tests showed that the model fits well and 75.1 percent of cases were correctly predicted by the model. Residual analysis (specifically Cook's Distance statistic) showed no outliers.

Model 4b considered the direct cost of treatment for calculating CHE. The logic was that SSP coverage was limited to the direct cost; hence, certain independent variables

such as area of residence were not significant (Table 4.47). Again, newly insured (OR 5.208) and uninsured individuals (OR 5.290) had higher likelihood of incurring CHE compared to insured individuals, controlling for other socio-economic variables. Individuals with inpatient treatment were almost 5 times more likely to face CHE compared to those with outpatient treatment. For each day of admission, sick individuals were 1.020 times more likely to incur CHE. Individuals suffering from chronic illness were 3.011 times likely to experience CHE compared to individuals with acute illness. The odds of having CHE compared to not having it were high if the individuals belonged to Q1 (OR 12.3), Q2 (OR 3.914) and Q3 (OR 3.238) compared to Q5 individuals. Age and gender of ill person, job status of the head of household, household size and area of residence were not significantly associated with probability of CHE. Thus, health insurance, types of treatment, days spent in the hospital, types of illness and income class were found to significantly determine CHE. The results of these tests showed that the model fits well and 76.5 percent of cases were correctly predicted by the model.

Table 4.46 Probability of Catastrophic Health Expenditure: Estimation of Model 4a

	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I.Exp (B)	
							Lower	Upper
Health insurance (base= SSP insured)			24.214	2	.000			
Newly insured	1.315	.327	16.221	1	.000	3.725	1.964	7.065
Uninsured	1.556	.355	19.206	1	.000	4.738	2.363	9.500
Age of ill person	-.005	.008	.354	1	.552	.995	.980	1.011
Gender of ill (base=female) Male	.447	.272	2.697	1	.101	1.564	.917	2.668
Types of illness (base: Acute)			14.854	2	.001			
Chronic	1.090	.285	14.685	1	.000	2.975	1.703	5.196
Maternity	.105	.709	.022	1	.882	1.111	.277	4.460
Types of treatment (base: Inpatient) Outpatient	-1.643	.388	17.896	1	.000	.193	.090	.414
Duration of treatment	.018	.008	5.818	1	.016	1.019	1.003	1.034
Job of head (base= Unemployed)			.786	5	.978			
Labourer	-.058	.355	.027	1	.870	.943	.471	1.891
Business	-.262	.798	.108	1	.743	.770	.161	3.678
Agriculture	-.105	.603	.031	1	.861	.900	.276	2.934
Salaried (informal sector)	-.284	.584	.237	1	.627	.753	.240	2.365
Formal sector	.385	.749	.264	1	.607	1.470	.338	6.382
Household size (base:1-3)			.870	2	.647			
4-6	-.526	.578	.829	1	.362	.591	.190	1.834
7and above	-.360	.533	.456	1	.500	.698	.246	1.983
Income quintile (base=Q5)			23.700	4	.000			
Q1	2.219	.533	17.345	1	.000	9.195	3.237	26.124
Q2	1.132	.512	4.884	1	.027	3.102	1.137	8.467
Q3	.896	.518	2.998	1	.083	2.450	.888	6.757
Q4	.393	.523	.566	1	.452	1.482	.532	4.128
Area of residence (base=Rural area)			3.259	2	.196			
Urban	-.762	.427	3.184	1	.074	.467	.202	1.078
Semi-urban	-.071	.299	.056	1	.812	.931	.518	1.674
Constant	-2.535	.786	10.397	1	.001	.079		
Number of observations	361							

Omnibus test model coefficient:Pearson chi square =104.506, df =20, p=0.000; -2 log likelihood = 361.135;

Cox and Snell R squared= 0.253; Negelkerke R squared= 0.348;

Hosmer and Lemeshow Pearson chi square =5.749, df =8, p=0.675

Table 4.47 Estimation of Model 4b: Probability of Catastrophic Health Expenditure

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.Exp (B)	
							Lower	Upper
Health insurance (base= SSP insured)			29.426	2	.000			
Newly insured	1.650	.340	23.507	1	.000	5.208	2.673	10.148
Uninsured	1.666	.369	20.421	1	.000	5.290	2.569	10.897
Age of ill person	-.007	.008	.735	1	.391	.993	.977	1.009
Gender of ill person (base=Female) Male	.233	.284	.670	1	.413	1.262	.723	2.202
Types of illness (base: Acute)			14.654	2	.001			
Chronic	1.102	.302	13.336	1	.000	3.011	1.666	5.441
Maternity	-.293	.778	.142	1	.707	.746	.162	3.429
Types of treatment (base: outpatient) Inpatient	1.645	. 420	15.368	1	.000	5.183	2.277	11.800
Duration of treatment	.020	.008	6.561	1	.010	1.020	1.005	1.035
Occupation of household head (base= Unemployed)			1.943	6	.925			
Labourer	-.312	.429	.527	1	.468	.732	.316	1.699
Business	-.419	.846	.246	1	.620	.658	.125	3.449
Agriculture	.119	.653	.033	1	.855	1.127	.313	4.050
Salaried in informal sector	-.147	.623	.056	1	.813	.863	.254	2.929
Formal sector	-.623	.950	.430	1	.512	.537	.083	3.453
Household size	.022	.087	.064	1	.801	1.022	.862	1.213
Income quintile (base=Q5)			27.125	4	.000			
Q1	2.510	.576	18.994	1	.000	12.300	3.979	38.022
Q2	1.365	.553	6.085	1	.014	3.914	1.324	11.573
Q3	1.175	.551	4.539	1	.033	3.238	1.099	9.542
Q4	.357	.572	.389	1	.533	1.429	.466	4.386
Area of residence (base=Rural area)			2.413	2	.299			
Urban	-.700	.452	2.398	1	.121	.497	.205	1.204
Semi-urban	-.171	.310	.305	1	.581	.843	.459	1.547
Constant	-4.79	1.036	21.376	1	.000	.008		
Number of observations	361							

Omnibus test model coefficient:Pearson chi square =114.589, df =21, p=0.000; -2 log likelihood = 343.103

Cox & Snell R squared= 0.272; Negelkerke R squared=0.379;

Hosmer & Lemeshow Pearson chi square =6.491, df =8 p=0.592

(Dependent variable: Catastrophic health expenditure; 1=yes)

Models 4c considered the cases of hospitalised individuals (Table 4.48). As SSP provides the inpatient coverage, knowledge on the impact of SSP in reducing CHE for hospitalised individuals would substantiate the earlier findings (model 4a). There were 285 cases of hospitalisation in the study. CHE due to admission in the hospital was highest for newly insured adults (91.6%) than uninsured (80%) and insured (54.5%) individuals. Chronic illness had significant impact on CHE for 81.3 percent of uninsured and 95 percent of newly insured and was lowest for insured individuals (56.4%). The days of treatment were highest for insured (average of 19 days) and lowest for uninsured (average of 12 days). Newly insured had average days of admission of 15 days. There was a discernible pattern in the incidence of CHE among the income classes. High-income classes (Q5) had lower incidence of CHE (16.7 % for insured, 17.1 % for newly insured and 20.8% for uninsured). It was highest for Q1 (23.1 % for insured, 21.1 % for newly insured and 22.9 % for uninsured) and Q2 (24.6 % for insured, 25 %for newly insured and 22.9 % for uninsured) income class.

Newly insured (OR 10.899) and uninsured (OR 3.810) had higher likelihood of CHE compared to insured individual. For each additional day of admission, the likelihood of CHE increased by a factor of 1.028. The results of these tests showed that the model fits well and 72.4 percent of cases were correctly predicted by the model. Thus, lack of health insurance and longer duration of treatment increased the likelihood of CHE due to hospitalisation.

Table 4.48 Estimation of Model 4c: Probability of Catastrophic Health Expenditure

	B	S.E.	Wald	Df	Sig.	Exp(B)	95%C.I.for Exp(B)	
							Lower	Upper
Health insurance(base= SSP insured)			35.057	2	.000			
Newly insured	2.389	.445	28.754	1	.000	10.899	4.552	26.095
Uninsured	1.338	.373	12.838	1	.000	3.810	1.833	7.920
Types of illness (base: Acute)			1.181	2	.554			
Chronic	.097	.299	.104	1	.747	1.101	.612	1.981
Maternity	-.644	.681	.896	1	.344	.525	.138	1.994
Duration of treatment	.028	.012	5.404	1	.020	1.028	1.004	1.052
Income quintile (base=Q1)			2.668	4	.615			
Q2	-.569	.465	1.500	1	.221	.566	.227	1.408
Q3	-.160	.461	.121	1	.728	.852	.345	2.104
Q4	-.602	.480	1.572	1	.210	.548	.214	1.404
Q5	-.204	.513	.158	1	.691	.816	.298	2.229
Constant	.036	.412	.008	1	.930	1.037		
Number of observations	285							

Omnibus test model coefficient:Pearson chi square =54.630, df =9, p=0.000: -2 log likelihood = 291.680

Cox and Snell R squared= 0.174; Negelkerke R squared= 0.248

Hosmer and Lemeshow Pearson chi square =3.583, df =8, p=0.893

(Dependent variable: Catastrophic health expenditure; 1=yes)

Model 4d (Table 4.49) took the cases of low income insured, newly insured and uninsured individuals belonging to Q1 and Q2 income class. Only significant variables estimated by the model 4a were included as independent variables in the regression analysis. Among these income classes, a higher percent of uninsured poor (59.5%) had episodes of CHE, followed by newly insured (54%) and insured (38.9%) poor. Chronic illness propelled CHE in 60.7 percent of insured, 59.3 percent of newly insured and 60 percent of uninsured poor individuals. Hospitalisation was the cause of CHE for 92.9 percent of insured poor, 85.2 percent of newly insured and 84 percent of uninsured poor. Moreover, insured individual had highest average days spent in the hospital (18 days) compared to newly insured (8 days) and uninsured (7 days).

The odds of incidence of CHE was high for newly insured (OR 3.103) and uninsured (OR 4.813) compared to insured individuals. Chronic illness increased the likelihood of CHE by 2.090 times than acute illness. Hospitalisation was highly associated with the probability of CHE compared to the outpatient treatment. For every additional day spent in the hospital, odds of incurring CHE rather than not having it increased by a factor 1.032. Thus, the episode of CHE was higher if the person had chronic illness, inpatient treatment and longer duration of treatment and SSP reduced the incidence of CHE. Hosmer and Lemeshow test value of 0.710 indicated that the model correctly predicts 69.5 percent of the cases.

Table 4.49 Estimation of Model 4d: Probability of Catastrophic Health Expenditure

	B	S.E.	Wald	Df	Sig.	Exp(B)	95%C.I.for Exp(B)	
							Lower	Upper
Health insurance (base= SSP insured)			12.573	2	.002			
Newly insured	1.132	.431	6.897	1	.009	3.103	1.333	7.222
Uninsured	1.571	.471	11.134	1	.001	4.813	1.912	12.113
Types of illness (base: Acute)			4.963	2	.084			
Chronic	.737	.356	4.294	1	.038	2.090	1.041	4.199
Maternity	1.305	1.172	1.239	1	.266	3.687	.371	36.685
Types of treatment (base: outpatient) Inpatient	1.060	.484	4.797	1	.029	2.888	1.118	7.458
Duration of treatment	.032	.013	5.611	1	.018	1.032	1.005	1.060
Constant	-2.459	.597	16.985	1	.000	.086		
Number of observations	164							

Omnibus test model coefficient: Pearson chi square =28.071, df =6, p=0.000; -2 log likelihood = 199.184

Cox and Snell R squared= 0.157; Negelkerke R squared= 0.210

Hosmer and Lemeshow Pearson chi square =5.435, df =8, p=0.710

(Dependent variable: Catastrophic health expenditure; 1=yes)

The impact of SSP on the CHE faced by insured women would help us to draw conclusion on the gender equity of MHIs (model 4e in Table 4.50). There were 179 women in studied groups, of which 56 had experienced CHE due to medical treatment. Higher percent of uninsured women (42.9%) had episodes of CHE, followed by newly insured (37.3%) and insured (20.5%) women. Chronic illness had resulted in CHE than acute illness in all the women. Nearly 63 percent of insured, 68.2 percent of newly insured and 83.8 percent of uninsured chronically ill women had CHE. Inpatient treatment in 93.8 percent of insured women, 86.4 percent of newly insured and 83.3 percent of uninsured women caused CHE. Inpatient insured women spent an average of 13 days, higher than that of newly insured (10 days) and uninsured (6 days) in the hospitals. Women in Q1 income class had higher percent of CHE in insured (31.3%) and uninsured (38.9%) groups. Q3 income class in newly insured individuals had highest incidence of CHE (36.4%) followed by Q1 class (27.3%).

Regression results support the hypothesis of positive impact of SSP on CHE. The probability of incidence of CHE was higher for newly insured (OR 5.115) and uninsured (OR 6.851) women compared to insured women. The duration of treatment increased the probability of CHE by a factor of 1.03 (at 10 % significance). Hospitalisation increased the likelihood of incurring CHE by 5.042 times compared to outpatient treatment. The model is robust with 76.5 percent of the cases correctly predicted.

Table 4.50 Estimated results of Model 4e: Probability of Catastrophic Health Expenditure

	B	S.E.	Wald	Df	Sig.	Exp(B)	95%C.I.for Exp(B)	
							Lower	Upper
Health insurance (base= SSP insured)			16.095	2	.000			
Newly insured	1.632	.488	11.164	1	.001	5.115	1.963	13.323
Uninsured	1.924	.528	13.279	1	.000	6.851	2.434	19.288
Types of illness (base: Chronic)			7.373	2	.025			
Acute	-.187	.799	.055	1	.815	.829	.173	3.969
Maternity	.955	.768	1.545	1	.214	2.598	.577	11.702
Types of treatment (base: outpatient) Inpatient	1.618	.562	8.291	1	.004	5.042	1.676	15.165
Duration of treatment	.029	.015	3.612	1	.057	1.030	.999	1.061
Income quintile (base=Q5)			12.526	4	.014			
Q1	1.363	.692	3.878	1	.049	3.907	1.006	15.167
Q2	.597	.674	.782	1	.376	1.816	.484	6.810
Q3	.527	.709	.551	1	.458	1.693	.422	6.800
Q4	-1.08	.832	1.714	1	.190	.337	.066	1.718
Constant	-4.43	1.106	16.055	1	.000	.012		
Number of observations	179							

Omnibus test model coefficient:Pearson chi square =52.722, df =10, p=0.000; -2 log likelihood = 169.725

Cox and Snell R squared= 0.255; Negelkerke R squared= 0.359

Hosmer and Lemeshow Pearson chi square =8.45, df =8, p=0.390

(Dependent variable: Catastrophic health expenditure; 1=yes)

4.6.5 Summary

Our results do confirm that SSP did successfully reduce the incidence of CHE for insured members. Before the claim from SSP, there was no difference in CHE of insured, newly insured and uninsured individuals. After the claim, analysis revealed a drastic reduction in CHE for insured individuals. Logistic regression analysis on the household survey data confirmed the hypothesis of the study (H5) that uninsured and newly insured individuals had higher incidence of CHE compared to insured individuals. The models with different specifications substantiate the findings of the basic model 4a and confirm

the positive impact of SSP (H5) on insured individuals. A number of specification and diagnostic tests proved them robust and insurance variable to be exogenous.

The most striking result to emerge from the models is that MHI does reduce the CHE for insured individuals. SSP undoubtedly provided financial protection since it reduced CHE for insured individuals. However, the effect of insurance was partial, as one fourth of individuals still had to face CHE even with insurance. Certain design features of the scheme resulted in partial financial protection. Exclusion of certain diseases, outpatient treatment and a ceiling of ₹5000 exposed certain individuals to CHE albeit there were no co-payments or deductibles imposed in SSP. Since SSP did not have access to any financial aid from external donors and the programme was incurring huge loss since the last few years, the question of increase in the benefit package does not arise. Given these limitations, SSP did reduce the incidence of CHE for hospitalised individuals to a considerable extent.

Model 4a, 4b and 4d predicted the chronic illness to be a determinant of CHE. Chronic illness not only increases utilisation and OOPE but also exposes the individuals to CHE. A possible explanation for this result is the recurrence of illness that warrants frequent access to health services and thereby OOPE and CHE. Chronic illness, if not treated would threaten the longevity of sick person or cause disability that would shorten productive years of life. However, SSP reduced CHE for a sizeable number of individuals with chronic illness. Moreover, CHE related to acute and maternity was less for insured compared to newly insured and uninsured individuals. The duration of treatment did influence CHE, with longer duration positively resulted in CHE. Even hospitalisation increased the probability of CHE. All the models (4a to 4e) with different specifications support the days of treatment and hospitalisation as important determinants of CHE.

Gender of ill persons and area of the residence were not predicted as the determinant of CHE, except in Model 4a. The area of residence influences the total cost of care, especially indirect and other expenses. The models considered the direct cost of care (model 4b, 4c); hence, area of the residence proved to be insignificant. The possibility of CHE was higher if the person was male rather than female and insured men

had higher incidence of CHE even after the claim. Men had to incur higher indirect cost due to absence from work (section 4.5.4.1c) and they had to borrow in higher proportion compared to women to meet the daily needs. Even the direct cost was high for them owing to prolonged days of admission in hospitals compared to women. Hence, gender of ill person was a significant determinant in the model 4a based on total cost, but not in other models. Horizontal equity in CHE was present since insured women had lower incidence of CHE compared to uninsured and newly insured women (model 4e). Moreover, SSP reduced the incidence of CHE more for female members than for male members.

Models 4a and 4b predicted a direct relationship between the income of the family and CHE with lower incidence for high-income class. However, when the cases of hospitalised individuals and women were analysed, it failed to be a predictor of CHE. One of the objectives of SSP is to promote equity in financial protection. Nevertheless, it failed to achieve this objective since the poorest did not get higher financial protection than other income classes due to certain design features of the scheme. Subsequent analysis revealed that poorest (Q1) individuals utilised outpatient services (not covered by SSP), had illness that required costly treatment such as paralysis, heart attack, kidney failure and cancer and had lowest income (<₹14000). Hence, effective protection given to low income class was lower than other income class in insured group. However, poorest insured individuals had lower incidence of CHE compared to their counterparts in uninsured and newly insured individuals (model 4d) that reveals horizontal equity impact of SSP. To sum up, the evidence from this study suggests lack of vertical equity but presence of horizontal equity in the incidence of CHE. On the issue of equity in the distribution of claim, SSP had better impact on the high (Q4) and lower income (Q2) individuals than the poorest (Q1).

There was a positive link between the number of visits made to a health facility and incidence of CHE. Higher the number of visits, larger is the chances of CHE since the individual has to incur additional expenses. Burden of CHE reduced for the individuals who visited health facility once compared to the individuals who had two or

three visits. Again, certain features of SSP as highlighted above resulted in the absence of positive impact on CHE owing to two or three visits.

The present results are significant in at least two major respects. SSP reduces the cost of care measured in absolute (OOPE) and relative terms (CHE) and it increases utilisation of health services in private hospitals. However, the ignorance of the risk coping strategies that compensate lack of health insurance is a major problem of this kind of analysis. Hence, there is an increasing concern that any evaluation of financial protection should consider the impact of MHI on the risk coping strategies of the households. The next section assesses the impact of SSP on the risk coping strategies of the households.

4.7 IMPACT OF SAMPOORNA SURAKSHA PROGRAMME ON THE RISK COPING STRATEGIES

4.7.1 Introduction

Illness is a major risk factor that jeopardizes the normal life of people with long-term negative effect. When faced with illness, the households usually seek treatment rather than postpone the treatment, especially when illness is severe or impairs normal life. Iatrogenic poverty resulting from illness is transient if the affected household has certain ex-ante and ex-post measures to tackle the health risks. Ex-ante strategies include health insurance, ex-post strategies involves self-insurance and survival strategies. Self-insurance can occur in two ways; i) use of savings ii) informal risk sharing arrangements within family, friends or neighbours for consumption smoothing during the episode of illness. Survival strategies involve the sacrifice of human capital (sending additional household member for work), sale of the productive assets, and borrowing from the banks and charity in the times of health crisis (Dercon 2002). However, some of these strategies have adverse impact on the future consumption as the household would have less income due to the sale of productive assets and the repayment of loan.

Financial protection provided by the MHI reduces the reliance on the risk coping strategies such as borrowing, sale of assets and the use of savings. Hence, this study considered the impact of SSP on the risk coping strategies of insured members. SSP membership has resulted in less OOPE and lower incidence of CHE. This positive impact would lead to less reliance on the risk coping strategies such as borrowing, sale of assets and savings. The research question was whether SSP reduced the reliance on other risk coping strategies for insured individuals compared to uninsured and newly insured individuals. Health insurance reduces the negative consequences of such strategies by meeting a major part of the total medical cost and stabilises the expenditure that would fluctuate due to illness. Hence, the study hypothesised that SSP reduces reliance on other risk coping strategies for insured individuals compared to newly insured and uninsured individuals. The hypothesis driven analysis used binary logistic regression model to know the impact of SSP on the incidence of borrowing and the use of savings. We know from

the previous sections that certain design features of SSP gives partial protection to insured individuals. Hence, insured individuals rely on risk coping strategies to some extent. Nevertheless, amount of funds mobilised from these strategies would be less as SSP claims would bring down the cost of treatment. Thus, the study hypothesised insured individuals to mobilise fewer funds compared to uninsured and newly insured individuals. To test this hypothesis, the amount of funds mobilised from borrowing and savings was analysed using multiple linear regression analysis.

Firstly, an analysis on the availability of money to meet medical expenses gives information on the need for risk coping strategies. If the funds were available to meet cost of medical treatment, the necessity to mobilise money from various sources does not arise. Since SSP meets the direct cost of hospitalisation, insured individuals would have more funds compared to newly insured and uninsured individuals. Second, risk coping strategies used by individuals were elucidated. As the cost of treatment would be less for insured individuals, they rely less on the other risk coping strategies compared to newly insured and uninsured individuals. Thirdly, determinants of borrowing and savings were estimated.

a. Binary logistic regression equation to determine the incidence of borrowing is as follows;

$$\text{Prob}(\text{Borrow}_i \mid \text{HCA}_i>0)=\beta_0+\beta_1 M_x+\beta_2 X_y+\varepsilon$$

{1 if Borrow | HCA >0, 0 otherwise}

$\text{Borrow}_i \mid \text{HCA}_i$ isthe probability of borrowing conditional on health care action. M_x is the dummy variable for health insurance status (SSP) and X_y is a set of covariates that determine borrowing. Model specification was changed to corroborate the findings.

b. Binary logistic regression equation to determine the use of savings is as follows;

$$\text{Prob}(\text{Savings}_i \mid \text{HCA}_i>0)=\beta_0+\beta_1 M_x+\beta_2 X_y+\varepsilon$$

{1 if Savings used | HCA >0, 0 otherwise}

$\text{Savings}_i \mid \text{HCA}_i$ is probability of use of savings conditional on health care action. M_x is the dummy variable for health insurance status (SSP) and X_y is a set of covariates that determine savings. The model fit was assessed using omnibus test of model

coefficients, Hosmer and Lemeshow test, -2 log likelihood ratio, Cox and Snell R square and Nagelkerke R square.

c. The determinant of the amount of borrowing were estimated by using multiple linear regression model.

$$\text{Log (Amount borrow}_i \mid \text{HCA}_i) = \beta_0 + \beta_1 M_x + \beta_2 X_y + \varepsilon$$

Amount borrow$_i \mid$ HCA$_i$ is amount of borrowing conditional on health care action. M_x represents the mode of payment (SSP). X_y is a set of variables that determines the amount of borrowing.

d. The determinant of the amount of savings were estimated by using multiple linear regression model.

$$\text{Log (Amount of savings}_i \mid \text{HCA}_i) = \beta_0 + \beta_1 M_x + \beta_2 X_y + \varepsilon$$

Amount of savings$_i \mid$ HCA$_i$ is amount of savings conditional on health care action. M_x represents the mode of payment (SSP). X_y is a set of variables that determine the amount of savings. These models were subjected to a number of tests namely variance inflation factor, correlation matrix, Cook's D statistic and Dfits statistic.

4.7.2 Access to Self-Finance during Health Crisis

Available funds in the family determine the ability to pay medical bills without resorting to risk coping methods. If the ill person is a minor, old or not working, family income acts as the source of funds to pay for the bills. Since insured can get the benefit from SSP, they could afford medical treatment compared to newly insured and uninsured individuals. The current study shows that a higher percent of insured had the financial resources to meet medical expenses compared to newly insured and uninsured individuals (Table 4.51). Nearly thirty six percent of insured met medical expenses without resorting to negative risk coping strategies. Just about one fifths of newly insured and 27 percent of uninsured could afford the treatment without borrowing, using the savings or sale of assets (p=0.019).

Table 4.51 Availability of Money to Pay Medical Expenses

	Insured	Newly insured	Uninsured
Yes	57 (35.8)	24 (20.5)	23 (27.1)
No	102(64.2)	93 (79.5)	62 (72.9)

χ^2 (2, N=371)=7.896, p=0.019

(Percentage given in bracket)

4.7.3 Risk Coping Strategies during Health Crisis

Risk coping strategies adopted by the families to meet medical expenses were borrowing, use of the savings and sale of assets or valuables and other household assets. Many households used two or three strategies to meet annual medical expenses. Ex-post strategies such as low return and low risk economic activities and lower consumption spending were absent. Predominantly, households used the asset-based strategies such as the sale of assets, utilisation of the savings, borrowing or health insurance (by insured). Sale of assets mainly consisted of crop or valuables like jewellery or two wheeler vehicles. There was no change observed in the portfolio of income sources like engaging school going children and women in income generating activities and sending additional members of the family to the labour market.

When the analysis was carried out considering both ex-post and ex-ante strategies, it was found that health insurance (65.4%) and borrowing (57.2 %) was the major option utilised by a large percentage of insured individuals followed by savings (32.7%) and lastly the sale of assets (5.6%). Borrowing was opted by a higher percentage of newly insured individuals (79.5%), savings was the second most used alternative (24.7 %) and sale of assets was the least opted option (2.6%). Uninsured individuals too had similar pattern (Table 4.52). A lower proportion of insured borrowed (57.2%) compared to uninsured and newly insured groups. Assets sale is time consuming and less liquid especially in rural areas; it was the last option exercised by the individuals faced with health shock. Seven percent of studied individuals used both the strategies of borrowing and savings to meet the treatment costs. Moreover, 64 percent of insured members borrowed even to pay the premium amount to SSP.

Table 4.52 Source of Financial Resources during Crisis - Ex Ante Strategies

	Insured (n=159)	Newly insured (n=117)	Uninsured (n=85)
Borrowing	91 (57.2)	93 (79.5)	64 (75.2)
Sale of assets	9 (5.6)	3 (2.6)	6 (7)
Savings	52 (32.7)	29 (24.7)	30 (35.3)
Health insurance	104	0	0

$\chi 2$ (4, N=361) =17.773, p=.000

From the data in the Figure 4.6, it is apparent that there was no difference among uninsured, newly insured and insured individuals regarding the reliance on other risk coping strategies such as borrowing, sale of assets and use of the savings (p>0.05). Thus, the study accepts the null hypothesis that SSP does not reduce reliance on negative risk coping strategies (H6).

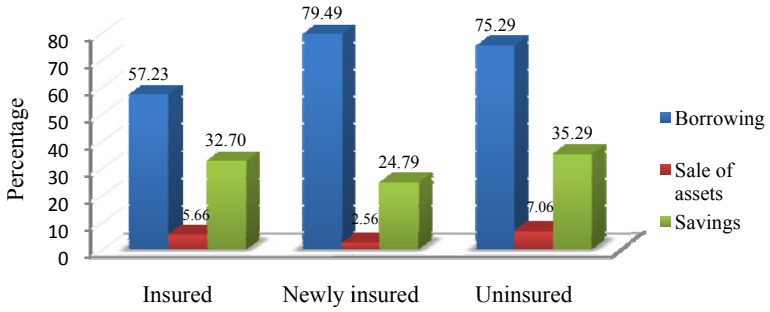


Figure 4.6 Risk Coping Strategies of Sample Individuals - Ex Post Strategies

Further analysis of the risk coping strategies in terms of the amount of resources mobilised through borrowing, savings and sale of assets shows an interesting picture. Insured individuals' borrowed lower amount (median of ₹5000) compared to newly insured and uninsured (₹6000 each) groups (Table 4.53). The amount of savings used was less for insured (₹1500) compared to uninsured (₹2000) and newly insured individuals (₹3000). Therefore, the future consumption or income generating capacity was impaired for uninsured and newly insured families since they have to repay higher

amount of loan. The amount of assets sold by insured individuals (median of ₹8500) was lower than that of newly insured (₹10250). However, it was higher than that of uninsured (₹4000) individuals. These results were not statistically significant suggesting that there was no significant difference in the amount mobilised from the sale of assets or savings by insured, newly insured and uninsured individuals. Insured mobilised less funds in total (median of ₹3000) compared to newly insured and uninsured individuals (median of ₹ 5000 each) ($p<0.05$).

Table 4.53 Amount of Money Mobilised to Pay for Health Care

	Insured (₹)	Newly insured (₹)	Uninsured (₹)
Borrowing[a]	13130 (31974)	20314 (37105)	16830 (29639)
Savings[b]	2840 (3193)	4713 (7810)	2900 (3002)
Sale of assets[c]	28438 (34928)	17625 (23507)	4417 (3720)
Total amount[d]	9645 (30129)	17784 (36168)	13478 (26429)

[a]Kruskal Wallis χ^2 (2, N=361) =20.983, p =0.00
[b]Kruskal Wallis χ^2 (2, N=361) =2.881, p =0.237
[c]Kruskal Wallis χ^2 (2, N=361) =2.059, p =0.357
[d]Kruskal Wallis χ^2 (2, N=361) =15.843, p =0.00
Mean amount (standard deviation in bracket)

Above finding drew the attention to study each risk coping strategy separately and explore the differences in borrowing, use of savings and sale of assets among insured, newly insured and uninsured individuals.

4.7.4 Relationship between Borrowing and Health Insurance Status

Borrowing was a majority strategy to cope with health expenses, as it was easy to access due to ample sources (formal and informal sources), simple procedure and flexible repayment terms. As SSP provided financial benefits, the need to borrow was less for insured compared to uninsured and newly insured individuals. Hence, study hypothesised that insured borrow less compared to uninsured and newly insured individuals. A lower percentage of insured individuals (57.2%) relied on borrowing compared to newly insured (79.5 %) or uninsured individuals (75.2 %) ($p<0.05$). Binary logistic regression model facilitated testing of hypothesis. In addition, multiple linear regression models helped to understand the impact of SSP on the amount of borrowing.

4.7.4.1 Determinants of borrowing for treatment

The study used binary logistic regression analysis to estimate the likelihood of borrowing for individuals in insured, uninsured, and newly insured groups. Individuals with SSP were differentiated from those without it by assigning a code of '1' for SSP insured, '2' for newly insured and '3' for uninsured individuals. Borrowed individuals were assigned a code of '1' and those who did not borrow were assigned a code of '0'. Certain variables expected to determine borrowing were included in the analysis. Firstly, analysis considered the various characteristics of the individual (types of treatment and health insurance), household (age, gender and job status of head of the household, size of the household and income class) and community (area and district of residence), after classifying individuals based on SSP membership status. Secondly, binary logistic regression analysis was used to predict the probability of the borrowing.

4.7.4.1a Characteristics of Individuals

Health insurance and types of treatment would determine the probability of borrowing for studied individuals.

i. Types of Treatment

Health expenditure depends on the types of treatment availed by ill persons. Inpatient (IP) treatment is generally expensive than outpatient (OP) treatment, which would result in borrowing. Almost nine of ten admitted individuals from insured group borrowed compared to seven of ten newly insured and eight of ten hospitalised individuals in uninsured group. OP treatment resulted in borrowing in 8.8 percent of insured, 26.9 percent of newly insured and 20.3 percent of uninsured individuals. Thus, there was a significant difference in the incidence of borrowing for the types of the treatment ($p<0.05$). Irrespective of SSP, inpatient (70.8%) treatment resulted in more borrowing than OP (63.8%) treatment (Table 4.58). OOPE and borrowed amount was found to be positively related ($p<0.05$); higher OOPE resulted in higher amount borrowed.

4.7.4.1b Characteristics of Households

Age, gender and job status of head of household, size of household and income class would influence borrowing. Hence, the following section dissects these variables in-depth.

i. Age of the Heads of the Household

Higher the age of the person, more will be the assets at disposal or savings that decreases the need to borrow. Hence, the age of a person and borrowing would have inverse relationship, as the amount of borrowing would be less for the elderly person compared to younger person. Median age of the head of the households which borrowed was 47 years and of those without borrowing was 50 years irrespective of insurance status (Mann Whitney U test $p<0.1$). The median age of the head of the households in the newly insured who borrowed was 47 years, which was lower than that of insured and uninsured (49 years) households.

ii. Gender of the Heads of the Household

Gender of the heads of the household would influence various strategies adopted to face health shocks. This study analysed the gender differences in borrowing strategies to explore this relationship. The results indicate no visible gender difference in the borrowing strategy adopted by the heads of the household ($p>0.05$) (Table 4.58). Regardless of SSP, borrowing was less for women compared to men. Insured families with women as the head of the households had lower episodes of borrowing (57.7%) compared to newly insured (75%) and uninsured (63.6%) families ($p>0.05$). Moreover, insured families with men as the heads of the household had lower incidence of borrowing (56.3%) compared to newly insured (78.8%) and uninsured households (78.1%) ($p<0.05$). One of the reasons for this finding is the CHE. Insured experienced lower percent (28.1%) of CHE than newly insured (40.4%) and uninsured (43.8%) ($p<0.05$). Hence, the necessity to borrow was less for insured families.

iii. Job Status of the Heads of the Household

The occupation in informal sector either as a labourer or as a monthly salaried worker would increase the possibility of borrowing in contrast to employment in formal sector due to seasonality of income. To test this assumption, the study analysed the job status and borrowing by the sample households. Table 4.54 shows the job status of head of households who borrowed to pay for medical expenses, classified based on SSP member status. Among the various job statuses, majority of the borrowing was from labourer households followed by unemployed heads. Families with self-employed and formal sector employed head of the households had lowest incidence of borrowing (Table 4.58).

Table 4.54 Borrowing and Job Status of Heads of the Household

	UN	L	SE	A	IS	FE
Insured (N=91)	23.1	57.1	2.2	7.7	6.6	3.3
Newly insured (N=93)	17.2	62.4	4.3	4.3	4.3	7.5
Uninsured (N=64)	17.2	56.3	3.1	12.5	10.9	0

χ^2 (5, N=361)=13.596, p =0.327

L- Wage labour (beedi roller, daily labourer) UN-Unemployed
SE- Self employment FE- Formal sector employment
IS-Salaried (informal sector) A-Agriculture
(Figures in percentages)

To delve into the magnitude of borrowing among the households with heads working as unskilled labourer, further analysis focused on the cases of unskilled labourer. Insured borrowed less (58.7%) than newly insured (79.3%) and uninsured families (79.2%). Consequently, insured individuals with heads of the household working as labourer had lower episodes of borrowing compared to their counterpart in uninsured and newly insured groups ($p<0.05$).

iv. Household Size

The pooling of resources in large families would reduce the need to borrow. However, median size of both borrowed and not borrowed families was four in all three studied groups (Mann Whitney test, p=0.202). Hence, household size may not influence borrowing.

v. Income Class of the household

The individuals from high-income classes usually use savings than borrowing compared to low-income classes. The study revealed that high-income individuals (Q5) borrowed less compared to low-income individuals (Q1 to Q3). Since these differences were not significant, income may not be a determinant of borrowing.

Table 4.55 Borrowing in Income Class: Comparison by Health Insurance Status

	Borrowed	Q1	Q2	Q3	Q4	Q5
Insured[1]	No	20.6	25	26.1	14.2	14.1
	Yes	22	23.1	19.1	16.5	19.3
Newly insured[2]	No	16.7	20.8	12.5	29.2	20.8
	Yes	24.7	19.4	22.6	21.5	11.8
Uninsured[3]	No	23.9	19	23.8	9.5	23.8
	Yes	26.5	25	18.8	18.8	10.9

[1] χ^2 (4, N=159)=1.624, p=0.805
[2] χ^2 (4, N=117)=3.12, p=0.538
[3] χ^2 (4, N=85)=3.16, p=0.531

The study considered poorest individuals in the sample to know the difference in borrowing among them. The poorest (Q1 and Q2) in insured group borrowed less (56.9%) than their counterparts in newly insured (82%) and uninsured (78.6%) groups. Moreover, of those individuals who incurred CHE, insured borrowed less (75% borrowed) than newly insured (88.9% borrowed) and uninsured individuals (92% borrowed). Therefore, SSP reduced the impoverishing impact of illness by reducing the need to borrow for the poor individuals.

4.7.4.1.c Characteristics of the Community

a. Area of Residence

It is apparent from previous discussions that people in rural areas incur higher OOPE and CHE that may result in borrowing compared to those in urban and semi-urban areas. On the contrary, a higher proportion of urban individuals borrowed. More of insured individuals in urban (64.3%) and semi-urban (60%) areas borrowed in contrast to newly insured and uninsured individuals. Rural residents from newly insured (67.3%) and uninsured groups (69%) largely borrowed than insured individuals (54.1%)(Table

4.56). However, there was no difference in the incidence of borrowing for insured and uninsured individuals ($p>0.05$), but not in case of newly insured individuals ($p<0.05$). Irrespective of insurance status, 79.6 percent of urban individuals borrowed which was quite high compared to 74 percent of the semi-urban individuals and 61.4 percent of rural individuals ($p<0.05$) (Table 4.58).

Table 4.56 Borrowing and Area of Residence

	Insured[1] (N=159)	Newly insured[2] (N=117)	Uninsured[3] (N=85)
Urban	64.3	90.5	78.9
Semi-urban	60	87.2	83.3
Rural	54.1	67.3	69

[1] χ^2 (4)=0.809, p=0.667
[2] χ^2 (4)=7.714, p=0.021
[3] χ^2 (4)=1.851, p=0.396
(Figures represent borrowed individuals in each group as percentages)

b. District of Residence

In all three groups studied, people from Dakshina Kannada (DK) had lower borrowing than those of Uttara Kannada (UK) and Gadag (Table 4.57) ($p>0.05$). Irrespective of SSP, individuals from UK (81%) had higher borrowings than those of DK (60.9%) and Gadag (60%) ($p<0.05$).

Table 4.57 Borrowing and District of Residence

	Insured[1] (N=159)	Newly insured[2] (N=117)	Uninsured[3] (N=85)
DK	47.6	71.7	73.9
UK	74	88.9	75.9
Gadag	55.6	50	80

[1] χ^2 (4, N=159)=8.908, p=0.012
[2] χ^2 (4, N=117)=9.375, p=0.009
[3] χ^2 (4, N=85)=0.171, p=0.918
(Figures represent only borrowed individuals in each group as percentages)

Table 4.58 Description of Independent Variables of Borrowing Model

Borrowed	No (N=113)	Yes (N=248)
Types of treatment[a]		
Outpatient	39.5	60.5
Inpatient	29.1	70.9
Gender of head of household[b]		
Male	83.2	82.3
Female	16.8	17.7
Job status[c]		
Unemployment	17.6	19
Labourer	51.1	59.3
Self employed	6.8	3.2
Agriculture	11	7.9
Formal sector	4.2	4
Salaried (informal sector)	9.3	6.6
Income quintile[d]		
Q1	20.4	24.2
Q2	23	22.2
Q3	18.6	23
Q4	17.7	18.1
Q5	20.3	12.5
Area of residence[e]		
Urban	20.4	79.6
Semi-urban	26	74
Rural	38.6	61.4
DK[f]	39.1	60.9
UK	19	81
Gadag	40	60

Pearson chi square; a= 2.989, $p<0.1$; b=0.046, $p>0.05$; c=5.868, $p>0.05$; d=4.427, $p>0.05$; e=9.146,$p>0.05$, f=16.45, $p<0.05$

4.7.4.2 Econometric Estimation of the Incidence of Borrowing

The probability of borrowing due to healthcare was studied using binary logistic regression analysis. It was hypothesised that SSP decreased the cost of treatment; hence chances of borrowing would be less for insured individuals. Table 4.59 displays the coding of variables included in the borrowing and savings models. Model specifications were changed in the borrowing models to substantiate the findings of the basic model.

Hence, the basic model (model 5a), labourer model (model 5b), hospitalisation (model 5c) and low income model (model 5d) were estimated. Model 5e considered actual amount of borrowing (log transformed) and used multiple regression analysis to assess the impact of SSP. Model 5a considered cases of borrowing due to illness episode and model 5b took the cases of only labourer head of the households. Model 5c used the cases of inpatient treatment and considered the significant variables estimated by model 5a. Model 5d took the cases of low income (Q1 and Q2) to know whether SSP makes any impact on borrowing by the poor people and considered the independent variables estimated by model 5a as significant. Model 5f considered the use of savings as dependent variable in which individuals using savings were coded as '1' and '0' otherwise. Binary logistic model was used to find the determinants of the use of savings. Model 5g was based on the amount of saving used by individuals; hence multiple regression model (log transformed) was used. The types of treatment and gender of the head of the household were coded into two dummy variables. The job status of head of the household was coded into six dummy variables. Age of the head of the household was a continuous variable and size of the household was coded into three dummy variables. Income quintiles were coded into five dummy variables. SSP membership status and area of residence were coded into three dummy variables each.

Table 4.59 Measurement of Independent Variables Included in the Regression Analysis

Variables	Model 5a, 5f	Model 5b	Model 5c	Model 5d	Model 5e, 5g
Health insurance SSP insured=1 (reference) Newly insured=2 Uninsured=3	✓	✓	✓	✓	✓
Types of treatment =1if inpatient, 0 if outpatient	✓	✓		✓	✓
Gender of head of household=1 if male, 0 if female (reference)	✓				✓
Job status of the household head 1= Labourer if primary occupation is unskilled worker being paid daily wage 2= Business if engaged in self-employment 3= Agriculture if farmer including dairy farmer 4=Salaried in informal sector if unskilled worker being paid monthly in unorganised sector 5=Formal sector if skilled worker employed in organised sector on a salary basis 0=Unemployed/not able (reference)	✓		✓		✓
Income quintile 1=Q1, 2=Q2, 3=Q3, 4=Q4, 5=Q5 (reference)	✓				✓
Area of residence 1= Urban if individual lives in urban area 2= Semi-urban if individual lives in semi-urban area 3=Rural if individual lives in rural areas (reference)	✓	✓	✓	✓	
District of residence 1=Dakshina Kannada 2=Uttara Kannada 3= Gadag (reference)	✓				✓

Binary logistic regression analysis was performed to predict the determinants of borrowing (Table 4.60). The evidence of insured individuals being less likely to borrow due to illness compared to newly insured and uninsured individuals was found. The odds of borrowing compared to not borrowing was high for newly insured (OR 3.122) and uninsured (OR 2.972) individuals compared to the insured. Age of the head of the household was another significant determinant of borrowing. The likelihood of borrowing decreased (OR 0.969) for every increase in age. Inpatient care had higher likelihood of borrowing compared to outpatient treatment (OR 3.013). Income was a determinant of borrowing with lower income quintile individuals had a higher probability of borrowing than high income quintile. Individuals from the middle-income quintile (Q3) were 2.279 times more likely to borrow compared to high-income quintile (Q5), at 10 percent significance level. Individuals in the households with unemployed heads (OR 4.821) had higher likelihood of borrowing compared to heads employed in formal sectors. Gender of head of the household, size of the household, area and district of residence were not associated with probability of borrowing. Lack of health insurance, younger head of the household, inpatient treatment, labourer class household heads and middle income class increased the likelihood of borrowing. Hence, the study accepts the hypothesis that SSP decreases the likelihood of borrowing for insured individuals compared to both newly insured and uninsured individuals (H7a). The tests on model fitness showed that 73.7 percent of the cases were correctly predicted by the model. The model was subjected to endogeneity test (Durbin-Wu-Hausman test) and health insurance was found to be exogenous with prob (χ^2) =0.984. Hence, the effect of the unobservable variables was absent. Residual analysis (specifically Cook's Distance statistic) showed no outliers.

The model 5b considered the employment of the heads of the household and took only the cases of labourers and the significant independent variables of model 5a. Any MHI should measure its performance in terms of the inclusion of the less privileged persons in the financial protection. Hence, the study considered the cases of labourer class, one of the less privileged classes in India. Of the 206 cases of labourers, 67.8

percent borrowed to meet medical expenses. Insured individuals borrowed less (62.7%) compared to newly insured (78.4%) and uninsured individuals (78.3%). The median age of labourer class head of the households who borrowed was 45 years and those who did not borrow were 48 years. Hospitalisation in these households resulted in borrowing for 74.2 percent of the families. Hospitalised insured individuals borrowed less (63.3%) than newly insured (80.8%) and uninsured persons (90.6%). Individuals living urban (76.9%) and semi-urban (81%) areas had a higher percent of borrowing than those in rural areas (60.4%).

The estimation results (Table 4.61) confirm the positive impact of SSP as analysed in the previous section. Newly insured individuals had 2.935 times and uninsured individuals had 3.334 times higher likelihood of borrowing compared to insured individuals. Inpatient treatment increased the likelihood of debt by a factor of 3.978 than outpatient treatment. For every year of the age of the heads, the likelihood of borrowing decreased by a factor of 0.996. Individuals living in urban areas were 2.789 times and those living in semi-urban areas were 3.783 times more likely to borrow compared to individuals living in rural areas. Thus, health insurance, age of heads of the household, inpatient treatment and area of residence were significantly associated with probability of borrowing. The results of these tests showed that the model fits well and 74.1 percent of cases were correctly predicted by the model.

Table 4.60 Probability of Borrowing: Estimated Results of Model 5a

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.	
							Lower	Upper
Health insurance (base= SSP insured)			16.757	2	.000			
Newly insured	1.139	.323	12.450	1	.000	3.122	1.659	5.877
Uninsured	1.089	.339	10.349	1	.001	2.972	1.531	5.772
Types of treatment (base: outpatient) Inpatient	1.103	.327	11.358	1	.001	3.013	1.587	5.723
Age of head of household	-.032	.013	5.782	1	.016	.969	.944	.994
Gender (base=Female) Male	.000	.353	.000	1	.999	1.000	.501	1.997
Job of head (base= Formal sector)			9.277	5	.099			
Unemployed	1.573	.795	3.912	1	.048	4.821	1.014	22.917
Labourer	.946	.700	1.824	1	.177	2.575	.653	10.161
Business	.555	.880	.397	1	.528	1.741	.310	9.771
Agriculture	.025	.773	.001	1	.974	1.026	.225	4.669
Salaried in informal sector	.527	.815	.418	1	.518	1.694	.343	8.373
Household size (base: 7 and above)			2.769	2	.250			
1-3	-.310	.533	.339	1	.560	.733	.258	2.085
4-6	-.647	.475	1.858	1	.173	.524	.207	1.328
Income quintile (base=Q5)			4.343	4	.362			
Q1	.301	.470	.410	1	.522	1.351	.538	3.392
Q2	.192	.442	.188	1	.664	1.211	.509	2.882
Q3	.824	.439	3.525	1	.060	2.279	.964	5.386
Q4	.392	.439	.794	1	.373	1.479	.625	3.501
Area of residence (base=Rural area)			3.402	2	.182			
Urban	.724	.452	2.567	1	.109	2.062	.851	4.999
Semi-urban	.446	.311	2.058	1	.151	1.563	.849	2.876
District of residence (base= Gadag)			5.753	2	.056			
DK	-.313	.397	.623	1	.430	.731	.336	1.592
UK	.462	.448	1.063	1	.303	1.587	.660	3.816
Constant	-.097	1.039	.009	1	.925	.907		
Number of observations	361							

Omnibus test model coefficient:Pearson chi square =59.321, df =20, p=0.000;-2 log likelihood = 389.398

Cox and Snell R squared= 0.093; Negelkerke R squared= 0.131

Hosmer and Lemeshow Pearson chi square =6.302, df =8, p=0.609

(Dependent variable: Borrowed; 1=yes)

Table 4.61 Probability of Borrowing: Estimated Results of Model 5b

	B	S.E.	Wald	Df	Sig.	Exp (B)	95% C.I.	
							Lower	Upper
Health insurance (base= SSP insured)			9.162	2	.010			
Newly insured	1.077	.419	6.593	1	.010	2.935	1.290	6.678
Uninsured	1.204	.473	6.486	1	.011	3.334	1.320	8.424
Age of heads of household	-.035	.017	4.206	1	.040	.966	.935	.998
Types of treatment (base: outpatient) Inpatient	1.381	.426	10.515	1	.001	3.978	1.727	9.165
Area of residence (base=Rural area)			13.022	2	.001			
Urban	1.026	.543	3.568	1	.059	2.789	.962	8.087
Semi-urban	1.325	.384	11.923	1	.001	3.763	1.774	7.984
Constant	.239	.909	.069	1	.793	1.269		
Number of observations	206							

Omnibus test model coefficient:Pearson chi square =33.023, df =6, p=0.000; -2 log likelihood = 213.049

Cox and Snell R squared= 0.149; Negelkerke R squared= 0.213

Hosmer and Lemeshow Pearson chi square =7.225, df =8, p=0.513

(Dependent variable: Borrowed; 1=yes)

Models 5c considered the cases of hospitalised individuals only. Since SSP covers hospitalisation, the cost of treatment would be less for insured individuals. There were 285 cases of hospitalisation in the study. Borrowing due to the admission in the hospital was the highest for uninsured individuals (85%) than newly insured (82.9%) and insured (58%) individuals. Irrespective of insurance, 70.9 percent of the admissions ended in borrowing. The median age of the hospitalised individuals who borrowed was 45 years. Individuals living in urban (77.8%) and semi-urban (73.1%) areas had a higher percent of borrowing than those in rural areas (66.2%). Regardless of the insurance, individuals from the families where the heads of the household worked as a wage labourer had the highest borrowing (59.6%) than any other occupation followed by the unemployed (11.3%) head of the households.

Table 4.62 illustrates the results of the model that shows a significant relationship between SSP and borrowing. The likelihood of borrowing was high (OR 3.373) if the individual was newly insured and if the individual was uninsured (OR 4.423) rather than

insured. Higher the age of the head, lower was the probability of borrowing (OR 0.971). Individuals in households with head working in formal sector (OR0.225) and salaried in informal sector (OR0.272 at 10% significance level) had a lower likelihood of borrowing compared to unemployed heads. The area of residence was not a determinant of borrowing. The results of these tests showed that the model fits well and 72.3 percent of cases were correctly predicted by the model. Thus, SSP, age and job status of the head of the household determined the likelihood of borrowing due to hospitalisation.

Table 4.62 Probability of Borrowing: Estimation of Model 5c

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.	
							Lower	Upper
Health insurance (base= SSP insured)			20.536	2	.000			
Newly insured	1.216	.351	11.992	1	.001	3.373	1.695	6.712
Uninsured	1.487	.412	12.993	1	.000	4.423	1.971	9.927
Age of head of household	-.030	.014	4.377	1	.036	.971	.944	.998
Occupation of household head (base= Unemployed)			6.921	6	.328			
Labourer	-.426	.684	.388	1	.533	.653	.171	2.495
Business	-.624	.635	.963	1	.326	.536	.154	1.862
Agriculture	-.778	.878	.786	1	.375	.459	.082	2.566
Salaried in informal sector	-1.303	.741	3.091	1	.079	.272	.064	1.161
Formal sector	-1.490	.748	3.972	1	.046	.225	.052	.976
Area of residence (base=Rural area)			2.193	2	.334			
Urban	.457	.499	.839	1	.360	1.580	.594	4.205
Semi-urban	.422	.310	1.853	1	.173	1.525	.831	2.798
Constant	2.301	1.048	4.823	1	.028	9.980		
Number of observations	285							

Omnibus test model coefficient:Pearson chi square =27.957, df =5, p=0.000: -2 log likelihood = 315.894

Cox and Snell R squared= 0.093; Negelkerke R squared= 0.133

Hosmer and Lemeshow Pearson chi square =5.527, df =8, p=0.700

(Dependent variable: Borrowed; 1=yes)

Model 5d (Table 4.63) considered the lowest income (in Q1 and Q2) insured, newly insured and uninsured individuals. The significant variables estimated by the

model 5a were included as independent variables in the regression analysis. Among these income classes, a higher percent of newly insured poor (82%) had higher borrowing, followed by uninsured (79%) and insured (62%) poor. Hospitalisation related borrowing was high in uninsured group (92.6%) than newly insured (86.8%) and insured (58.2%) groups. Irrespective of insurance, 73.5 percent of the individuals borrowed for inpatient treatment. The median age of the head of the household with borrowing was 45 years and those who did not borrow were 48 years. The poor urban individuals (89.5%) borrowed more compared to their counterparts in semi-urban (75%) and rural areas (61%).

The results of the model confirm the positive impact of SSP on the borrowing strategies of insured individuals. Newly insured had 5.075 times higher likelihood of borrowing and uninsured had 5.980 higher likelihood of borrowing compared to insured. Hospitalisation increased the likelihood of borrowing by 5.737 times than outpatient treatment. The odds of borrowing were high for individuals living in urban areas (OR 8.291) and semi-urban areas (OR 2.025) rather than rural areas. Thus, borrowing was higher if the person did not have SSP, lived in urban or semi-urban areas and had inpatient treatment. SSP reduced the incidence of borrowing for poor people. Hosmer and Lemeshow test value of 0.960 indicate that model correctly predicted excellent discrimination in 74.4 percent of cases.

Table 4.63 Probability of Borrowing: Estimation of Model 5d

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.	
							Lower	Upper
Health insurance (base= SSP insured)			15.199	2	.001			
Newly insured	1.624	.500	10.539	1	.001	5.075	1.903	13.530
Uninsured	1.788	.550	10.592	1	.001	5.980	2.037	17.558
Types of treatment (base: outpatient) Inpatient	1.747	.526	11.010	1	.001	5.737	2.044	16.101
Age of head of household	-.013	.016	.620	1	.431	.987	.957	1.019
Area of residence (base=Rural area)			7.972	2	.019			
Urban	2.115	.838	6.374	1	.012	8.291	1.605	42.831
Semi-urban	.705	.398	3.137	1	.077	2.025	.928	4.419
Constant	-1.824	.604	9.103	1	.003	.161		
Number of observations	164							

Omnibus test model coefficient:Pearson chi square =30.282, df =5, p=0.000; -2 log likelihood = 169.741

Cox and Snell R squared= 0.169; Negelkerke R squared= 0.239

Hosmer and Lemeshow Pearson chi square =1.992, df =8, p=0.960

(Dependent variable: Borrowed; 1=yes)

4.7.4.3 Econometric Estimation of Amount of Borrowing

Multiple regression analysis was performed to know the impact of SSP on the amount of borrowing due to illness. It was hypothesised that SSP decreases the amount of borrowing since insured individuals can claim from the programme for hospitalisation. The regression analysis considered the log transformed borrowed amount and the age of the heads of the household. Backward elimination stepwise regression estimated the robust model by eliminating insignificant variables from the model at the 13th step. The analysis began with the full model considering certain independent variables namely types of treatment, age, gender and job status of the heads of the household, income class, district of residence and health insurance status. Insured individuals had lower amount of borrowing (Table 4.64). The amount of borrowing would be 65 percent less for insured individuals [exp (-.088)=1.65] than uninsured individuals. As given earlier, insured individuals spent less compared to uninsured individuals. Moreover, borrowing would be

19.6 percent higher for inpatient treatment than outpatient treatment [exp (.179=1.196]. Individuals from smaller households (household size 1-3) would borrow 9.7 percent less amount compared to individuals from larger households (7 and above) [exp (-.093=1.097]. A one percent increase in OOPE would yield a .70 percent increase in the amount borrowed. The model gives strong evidence to confirm the hypothesis of the study that SSP reduces the amount of borrowing (H7b) for insured individuals.

Variance Inflation Factor test did not suggest any multicollinearity since the value was one for all the significant independent variables, less than cut off 10. Correlation matrix did not show any significant correlation between independent variables. Cook's D statistic detected no outliers (all cases had values <0.16) and Dfits statistic (< 1.0) did not suggest any observation that strongly influenced the model. F value was 88.928 (p=0.00).

Table 4.64 Estimation of Model 5e: Health insurance and Amount of Borrowing

	Standardized Coefficients		
	Beta	t	Sig.
(Constant)		-1.767	.079
Insured (=1, 0 otherwise) (base: uninsured)	-.079	-1.448	.149
Newly insured (=1, 0 otherwise)	.015	.288	.774
Gender of head: Male (=1, 0 otherwise) (base: female)	.021	.463	.643
Treatment: Inpatient (=1, 0 otherwise) (base: outpatient)	.170	3.696	.000
Log (Age of the head)	-.050	-1.106	.270
Chronic (=1, 0 otherwise) (base: Acute)	.036	.785	.433
Maternity (=1, 0 otherwise)	.040	.869	.386
Log (OOPE)	.696	15.014	.000
Urban (=1, 0 otherwise) (base: Rural)	-.042	-.882	.378
Semi urban (=1, 0 otherwise)	-.051	-1.096	.274
Q1 (=1, 0 otherwise) (base: Q5)	.022	.314	.754
Q2 (=1, 0 otherwise)	.000	.007	.994
Q3 (=1, 0 otherwise)	.025	.368	.713
Q4 (=1, 0 otherwise)	.051	.825	.410
Household size 1-3 (=1, 0 otherwise) (base: Household size 7 & above)	-.032	-.655	.513
Household size 4-6 (=1, 0 otherwise)	-.094	-1.971	.050

Estimation at 13th step

(Constant)		-4.697	.000
Insured	-.088	-2.067	.040
Treatment	.179	4.196	.000
Log (OOPE)	.708	16.752	.000
Household size 1-3	-.093	-2.243	.026
Adjusted R^2	0.590		
Standard error of the estimate	0.642		

Dependent Variable: Log transformed amount of loan
Number of observations: 253

4.7.5 Relationship between the Health Insurance Status and the Use of Savings

This section explores the association between savings used for different types of treatment by insured, newly insured and uninsured individuals. The hypothesis was that insured use fewer savings compared to uninsured and newly insured individuals since SSP meets most of the direct expenses of hospitalisation. Contrary to our expectation, higher percent of insured used savings (32.7 %) in comparison with newly insured (24.7%), however it was less than that of uninsured (35.3%) individuals.

4.7.5.1. Determinants of the Use of Savings

Binary logistic regression analysis estimated the probability of the use of savings for individuals in insured, uninsured and newly insured groups. Individuals with SSP had a code of '1'. Newly insured and uninsured individuals were coded '2' and '3' respectively. Individuals who used savings were assigned a code of '1' and those who did not use savings had a code of '0'. Certain variables expected to determine savings were included in the analysis. Firstly, the analysis considered various characteristics of individual (types of treatment and health insurance status), households (age, gender and job status of head of the household, size of the household and income class) and community (area and district of residence), after classifying individuals based on SSP membership status. Secondly, estimation of binary logistic model with varied specifications was used to test the hypothesis. Model 5f was a binary logistic model that estimated the determinants of use of savings. Model 5g was a multiple linear regression model to know the determinants of the amount of savings. Table 4.59 provides the coding of variables.

4.7.5.1.a Characteristics of Individuals

i. Types of Treatment

Insured individuals used more savings for (88.5%) inpatient treatment than uninsured (64.3%) and newly insured individuals (Table 4.65). Thus, there was significant difference in the incidence of savings for the types of the treatment ($p<0.05$). Irrespective of SSP, inpatient (72.5%) treatment resulted in the use of higher savings than OP (27.5%) treatment ($p<0.05$).

4.7.5.1.b Characteristics of Households

i. Age of the Heads of the Household

The age of the heads of the household and savings is directly related. The study explored this assumption by including it as an independent variable. It was found that the median age of the head of household who used savings was 51 years and of those without savings was 47 years irrespective of insurance status (Mann Whitney U test $p<0.1$). The median age of newly insured head was 46 years, which was lower than that of insured (53 years) and uninsured (50 years) households.

ii. Gender of the Heads of the Household

There is no established relationship between gender of the heads of the household and use of savings. The current study shows an interesting finding. Households with men as the head used more savings compared to households with women as the heads (Table 4.65) ($p<0.05$). Regardless of SSP, there was no difference in the use of savings among men or women head households ($p>0.05$) although the general trend was that households with men as the head used more savings.

iii. Job status of the Heads of the Household

Majority of labourer households in three groups (Table 4.65) used the savings, followed by families with agriculture, self-employed, salaried and formal sector employed as heads of households ($p>0.05$).

iv. Household Size

Median size of families that used savings and did not use savings was four in all three studied groups (Mann Whitney test, $p >0.05$). Hence, the household size and savings were not related.

v. Income Class of the Household

Individuals from high-income class would use savings compared to those from low-income class. To the contrary, a higher percent of the Q1 (24.8%) used more savings than Q5 (22%). Small proportion of Q2 (19.3%), Q3 (17.4%) and Q4 (16.5%) individuals used savings ($p>0.05$). Insured individuals from the Q2 income quintile (52.2%) used higher savings compared to Q5 individuals (Table 4.65). Q4 (50%) individuals from

newly insured group used savings more than Q5 (25%). In uninsured group, higher percent of Q1 (31%) class used more savings than Q5 ($p>0.05$).

4.7.5.1.c Characteristics of the Community

a. Area of Residence

Higher proportion of rural individuals used savings in three groups (Table 4.65). Rural individuals from newly insured (63.6%) and uninsured groups (60.7%) largely used savings than insured (57.7%) ($p>0.05$). Regardless of SSP, individuals in rural (64.3%) areas used more savings than those in semi-urban (27.5%) and urban areas (13.8%) ($p<0.05$).

b. District of Residence

In addition to area of residence, district of residence was considered since FGD revealed probable influence of the district of residence on savings**.** In all three groups studied, people from Dakshina Kannada (DK) used more savings than those of Uttara Kannada (UK) and Gadag (Table 4.65) ($p>0.05$). Irrespective of SSP, individuals from DK (60.0%) used higher savings than those of UK (29.4%) and Gadag (10.1%) ($p<0.05$).

Table 4.65 Description of Independent Variables Included in the Savings Model

	Insured (N=50)	Newly insured (N-31)	Uninsured (N=28)
Types of treatment[a]			
Outpatient	11.5	42.4	35.7
Inpatient	88.5	57.6	64.3
Gender of head of household[b]			
Male	90.4	87.9	64.3
Female	9.6	12.1	35.7
Job status[c]			
Unemployment	9.6	6.1	17.9
Labourer	51.9	69.7	46.4
Self employed	9.6	3	3.6
Agriculture	11.5	6.1	3.6
Formal sector	9.8	8	17.8
Salaried (informal sector)	7.7	9.1	10.7
Income quintile[d]			
Q1	25	21.2	32.1
Q2	23.1	15.2	21.4
Q3	15.4	18.2	17.9
Q4	15.4	27.3	3.6
Q5	21.2	18.2	25
Area of residence[e]			
Urban	9.6	18.2	14.3
Semi-urban	32.7	18.2	25
Rural	57.7	63.6	60.2
Dakshina Kannada (DK)[f]	61.5	57.6	64.3
Uttara Kannada (UK)	26.9	30.3	28.6
Gadag	11.5	12.1	7.1

Pearson chi square; a= 11.479, $p<0.05$; b=9.957, $p<0.05$; c=12.456, $p>0.05$; d=7.176, $p>0.05$; e=2.900,$p>0.05$, f=.628, $p>0.05$

4.7.5.2 Econometric Estimation of the Probability of Use of Savings

The estimation results on the relationship between SSP and savings is depicted in Table 4.66. The evidence of insured individuals being less likely to use savings compared to newly insured and uninsured individuals was not evident. Hence, study accepts the null hypothesis that SSP does not reduce the use of the savings for insured individuals (H8a). The age of the heads of the household was another significant determinant. The odds of

using savings increases by a factor of 1.035 for each year of the age of the heads of the household. Individuals with hospitalisation were 0.5 times less likely to use savings compared to individuals with outpatient treatment. Income was a determinant of savings with lower income quintile individuals had the lower probability of use of savings than high income quintile. Individuals belonging to low income quintile (Q3) were 0.389 times less likely to use savings compared to the highest income quintile (Q5). Individuals residing in semi-urban areas had lower likelihood of the use of savings compared to those in rural areas (OR 0.534). People from Dakshina Kannada had higher likelihood of the use of savings compared to Gadag residents (OR 2.642). Thus, older heads of the household, outpatient treatment, high income class, living in rural areas and Dakshina Kannada district increased the likelihood of theuse of savings.

The model was subjected to endogeneity test (Durbin-Wu-Hausman test) and health insurance was found to be exogenous with prob (χ^2) =0.874. Hence, this result rules out the effect of the unobservable variables on the study findings. Residual analysis (specifically Cook's Distance statistic) showed no outliers. The model correctly predicted 70 percent of the cases.

Table 4.66 Probability of the Use of Savings: Estimated Results of Model 5f

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.	
							Lower	Upper
Health insurance (base= SSP insured)			.874	2	.646			
Newly insured	-.284	.303	.873	1	.350	.753	.415	1.365
Uninsured	-.111	.317	.123	1	.726	.895	.481	1.664
Types of treatment (base: outpatient) Inpatient	-.869	.316	7.543	1	.006	.420	.226	.780
Age of head	.034	.013	7.047	1	.008	1.035	1.009	1.061
Gender (base=Female) Male	-.195	.344	.324	1	.570	.822	.419	1.613
Job status of head (base= Unemployed)			3.570	5	.613			
Labourer	-.667	.815	.671	1	.413	.513	.104	2.533
Business	-.142	.744	.036	1	.849	.868	.202	3.726
Agriculture	.266	.904	.087	1	.768	1.305	.222	7.671
Salaried in informal sector	.162	.829	.038	1	.846	1.175	.231	5.972
Formal sector	-.001	.848	.000	1	.999	.999	.190	5.260
Household size (base 1-3)			.473	2	.790			
4-6	.305	.506	.364	1	.546	1.357	.504	3.655
7 and above	.309	.453	.467	1	.494	1.363	.561	3.308
Income quintile (base=Q5)			7.335	4	.119			
Q1	-.215	.448	.231	1	.631	.806	.335	1.942
Q2	-.709	.433	2.681	1	.102	.492	.211	1.150
Q3	-.943	.424	4.950	1	.026	.389	.170	.894
Q4	-.677	.427	2.511	1	.113	.508	.220	1.174
Area of residence (base=Rural area)			4.170	2	.124			
Urban	-.412	.406	1.031	1	.310	.662	.299	1.468
Semi-urban	-.627	.309	4.106	1	.043	.534	.291	.980
District of residence (base= Gadag)			6.483	2	.039			
DK	.971	.419	5.377	1	.020	2.642	1.162	6.004
UK	.501	.466	1.154	1	.283	1.650	.662	4.112
Constant	-1.812	1.122	2.606	1	.106	.163		

Omnibus test model coefficient: Pearson chi square =35.120, df =18, p=0.00; -2 log likelihood = 384.192

Cox and Snell R squared= 0.11; Negelkerke R squared= 0.134;

Hosmer and Lemeshow Pearson chi square =5.148, p=0.742

(Dependent variable: Savings; 1=yes); Number of observations: 361

4.7.5.3 Econometric Estimation of the Amount of Savings Used for Treatment

Multiple regression analysis was performed to know the impact of SSP on the amount of savings. As SSP provides financial protection, we hypothesised that SSP decreases the amount of savings for insured individuals. Regression analysis used the log transformed amount of savings and age of the head of the households. Backward elimination stepwise regression estimated the robust model by eliminating insignificant variables from the model at the 15^{th} step. The analysis began with the full model considering certain independent variables namely types of the treatment, age, gender and job status of the head of the household, income class, district of residence and health insurance status. In model 5g, amount of savings used would be 17.4 percent less for Q4 individuals compared to Q5 individuals [exp (-.161)=1.174]. A one percent increase in OOPE would yield a .48 percent increase in savings amount used. Amount of savings was not significantly different for insured individuals compared to uninsured and newly insured individuals (Table 4.67). SSP status, gender and job status of the head of the household were not associated with the amount of savings used. Hence, we reject the study hypothesis that SSP reduces the amount of savings used for the treatment (H8b).

Multicollinearity was measured using Variance Inflation Factor that did not suggest any collinearity since the value was 1 for all the significant independent variables, less than cut off of 10. Correlation matrix did not show any significant correlation between independent variables. Cook's D statistic detected no outliers (all cases had values <2) and Dfits statistic (< 1.0) did not suggest any observation that strongly influenced the model. The model fitted well with F value of 17.562 (p=0.00).

Table 4.67 Estimated Results of Model 5g: Health insurance and Amount of Savings

	Standardized Coefficients		
	Beta	t	Sig.
(Constant)		.567	.572
Insured (=1, 0 otherwise) (base: uninsured)	.012	.095	.924
Newly insured (=1, 0 otherwise)	.141	1.230	.223
Gender of head: Male (=1, 0 otherwise) (base: female)	-.038	-.360	.720
Treatment: Inpatient (=1, 0 otherwise) (base: outpatient)	-.116	-1.098	.276
Log (Age of the head)	.132	1.271	.207
Acute (=1, 0 otherwise) (base: Chronic)	-.098	-.916	.363
Maternity (=1, 0 otherwise)	-.013	-.118	.906
Log (OOPE)	.493	4.681	.000
Urban (=1, 0 otherwise) (base: Rural)	.065	.600	.551
Semi urban (=1, 0 otherwise)	.129	1.242	.218
Q1 (=1, 0 otherwise) (base: Q5)	-.227	-1.568	.121
Q2 (=1, 0 otherwise)	-.088	-.723	.472
Q3 (=1, 0 otherwise)	-.133	-.988	.326
Q4 (=1, 0 otherwise)	-.306	-2.431	.017
Household size 1-3 (=1, 0 otherwise) (base: Household size 7 & above)	.011	.103	.918
Household size 4-6 (=1, 0 otherwise)	-.095	-.824	.413
Estimation at 15th step			
(Constant)		1.662	.100
Q4	-.161	-1.787	.077
Log (OOPE)	.487	5.416	.000
Adjusted R^2	0.265		
Standard error of the estimate	0.857		

Dependent Variable: Log transformed amount of savings
Number of observations: 113

4.7.6 Sale of Assets to Pay for Medical Expenses

Usually, sale of assets take place when the households find it extremely difficult to pay from pocket, borrow or use their savings to meet high cost of medical care. It also depends on the saleable assets held by the households. The most common assets sold by agriculture families were crop (whether harvested or not) whereas families of informal workers sold consumer durables and sometimes jewellery or land/ house if illness was catastrophic. Sale of assets was a last resort used by most of the individuals. Since SSP provides financial coverage for hospitalisation, the need to sell assets for insured was not as much as that for uninsured or newly insured individuals. To test the hypothesis that insured sold fewer assets compared to uninsured and newly insured individuals, Pearson chi square test was used.

Sale of assets was higher among insured (5.6%) than newly insured (2.6%) but lower than uninsured (7%) individuals. There was no statistical difference among insured, newly insured and uninsured individuals in the sale of assets ($p>0.05$). Hence, null hypothesis that sale of assets does not differ among insured, newly insured and uninsured individuals was accepted (H9). Due to small size of the sample that sold assets, regression analysis was irrelevant.

4.7.7 Summary

Individuals in the survey used multiple risk coping strategies to meet medical expenses. Predominantly, they used asset-based strategies such as sale of assets, use of savings, borrowing money or health insurance (by insured). The use of savings and sale of assets were less frequent than borrowing. Strategies with potential negative impact on the portfolio of income sources like engaging school going children, women in income generating activities and sending additional members of the family to labour market was not seen. There was no difference in the ex-post risk coping strategies adopted by insured, newly insured and uninsured individuals. Nevertheless, overall mobilised amount from other risk coping strategies was low for insured compared to newly insured and uninsured individuals.

The availability of money had positive association with the savings used by the individuals and negatively related to the borrowing. A small percent of the individuals used savings in addition to borrowing. Individuals used savings mainly to meet outpatient treatment costs. Saving was used in the households in which heads of the household was older and belonged to high-income class. Rural individuals used more savings compared to individuals in semi-urban areas and those living in DK used more savings than those of Gadag. SSP was not a significant predictor of the savings (use and amount) in the logistic and multiple linear regression models. Hence, the study rejects the hypothesis that SSP reduces reliance on savings for insured individuals (H8a and H8b).

The study found sale of assets, such as crop or valuables like jewellery or two wheeler vehicles, to be the least used health financing strategy. The target population of SKDRDP is poor in informal sector. These households did not have any assets to sell other than television, motor bikes and dwelling house. Thus, the study found statistical significance for the incidence and amount of borrowing but not for savings and sale of assets. However, average amount realised from sale of assets for insured was the highest due to expensive cost of treatment for illness such as dialysis, kidney operation, angiogram etc. faced by three to four insured individuals who had to pay almost one lakh each.

Logistic regression analysis for the household survey data confirmed the hypothesis of the study on the impact of SSP on borrowing to meet medical expenses. The results indicate that insured individuals had lower borrowing compared to newly insured and uninsured individuals. Models on hospitalisation, low-income class, labourer head of the households and amount of loan support the hypothesis of positive impact of SSP in reducing the incidence and amount of borrowing for insured individuals (H7a and H7b). The results from these models indicate that insured rely less on the borrowing as postulated in the theory. Since SSP brings down OOPE and CHE, the need to borrow is less for insured individuals. Insured individuals in lower income class (model 5d) and head of the households working as labourer (model 5b) had lower incidence of borrowing compared to their counterparts in uninsured and newly insured groups. Consequently,

SSP could provide financial protection to vulnerable sections of the society against health risks leading to impoverishment in such households.

One unanticipated finding was that SSP did not have any impact on the use of savings and sale of the assets. The use of savings depends on the income of the family and accumulated savings. Since the target population belongs to the poor section of the society mostly in the informal sector, they can be expected to have fewer savings that can be used to pay for medical expenses. Despite SSP claims, insured individuals had to bear the indirect cost of care and outpatient treatment. This nullified the effect of SSP with regard to the use of savings. In-depth analysis on the sale of the assets could not be carried out due to the small sample size. Hence, we cannot substantiate the lack of impact of SSP on the sale of assets.

The results of the study indicate that age of the head of households was a significant determinant of the incidence of borrowing and savings. Since the younger person in general has lower income compared to the elder person with similar socio-economic background, the elderly head of the households would have more savings and rely less on the borrowing. In this study, older head of the households used savings and borrowed less than younger heads. The regression models with different specifications (5a to 5d and 5g) confirmed this finding. Hospitalisation did positively influence borrowing since the cost of treatment (direct and total) would be high compared to outpatient treatment. In addition, individuals used fewer savings (amount and incidence) for hospitalisation compared to the outpatient treatment.

Income class proved to be a determinant of the incidence and amount of borrowing with an exception to individuals with labourer head of the households. Moderately poor (Q3) individuals borrowed in higher proportion than high-income class (Q5). Similarly, the job status explained the observed differences in the incidence of borrowing in the basic model (5a) and hospitalisation model (5c). The unemployed heads had a higher probability of borrowing compared to formal sector employees. The area of residence was a determinant in two models (poor and labourer head of the household). Urban and semi-urban residents had higher likelihood of borrowing and lower use of the

savings compared to rural areas. Smaller households had lower likelihood of borrowing. Higher OOPE resulted in higher amount of borrowing as well as use of savings.

Another striking finding that needs further explanation is the highest amount and incidence of borrowing by newly insured individuals. Newly insured individuals had the high cost of treatment (both OOPE and CHE); an average of seven percent of the annual consumption expenditure compared to uninsured and insured individuals. The head of the households in this group were younger, primarily lived in urban areas and belonged to Q3 income class. These factors contributed to the highest incidence and the amount of borrowing for newly insured individuals. On the other hand, insured had lower borrowing since majority of them had inpatient treatment covered by SSP and had lower OOPE and CHE.

Having established the lower incidence and amount of borrowing for insured individuals, the next issue concerns the absence of complete financial protection by SSP since insured used various risk coping strategies to meet the cost of illness. The reasons point at certain design features of SSP. Firstly, SSP covered hospitalisation expenses only. Indirect costs (including lost wages during treatment and travelling, food expenses) had to be borne by the individuals. Persons with outpatient treatment had to use their money for the treatment. Certain excluded diseases from the benefit package namely common ailments such as fever, and cough forced sick people to pay from their pocket. Secondly, the benefit package was low (₹5000) compared to the escalated treatment cost. In case of some illness requiring expensive drugs or procedures (diagnostic or surgical), individual had to use own funds. Thirdly, a large percent of insured households borrowed to pay the premium. They borrowed money from the neighbours or friends or used credit facility of SSP to pay the premium. This suggests that insured households are cash constrained even to pay the annual premium. Hence, the amount of savings available to pay for the care was low. Thus, the present study could not find any difference in the use of savings among insured, newly insured and uninsured individuals.

SSP as a risk coping strategy would complement other risk coping strategies rather than making them redundant. Yet, it would reduce the negative effect of these

strategies by reducing excessive reliance on them. The finding revealed in this section confirms the positive impact of SSP on financial protection. Thus, direct measure of financial protection namely OOPE, CHE and comprehensive measures of risk coping strategies do support the study hypothesis that SSP indeed provided financial protection to its members. The findings points out the potential positive contribution that SSP can make to reduce the reliance on risk coping strategies. This would decrease the possibility of impoverishment in the poor households and improve their quality of life. However, it is interesting to know whether the poorest are included in SSP membership. If SSP excludes the poorest, the positive impact of the programme would not be welfare promoting. Hence, the next chapter finds out the determinants of the enrolment and social inclusion in SSP to promulgate such MHI schemes as a poverty reduction strategy.

CHAPTER 5

ENROLMENT IN SAMPOORNA SURAKSHA PROGRAMME

5.1 Introduction

Enrolment in SSP influences the risk coping capability of the households during the health crisis. It plays an important role in mitigating poverty induced by the expensive medical care, especially for the poor households. However, we have seen that SSP has excluded some low-income households and included high-income households as members (section 4.1). The research question was whether poorest was excluded from SSP membership or not. This chapter analyses the factors determining SSP membership and reasons for enrolment in SSP. Firstly, the study considered the incidence of illness in the previous year of the study in insured, newly insured and uninsured households. Second, the factors determining enrolment were estimated using binary logistic regression model. Specifications of the basic model were changed to substantiate the findings and to test the robustness of the model. Thirdly, the factors for enrolment as perceived by the respondents were studied using factor analysis. Fourthly, the study explored the performance of SSP in social inclusion. Lastly, the analysis focused on adverse selection in SSP.

SSP, initiated by SKDRDP is a socio-economic development programme targets the poor households in the informal sector. Hence, it has to include the majority of the poorest in the risk pool. Although most of the target population falls below or at the border of BPL (below poverty line), this study defined the destitute (annual income of less than ₹14000) as extremely poor or poorest. Thus, the hypothesis was that SSP includes the poorest in large proportion than high-income families in the target population. Various determinants of enrolment were estimated using binary logistic regression analysis, income being one of them to test study hypothesis.

Adverse selection in MHI threatens the long-term viability and financial sustainability. SSP enrols entire household as the unit of enrolment to curtail adverse selection. Due to the constant flow of information among the people in rural communities, information asymmetry will be less prevalent and much less the possibility of adverse selection. However, SSP does not insist on the waiting period and includes pre-existing diseases in the coverage. Moreover, the upper age limit for enrolment is 80

years that encourages older high-risk individuals to enrol in SSP. Hence, the study hypothesises that SSP has adverse selection.

The hypothesis of the study was tested using the data collected from 1146 households (4961 individuals); 782 insured households (3444 individuals that includes newly insured who enrolled in 2011-12), and 364 uninsured households (1517 individuals). Individual (head of household), household and community characteristics of insured households were compared with uninsured households. The probability of obtaining a membership in SSP was found out by using the binary logistic regression model as given below;

Prob (membership>0) = $\beta_0+\beta_1 X_y +\varepsilon$, where X_y stands for a set of independent variables like income, characteristics of the household head, household characteristics, community characteristics that affect membership. Factor analysis was carried out to understand the reasons for enrolment in SSP. Social inclusion and adverse selection were tested using binary logistic regression model and Pearson chi square test.

5.2 Incidence of Illness among Insured and Uninsured Households

Enrolment in SSP was associated with the incidence of illness in the previous year of enrolment. A higher percent of insured (38.2% of insured and 32.5% of newly insured) reported the incidence of illness compared to one fourths of uninsured ($p<0.05$).

Table 5.1 Incidence of Illness and Enrolment in SSP

	Incidence of illness	
	Yes	No
Insured (N=416)	38.2	61.8
Newly insured (N=366)	32.5	67.5
Uninsured (N=364)	23.5	76.6

χ^2 (2, N=1146) =20.008, p =0.00

5.3 Determinants of Enrolment in the Surveyed Households

Binary logistic regression analysis was done to estimate the likelihood of membership in SSP. Individuals with SSP were differentiated from those without it by assigning a code of '1' for SSP insured (and newly insured) and '0' for uninsured individuals. The factors determining enrolment in SSP can be classified into enabling

factors (income and education), predisposing factors (gender, marital status, age and the job status of head of the household, area of residence, distance to hospitals and size of the household) and need factors (chronic illness in the household). Firstly, the present study analysed various factors that would determine enrolment after classifying individuals based on SSP membership status. Secondly, binary logistic model estimated the determinants of enrolment with a different model specification to substantiate the findings of the basic model.

5.3.1 Enabling Factors

a. Education of Head of the Household

The education level would determine the enrolment with educated seeking enrolment than the uneducated. A higher percentage of the head of insured households were illiterate or primary educated and uninsured group had higher proportion of secondary school educated, pre-university or degree holders (Table 5.3). Uninsured head of the households had an average education of six years, higher than that of insured (average of 5 years) ($p>0.05$). This suggests that better educated head of the households tend to stay away from SSP.

b. Income Class

Social inclusion objective of SSP would be achieved if the poorest income class were represented more than high-income class. SSP's target population is those below or near the poverty line. Hence, the study expects poorest (below the poverty line) to be included in the programme (H10). It should be kept in mind that high-income families in this study are still poor when we consider the definition of the income quintiles given by Planning Commission on all-India basis. However, our analysis considered the income quintiles to find out the inclusion of the poorest in SSP.

Intra-group analysis (Table 5.3**)** illustrates that SSP included households from different income classes in almost equal proportion. A higher proportion of insured households was from Q4 (21.6%) followed by Q2 (20.7%) and Q3 (20.5%). Uninsured households had relatively higher percentage of Q4 and Q1 quintiles and lowest from Q5. SSP excluded lowest income quintile (Q1) (only 19.4 percent) whereas a higher

representation was observed from Q2 and Q3 quintile, which denotes partial social inclusion.

5.3.2 Predisposing Factors

a. Age of Head of the Households

Age of the head of the household would determine enrolment with older head of households joining the scheme compared to younger head of the households. The median age of the head of insured households was 46 years and that of uninsured was 48 years. Hence, households with the younger heads joined SSP than households with the older heads. However, these finding was not significant (Mann Whitney test, $p>0.05$).

b. Gender of Head of the Households

Women headed households usually have low level of education and income that would result in non-enrolment. Women were the heads of household in 20.1 percent of uninsured households whereas only 15.8 percent of insured households had women as the head (Table 5.3). The gender of the head of the households indeed contribute to enrolment status in SSP ($p<0.1$). Uninsured had a higher percentage of women as head of the households with lower income and education level compared to households with men as the head. The median annual income of male-head households was ₹93,600 and female-head households was ₹76,800 and this difference was significant (Mann Whitney U test, $p=0.00$). Even a difference was found in the education of head of the households (Mann Whitney U test, $p<0.05$). Nearly half of the women (47.7%) were illiterate compared to only 18.8 percent of men who head the households. These differences in the basic characteristics of male and female head of the households might have contributed to the differences in enrolment in SSP.

c. Marital Status of the Head of the Households

The head of the households undertake the responsibility of the family in the social fabric of Karnataka. If the head of the household is married, he has to meet the financial needs and take decisions related to risks facing the household including health risk. Hence, married heads of the household would enrol in SSP more than single (unmarried, widowed, divorced) head of the households. The size of family ranged from

three to six members for married head of the households than single heads (2-3 members). There was a significant difference in the marital status of the heads and enrolment in SSP ($p<0.05$). Nearly 87 percent of insured had married head of the households compared to 81 percent of uninsured.

d. Job Status of Head of the Households

The job status of the head of the households largely determines the seasonality of the income of the family, thereby the purchase of health insurance. Employment in formal sector, self-employment (business) or skilled salaried job in informal sector is associated with better income and certainty of income than labour (skilled or unskilled) and agriculture. On the contrary, a higher proportion of insured were found to be self-employed (8.2%), salaried in informal sector (8.8 %) or employed in formal sector (private and government) (5.8%) in contrast to uninsured households (7.8%, 8.1 % and 4% respectively) ($p>0.05$) (Table 5.3). Hence, an unequivocal conclusion could not be arrived.

e. Size of Households

Number of members in the household determines the enrolment decision. Large families denote higher informal insurance as they can rely on each other during the health crisis, which reduces the demand for MHI. Yet they have higher risks and health expenditure; hence, they would be inclined to secure the family against risks of ill health. Nuclear family demands MHI due to the lower buffer in the form of informal insurance and financial insecurity (Abel-Smith 1992). It is difficult to predict the impact of household size on enrolment in SSP. There is no theoretical support to know the impact of household size on SSP enrolment. Let us know what the data speaks.

Although median size of the households in insured and uninsured group was four, there was a significant association between the household size and membership in SSP (Mann Whitney U test $p<0.05$). Nearly 32 percent of uninsured and 27.6 percent of insured households had family size of 1 to 3. Almost 56 percent of uninsured and 53.4 percent of insured had family size of 4 to 5. Twelve percent of uninsured group had 6-10 members whereas insured group had 18 percent and almost one percent had 11-19

members. This stresses that larger families tend to enrol in SSP coverage, due to financial insecurity, higher risk of ill health and adverse effect of huge health expenses. Even the average cost of premium was low for large families. Hence, safeguarding the large family from unforeseen consequences of ill health motivated enrolment in SSP.

f. Area of Residence

Geographical location of the households is an important determinant of enrolment in MHI. A comparison of both groups reveals that insured were more from semi-urban areas (35.9%) than uninsured households (31.9%) although target population resided mainly in rural areas (55%) (Table 5.3).However, no significant association between area of residence and SSP membership was possible ($p>0.05$). Of the available hospitals in the semi-urban areas, one fourth was network hospitals whereas just one tenth of total hospitals were SSP hospitals in rural and urban areas.

g. Distance to Hospitals and Enrolment in SSP

This study has established a positive relationship between the distance to hospitals and CHE in the section 4.6. If the households stay far away, they would incur higher expenditure for treatment. Since SSP brings down the direct cost of treatment, the households would incur lower total cost of treatment. Thus, families staying far away from the hospitals would be motivated to enrol in SSP. The study results indicate that insured had to travel an average of 2.8 km to network hospitals compared to uninsured (mean distance 2.4 km) households. Hence, distance to hospitals encourages households to purchase SSP (Mann Whitney U test $p<0.05$).

5.3.3 Adverse Selection

Risk of ill health motivates individuals to enrol in MHI resulting in adverse selection (need factor). Many observable and non-observable factors determine health risk. However, measurement of health risk is difficult. Self-reported health status (from very good to very bad) and the health expenditure as measures of health risk are usually used. However, these indicators are highly subjective varying according to the perception and understanding of the respondents. Higher health expenses may be due to over utilisation. Another measure is to consider age, gender or job status of members of the

family and classifying households with members in jobs involving high level of health risk, presence of women or elderly in the family as high-risk households. However, the study did not consider it a measure of health risk as household was the unit of analysis, hence these characteristics could not be used to measure health risk. Thus, in this study, health risk, defined as the bad medical situation, acts as an indicator of adverse selection.

Adverse selection (AS) or health risk was defined as the prevalence of chronic illness in the family such as hypertension, diabetes, asthma, cancer from which the person suffers for longtime. Since SSP insists on the family enrolment, health risk of the household rather than individuals measured the adverse selection. Due to certain design features of SSP (inclusion of pre-existing illness, no waiting period, and lack of screening of members before enrolment), we can expect adverse selection to be present in SSP. To test the hypothesis (H11), adverse selection was included as independent variable in the enrolment logistic regression model.

Nearly 66 percent of uninsured households did not report any chronic illness compared to 60.7 percent of insured household. These findings were not significant ($p=0.112$). Further assessment considered the prevalence of adverse selection in different income quintiles to know whether it has come from low-income households or not. SSP members in low-income quintile (Q1, Q2, Q3) had higher health risk compared to those in high income class (Q5) (Table 5.2). However, the conclusion on the welfare promoting impact of SSP could not be reached ($p>0.05$).

Table 5.2 Intra-Income Comparison of Health Risk

	Q1	Q2	Q3	Q4	Q5
Non members[1]					
Yes	28.2	39.7	42.3	26.7	35.9
No	71.8	60.3	57.7	73.3	64.1
Members[2]					
Yes	42.3	42.5	38.1	37.5	35.6
No	57.7	57.5	61.9	62.5	64.4

[1] $\chi 2$ (4, N=1141) =6.072, p =0.194
[2] $\chi 2$ (4, N=1141) =2.519, p =0.641

Table 5.3 Basic Characteristics of Insured and Uninsured Households

	Insured (N=782)	Uninsured (N=364)
Gender of head of family: Male [a]	84.2	79.9
Education of head of family [b]		
Illiterate	24.7	22
Primary	42.7	40.7
Secondary	23	24.5
Pre-university/graduate	8.9	11.8
Others	0.7	1
Job status[c]		
Unemployment	15.8	18.3
Labourer	56.2	56
Self employed	8.2	7.8
Agriculture	5.2	5.8
Formal sector	5.8	4
Salaried (informal sector)	8.8	8.1
Income class[d]		
Q1	19.4	22
Q2	20.7	19.8
Q3	20.5	18.4
Q4	21.6	22.3
Q5	17.8	17.5
Area of residence[e]		
Urban	10.5	12.4
Semi-urban	35.9	31.6
Rural	53.6	56

Pearson chi square; a= 3.217, p<0.1; b=3.417, p>0.05; c=3.774, p>0.05; d=1.480, p>0.05; e=2.421, p>0.05

5.3.4 Econometric Estimation on the Determinants of Enrolment in SSP

Binary logistic regression analysis was applied to estimate the determinants of enrolment in SSP. Table 5.4 displays the coding of thevariables that were included in the model (model 6a), and vulnerable group model (model 6b). Model 6b took cases of unemployed and labourer households to explore the determinants of enrolment in these households. The gender and marital status of the head of the households and chronic illness in the family was coded into two dummy variables. The job status of head of the households was coded into six dummy variables. Age of the head of the households and

distance to hospital were continuous variables. SSP membership status, size of the household and area of residence were coded into three dummy variables each.

Table 5.4 Measurement and Coding of Independent Variables

Variables	Model 6a	Model 6b
Gender of head of household=1 if male, 0 if female (reference)	✓	✓
Marital status of head of household=1 if married, 0 if single	✓	✓
Job status of the household head 1= Labourer 2= Business 3= Agriculture 4=Salaried in informal sector 5=Formal sector 0=Unemployed/not able (reference)	✓	
Chronic illness in the family=1 if yes, 0 if no	✓	✓
Income quintile 1=Q1, 2=Q2, 3=Q3, 4=Q4, 5=Q5 (reference)	✓	✓
Area of residence 1= Urban if household lives in urban area 2= Semi-urban if household lives in semi-urban area 3=Rural if household lives in rural areas (reference)	✓	✓

Age, gender, marital status, education and job status of head of households and income class were not significantly associated with enrolment (Table 5.5). The households living in the semi-urban areas were 1.35 times more likely to enrol than rural areas. Families living far away from hospitals were 1.083 times more likely to enrol in SSP. Thus, households living in semi-urban areas and away from hospitals were more likely to enrol in SSP. The results of these tests showed that the model fits well and 68.5 percent of cases were correctly predicted by the model.

Model 6b estimated that households in semi-urban areas influenced the likelihood of enrolment by a factor of 1.621 than rural areas (Table 5.6). There was a positive association between distance to hospital and enrolment in SSP (OR 1.110). Household size was not a determinant of enrolment for unemployed/labourer families. 69 percent of cases were correctly predicted by the model.

Table 5.5 Probability of Enrolment: Results of Model 6a

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.	
							Lower	Upper
Age of household head	-.008	.008	1.081	1	.299	.992	.978	1.007
Gender of head (base=Female) Male	.112	.313	.127	1	.721	1.118	.606	2.064
Education of head (base: Illiterate)			3.606	3	.307			
Primary (1 to 7 std)	.505	.374	1.824	1	.177	1.658	.796	3.451
Secondary (8 to 12 std)	.367	.352	1.090	1	.297	1.444	.725	2.876
Graduate and above	.162	.345	.220	1	.639	1.176	.598	2.312
Marital status (base: Married) Single	-.387	.314	1.520	1	.218	.679	.367	1.257
Occupation of household head (base= Unemployed)			3.740	5	.587			
Labourer	-.282	.216	1.698	1	.193	.754	.494	1.153
Business	-.264	.319	.687	1	.407	.768	.411	1.434
Agriculture	.116	.442	.069	1	.792	1.123	.473	2.669
Salaried in informal sector	-.263	.301	.767	1	.381	.769	.426	1.385
Formal sector	-.604	.387	2.443	1	.118	.546	.256	1.166
Chronic illness in the family (base: Yes) No	-.230	.137	2.804	1	.094	.795	.607	1.040
Household size (base: 1-3)			1.188	2	.552			
4-6	-.292	.295	.975	1	.323	.747	.419	1.333
7 and above	-.165	.271	.369	1	.543	.848	.498	1.444
Income quintile (base=Q5)			.808	4	.937			
Q1	-.034	.233	.021	1	.885	.967	.612	1.526
Q2	.086	.223	.150	1	.699	1.090	.704	1.688
Q3	.126	.220	.329	1	.566	1.134	.737	1.745
Q4	.012	.210	.003	1	.953	1.012	.671	1.526
Area of residence (base=Rural area)			4.224	2	.121			
Urban	.090	.218	.172	1	.678	1.095	.714	1.678
Semi-urban	.300	.147	4.187	1	.041	1.350	1.013	1.799
Distance to SSP hospital	.080	.030	6.949	1	.008	1.083	1.021	1.149
Constant	-.518	.554	.873	1	.350	.596		
Number of observations	1146							

Omnibus test model coefficient: Pearson chi square =54.227, df =21, p=0.00; -2 log likelihood = 1399.754

Cox and Snell R squared= 0.026; Negelkerke R squared= 0.036

Hosmer and Lemeshow Pearson chi square =3.643, df =8, p=0.888

Table 5.6 Probability of Enrolment: Estimated Results of Model 6b

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.	
							Lower	Upper
Education of head (base: Illiterate)			5.226	3	.156			
Primary (1 to 7 std)	1.184	.866	1.869	1	.172	3.268	.598	17.847
Secondary (8 to 12 std)	.970	.860	1.275	1	.259	2.639	.490	14.227
Graduate and above	.738	.865	.727	1	.394	2.092	.384	11.402
Gender of head (base=Female) Male	.075	.354	.045	1	.833	1.078	.538	2.158
Age of head	-.004	.008	.276	1	.599	.996	.981	1.011
Marital status (base: Married) Single	-.386	.361	1.143	1	.285	.680	.335	1.379
Chronic illness in the family (base:Yes) No	-.222	.159	1.953	1	.162	.801	.587	1.093
Household size(base= 1-3)			1.476	2	.478			
4-6	-.265	.342	.600	1	.438	.767	.392	1.500
7 & above	-.055	.314	.031	1	.861	.947	.512	1.752
Area of residence (base=Rural area)			8.176	2	.017			
Urban	.206	.269	.588	1	.443	1.229	.726	2.082
Semi-urban	.483	.169	8.170	1	.004	1.621	1.164	2.258
Distance to SSP hospital	.104	.036	8.479	1	.004	1.110	1.035	1.190
Income quintile (base=Q5)			4.823	4	.306			
Q1	.265	.228	1.355	1	.244	1.304	.834	2.039
Q2	.230	.240	.915	1	.339	1.259	.786	2.016
Q3	.097	.239	.165	1	.684	1.102	.690	1.762
Q4	-.223	.262	.727	1	.394	.800	.479	1.336
Constant	-.239	1.076	.049	1	.824	.787		
Number of observations	800							

Omnibus test model coefficient: Pearson chi square =31.895, df =16, p=0.01; -2 log likelihood = 1046.664

Cox and Snell R squared= 0.036; Negelkerke R squared= 0.051

Hosmer and Lemeshow Pearson chi square =7.035, df =8, p=0.533

(Dependent variable: Enrolled; 1=yes)

5.4 Reasons for Enrolment in SSP

The factor analysis focused on the various reasons that motivate enrolment. Mutual help, reduction in financial barriers, access to good hospitals and benefit package were the main reasons to join SSP (Figure 5.1). Figure 5.2 shows the reasons given for enrolment by insured and newly insured households.

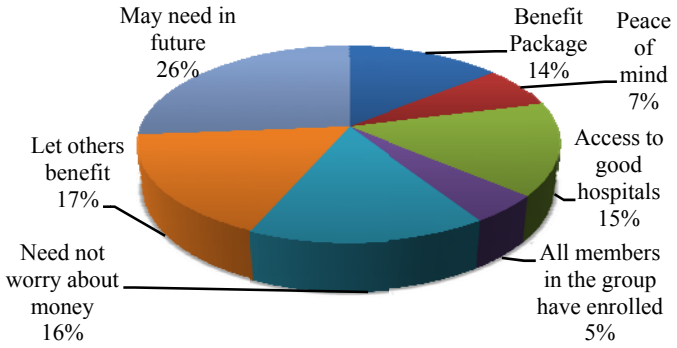


Figure 5.1 Reasons for Enrolment in SSP

Newly insured joined SSP to access good hospitals and to secure the family financially against any illness in future. They regarded mutual help to be another important reason. Other than securing the future against risk of illness, reducing financial barriers and benefit package of SSP attracted insured members of SSP. There was significant differences in the reasons given by insured and newly insured respondents ($p<0.05$).

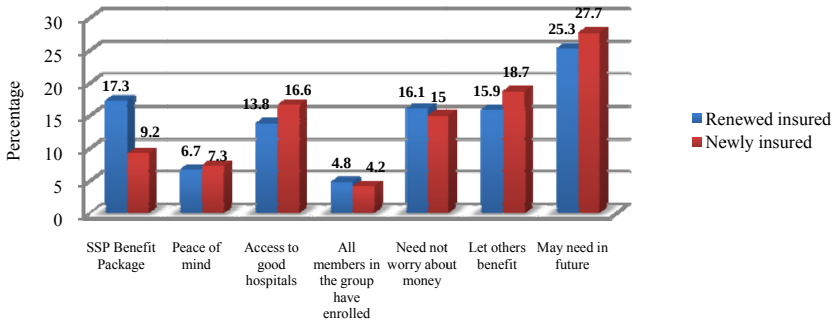


Figure 5.2 Reasons for Enrolment: Comparison of Renewed Insured and Newly Insured Households

To understand the most relevant reasons for enrolment, factor analysis was carried out. KMO sampling adequacy was 0.580 and Barlett's test of sphericity was significant with p <0.05. Rotated component matrix highlights 'SSP benefits' (.741), 'May need in future' (.751) as the first component, 'Let others benefit' (.730) and 'Peace of mind' (.635) as second component, 'All members in the group have enrolled' (.667), and 'Need not worry about money' (.771) as third component and 'Access to good hospitals' (.951) as fourth component (Table 5.7).

Table 5.7 Rotated Component Matrix: Factors Underlying Enrolment in SSP

	Component			
	1	2	3	4
SSP benefits	.741	-.064	.104	-.152
Peace of mind	.300	.635	.116	-.047
Need not worry about money	-.149	.338	.771	.191
Go to good hospitals	.024	-.118	-.002	.951
All members in the group have enrolled	.081	-.301	.667	-.198
Let others benefit	-.213	.730	-.102	-.089
May need it in future	.751	.083	-.205	.234

Rotated component matrix revealed hedging risk through SSP benefits as the first factor for enrolment, financial security for oneself and others as the second factor, group influence to avert the cost of illness as the third factor and access to good care as the fourth factor for enrolment in SSP. Thus, some components of social capital namely group influence and mutual financial security influenced enrolment.

5.5 Non-Enrolment in SSP

Several factors that resulted in non-enrolment in SSP are demand side factors (individual and household characteristics) and supply side or scheme related factors. The demand side factors were low income of family, unrealised benefits, multiple enrolments in health insurance schemes, lack of family support, withdrawal from self-help groups,

lack of time to fill forms, family members being healthy, not aware of SSP and cultural beliefs. Supply side factors were complex claim procedure, inadequate benefit package, inflexible timing of collection of the premium and lack of good health care facilities.

5.5.1Demand Side Factors

1. Low Income of the Family

The target population of SKDRDP is poor households with low income.

"*...we have too much loan to repay… We do not have money to pay premium..*", "*…we do not have much income….. I am planning to leave SHG as we have too many loans..*", "*..prices have gone up… we have outstanding loans and payment of weekly installment of the loan itself is difficult..*"

Low income of the family and increase in premium amount in 2011 have resulted in unaffordability of premium;

"..they (insurers) have increased the premium this year… It is difficult to pay..".

A credit facility provided by SSP to pay the premium for those who cannot otherwise afford it to enlarge the risk pool. However, lack of awareness among the participants about this facility prevented many from joining SSP;

"*…it's difficult to borrow to pay the premium..*", when asked were you aware of borrowing facility to pay the premium; *"..no one has told us...If we knew, we would have enrolled in Suraksha..*".

2. Unrealised Benefits

About the benefits of insurance, participants expected to claim from SSP at least once;

"…we have been doing Suraksha for many years..we did not get any benefits so far… we do not want to continue", "No one fell sick in the last two years…why waste money by paying the premium?..", "*…we did not get any benefit in these five years.. wedo not want to continue..*", when asked, "*..did not that mean having illness? …Do you want to fall sick to claim?..*", the reply was, "*..wedo not want illness…but we do not want to spend money for something which does not benefit us..",* when asked again, "*…you may benefit in future if someone fall sick in your family..*", reply was, "*..we believe in*

Lord Manjunatha (of Dharmasthala, a well-known temple in DK district)…He will keep us healthy.."

3. Multiple Memberships in Other Health Insurance Schemes

Multiple memberships in other health insurance schemes were expressed as another factor responsible for non-enrolment.

"*…we have ESI..wedo not want Suraksha…*","*….we bought Suraksha card although we had Yashaswini…We did not get benefit from both... No one was ill in the family..*".

4. Lack of Family Support

The most important social factor highlighted by the participants as an important factor for not joining or not renewing their membership was lack of support from family, mainly objection by husband;

"*…my husband was ill last year..he did not get benefit… He told me not to do this time..*", "*..I do not have approval from home..*" The other reason was; "*..my husband told me not to do.. we need money...we can use premium amount for some other need..*"

5. Cultural Beliefs

The culture shapes people's perception about health insurance and ayurvedic system of treatment, home medicine (using herbs, shrubs and spices available at home to treat illness). Many participants stated;

"*…we trust ayurveda medicines..it does not have side effects…*", "*..if we buy insurance, we will get illness..*"

6. SHG Membership Status

The formation of new SHG after the enrolment time and inability to continue SHG membership was another reason;

"*..my family does not allow me to continue in group (SHG), they have told me to pay back loan as quickly and leave the group..*" "*..we joined the group (SHG) in May, we could not join Suraksha..*", *"…we have to join in February, we were not in group then.."*

7. Other Reasons

Inability to make time to attend meetings or pay the premium was highlighted; "*..I was away from home when the enrolment took place in my village…*".

The domestic responsibilities kept many participants busy;

"*..we have to cook, wash clothes and take care of elderly, so we take medicines from pharmacist or drink 'kashaya' (home medicine) if we fall sick*", "*even if we have Suraksha, we have to forgo the days' work but we cannot do that as we are poor*".

Since the household was the unit of enrolment specified by SSP, large families complained of their inability to pay the premium;

"*..we have 6 people in the family but father only earns… we cannot pay premium for the entire family..*"; "*…I want to enrol my parents..others are healthy, then why enrol all?..*"

5.5.2 Scheme Related Factors

1. Inadequate Benefit Package

The participants stressed the need to include outpatient treatment in the benefit package and the need to increase the claim benefits;

"..we get illness like fever, cough, we cannot get benefit as outpatient is not covered..". *"…we always go to a private clinic…it does not come under network…*", "*…amount of benefit is too less, what will you get with Rs.5000?...they (insurers) should increase benefit amount and include common ailments…*"

Exclusion of many diseases from the coverage was another concern;

"*…Suraksha does not cover many diseases which are common here…why insure when we cannot get the benefit?..*"

2. Complex Claim Procedure

Lack of knowledge about the rules for submitting the pre-authorisation forms and procedure to claim benefits was a problem as highlighted by field staff;

"…many eligible claims were rejected as insured members did not submit Suraksha card within 24 hours after admission…", "*..people do not bother about the*

name they give in the card and in the hospital… we have suggested them to give alias names and correct age..”

3. Lack of Good Health Care Facilities

Perceived quality of care at health facilities such as cleanliness, absence of medicines, and delay in payment to hospitals influenced non-enrolment;

“….bed for men and women are kept together…. There is no privacy..the ward is not clean…”, “*..doctors do not discharge even if we are better as money is not sent to them by Suraksha office”*, “*..drugs are not available* …”.

The distance factor was expressed to be another concern;

“*..good Suraksha hospitals are in Kumta (a city in UK district) which is far away*…”, “*..doctors do not see us well, we have to go Hubli or Manipal for good hospitals (far away city)..”.*

4. Timing of Collection of Premium

Availability of money or time during the enrolment period (February of every year) stands out as a key factor affecting enrolment in SSP. There were opposing views among participants on the time of enrolment, it was suggested that;

“…*Suraksha should be kept open throughout the year”,* “…*no, it should be done in February, we will keep postponing if it can be done any time in the year.*.”, “*..we do not have money in March season…if it was monsoon, we get more money working in fields*..”.

5.6 Summary

The incidence of illness was the highest in insured households than uninsured households in the previous year of the study. This may have influenced enrolment and may jeopardise the financial health of the programme. To prevent this, usually health insurance scheme incorporates mechanisms to detect and control pre-existing illnesses, owing to its negative effect on the financial sustainability of the scheme. Even SSP had the household as a unit of enrolment to curtail the inclusion of high-risk individuals. Certain features to curtail adverse selection such as waiting period, exclusion of pre-existing illnesses and reference system were absent in SSP. However, adverse selection,

measured by the presence of chronic illness, was found to be absent in SSP (regression analysis). Moreover, the incidence of illness alone would not push SSP towards financial difficulties. Previous research findings confirm the absence of adverse selection in the presence of higher illness episodes among insured households in MHI schemes (Gumber, 2001). Hence, the finding of this study adds to the literature that advocates important role of MHI in health financing contrary to those who highlight information asymmetry as one of the major barriers to any MHI service to the poor.

In addition to risk (need) factors, certain demand factors (predisposing and enabling) and supply (features of SSP) determines enrolment in MHI. However, other than distance to hospital and the area of residence, various household characteristics such as education and marital status of the head of the household, size of the household did not determine enrolment. In addition, age, gender and job status of the head of the household, income class and chronic illness was not associated with enrolment. To confirm these findings, the present study made changes to model specification by analysing the cases of the households of unemployed and labourer head of the families. In these cases, the probability of enrolment was associated with longer distance to hospital and semi-urban area of residence.

The study found higher representation of semi-urban residents in SSP due to the presence of large number of network hospitals. Moreover, higher likelihood of enrolment was associated with longer distance to hospitals, which contradicted theoretical expectations as documented by Schneider and Diop (2001) and Msuya (2004). Our finding supports the fact that living away from hospitals increases the cost of treatment, which encourages families to seek alternative mechanism to reduce the cost such as health insurance.

Social inclusion in SSP is absent since there was no higher representation of the poorest households. Despite the credit facility to pay the premium, poorest households (Q1) stayed out of SSP. Probable cause for this finding is the Rashtriya Swasthya Bhima Yojana (RSBY) started in 2010. Central government of India introduced a national level MHI scheme (RSBY) targeted at the families below the poverty line (BPL). These

families could buy a health card for ₹30. Hence, larger section of the poorest households did not enrol in SSP. Various design features of SSP namely high premium, withdrawal of subsidy and inflexibility in the payment of the premium also deterred poor from joining SSP. This finding is backed by the FGDs that revealed inability to pay the premium, seasonality of income and lack of flexibility in the collection of premium as factors contributing to non-enrolment in SSP.

SSP membership to some extent can be attributed to some components of social capital namely solidarity (group influence; 'all SHG members are members') and reciprocity (concern for others; 'let others benefit'). Households enrolled in SSP to hedge risk using benefits of SSP, to provide financial security for oneself and others, influence of the group to curtail medical expenses and to access good hospitals in case of a need. Since SSP is nested in SKDRDP, a well-known socio economic development programme in Karnataka, trust building was not a challenging task for SSP. The solidarity and concern for others and mutual help underlying enrolment can be attributed to pre-existing trust among the SHG members. The members were willing to cross-subsidise the risk and income, an important ingredient of any insurance mechanism.

Thus, families living in semi-urban areas and away from the hospitals were more likely to enrol in SSP. Some components of social capital played significant role in influencing group members to enrol in SSP. Risk aversion in the form of safeguarding the family against medical expenses in future was observed. SSP benefit package motivated many households to join SSP; at the same time, certain features of benefit package namely inflexibility in the collection of the premium and high premium prevented some from joining the programme. Poorest were excluded due to high premium coupled with low income and the availability of other less expensive alternatives (RSBY). Members did not participate in the decision making of benefit package or setting premium. That might have contributed to lower enrolment since members could not link their involvement in SSP with broader goal of 'health for all members' which was possible through their premium contribution. This section provides strong evidence for the exclusion of the poorest due to certain design features. Hence, it becomes imperative to

explore the association between design characteristics and the performance of SSP. Chapter 6 explicates this relationship to provide a deeper understanding of the working and outcome of SSP.

CHAPTER 6

RESOURCE MOBILISATION AND EFFECT OF FEATURES OF SSP ON THE OUTCOME

6.1 Introduction

Resource mobilisation determines the financial sustainability and viability of the MHI scheme. It is directly measured by the cost recovery ratio (financial sustainability), amount of resources mobilised (premium collection) and indirectly by quality impact on healthcare. Moreover, various characteristics of SSP (technical, management, organisational and institutional) affect the performance of SSP in terms of resource mobilisation (RM), social inclusion (SI) and enrolment, financial protection (FP), financial sustainability (FS) and viability of the programme. So far, we know that SSP provides partial financial protection in terms of reduction in OOPE, CHE and less reliance on borrowing. It is also proven that poorest of the target population was excluded from insurance coverage. This prompted us to explore the factors that prevented complete financial protection and social inclusion. i) What is the amount of resources mobilised by SSP? ii) Is SSP financially sustainable? iii) What is the perception of quality of care by members and non-members of SSP? iv) What aspects of technical characteristics shaped the performance of SSP in terms of FP, enrolment and RM? v) What are the management related factors that determined enrolment and RM? vi) What is the role of organisational characteristics in RM and FS? vii) What are the institutional characteristics that influence the viability of SSP?

Incurred claims ratio, expense ratio, combined ratio and net income ratio measures financial sustainability. Incurred claims ratio was calculated by dividing the claims by the premium collected and it denotes the extent of financial protection given to members. A higher ratio means better financial protection but lower financial sustainability. Expense ratio was calculated by adding the expenses (administrative/ operating expenses and taxes for the insurer) and dividing it by the premium collected. Net income ratio was calculated by adding the claims and expenses and deducting it from the premium collected and the resulting number was divided by premium amount. Net operating profit was calculated by adding claim amount, operating expenses, tax payment by the insurer and deducting it from the premium. Combined ratio was calculated by adding incurred claims ratio and expenses ratio.

Quality of care of the network hospitals can enhance enrolment in SSP and retain the existing members due to satisfaction from the treatment. SSP can pressurise the providers to improve the quality of services through the stipulations in the contract with them. To understand the perception of the quality of care offered at network hospitals, this study compared insured, uninsured and newly insured individuals. It considered certain criteria of quality of care namely cleanliness of hospitals, expertise of doctors, expertise of nurses, friendliness of staff, availability of facilities, availability of medicines and time taken by the doctors to examine the patients. SSP selects the hospitals based on certain criteria that include the availability of basic infrastructure and good treatment. Hence, the perception of a good quality of care at the network hospitals by insured individuals is expected.

The data collected by interviewing SSP administrators, project officers and field staff comprises the primary data (qualitative and quantitative). The perception of insured, newly insured and uninsured individuals on the quality of care of the hospital was assessed through a five point Likert rating scale (1=highly unsatisfactory; 5=highly satisfactory). Secondary data was collected from the brochures, annual reports and promotion materials of SSP. Firstly, the analysis focused on the resources mobilised (premium collected) by SSP over the years and claim benefits disbursed. Secondly, the study ascertained financial sustainability by calculating claims ratio and related ratios. Thirdly, quality of care provided at health facilities as perceived by insured, uninsured and newly insured respondents were analysed using discriminant analysis. Fourthly, the study explored an association between various characteristics (technical, management, organisational and institutional) and the outcome of SSP (FP, SI and RM).

6.2 RESOURCE MOBILISATION

Resource mobilisation reflects attractiveness of MHI and determines its viability. The amount of revenue mobilised depends on the premium per individual and number of the households enrolled in MHI. In addition, the number of insured members as a percentage of target population gauges the popularity of MHI. This section presents the study findings on the revenue mobilisation, financial sustainability and quality of care as perceived by sample individuals.

6.2.1 Revenue Mobilisation

Revenue collection determines the resource mobilised by SSP and financial sustainability. This section analyses the premium structure, premium collection since inception, premium paid to insurance companies and benefits sanctioned by the programme.

6.2.1.1 Premium Structure of SSP

The premium collected from the members form the main source of financial resource for SSP. Government subsidies and external aid were not availed by SSP. Table 6.1 depicts the premium structure for a family of two, three, four, five, six and seven members. The premium payable for the first member of a family was ₹350 in 2011-12. There has been a significant change in the premium contribution and marginal cost per member since 2007. Until 2007, marginal cost for a member was higher for a small family (₹162) than a large family (₹132) (Shetty N. 2009), but the changes made in 2007 removed such a difference. The premium amount increased from ₹220 in 2010-11 to ₹ 350 in the year 2011-12. A family with five members had to pay an additional ₹250 per year and a family of seven members had to pay an additional ₹310 per year. Small family had to pay more than a large family in terms of premium burden compared to the year 2010-11. Average cost per member decreased with size of family. It was ₹ 262 for two-member family and ₹ 200 for seven-member family in 2011-12.

Table 6.1 Description of the Premium and Eligible Limit for Cashless Treatment

Number of family members	Annual contribution (2010-11)	Annual contribution (2011-12)	Marginal cost (2011-12)	Average cost (2011-12)	Yearly Percentage change in premium	Eligible limit
One	220	350	-	350	59.1	5000
Two	365	525	175	262	43.9	10000
Three	510	700	175	233	37.3	15000
Four	625	875	175	219	33.6	20000
Five	800	1050	175	210	31.3	25000
Six	945	1225	175	204	26.6	30000
Seven	1090	1400	175	200	28.4	35000

Source: SKDRDP's 'Sampoorna Suraksha' Micro-Insurance Campaign Material (for 2010 -11 and 2011-12)

(In Indian rupees)

6.2.1.2 Enrolment and Premium Collection

SSP is one of the successful MHI programmes in terms of enrolment and renewal of membership. There was a phenomenal growth in the number of families and individuals enrolling in the scheme since inception (Table 6.2). During the first year in 2004-05, 1.86 lakh members from 54,000 families joined SSP. In 2010-11, 16 lakh members from 418,956 families joined the scheme. However, recent (2011-12) increase in enrolment was negative (-0.11 %). The enrolment as a percentage of target population ranged from 32 percent to 54 percent with an average rate of 41.6 percent.

Table 6.2 Premium Collection and Coverage of Families under SSP

Year	Number of families covered	Number of members	Premium collected (₹)
2004-05	54000	186000	16812933
2005-06	77078	195600	28675467
2006-07	146722	403828	57442349
2007-08	223389	721203	106900589
2008-09	252542	932682	154170730
2009-10	294374	1177325	168083995
2010-11	419979	1662089	278338765
2011-12	420302	1660185	364085225
Total			1174510053

Source: SKDRDP's 'Sampoorna Suraksha' Micro-Insurance Campaign Material (2011-12)

Figure 6.1 depicts yearly growth in membership in terms of both number of families and number of members since inception. Number of members enrolled increased by 42.7 percent in the second year of operation (2005-06), by 90 percent in the third year (2006-07), but the growth was slower in the later years until 2010-11. Number of families enrolled had a similar pattern with highest yearly increase in 2006-07 and a steep fall in 2008-09 and 2011-12. Premium mobilised increased by 100 percent in 2006-07, by 86 percent in 2007-08, 44 percent in 2008-09 and by 65 percent in 2010-11. The scheme was not successful in mobilising enough premiums in the year 2009-10, as the incremental increase was just 9 percent.

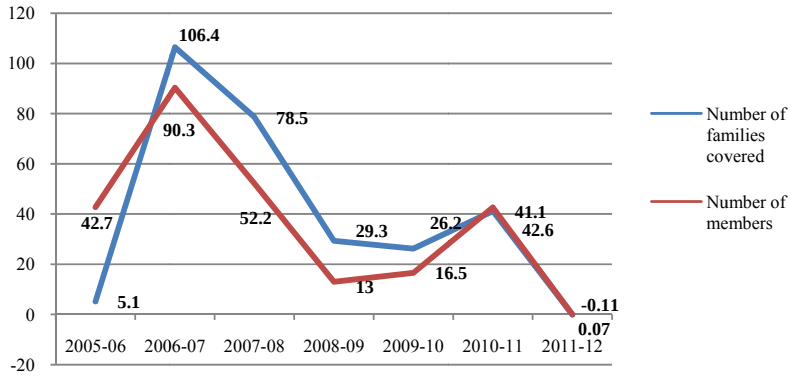


Figure 6.1 Growth Rate of Enrolment over a Period of Time

6.2.1.3 Allocation of Premium to Insurance Company and SSP

In 2004-05, SSP collected a total premium of ₹16,812,933 and it transferred ₹ 10,762,208 to United Insurance Company for medical benefits component. It retained ₹ 6,050,725 to provide the special benefits and to meet the operating expenses (Table 6.3). In the next year, it paid 59.8 percent to ICICI Lombard General Insurance Company Ltd. and retained the remaining amount. Nearly sixty-two percent was paid in 2006-07 and 64 percent in 2007-08 to ICICI Lombard General Insurance Company Ltd. In 2008-09, it paid 54 percent of premium to Reliance Insurance Company. Since 2009-10, it contracted with four general insurance companies namely United Insurance Company Ltd., Oriental Insurance Company Ltd., New India Assurance Company Ltd. and National India Insurance Company Ltd. In 2009-10, it paid nearly half of the premium to insurance companies and the retained amount was used to meet special benefits claims.

Table 6.3 Premium Shared with Insurance Companies

Years	Paid to insurer (₹)	Retained at SSP (₹)
2004-05	10762208 (64.1%)	6050725 (35.9%)
2005-06	17125483 (59.8%)	11549984 (40.2%)
2006-07	35207731 (61.3%)	22234618 (38.7%)
2007-08	68514286 (64.1%)	38386303 (35.9%)
2008-09	83322145 (54%)	70848585 (45%)
2009-10	87000000 (51.8%)	81083995 (48.2%)
2010-11	153249342 (55.1%)	125089423 (44.9%)

6.2.1.4 Benefits Provided by SSP since Inception

The analysis of SSP since inception in providing medical and special benefits (Table 6.4) reflects its performance in financial protection. The amount of claim sanctioned and disbursed increased from ₹26,421,143 in 2004-05 to ₹51,122,218 in 2006-07 and ₹289,317,396 in 2010-11. Over the years, two thirds of the claimed amount was for hospitalisation, nearly one fifths for delivery allowances and a lower percent for death, consolation for natural calamities and rest allowances. In terms of the amount of claims settled, there was an increase of 103.6 percent in 2006-07 compared to 2004-05 and 78.5 percent in 2007-08, 77 percent in 2008-09 and 52 percent in 2009-10, 114.6 percent in 2010-11.

Health treatment benefit increased by 104 percent during the period 2004-05 to 2006-07, delivery allowance by 122 percent, death consolation by 57 percent, and domiciliary treatment allowance by 330 percent. Death consolation benefit increased by 223 percent in 2008-09 compared to the previous year. Increase in the amount sanctioned for health treatment and delivery allowance was moderate in 2008-09.

Table 6.4 Benefits Given Under the Scheme since Inception

Year		Health Treatment	Delivery allowance	Death Consolation	Domiciliary treatment-Rest allowances	Consolation for natural calamities	Total
2004-05	Number	7737 (65.5)	2593 (22)	227 (1.9)	360 (3)	893 (7.6)	11810
	Amount (₹)	26421143 (74.6)	7017268 (19.8)	1135000 (3.1)	202090 (0.6)	648061 (1.8)	35423562
2005-06	Number	8587(65.4)	2761(21)	208 (1.5)	518(4)	1061(8)	13135
	Amount (₹)	24989658 (76.1)	6012452 (18.3)	1175000 (3.6)	223165 (0.7)	416392 (1.3)	32816667
2006-07	Number	16274 (68.5)	6045 (25.4)	308 (1.3)	882 (3.7)	232 (1)	23746
	Amount (₹)	51122218 (75.67)	13372367 (19.8)	1839500 (2.7)	958600 (1.4)	260520 (0.4)	67553205
2007-08	Number	29326 (69.5)	10202 (24.2)	525 (1.2)	1644 (3.8)	475 (1.1)	42171
	Amount (₹)	94236027 (78)	21761560 (18)	3169000 (2.6)	1169009 (1)	397800 (0.4)	120733396
2008-09	Number	47006 (69.34)	13166 (19.42)	4680 (6.92)	2549 (3.76)	380 (0.56)	67781
	Amount (₹)	172696021 (80.87)	27218357 (12.75)	11584350 (5.43)	1698200 (0.8)	342550 (0.2)	213539478
2009-10	Number	58734 (70.47)	15993 (19.18)	6290 (7.55)	1871 (2.24)	463 (0.54)	83351
	Amount (₹)	225103867 (81.47)	34457438 (12.47)	15207800 (5.5)	1155370 (0.41)	375200 (0.15)	276299675
2010-11	Number	70952 (53)	40553 (30.3)	19420 (14.5)	2168 (1.6)	869 (0.6)	133962
	Amount (₹)	289317396 (63.5)	110110432 (24.2)	53739818.6 (11.8)	1497157 (0.32)	828821.2 (0.18)	455493625
2011-12	Number				Special benefits areconsidered		2387
	Amount (₹)						5433086

Source: SKDRDP's 'Sampoorna Suraksha' Micro-Insurance Campaign Material (2011)

Amount of benefits per claim (Figure 6.2) shows an increasing trend in the benefits sanctioned from inception to 2010-11, except in the year 2005-06. Total amount per claim was ₹3,000 in 2004-05, that reduced to ₹2,500 in 2005-06 but increased to ₹

3,400 in 2010-11. Health benefit per claim was ₹3,415 in 2004-05 and ₹4,078 in 2010-11; delivery allowance was the highest in 2004-05 (₹2,706) and 2010-11 (₹2,715).

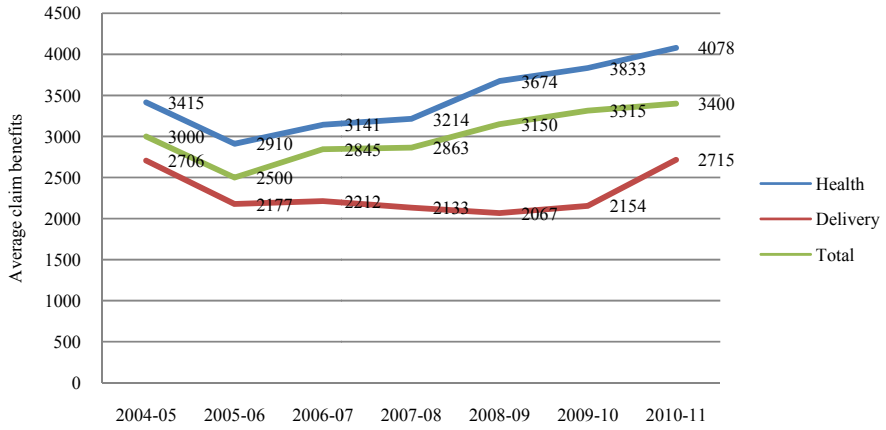


Figure 6.2 Amount Sanctioned by SSP per Claim

6.2.2 Financial Sustainability of SSP

The sustainability of MHI depends on the reasonable balance of funds maintained (Zhang et al. 2009). At the same time, huge surplus of funds undermines financial protection provided to the members. SSP mobilises the funds from premium contribution to provide claim benefits. The amount of benefits directly varies with health care utilisation. Albeit, this study did not observe a high correlation between admission rate and claims ratio (r=0.32). Admission rate was 5.67 percent in 2004-05, reached lowest level in 2007-08, thereafter increased to 6.95 percent in 2008-09. It was 7.88 percent in 2010-11, highest since inception.

Incurred claims ratio, net income ratio, combined ratio and expense ratio measures financial sustainability. Incurred claims ratio was very high (208%) in 2004-05, but it reduced significantly (113%) in 2007-08. It deteriorated to an alarming level of 197.5 percent in 2009-10. On an average, the claims ratio was 107.5 percent in the last six years, which denotes that the scheme paid ₹107.5 in claims for a premium of ₹ 100. Medical claims ratio declined from 245.5 percent in 2004-05 to 160.7 percent in 2008-09(Table 6.5). Special claims ratio declined from 148.8 percent in 2004-05 to 49.5

percent in 2008-09. Special claims were high in 2010-11, however, medical benefits claim drastically reduced to 189 percent in the same year to bring down the total claims ratio to 163.6 percent. The net operating loss for the programme decreased from ₹ 22,286,165 in 2004-05 to ₹10,071,113.9 in 2005-06, but increased ₹20,494,666 in 2006-07,₹33,819,808 in 2007-08, ₹35,603,786 in 2008-09. It sharply increased to ₹ 186,869,494 in 2009-10 and ₹219,224,481 in 2010-11.

Combined ratio declined from 239.5 percent in 2004-05 to 140.3 percent in 2007-08, but later increased to 159.8 percent in 2008-09 and 187 percent in 2010-11. The average combined ratio since inception was 176.85 percent. It was high for medical claims (213.2%) than special claims (91.8%). Net income ratio on an average for medical claims was -194.3 percent, for special claims it was 32.9 percent and total (both medical and special claims) was-192.8 percent.

The claims ratio, calculated on the special claims, declined from a high level of 148.8 percent in 2004-05 to 69 percent in 2007-08 and 49.5 percent in 2008-09. It increased to 132.8 percent in 2010-11. Special claims coverage risk was borne by SSP that incurred an underwriting loss of ₹ 40,001,252 in 2004-05 but it earned a profit of ₹ 1,971,679 in 2005-06, ₹3,996,723 in 2006-07, ₹8,619,418 in 2007-08 and ₹28,799,354 in 2008-09. However, it had to suffer a loss of ₹54,743,586 in the year 2010-11.

Table 6.5 Incurred Claims Ratio, Incurred Expense Ratio and Combined Ratio of SSP

Particulars		2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Admission rate (%)		5.67	5.9	5.6	5.55	6.95	6.88	7.88
Incurred claims ratio (%)	Medical claims	245.5	146	145.2	137.5	160.7	318	189
	Special claims	148.8	67.8	73.9	69	49.5	68.1	132.8
	Total	208.8	115.8	117.7	112.9	138.7	197.6	163.6
Incurred expense ratio (%)	Medical claims	24.4	24.4	24.4	24.4	16.6	17.5	18.5
	Special claims	6.3	6.1	3.2	3	4.5	4.7	4.9
	Total	30.7	30.5	27.6	27.4	21.1	22.2	23.4
Net income ratio (%)	Medical claims	-170	-172.6	-101.5	-89.9	-106.3	-378.4	-341.3
	Special claims	-66	17	18	22.5	40.6	22.2	-43.8
	Total	-236	-155.6	-83.5	-67.4	-65.7	-356.2	-385.1
Combined ratio (%)	Medical claims	269.9	170.4	169.6	161.9	177.3	335.5	207.5
	Special claims	155.1	73.9	77.1	72	54	72.8	137.7
	Total	239.5	146.3	145.3	140.3	159.8	219.8	187

(Assumed 16 % service tax rate and 10 % of premium as operating expenses for insurer till 2007-08)

6.2.3 Perceived Quality of Care of Hospitals

The perception of the cleanliness of the hospitals was high among insured respondents (mean 3.98) than newly insured (3.69) and uninsured (3.83) respondents (Table 6.6). Regarding the perception of cleanliness of hospitals that respondents frequently visit, the percentage mean for insured members was 79.57 which was higher than that of newly insured (73.88) and uninsured respondents (76.65). Hence a significant difference in the perception of cleanliness of hospitals by insured and uninsured and newly insured individuals was evident ($p<0.05$). Perception of expertise of doctors by newly insured individuals (mean 3.96) was better than that of insured (mean 3.95) and uninsured respondents (mean 3.91). However, this finding was not significant suggesting

lack of difference among the studied individuals. Similarly, no difference in the perception of care by nurses was noted ($p>0.05$). Insured members perceived hospital staffs to be friendly (percentage mean 77.26) compared to other two groups. Insured members perceived good quality of care measured by the availability of medicines and facilities (percentage mean 70.67 and 72.55 respectively). Insured members felt that doctors at network hospitals spent more time compared to other two groups.

Table 6.6 Quality of Care at Hospitals: Comparison of Insured and Uninsured Groups

		Mean	Standard deviation	Percentage mean	Test value
Cleanliness of hospitals	Insured	3.98	0.927	79.57	25.322*
	Newly insured	3.69	0.921	73.88	
	Uninsured	3.83	0.892	76.65	
Expertise of doctors	Insured	3.95	0.96	79.09	1.316
	Newly insured	3.96	0.856	79.13	
	Uninsured	3.91	0.909	78.19	
Care given by nurses	Insured	3.73	0.954	74.62	5.282**
	Newly insured	3.59	0.996	71.86	
	Uninsured	3.61	0.969	72.14	
Friendliness of staff	Insured	3.98	0.882	77.26	26.145*
	Newly insured	3.56	0.939	71.26	
	Uninsured	3.62	0.962	72.42	
Availability of facilities	Insured	3.63	1.04	72.55	49.347*
	Newly insured	3.22	1.102	64.43	
	Uninsured	3.11	1.118	62.2	
Availability of medicines	Insured	3.53	1.132	70.67	14.768*
	Newly insured	3.28	1.088	65.68	
	Uninsured	3.28	1.141	65.66	
Time taken to examine by doctors	Insured	3.55	0.995	71.01	50.453*
	Newly insured	3.4	1.047	67.98	
	Uninsured	3.04	1.049	60.77	

Kruskal Wallis *$p<0.05$

Further probe using discriminant analysis was performed to know various quality factors that differentiate insured and uninsured (cases of newly insured were included) individuals. Predictor variables were cleanliness of hospitals, expertise of doctors, care

given by nurses, friendliness of staff, availability of facilities and medicines and time taken for physical examination by the doctors. The aim was to investigate the quality factors that differentiate insured from uninsured individuals. It is known that insured individual's visit district and regional hospitals than home medicine, government hospitals and private clinic.

The structure matrix considered insured and uninsured (including newly insured) individuals as a grouping variable and the factors that determine quality as predictor variables. The discriminate function revealed a significant association between the groups and all predictors with Wilk's lambda (p=0.00) (Box's M= 76.053; F=2.752, p=0.000). Availability of facilities such as laboratories and X-ray (.781), examination time (.587), friendliness of staff (.533), cleanliness of hospital (.501) and availability of medicines (.401) differentiated insured and uninsured individuals. Expertise of doctors (.052) and care by nurses (.265) were not loaded on the discriminant function.

Discriminant analysis showed that operational quality of care (laboratory, X ray and diagnostic equipment and cleanliness of hospitals, availability of medicines), friendliness of support staff, and doctor quality of care (examination time) differentiated uninsured from insured households. Thus, insured individuals perceived better quality of care at network hospitals. SSP selected network hospitals by applying stringent criteria that stipulates basic facilities, cost of treatment and good treatment. This has resulted in better perception of quality of care at network hospitals.

6.2.4 Summary

High level of incurred claims ratio implies two things: i) financial protection to those who needed it the most, and ii) insufficient premium collection. In 2004-05, claim sanctioned by SSP was high (reflected in high claim ratio, combined ratio and net loss). However, it reduced significantly and average claims ratio was healthy in 2009-10. The performance deteriorated in 2010-11 with very high claims ratio, higher average rupee sanctioned per claim, combined ratio, net income ratio and net loss. Moreover, in the year 2010-11, incremental increase in membership was negative. Medical claims was the highest in 2009-10, special benefits reached its peak in 2010-11. Hence, lower

premium collection coupled with high claims ratio, combined ratio and net loss threaten the financial sustainability of SSP. Insurance companies absorbed the loss incurred due to medical benefits. Due to low coverage of target population, insufficient premium collection, high claims and low income of members, resource mobilised by SSP was low.

The membership base of SSP declined owing to changes in the policy in 2011-12. From 2008-09 to 2011-12, BPL families were given a special concession in the premium amount. Since then, SSP removed the distinction between BPL (below poverty line) and APL (above poverty line) while determining the premium amount. The removal of BPL concession in the premium coupled with introduction of universal health insurance (UHS) adversely affected enrolment. Since 2009-10, Yeshasvini scheme of Karnataka state was offered to the members of co-operative institutions at very low costs. Many of the SKDRDP members were also the members of these co-operative societies; hence, they could enrol in these schemes resulting in non-renewal of their membership in SSP. In addition, central government conceptualised Rashtriya Swasthya Bhima Yojana (RSBY) in 2008, which came into effect in Karnataka in 2010. This scheme provided inexpensive insurance benefits to BPL families. In the same year, premium amount was increased to meet higher claims and other cost of operation including inflation. These factors might have contributed to negative or very low increase in membership in SSP in 2011-12.

Net profit was earned by special benefits component from 2005-06 to 2009-10. However, SSP special benefits had to incur huge loss in the year 2010-11 due to two times increase in delivery allowances and death consolation. The performance of medical benefits covered by the insurance companies suggests unhealthy financial status since 2009-10. As the incurred claims ratio for medical benefits was relatively high throughout the years since inception, many insurance companies did not contract with SSP. Since 2009-10, overall performance deteriorated as incurred claims ratio, incurred expenses ratio, net income ratio, and combined ratio increased to an alarming level. This necessitated external financial assistance in the form of a loan from SKDRDP. Any

deficit in special component of SSP was financed through a credit from MFI of SKDRDP.

There are several plausible explanations to the high claim ratio in SSP. The main factor is SSP technical design features such as exclusion of outpatient treatment that might have motivated insured individuals to seek inpatient care. SSP did not have deductibles, co-payments or waiting period, which removed the financial barriers to access care and increased utilisation. Even the cashless system of payment to the providers eased the difficulties in claiming from SSP for insured members. Field staffs were supportive to the members in solving problems faced during claibursal from SSP.

The study observed higher utilisation of health services resulting in the high level of claim ratio. However, the poorest individuals do not seek care just to claim from SSP as hospitalisation involves other expenses such as transportation and food in addition to the loss of wages due to absence from the work. Hence, SSP promoted welfare by increasing utilisation and lowering the burden of OOPE for the poor households but not over-utilisation. A higher claims ratio denotes better financial protection to the members who got more than what they contributed to SSP. The welfare impact of SSP cannot be ignored since it provided financial protection to almost one and half lakh individuals (claims given ₹45.5 crore in 2010-11) who otherwise had to suffer from the financial consequences of medical illness. Moreover, SSP did mobilise huge resources (almost ₹36 crore in 2011-12) which would not be possible in its absence.

Resource mobilisation indirectly depends on the quality of care of network hospitals. Insured individuals sought care at network hospitals and perceived certain quality variables such as cleanliness, availability of facilities (laboratory and diagnostic) and medicines, friendliness of staff and time spent by the doctor in examining the patient to be higher in those hospitals. Hence, the results of the study substantiate and provide support for active role of SSP in quality improvement of the hospitals.

SSP does not have reserve funds to reduce the risk of deficit and ensure financial sustainability. Lack of reserves reflects high level of claims ratio and persistent deficit in revenue collection. One option is to improve the revenue through increase in the

premium, expand the risk pool through higher enrolment or plug the deficit through external donor assistance. Before taking a decision on increase in premium, scheme administrators should consider its probable negative effect on enrolment. This requires a suitable trade-off between premium and enrolment since increase in the cost of insurance would adversely affect the expansion of risk pool. Another welfare reducing option is to either bring about changes in benefit package, reduction in claim amount or remove certain benefit covered by SSP to make it financially sustainable. The third option is strict monitoring of supplier and insured members' moral hazard through gatekeeper system or referral mechanism.

If the financial sustainability of SSP were in danger in the years to come, potential benefits of SSP would be marred. Nevertheless, financial sustainability would not hinder the viability of SSP due to i) nesting of SSP in SKDRDP which provides administrative and managerial assistance thereby brings down the cost of operation and ii) health risk coverage by public insurance companies and iii) trust of members that would strengthen loyalty of members. The long-term feasibility of SSP calls for strict control over costs, better revenue collection and restriction on the claims sanctioned under special benefits.

6.3 EFFECT OF FEATURES OF SSP ON FINANCIAL PROTECTION, ENROLMENT AND RESOURCE MOBILISATION

Technical characteristics such as revenue collection, risk pooling and strategic purchasing affects the performance of MHI in terms of FP, enrolment and RM (Preker et al, 2004). Certain technical design features affect the enrolment thereby revenue collection. Management characteristics namely staff (leadership and capacity in terms of management skills), culture (style of management and structure) and access to information (on financial resources, health information and behaviour) determine RM and enrolment. Forms of organisation (economies of scale and scope, contractual relationships), incentive regime (extent of decision rights, market exposure, financial responsibility, accountability, and coverage of social functions) and linkages (extent of horizontal and vertical integration or fragmentation) are organisational characteristics that influence RM and financial sustainability. Certain institutional characteristics such as stewardship (strategic and operational decisions, regulations), governance (ownership arrangements), insurance markets (rules on revenue collection, pooling, and transfer of funds) and factor/ product markets determine viability and performance of SSP (Preker et al, 2004). This section focuses on the role of these characteristics on the outcome of SSP in terms of RM, FP, enrolment and financial sustainability.

6.3.1 Technical Design Characteristics

6.3.1.1 Revenue Collection

The effectiveness of SSP depends on the resources mobilised which in turn depends on a) coverage of target population b) level of prepayment compared with OOPE, c) whether contributions are compulsory or voluntary, d) degree of progressivity of contributions, and e) subsidies for the poor (Preker et al. 2004). Coverage of target population as measured by enrolment depends on certain technical design factors namely i) affordability of contributions, ii) unit of membership, iii) distance to hospitals, iv) timing of collection of premium, v) quality of care and vi) trust in the scheme administration (Carrin 2005).

a) Coverage of Target Population

The percentage of population covered by SSP denotes general attractiveness of the programme. The coverage of target population was 53.4 percent in 2004 that reduced to 47.7 percent in 2005 and again by 5.5 percent to 42.2 percent in 2006. There has been successive decline from 2007 to 2011. It was 48.2 percent in 2007, 38.7 percent in 2008, 36.5 percent in 2009, 34.1 percent in 2010 and 32 percent in 2011. This calls for further investigation into the declining risk pool. In terms of absolute number, both the membership in micro-credit and SSP increased since inception. However, the percentage increase in SSP membership as compared to the previous year increased at a decreasing rate. Declining membership has adversely affected the enrolment in SSP and RM.

b) Ratio of Prepaid Contributions to Healthcare Costs or Claims

Higher prepaid contributions would generate sufficient revenue that enables the programme to provide better and sustainable financial protection to insured members. The ratio of premium to health care costs covered by the programme varied from 0.47 in 2004-05 to almost 0.88 in 2005-06. It declined to 0.72 in 2008-09 and 0.61 in 2010-11. This denotes higher financial protection as the prepayment was less than claims. Nevertheless, the financial consequence on SSP was drastic. Insurance companies had to suffer heavy losses and SSP had to obtain funds from MFI wing of SKDRDP to meet the deficit. If the programme continues to incur losses, it would dissuade insurance companies from issuing group policies to the members of SSP.

Financial sustainability improves by increasing the revenue collection or by curtailing the expenditure. Since the claim benefits and administrative expenses consume the revenue earned, there is a need to curb them. Hence, in an attempt to understand the viability of SSP, the study assessed the expenses involved in providing the special benefits coverage. The administrative costs as a percentage of premium borne by SSP to provide insurance coverage was high in the initial two years (6.2 % in 2004-05, 6.1% in 2005-06), but it declined by half in 2006-07 (3.1%) and 2007-08 (3.1%). It was 4.5 percent in 2008-10. It reached a high level of 4.9 percent in 2010-11 owing to higher cost

of various resources. A reduction in administrative cost is highly needed given the low level of revenue collection and high claims ratios.

c) Nature of Contribution

SSP membership is voluntary for SHG members and their families. SSP did not coerce or put pressure on the SHG members to enrol in the programme. However, it insisted premium payments in cash. Voluntary membership has positive and negative effects. It can encourage the adverse selection among the members as those with pre-existing illness would join whereas healthy people would stay out. In contrast, compulsory membership would increase RM and FS due to enlarged risk pool. However, an attempt to curtail adverse selection through compulsory membership for all SHG members hampers market mechanism by limiting the opportunities available for them.

d) Degree of Progressivity of Contributions

The premium charged was a flat amount without a concession to the low-income households or the poorest, which appear to be regressive. Until 2007, the marginal cost for additional member was high for a small family than a large one. The marginal cost was uniform for all the members regardless of the household size since 2007. Nevertheless, average cost per member was lower for the large families compared to the small families. Poorest had to incur higher premium as a percent of annual income compared to the middle or high-income household. Thus, social inclusion in the form of larger representation of the poorest section of target population was not achieved (section 5.6).

e) Subsidies for the Poor

There was no concession in the premium, irrespective of caste, religion and income since the year 2011-12. This is regressive, as the poor will have to pay higher percentage of annual income compared to non-poor. SSP contracted with public sector insurance companies and removed the distinction between families below poverty line and above poverty line while determining the premium amount. Such a policy change might have adversely affected enrolment and RM. As the target population is the poor in

the informal sector, regressive premium would discourage many to join SSP or renew their membership.

f) Technical Design Features Determining Enrolment

i. Affordability of premium

The premium charged by SSP was on an average 1.17 percent of annual income of the surveyed households. It was the highest for low-income families (Q1 2.2%; Q2 1.32% and Q3 1.01%) than high-income families (Q4 0.78% and Q5 0.48%). Despite the credit facility to pay the premium, coverage of the target population was low. In this regard, FGD identified lack of awareness on the borrowing facility in some *karyakshetras* as the primary reason for non-enrolment, in addition to a high level of premium.

ii.Unit of membership

Another determinant of enrolment is the unit of membership. SSP insisted on family enrolment rather than individual memberships to encourage the participation of the entire household in addition to cross subsidise the benefits of risk pooling. This has in fact reduced adverse selection as discussed in section 4.2.4. Larger pooling and cross subsidisation of the risk took place since the high risk as well as the low risk individuals in a family enrolled.

iii. Timing of premium collection

Membership in SSP depends on the timing of collection of premium (monthly, quarterly or yearly). SSP enrolment takes place in February of every year; hence, timing of the collection of the premium is inflexible. To encourage larger participation and to overcome the inflexibility, SSP offered credit facility. This curtailed the negative influence of seasonality of income on enrolment, to some extent. The repayment of such a loan took place along with other financial transactions namely savings and credit repayments in weekly meetings. This not only brings down transaction cost but also improvesthe affordability of premium. Almost 64 percent of insured members borrowed to pay the premium. However, FGD identified inflexibility to be one of the reasons for non-enrolment. Whatever may be the effect of inflexibility on enrolment, there was a positive effect on the adverse selection. Usually, the demand for health insurance will be

high when an individual falls sick. If the enrolment can take place at any time, the possibility of the adverse selection would be high. By restricting the enrolment on the incidence of illness, SSP created barriers to adverse selection.

iv. Trust in SSP

SKDRDP enjoys clientele due to trust in the competence of its management; hence, SSP could leverage the trust of its parent organisation. Supportive field staffs that were always available to provide information on the pre-authorisation, network hospitals and sanction of claim benefits strengthened the pre-existing trust. Hence, the staffs' responsiveness to non-medical expectations of members was high. The viability of SSP largely depends on the people's confidence and trust in the management. Since SSP enjoys the patronage of the religious temple and trust of its members, it was in a better position to harness information and monitor the behaviour of members that enhances viability of the programme.

v. Quality of care

Quality of care has been identified as another factor determining the enrolment. Availability of laboratory, X- Ray and diagnostic equipments, cleanliness of hospitals, availability of medicines, friendliness of support staff and time taken by doctors to examine the patient were considered the most important features of quality of care of the network hospitals. The study reiterates the perception of good quality of care at the network hospitals by insured households compared to that of newly insured and uninsured households (explained in section 6.1.3). Since SSP selects the network hospitals by applying stringent criteria, the quality perception is high among insured group. Thus, higher enrolment and retaining of existing members are possible. This study did not explore the quality impact on the enrolment as it is beyond the scope of the identified objectives.

vi. Distance to network hospitals

Distance to hospitals was another crucial determinant of the enrolment in SSP (section 5.6). The households residing far away from the network hospitals had higher likelihood of enrolment in SSP compared to those living near the hospitals. By

encouraging the enrolment from the people residing far away, SSP could reduce the financial barriers to access care.

6.3.1.2 Risk Pooling

Risk pooling is determined by trust in SSP management and the mechanisms of cross subsidisation that facilitate transfer of income from rich to poor and risk from healthy to the sick. Risk pool of SSP in terms of the membership consists mainly of poor families (70 % of the target population was BPL). This socially desirable objective has restricted the mobilisation of resources and designing of a comprehensive benefit package since the poor cannot afford high amount of premium. Despite the shortcomings, the number of members was over 16 lakh in 2011-12, one of the highest in MHI industry in India and other countries where membership ranged from 1000 to 2 million (Devadasan 2006).

a) Trust in the Management of SSP

Trust in the integrity and competence of the management of the programme has greatly contributed to the viability of SSP. Trust was built by providing adequate information on the programme, acting upon the feedback from members by the management, member-friendly approach of field staff and good rapport developed due to many years of association with SKDRDP micro finance programme.

b) Mechanisms to Enlarge the Risk Pool

Financial sustainability improves when the membership base expands. SSP aimed at the larger risk pool from the very start by targeting the population of entire district rather than specific *taluks* that has not only enhanced risk pool but also gave rise to economies of scale in membership base, cost of administration and transaction. SSP has penetrated into new markets in 2011-12 in two districts where it launched micro finance programme. However, enrolment in these new districts seems to be low as SSP was novel to these members (as observed in FGD).

Adverse selection, moral hazard and fraudulent activities due to information asymmetry prevent the cross subsidisation and larger risk pool in any MHI scheme. SSP has implemented various fraud identification mechanisms namely inflexibility in the

timing of enrolment, computerised identity card, verification of medical bills, limits on the benefit package, visits to the hospitals by Sampoorna Suraksha assistants to verify the admission of members and scrutiny of pre-authorisation procedure by SSP office. However, lack of screening for pre-existing illness and absence of waiting period to claim benefits increases the scope for information asymmetry. Nevertheless, waiting period is not justifiable in SSP as the enrolment takes place only once in a year. Such a qualifying period is required in schemes that are open throughout the year.

SSP curtailed moral hazard by a unique feature uncommon to other MHI schemes. It has a standard protocol to approve the claims (known as pre-authorisation procedure) that clearly defines the steps involved in sanctioning the claim. Admissions with the pre-authorisation from the certified medical officers of SSP were approved and cashless payment was made directly to the hospitals. In-house medical officers appraise the discharge summary, days of hospitalisation, diagnostic procedure and drugs prescribed before making payment to hospitals. In case of discrepancies, the erring hospitals would be accountable. Moreover, the designated staff of SSP made daily visits to hospitals to check for fraud or prolonged stay in the hospital in addition to the verification of the admission and scrutinisation of the identity card. By this way, impersonation to claim the benefit as a third party was difficult.

6.3.1.3 Strategic Purchasing

The purchasing of health care services is a vital function that includes contracting with the hospitals, deciding payment mechanism, system of referrals and waiting period requirement. SSP practised the strategic purchasing to some extent. In addition to routine payment of the hospital bills for specified services, SSP had contractual relationship with hospitals.

a) Selection of Network Hospitals

SSP adopted active purchasing based on the quality, accessibility and cost criterion in selecting the network hospitals. It sends the information on the benefit package and price of care to the hospitals. If the hospitals agree to the conditions specified in the agreement, a memorandum of understanding would be signed between

the project officers and the director of the hospital. The hospitals did not exert monopoly power during price and payment negotiations. If the terms of contract were not agreeable, they could refuse to be part of network hospitals. The project officers removed the hospitals from the network that inflated medical bills or involved in fraudulent activities and did not take any action despite many reminders. Thus, moral hazard and fraudulent practices were curtailed. However, the lengthy and complex claim procedure would reduce enrolment as the majority of the target population comprises less educated individuals.

b) Claim Disbursement Procedure

Claim disbursement follows a predetermined procedure as explained in the section 3.6.2. The insurance company and medical team from SSP office conduct audits and inspections to ensure quality medical care to the members of the scheme and to prevent the supplier and member moral hazard. The absence of referral system may not result in over-utilisation of health care facilities due to the opportunity cost (indirect cost) associated with accessing health care. Supplier moral hazard on the part of hospitals was indirectly curtailed by persuading them to restrict the bill amount to pre-determined package as per the contract.

c) Benefit Package

Based on the target population's willingness and ability to pay, SSP determined the premium. Benefit package was fixed considering the cost of health care services in the state of Karnataka. SSP covered inpatient health services in the benefit package and excluded outpatient (OP) treatment and common ailments. One attractive feature of benefit package was the inclusion of life and health risk, maternity treatment, and death compensation. However, the real effectiveness of the benefit package was low since the cost of health care services has gone up drastically whereas the amount of benefit did not change since inception. This was evidenced in the survey as some insured individuals had to rely on other risk coping strategies such as borrowing, sale of assets and use of savings. Nevertheless, increasing the amount insured invariably necessitates higher premium, which is not affordable by a majority of the target population. Albeit, SSP

sanctions additional amount, higher than sum insured, if the treatment was enormously expensive such as cancer, heart and other vital organ surgeries. In addition, insured can get a loan from the '*Pragatibandhu*', MFI of SKDRDP to meet any expense that exceeds insured amount. These additional provisions could remove some of the limitations of benefit package.

6.3.2 Management Characteristics

6.3.2.1 Staff

The religious leader of the Dharmasthala temple (President) leads SKDRDP and Board of Trustees manages its operations. Although directors and project officers do not have the management qualification, they have experience in implementing various socio-economic development programmes. Field staffs (*Sevanirathas*) motivate SHG members to enrol in SSP by educating them the importance of health insurance. They monitor moral hazard behavior due to the close proximity to the members. An experienced management implements SSP using the administrative set-up of SKDRDP. The programme had staff with skills required to formulate benefit package, contract with providers and process claims in addition to collecting premium and creating awareness. SSP could make use of pre-existing network of grass-root member households and a large team of field staff with the knowledge of local community and tradition. As SSP expands, complexity in administration and management would arise that necessitates investment in management information system (MIS) and professional training of the staff.

6.3.2.2 Culture

A hierarchical organisation structure of SKDRDP has the President and Board of Trustees as the top-level management who delegate the authority to four directors that supervise and guide project officers in each *valaya*. Project officers oversee the work of supervisors and field staff. The office staffs carry out claim processing, maintaining accounts and record keeping. Hierarchical structure stresses top down management with least participation of insured members in the management. The President interacts

continuously with staff that helps them to identify with the ideology and values of the SKDRDP such as charity, philanthropy and mutual aid.

6.3.2.3 Access to Information

The monthly SHG joint meetings communicate the information on SSP namely benefits package, excluded diseases, claim procedure, nearby network hospitals and rejection of claims to the members. Frequent information flows among the members and staff of SSP built trust and curtailed moral hazard largely. The '*Jnana Vikasa*' Programme imparts knowledge to the SHG members on various issues including health that removed non-financial barriers to access care (section 4.2.5).

SSP has computerized data recording system at various regions that stores members' basic information and data on utilisation of benefits (name of member and hospitals, duration of stay, amount of hospital bill, claims sanctioned). However, the *valaya* maintains the records and does not analyse them to assess the performance of the programme. Lack of MIS (management information system) would threaten the viability of SSP when the programme expands to a large number of districts in Karnataka. Management and administration of large risk pool requires quick access to information. Hence, implementation of MIS becomes a necessity. To conclude, SSP has the parent organisation that provides stable leadership, management skill, information systems, infrastructure, access to rural network and financial resources. This would enhance viability of SSP.

6.3.3 Organisational Characteristics

6.3.3.1 Forms of Organisation

Since SSP is embedded in SKDRDP, it could utilise the work force, office infrastructure and established network to provide MHI services resulting in a lower cost of operation. However, SSP had to incur the additional expense of medical staff who handle the pre-authorisation procedure and operating/maintenance cost of computers and other office equipments in SSP head office. The economies of scale and scope were possible since the parent organization had a broad range of services namely micro- credit, bundled insurance and savings. However, economies of scale didnot increase resource

mobilisation and higher enrolment. The potential to increase enrolment is high since SKDRDP has a good clientele that can be motivated to join SSP for better viability and financial sustainability. Contractual agreements with the insurance companies and hospitals are the backbone of SSP in which the programme acts as the Third Party Administrator (TPA) and manages the administration and implementation. These agreements make SSP viable as insurance companies absorbed the loss since inception and the hospitals strive to provide better care to insured members.

6.3.3.2 Incentive Regime

An exploration on the extent of the decision rights reveals that operations were decontrolled from the board. The Executive Director, the Executive Committee consisting of the directors and project officers managed the operations. Field supervisors and field staffs were not involved in any major decision making. Office staffs handle pre-authorisation and claim settlement procedure and kept accurate member records including accounts. There is an audit wing to scrutinise the records of SSP, detect fraudulent activities and prepare financial statements. Systematic and organised administrative framework made every staff accountable and responsible that has enhanced trust among members.

The main source of funds was the revenue collected from the members. External funding in the form of grants or donations or financial support from the government or other aid agencies was absent. Moreover, SSP did not maintain reserves that exposed the programme to higher financial risk. SSP has incurred loss since inception, but parent organization supported it, out of conviction. However, the threat of financial sustainability is impending due to declining enrolment resulting in inadequate resource mobilisation and high level of claims.

6.3.3.3 Linkages

Vertical integration through contractual agreement with the providers could provide treatment to members at concessional rates. The Executive director in consultation with the insurance companies, Board of Trustees and the President sets the premium and determines the benefit package. The director of SSP guides the

implementation through project officers who select the hospitals, contract with providers, and follow-up quality of care and supervise the implementation. Since insurance companies borne medical claims by underwriting the risks, they enhanced financial sustainability of SSP. Nevertheless, long-term viability is doubtful if these companies shy away from covering risks because of loss as evident in high claim ratio.

6.3.4 Institutional Characteristics

6.3.4.1 Stewardship

The management of SSP and insurance companies without the intervention of local, state or national government took up stewardship function. The government, both central and state, do not play any role in SSP design, risk coverage or implementation. SSP collected the premium amount, transferred a part of it to the insurance companies, recorded members' data, implemented pre-authorisation procedure and made cashless payment to hospitals whereas insurance companies provided risk coverage, verified the pre-authorisation forms and disbursed sanctioned claim amount to SSP. Thus, risk and servicing the clients were shared between SSP and insurance companies.

The top management consisting of the President, Board of Trustees, the executive director and SSP director took strategic decisions after consultation with the insurance companies. Project officers and supervisors took operational decisions and field staff implemented them.

Regarding the regulation of SSP, IRDA (Micro-Insurance Regulations, 2005) establishes the rules and regulations that are abided by the insurance companies. This Act recognises SHGs as the distribution agents who can carry out the functions of the premium collection, claims administration and distribution of policies. Hence, SSP chose the partner-agent model in which SKDRDP acts as an agent for a partner (the insurance companies). Since private insurance companies have to tie up with MFIs or other channels to meet the statutory requirements, SSP seems viable in the long run.

6.3.4.2 Governance

SSP and insurance companies share the ownership and governance of the programme. The objective of SSP is to provide financial protection against unforeseen contingencies and improve the access to health care services. The ownership and governance arrangements support the achievement of these objectives.

6.3.4.3 Insurance Markets

As per IRDA Act, private insurance companies should mobilise seven percent of total premium from rural and social sector of the country in the 8th year of operation. They have tied up with MFIs or NGOs to meet the statutory requirements to reduce transaction cost. These companies issue a negotiated custom designed group insurance policies to SSP that include the coverage for pre-existing illness. The custom-designed package meets the local needs of the target population and plays an important role in enrolment.

In MHI market, currently there is a limited competition since the evidence base on the positive impact is yet to build up. Besides, the insurance companies are sceptical of covering risks, at the same time MFIs hesitate to diversify into non-core activities like insurance. Barriers to entry into MHI market are high which reduces the threat of new competitors. At the same time, its commitment to the welfare of the underprivileged people makes the exit from the market difficult.

There is threat from RSBY for SSP and a visible impact is the deterioration in enrolment in 2011-12. From the frying pan to the fire, finding insurance underwriting partners every year is challenging, as the programme has incurred huge loss since its inception. Soliciting insurance partnership in the midst of uncertain environment is quite difficult.

6.3.4.4 Factor and Product Markets

There is a limited competitive pressure in the product market as the schemes aimed at the poor in the informal sector are rare. A few government programmes that target the poor are Yeshasvini, UHS and RSBY. In Yeshasvini programme, only surgical hospitalisation is covered and it acts as a standalone insurance programme, not embedded

in any development programme. However, SSP provides bundled product covering the risks of health, life and natural calamities and is entrenched in SKDRDP, thereby utilises the outreach and experience in providing financial services to people. It is one of the few MHI schemes in India having a membership base of over 10 lakh individuals. At present, SSP, as a MHI product, has little competition in the insurance market.

In the factor markets, SSP has to compete with other companies that employ people with basic education. SSP hires local people who have completed 10 years of basic education, and trains them. Since labour market is abundant with such people in Karnataka and cut-throat competition does not exist. It does not hire professional managers to perform various functions; instead uses internal promotions to fill these positions. SSP does not own many hospitals to provide health services to members. Despite that, SSP has significant market power through contract with providers that specify the quality of care and payment mechanism. Non-compliance with specifications of the contract can lead to the deletion of hospitals from the list of network hospitals. Thus, SSP has indirect influence on the providers of health care. Table 6.7 depicts the link between features of SSP and its impact on the performance with future implications.

Table 6.7 Effect of Characteristics of SSP on the Outcome of the Programme

Characteristics	Features of SSP	Impact on Performance	Future Implications
1. Technical **Revenue Collection** *Coverage of target population*	53.4 % in 2004-5; 32 % in 2011-12	Decline in enrolment and RM	Shrinking risk pool
Ratio of premium to healthcare costs	0.47 in 2004-05, and 0.61 in 2010-11	Higher FP; reduced CHE	FS affected
Nature of contribution	Voluntary; low interest credit facility	Poor used credit facility to pay the premium	To some extent, poor were given a option to enrol
Degree of progressivity of contributions	Regressive, average cost was less for large families	Enrolment of large families; poor paid higher premium	Social exclusion
Subsidies for the poor	No subsidies since 2011-12	Negative growth in enrolment	Adverse effect on enrolment
Risk pooling	Cross subsidisation across income and risk		One of the largest risk pools in India
Trust in the management of SSP	Part of SKDRDP, well known NGO in Karnataka	Faith in the integrity and competence of the management in Karnataka	May encourage enrolment
Mechanisms to enlarge risk pool	Target population was the entire district; coverage of health risks by general insurance companies	Economies of scale in administration and transaction costs; decline in administrative costs	Higher scope to enhance enrolment as percentage of target population
Strategic purchasing *Selection of network hospitals*	Active purchasing based on quality, accessibility and cost criterion	Perception of better quality of care	Good quality of treatment would result in renewal and higher enrolment

Claim disbursement procedure	No waiting period; pre-authorisation required; strict monitoring of claimants	Moral hazard and fraudulent practices curtailed	No threat to FS due to moral hazard
Benefit package	Inpatient coverage of ₹5000; cashless treatment	Higher hospitalisation, members relied on risk coping strategies	Partial impact on FP
2. Management **Staff**	Experienced and hard working staff; frequent field visits to monitor members	Important role in enrolment and motivated poor to join SSP; no moral hazard	Delay in claim approval, investment in management information system and professional training required
Culture	Ideology and values such as charity, philanthropy and mutual aid	Conveyed transparency and trust to every stakeholder	Members trust in SSP, may enhance enrolment and RM
Access to information	Dissemination of information weekly meetings; flow of information among members; Minimal MIS	Trust was built due to frequent information; Moral hazard curtailed; data management was not effective	Information asymmetry problems were minimum; lack of MIS act as threat to efficient operations.
3. Organisational **Forms of organisation**	Partner-agent and mutual model that leveraged trust of SKDRDP; bundled credit, savings and insurance	Economies of scale and scope; enhanced enrolment; reduction in administrative cost	Good model of MHI in India; economies of operations could not increase RM
Incentive regime	Auditing of records, transparency in accounts; premium was main source of funds	No fraudulent activity; huge loss as there was no external funding	Threat of FS still exists due to high level of claims and inadequate RM and lack of external

			funding
Linkages	Formal contracts with insurance companies and hospitals; risk underwritten by insurance companies	Revenue of the network hospital increased; huge losses absorbed by insurance companies	Insurance companies ensure viability
4. Institutional **Stewardship**	Played by both SSP and insurance companies; regulated by IRDA	Transparency and ethical practices	Enhanced viability of SSP
Governance	Ownership and governance was entrusted with SSP and insurance companies	Resource sharing and economies of scope and scale were achieved; administrative costs were brought down	Better viability of SSP; management know-how limited
Insurance markets	Limited competition in the MHI market; acted as agent of general insurance companies	As competition was less, enrolment till 2010 was good	RSBY is a threat; barriers to entry and exit high; monopoly in rural areas
Factor and product markets	Limited competitive pressure in the product market; factor market had surplus human resource	Significant market power through contract with providers; product of SSP unique	There is a potential for higher enrolment

6.3.5 Summary

Effective design and management are critical to the success of MHI schemes. This study identified certain technical, management, organisational and institutional characteristics that influenced enrolment, resource mobilisation, financial protection and social inclusion. Technical features of SSP such as credit facility to pay premium, additional loan to insured members to meet medical expenses, bundling of medical and

life insurance benefits, cashless treatment, higher benefit compared to other MHIs and wide network of network hospitals encouraged higher participation of the target population. Although enrolment in absolute number has increased, the growth in enrolment declined over the years since inception. In 2010, RSBY was introduced in Karnataka, which attracted many of these members. In the same year, subsidies for the poor were withdrawn and the premium was hiked which adversely affected enrolment. Despite the positive role of social capital (mutual help, solidarity and concern for others) in enhancing enrolment, there was negative growth in membership base. Certain undesirable design features like increase in the premium, availability of cheaper options (RSBY), removal of subsidies for the poorest families, inflexibility in the collection of premium, regressively charged premium and low benefit amount can be attributed to decline in participation rates. However, credit facility to pay the premium removed many of the design constraints.

Regressive premium, lack of subsidy coupled with low income resulted in the exclusion of poorest target population from enrolment, especially poor (mainly in seasonal occupation) could not afford the premium. SSP members from the poorer households had to spend 2.2 percent of annual household income to pay the premium. Thus, the design of SSP aimed at rural middle-income class than poor since certain features like the absence of a sliding scale, exemption policy, payment in- kind and flat rate of the premium limited the participation of the poorest in SSP.

SSP acted as a strategic purchaser of the health services largely by negotiating the price of care with providers and selecting the hospitals with basic facilities. It monitored the provider behaviour through pre-authorisation requirements that checked the line of treatment and probable cost of care before effecting payment. This curtailed moral hazard (from members) and fraudulent practices to large extent. However, it did not attempt to improve the quality of care, except selection of the hospitals with basic facilities. Certain strategic mechanisms namely gate keeping and drug formularies, referral practice, financial incentives to providers of care and insured to encourage the use of specific providers was absent. It did not negotiate favourable prices for essential drugs. Since the

primary care and referral system was ignored, members were motivated to get hospitalised even for acute illness that resulted in high claims.

Lack of gatekeeper mechanism was another factor responsible for high claims. SSP did not encourage the implementation of standard treatment protocols including drug formularies and physician profiling (tracking of the physician treatment patterns). However, monitoring utilisation of services by the members facilitated the removal of fraudulent hospitals from the list of network hospitals. SSP used fee-for-service system, known for the cost escalation and administrative complexity along with higher incentive to over-service and over-prescribe. It should be recognised that a scheme would not sustain financially if strict referral system or gate keeping were not practised. SSP can se primary health centre and tier system of Indian health care system to implement gate keeping.

The enrolment of members as a percent of target population has declined over the years; thereby the risk pool has shrunk jeopardizing financial sustainability and viability of SSP. Insufficient revenue collection has resulted in huge losses since inception. Even with the high claims, financial protection was partial owing to low benefit package (₹ 5000), which was unchanged despite an increase in the cost of medical treatment. Hence, insured members had to incur CHE and adopt other risk coping strategies. However, the burden of severe cases on broader health care system reduced. Increasing the benefit package is not a solution to partial financial protection. This necessitates higher premium that adversely influence enrolment. If premium increases, people with low health risk would refrain from enrolment giving rise to adverse selection. In addition, poorest would stay away from the programme. Hence, a tradeoff is required that balances financial sustainability and risk pool. On the other hand, SSP has an advantage over other MHI scheme since it is nested within broader development programme with adequate financial resources that can bail out SSP in times of trouble.

Household as a unit of membership, inflexible period of enrolment and better information flow among members due to close proximity reduced selective enrolment of

ill persons in the family, especially enrolment after illness. Pre-authorisation rules, scrutinisation and monitoring of hospitalisation reduced moral hazard behaviour.

Being embedded in SKDRDP, SSP enjoys clientele due to faith in the integrity and competence of management. Senior management of SSP was committed to the programme and determined to continue it out of conviction, despite financial difficulties. Moreover, SKDRDP increased the income of poor families in its area of operation through micro-finance and other developmental activities. This enhanced the ability and willingness of SHG members to enrol in SSP. Since SSP met their priority needs (health), readiness to participate and support the the programme was high.

The member orientation and strong community networks facilitates the viability of SSP. Some of management factors that shaped the success of SSP are contracting with providers, determining the appropriateness of care provided and its pricing, accounting and bookkeeping, monitoring, peoples' confidence and trust in the management. Relevant information disseminated to members in the monthly SHG meetings conveyed transparency and trust that premium amount belonged to members' betterment. This positively shaped the renewal and enrolment decisions of members and indirectly increased resource mobilisation. However, certain hindrances namely lack of professional management with requisite skills in marketing, and communication, actuarial science, lack of member participation in the management and absence of any negotiation with providers for better quality of care would affect the programme adversely. In addition, the management of data and creation of electronic database was insufficient. This would limit the revenue collection, containment of administrative cost, and quality of health services.

Organisational characteristics of the scheme such as contractual linkages between SSP and providers stipulated the nature and scope of the services the providers should offer to the members. Thus, yearly contracts ensured flexibility to change the providers (include or delete from the list of network hospitals) based on their performance. Even the contractual relationship with insurance companies defined the role and responsibilities of the parties concerned. The insurance companies absorbed the loss of

medical component of the benefit package; which ensures the viability of the programme in the long time.

Parent organisation SKDRDP facilitated resource sharing and economies of scope and scale. Offering of MHI services through partner-agent and mutual model leveraged the trust that SSP enjoys among SHG members and enhanced the enrolment of target population. Moreover, bundling the insurance services with credit or savings and using the existing infrastructure to provide service and collect premium reduced administrative cost. Regular auditing of the financial records and preparation of annual reports that are publicly available helped to build up the credibility.

The premium was the main source of funds. SSP did not seek external financial assistance or aid to cover the losses of special component of benefit package. Hence, threat of financial sustainability looms around the programme due to the high level of claims, inadequate RM and lack of external funding.

The government did not play a stewardship role by providing subsidies or administrative assistance to SSP. Instead, insurance companies and SSP played the role of stewardship by sharing the risk of coverage and servicing the clients. Moreover, the government did not monitor, regulate and accredit the providers; hence, SSP developed the technical skills to conduct these activities. SSP and the insurance companies jointly had the ownership and governance responsibilities that facilitated resource sharing.

The competition in the job market was not intense as there was surplus labour with required qualification. The competition in health care market becomes irrelevant since SSP does not own all the network hospitals to provide health care facilities to the members. The rivalry in MHI market was minimal as the high level of entry and exit barriers to MHI market would prevent a large number of players from entering the industry. However, SSP has to face the threat from the recently introduced RSBY and schemes of other MFIs.

Taken together, these results suggest that SSP is viable owing to i) Nesting within SKDRDP ii) Tie up with insurance companies iii) Dedicated staff and management iv) High potential for greater penetration. However, self-financing of SSP is limited due to

several features; limited population coverage, low cost recovery rates and membership limited to poorest groups. Unless these issues are addressed, SSP cannot be considered an exclusive health-financing alternative, rather it can be considered as supporting mechanism that complements the government efforts to provide health care to all the population. SKDRDP has to capitalise its monopoly in many parts of rural Karnataka to make SSP a self-financing MHI scheme.

CHAPTER 7

SUMMARY OF FINDINGS, CONCLUSION AND SUGGESTIONS

7.1 Introduction

Illness is the second most frequent risk in rural areas after the crop failures. It is the single largest cause of perpetual poverty in many of the poor households. There is a strong link between health and income that makes the poor most susceptible to health shock. Given the inadequate public funding as well as inefficient delivery of public health services and lower penetration of private health insurance, MHI is identified as a potential insurance mechanism to mitigate iatrogenic poverty. Moreover, IRDA regulations impose rural and social sector obligations on private insurance companies to provide insurance benefits to the poor that unlocks a huge market for MHI industry.

MHI aims to provide adequate financial resources to ensure timely access to health care services. The most convincing argument in favour of MHI would be the tangible proof that it can do what it claims and provide protection against the financial consequences of health risks to the population. Scaling up of MHI to provide insurance coverage to larger population is not advisable without the evidence on the impact of schemes on the target population. Hence, this study was carried out to understand the impact of Sampoorna Suraksha Programme, a well-known MHI scheme in Karnataka. This descriptive cross sectional survey collected data using questionnaire and qualitative instruments from 1146 households selected randomly applying multi-stage cluster sampling design. Logistic/multiple linear regression analyses and chi square test were used to test the hypothesis of the present study.

7.2 Summary of the Findings

This section summarises the main findings that draws together results presented in different sections and discusses these findings in the context of previous research on the impact of MHI. It highlights managerial implications and provides policy suggestions which are of interest to the scheme management and policy makers.

7.2.1 Findings on the Impact of SSP on Financial Protection (Chapter 4)

Access to Care: SSP did not have any impact on access to health care (H1). This result is in agreement with World Health Organisation (2000) findings, which documented lack of impact of MHI in improving the access to health care system. Uninsured and newly insured individuals could overcome the financial barriers by borrowing, sale of assets or use of the savings to pay for health services. 'Jnana Vikasa' programme of SKDRDP, which educated SHG members on the importance of health, removed the non-financial barriers.

Health Seeking Behaviour: SSP insured members sought treatment in private network hospitals rather than self-treatment or public hospitals compared to uninsured and newly insured individuals (H2). Accessibility to network hospitals, affordability (due to SSP claims) and acceptability (quality of care at network hospitals) influenced insured members to seek care in private network hospitals. The present study confirms the previous findings (Jowett 2004; Jutting and Tine 2000; Chankova et al. 2008) and contributes additional evidence that suggests the role of income in HSB in addition to the positive impact of MHI in India.

Utilisation of Health Services: This study has gone some way towards enhancing our understanding of the MHI impact on utilisation of health services. Insured individuals utilised health services in higher proportion compared to uninsured and newly insured individuals (H3). Income class, gender of ill persons and types of illness determines hospitalisation. The most obvious finding to emerge from this study is the absence of vertical equity based on income and gender, but horizontal equity was evident.

Out of Pocket Expenditure: The present study provides additional evidence with respect to the positive impact of MHI on financial protection. SSP decreased out of pocket expenses associated with treatment for illness for insured individuals compared to uninsured and newly insured individuals (H4). This result is consistent with those of Jutting (2003) and Schneider and Diop (2001), but contradicts the findings from the Indian studies (Ranson 2001; Gumber 2001). The days spent in the hospital, SSP, chronic illness, area of residence and gender of ill persons emerged as reliable predictors of out of

pocket expenses. Certain design features prevented complete financial protection of SSP in the form of zero out of pocket expenses. Insured poor individuals might not have benefited from SSP compared to better-off insured individuals (absence of vertical equity); however, they had lower expenses compared to uninsured and newly insured individuals (presence of horizontal equity). The study did not find gender based vertical equity as insured men incurred higher expenses compared to insured women. However, the findings support horizontal equity in which insured women had lower out of pocket expenses compared to uninsured and newly insured women.

Catastrophic Health Expenditure: One of the more significant findings to emerge from this study is that SSP successfully reduced the incidence of catastrophic health expenditure (CHE) for insured members (H5). However, the impact was partial, as one fourth of households still had to face CHE even with health insurance. The partial effect of SSP occurred due to certain limitations of benefit package (smaller benefit package, exclusion of outpatient treatment and certain diseases from coverage). Partial protection of MHI as found in this study is in accordance with the earlier studies by Ranson (2002) and Devadasan (2007) in India and Zhang (2010) in China.

There was gender based equity among women since insured women had a lower probability of CHE compared to uninsured and newly insured women. Gender based equity in claim distribution was detected as SSP reduced the incidence of CHE more for female than for male members. Even vertical equity based on income was absent but horizontal equity was present. The binary logistic regression analysis estimated SSP status, income quintile of the household, chronic illness, hospitalisation and duration of treatment to be significant predictors of CHE.

Risk Coping Strategies: This study could not establish a significant difference in the broad category of risk coping strategies among insured, uninsured, and newly insured individuals (H6). However, it clearly demonstrated the relevance of MHI in reducing illness-related borrowing (H7a, H7b). Younger and unemployed heads of the household, low income, SSP status and hospitalisation predicted the likelihood of borrowing. SSP insured individuals borrowed less amount.

The present study could not identify a clear benefit of MHI in the prevention of sale of assets (H9) or use of the savings (H8a, H8b) to meet the cost of illness. Hence, the study findings do not support the previous research of Dekker and Wilms (2009) and Aggarwal (2010) who provided evidence that health insurance reduces reliance on other risk coping strategies. Certain design features of SSP such as the exclusion of the outpatient treatment, certain diseases, transportation costs and limited benefit package (₹ 5000) were responsible for not eliminating the reliance on risk coping strategies by insured individuals.

7.2.2 Findings on the Impact of SSP on Social Inclusion (Chapter 5)

The findings on the social inclusion are rather disappointing. Contrary to the expectations, this study did not find large proportion of the poorest in the membership base (H10). Although these results differed from some other empirical studies (Chankova 2008; Ranson 2001; Gumber 2001), they are consistent with those of Msuya (2004), Jutting (2003) and Schneider and Diop (2001). Social exclusion was evident due to certain supply side factors (design features) such as fixed period of enrolment, lack of participation in decision making (benefit package or setting premium), regressive premium and lack of subsidy in addition to low income and consequent non-affordability of the premium.

There was no evidence for the presence of adverse selection in SSP (H11). The distance to the hospital and area of residence predicted the membership in SSP. One unanticipated finding was that various components of the social capital namely solidarity, reciprocity and mutual aid influenced enrolment.

7.2.3 Findings on Resource Mobilisation of SSP (Chapter 6)

Resource mobilised by SSP over the years was insufficient to cover the claim amount disbursed. Lower level of resource mobilisation was also due to low coverage of target population, insufficient premium collection and decrease in membership (negative in 2010-11). Technical design features of inpatient coverage in addition to lack of deductibles/ co-payments, no waiting period and absence of referral or gatekeeper system, coverage of pre-existing diseases, cashless treatment and easier reimbursement

procedure resulted in a high level of claims. At the same time, high level of premium, lack of subsidy to low income families and inflexibility in enrolment period along with competition from government sponsored RSBY and Yeshasvini schemes adversely affected enrolment. Reasonable balance of funds was difficult since claims were always higher than revenue collection. Financial sustainability is doubtful if the deficits continue at the same or higher rate.

7.2.4 Findings on Characteristics of SSP and Its Effect on Enrolment, Financial Protection and Resource Mobilisation (Chapter 6)

SSP partner agent model facilitated better benefit package at a lower cost through integrated distribution network of SKDRDP. Since the target population of SSP was nine districts of Karnataka unlike small communities in most of the African schemes, higher enrolment was possible. Enrolment was driven by certain insured-friendly features of SSP such as credit facility to pay premium, bundling of medical and life insurance benefits, cashless treatment, better benefit package compared to other MHIs and wide network of SSP hospitals. The household as a unit of enrolment and inflexible enrolment period reduced adverse selection and prevented selective membership of high-risk individuals that enhanced cross subsidisation of risk. Social inclusion was not evident owing to lack of affordability of the premium, withdrawal of subsidies, flat rate of premium with no sliding scale and lack of premium exemption policy. SSP benefit package failed to provide complete financial protection since it is unchanged (₹5000) even when the cost of care has gone up. SSP was incurring losses due to shrinking risk pool and high level of claims threatening financial sustainability and viability.

Some of the management characteristics that ensured viability of SSP were members' trust in the integrity and competence of the management, commitment of the management, nesting in MFI (SKDRDP), strong community networks and contracts with providers and insurance companies, dedicated field staff, transparency in accounting and bookkeeping. This positively shaped the renewal and enrolment decisions of members and increased resource mobilisation. However, lack of professional management with requisite skills in marketing and communication, actuarial science, lack of negotiation

with providers for better quality of care, absence of local management, accountability and monitoring by members would limit revenue collection and containment of cost.

Organisational characteristics of the scheme such as contractual linkages between SSP, providers and insurance companies enhanced the viability of the programme. SSP could leverage the trust that members had in SKDRDP programs and use the infrastructure of the parent organisation, which reduced administrative cost and improved enrolment. Since financial records were audited and available publicly, transparency was ensued that limited fraudulent activities. Nevertheless, financial unsustainability would jeopardize the programme due to inadequate resource mobilisation and lack of external funding.

Since SSP did not seek any assistance, government did not play stewardship role by providing subsidies or training and administrative assistance. Insurance companies and SSP itself played the stewardship role by sharing ownership and governance, risk coverage and service to the clients. Regarding product and factor market, there was limited competition. SSP has monopoly in rural areas, as few MHI products are available. However, it faces major threat from government sponsored RSBY since 2010-11. Human resource, especially lower level personnel required to implement the programme was adequate given the surplus of labour in India, especially in rural areas.

7.3 Main Findings and Conclusion

1. The reliance on ex-post risk coping strategies compensates lack of MHI for uninsured and newly insured individuals.
2. There was diversion of demand for care from traditional and public facilities to private hospitals.
3. Insured individuals had higher utilisation measured by admission rate; however, moral hazard behaviour was absent.
4. MHI provides effective financial protection against out of pocket health expenses.
5. A sizeable share of households experiencing catastrophic health expenditure had payments less than 10 percent of annual per capita income due to SSP.

6. SSP reduced the excessive reliance on borrowing but it had no effect on the use of savings or sale of assets.
7. Horizontal equity based on the income and gender in utilisation of health services, out of pocket expenses and catastrophic health expenditure exists.
8. There was no adverse selection but members had higher incidence of illness.
9. Social capital components of solidarity, reciprocity and mutual aid determined enrolment in SSP
10. Intensive monitoring of admitted insured members for any fraudulent activities, fixing of price for each disease in consultation with hospitals and regular audits to detect any financial irregularities were some of the factors that shaped the success of SSP.
11. Experienced and well-established parent organisation (SKDRDP), contractual yet amicable relationship with insurance companies and providers of care, trust of the target population in SSP and dedicated management and the staff (office and field) increases the viability of SSP. However, financial sustainability needs to be addressed because the enrolment has declined and claims ratio has been very high since its inception.
12. SSP faces financial constraints to provide absolute financial protection due to the limited coverage of the target population, low cost recovery and membership base (low income) that restricts premium collection. There was no external financial support from the government or aid agencies.

To sum up, the beneficial effect of MHI on financial protection was evident from this study. However, on the contrary, there was inadequate resource mobilisation and social exclusion. This discrepancy is due to certain characteristics of SSP such as high premium, introduction of RSBY, lack of subsidies for the poor, stagnant benefit package, exclusion of outpatient treatment and regressive nature of premium structure.

SSP contributed to the achievement of ultimate objective of the health system especially reduction in impoverishment and equitable utilisation. There was lower incidence of borrowing, OOPE and CHE by insured individuals; hence, SSP reduced

impoverishing effect of illness. Equitable utilisation, especially horizontal equity based on income and gender was observed with insured poorest and women using the health services more than those of uninsured and newly insured households. There was no evidence for the sustainability of resource mobilisation. Hence, the facilitating role of the government in the form of clear policies and provision of subsidies, especially for the poorest is required.

7.4 Managerial Implications

Management of SSP and similar MHI schemes either new or already in operation should consider the following to improve the performance and outcome of the scheme.

1. To widen the membership base and enhance financial sustainability, SSP management should disseminate information on the various aspects of SSP to create awareness among the target SHG members. Certain mechanisms can be used to expand risk pool and ensure sustainability of SSP. These are,

   i) Deeper penetration in the existing and new districts through an intensive awareness programme to enrol higher percent of target population.

   ii) Financial assistance to the poorest through financial assistance or grants from corporate donors.

   iii) Use established rural network to penetrate into existing untapped areas.

   iv) Effective use of infrastructure and staff of parent organisation (SKDRDP) to enrol/retain members.

   v) Motivate members to join SSP through a sense of community belongingness and credit facilitates of SKDRDP.

2. To overcome distance barrier, transportation charges can be included in the benefit package. Many services such as outpatient treatment and wage loss can be covered to make SSP more enticing. Since outpatient (OP) treatment is excluded, there is a tendency to be hospitalised to claim from SSP. Inclusion of OP would prevent over-utilisation and encourage proper channelising of limited health care resources to the pressing needs. This can be rolled out on a pilot basis to assess its impact on financial sustainability.

3. Complete financial protection necessitates changes in certain design features, subjected to the availability of financial resources and affordability of premium. Modifying benefit package by increasing benefit amount requires huge funds. The programme is making losses over the years, yet it is not advisable to increase premium due to its negative effect on enrolment and revenue collection. Hence, a rational trade-off is warranted that balances the interests of members and the viability of the programme. To meet the cost of additional benefits and include the poorest, financial assistance from the government, corporate sector and other international or national aid agencies can be sought. This may seem impossible; consistent efforts should be made so that poorest are included in the risk pool.

4. Supply side interventions in the form of standard treatment protocols, drug formularies and primary health care facilities are essential to increase financial protection. Provider control mechanisms should be implemented to detect unnecessary investigations, fraudulent practices or inflated billing. This is necessary in India where the providers are mostly unregulated and there are many incentives for supplier (hospital) moral hazard in the health system. Referral system or strict gate keeping can be implemented to increase efficiency. The management should be actively involved in the strategic purchasing by educating members about their rights to seek good quality care at hospitals in monthly meetings and stipulations in the contract.

5. Recent changes in health insurance aimed at the poor (RSBY) and schemes initiated by other MFIs would limit the growth of budding MHIs including SSP. In the long run, intensive propaganda and marketing of SSP is required to maintain or enhance membership base. Otherwise, SHG members may enrol in other MHI schemes with greater benefits at lower premium which would decrease enrolment in SSP. The active participation of members to incorporate community preferences in the benefit package of SSP should be practised. This would motivate people to renew the membership and improve satisfaction. Elements of social capital embedded in MFI programme of SKDRDP namely solidarity, reciprocity and feeling of mutual aid and faith in the integrity and competence of the management of SSP can be used to achieve wider

coverage, penetration into untapped areas and reduction in adverse selection and moral hazard behaviour.

6. Financial sustainability of SSP requires immediate attention. If it continues to make huge losses, it will be difficult to tie up with private for-profit insurance companies in the future. This calls for either increase in membership, premium, or pruning benefit package. These options require certain trade-offs to be made. To enhance enrolment, the premium should be low and benefit package is to be generous. This throttles resource mobilisation and endangers financial sustainability. Increase in premium decreases membership base, hence reduces revenue collection. Curtailing certain services or exclusion of some expensive diseases defeats the very purpose of SSP.

7. MHI schemes should provide training in actuarial science and management to improve their technical expertise and establish MIS to increase effectiveness and efficiency. Moreover, the impact of changing job market on the staff of SSP needs to be assessed. Field staff may leave the organisation due to inadequate salary, long working hours and frequent transfers. Dilution of the religious reverence may take place when SSP expands to other districts far away from the influence of Dharmasthala temple. Hence, the programme has to build trust through action and customer responsive policies and products. Replicability of SSP in other states or districts depends on the financial and managerial support from the external parties. The development of micro-credit has taken three decades to grow to present status. Micro insurance too has to undergo a long journey by synchronizing the expertise from insurers, distributors (MFIs or NGOs), service providers and build capacity for scaling up of MHI.

7.5 Policy Implications

Taken together, the findings of the present study suggest a greater role for the government and the corporate sector. The following points highlight the active role of the policymakers to make a MHI scheme viable and sustainable.

1. MHI provides financial protection to vulnerable sections of the society, hence scaling up of MHI to penetrate into remote rural areas is required. Since MHI removes financial

barriers to access care and thereby facilitates treatment at good hospitals, policymakers should promote it.

2. Poorest were not largely represented in membership pool due to lack of affordability. Since MHI can be the most important mechanism, policymakers should support it financially and regulate its operations. The poorest can be motivated to be a member of MHI by subsidizing the premium. The debate is whether policymakers should stress nation-wide health insurance scheme or strengthen health care system by establishing quality hospitals in remote and rural areas. If insured members cannot access care due to its unavailability of facilities, health insurance is purposeless. Given the moderate performance of the government since independence in setting up health facilities, provision of health insurance might be a better option.

3. Intensive monitoring of admitted insured members for any fraudulent activities, fixing of price for each disease in consultation with hospitals, regular audits to detect any financial irregularities, creation of awareness on MHI and its benefits to target population were some of the factors identified as responsible for the success of SSP. These factors are essential for the effective implementation of any MHI scheme including RSBY.

4. Self help groups and other community organisations are to be promoted to scale up MHI schemes for faster information dissemination, local knowledge and awareness. These SHGs are the target population of MHIs, hence larger risk pool and deeper insurance penetration is achieved through their promotion. Hence, 'financial inclusion' can lead to 'insurance inclusion'.

5. There is no single solution to any problem, even in the case of health care financing. Different elements, actors and mechanisms are to be judiciously combined to achieve the Alma Ata declaration of 'health for all'. Hence, MHI can provide financial protection if it is implemented with accountability, dedication and strict monitoring of various participants that includes regulators, insurance companies, hospitals, members and administrators of the scheme.

At the end, it should be remembered that MHI is just a health financing mechanism and not a magic potion for all evils in the health system. As a supporting

mechanism, it complements the government efforts to provide health care to all population. This innovative mechanism should be utilised by the members to the fullest through better understanding of its benefits to oneself and others in the community.

7.6 Limitations

A number of limitations need to be considered. Firstly, the study findings are not generalisable to the entire population of India. Nevertheless, the study findings are applicable to similar MHI schemes initiated by MFIs in Karnataka. The plausible explanation centers on the fact that there is less divergence in socio-economic characteristics of SHGs such as income, occupation, education and area of residence. Secondly, the present study was not able to analyse non-financial barriers such as lack of health facilities, transportation or intra-household dynamics. The current research was not designed to evaluate factors that cause non-financial barriers. Third limitation was the recall bias related to income, expenditure and treatment costs. This bias was minimised by asking the households to recall each episodes of illness and produce medical bills. Moreover, the questionnaire collected data on medical expenses, drug costs, transportation costs, lodging charges, interest on the amount of borrowing, wages per day and number of work days lost separately. Thus, treatment cost was the aggregate of multiple items. This controlled the recall bias largely. Fourthly, family income was calculated by adding the income of every member of the family (weekly income in case of seasonal worker/agriculturist). There might be a tendency for the families to provide incorrect income data. However, the field staffs cross verified the income data since they knew the income pattern of the households clearly. Fifthly, geographical access to care determines utilisation and affects the pattern of seeking care. Hence, a comparison of insured, newly insured and uninsured individuals on the health seeking behaviour and utilisation may be biased. Nevertheless, the study design minimised such bias by selecting the individuals from the same location/ *karyakshetra*. Lastly, the findings on the sale of assets as one of the risk coping strategies should be interpreted carefully. Since the sample size was small, the findings cannot be applied to a larger target population.

7.7 Suggestions for Future Research

This study has thrown up many questions in need of further investigation. It is recommended that more research be undertaken in the following areas.

1. This study could identify some aspect of social capital such as mutual aid, concern for others well-being, and solidarity during illness. Further research might explore the impact of MHI on various dimensions of social capital.
2. It would be interesting to compare the risk management techniques of different schemes to build up the repertoire on the best practices.
3. A better understanding of the impact of MHI on intra-household dynamics, in particular women is needed.
4. Further research on the equity impact of MHI using experimental study design can be undertaken.

APPENDIX I: ENGLISH HOUSEHOLD QUESTIONNAIRE USED FOR THE SURVEY

Dear Participant,

Greetings!

I am doing a doctoral study on the 'Impact of Micro Health Insurance on Sampoorna Suraksha Programme in Karnataka'. The purpose of the study is to understand the impact of Sampoorna Suraksha on insured. I have selected you as one of the participant for this study. I request you to kindly fill this questionnaire which will take 20 minutes. The instructions for completing the questionnaire are given on the form itself. I ensure you that the information given by you will be kept strictly confidential and your identity will not be disclosed anywhere. Your participation represents a valuable contribution to my research. I appreciate your co-operation for this study.

Q1. Has anyone not been completely well within the last one year? (Include any kind of illness suffered, as well as problems of pregnancy and childbirth, even if treatment was not sought. Include outpatient treatment in the last 3 months also. If any member suffered more than one illness or more than one hospitalisation in the last year, then each episode should be recorded separately)
□ Yes, continue
□ No, GO TO 22

ID of individuals	1			2		
Q2. What is your age?						
Q3. Gender Male=1, Female=2						
Q4. How many times you had illness? (give the following information on each episode)	1	2	3	1	2	3
Q5. What was the illness?						
Q6. Did you get treatment? OP=1, IP=2, No=0 IF NO, GO TO Q19						
Q7. How many days were you hospitalised? (If IP)						
Q8.Where did you go for treatment?						
Q9. Why did you go there?						

Q10. What was the amount spent for treatment? Hospital expenses Medicine Laboratory/ diagnostic charges Indirect expenses (pay phones, lodging, food or drink) TOTAL						
Q 11. What was the result of the treatment?						
Q12. How did you pay the bills?						
Q 13. Did you have money to pay medical bills? [yes >GO TO 19; no=0, go to next question]						
Q 14. How did you mobilise the money?						
Q15. How much money did you borrow?						
Q16. What was the interest rate charged?						
Q17. Is you used savings, how much was used?						
Q18. If you sold assets, how much you got from the sale?						
Q19. How many days were you ill?						
Q20.How many days you did not go for work?						
Q21.What was the daily wage rate(rupees)? (if you are a labourer)						

Instructions: Code for above questions

Q8.

1-Home remedy
2-Clinic
3-Government hospital
3- Small private hospital
4-Large private hospital
5- Pharmacy
6- Ayurveda/Homeopathy
9- Others (specify) _____

Q9.

1-Accessibility	□ Yes	□ No
2-Lack of improvement	□ Yes	□ No
3-Lack of money to pay	□ Yes	□ No
4-Quality of treatment	□ Yes	□ No
5-Low cost of treatment	□ Yes	□ No
6-Trust in treatment	□ Yes	□ No
7-Near to home	□ Yes	□ No
8-Severity of illness	□ Yes	□ No
9-Nature of illness	□ Yes	□ No

Q11.

1-Better 2- Slight improvement 3- No improvement

Q12.

1- From pocket 2- Other health insurance (private)

3- Sampoorna Suraksha 4- Others_____

Q14.**[** Tick all relevant answers**]**

Borrowed	□ Yes	□ No
Sold crop	□ Yes	□ No
Used savings	□ Yes	□ No

For Sampoorna Suraksha members only, Non members GO TO Q25

Q22**.** How long you have been the member? _____years

Q23**.** Did you claim any benefit under the scheme so far?

□ Never □ Once □ Twice □ Thrice or more

Q24.What is the amount of benefit availed by your household so far?_____**_**

Q25**.** How far is the hospital or clinic from your house?

Distance_____km or time taken____minutes/hours

Q26. How far is the Suraksha hospital or clinic from your house?

Distance _____km or time taken _____minutes/hours

Q27.What made you join Sampoorna Suraksha Programme scheme? [Tick all relevant answers]

Benefit package	□ Yes	□ No
Can go to better hospitals	□ Yes	□ No
All members in the group have enrolled	□ Yes	□ No
Need not worry about money	□ Yes	□ No
Peace of mind	□ Yes	□ No
Let others get benefitted	□ Yes	□ No
May need in future	□ Yes	□ No

Q28. Did you take any loan to pay the premium?
□ Yes □ No

Q 29.Do anyone in your family have a permanent illness or suffer from any illness for longtime?
□ Yes □ No

Q30. If yes, write their age and illness _____,_____; _____;_____

How satisfied are you with the network hospitals of SS?

Fully satisfied 5	Somewhat satisfied 4	Neither satisfied nor dissatisfied 3	Somewhat dissatisfied 2	Fully dissatisfied 1

Q 31.Overall cleanliness of the hospital	1	2	3	4	5
Q 32.Expertise /experience of doctors	1	2	3	4	5
Q 33.Care given by nurses	1	2	3	4	5
Q 34.Facility (laboratory, X ray, equipments)	1	2	3	4	5
Q 35.Availability of drugs in pharmacy	1	2	3	4	5
Q36. Friendliness and courtesy of the staff	1	2	3	4	5
Q 36.Time spent by doctor in examination	1	2	3	4	5

Socio-economic information

Q 38. Gender of respondent:
□ Male □ Female

Q 39. Marital status of the respondent
□ Married □ Widow(er)
□ Divorced or separated □ Have never been married

Q 40. Relationship to household head:
□ Head of household □ Spouse
□ Brother/Sister □ Son/Daughter
□ Son-in-law/Daughter-in-law □ Parent

Q 41. Religion:
□ Hindu □Muslim
□ Christian

Q 42. For each household member, please provide the following information

S.No.	1. Gender Male=1 Female=2	2. Age (in years)	3. Marital Status	5. Education	6. Primary occupation	7.Income (daily/monthly) (₹)
1						
2						
3						
4						
5						
6						

3. Married	1	Widow(er)/divorcee	2
Unmarried	3		
5. Nursery School	00	Passed Masters degree or above	14
1 to 12 th standard completed	01 through 12	Passed Bachelor Level	13
Passed technical diploma	15	Illiterate	0

6**.** Primary occupation:

Unemployed (including not able to work)	01
Unskilled daily wages (agricultural or factory workeror beedi)	02
Presently studying	03
Farming (including dairy farming)	04
Self-employed (petty-business)	05
Unskilled monthly salary (housemaid)	06
Skilled daily wages (plumber, electrician)	07
Employed in formal sector (including government)	08

7. If daily labourer, how many days do you work in a month?_____

Q 43**.**Area of residence:

□Urban □ Semi-urban □ Rural

Q 44.How many of the following are owned by your household members?

House	
Land for house	
Land for cropping; Owned Mortgaged	
Goats, chicken, cows	
Radio	
Television	
Bicycles	
Scooters/mopeds/motorcycle	
Four or three wheeled vehicles	
Electric fans	
Mobile phone	
Refrigerator	
Any machines	
Others (specify)	

Q 45.Household income from itemized sources:

Income source	Amount (in ₹)
Crops (annual)	
Livestock (milk/egg) (monthly)	
Interest on savings (monthly)	
Rent on land/ buildings (monthly)	
Gifts (received from relatives and friends)	
Any other income	

Q46. Do you use grain from your own field or receive grain instead of wages?

□ Yes □ No

Q47. If yes, what is the money equivalent of the grain? ₹ _____

Q48 . Item wise expenditure (Instructions: month or year).

Expenditure- item wise	Amount (in ₹)	Expenditure- item wise	Amount (in ₹)
Food		LPG/ firewood	
Clothing		Electricity	
Transportation		Moblie	
Healthcare (including medicine)		Education	
Daily goods		Social activities	
Durable goods		Gifts (assistance to relatives and friends)	
Loan interest		Tobacco/alcohol	
Entertainment		Other items	

Expenditure in expensive month (in rupees) _____
Expenditure in cheap month (in rupees) _____

Housing related information:

Q49. Do you have electricity connection?
□Yes □No

Q50. What is the types of flooring?
□ Mud □ Ceramic tiles □ Cement-red oxide □ Marble

Q51. What types of wall material is used?
□ Mud □ Brick □ Cement blocks

Q52. What types of ceiling is used?
□ Thatched □ Clay tiles □ Metal tin □ Concrete

Q53. How many rooms are there in your house?_____

Q54. What types of toilet facility does your family use?
□ Open □ Private □ Public

Q55. What is the source of water for your family?
□ Piped into house □ Public tap □ Well
□ River/spring □ Water tank

I thank you for your co-operation and spending your valuable time.

APPENDIX II: ENGLISHQUALITATIVE INTERVIEW SCHEDULESUSED FOR THE SURVEY

AP 3.1: Focus Group Discussion with Insured and Uninsured Groups

We would like to know your thoughts and ideas about Sampoorna Suraksha and your past illness related actions. Please feel free to share your ideas when relevant. You may also ask for clarification if a question is not clear. Your names will not be recorded or associated with any remarks. This discussion group will last approximately half an hour.

- Do you access health services during illness?
- What are the reasons for not accessing care despite illness?
- (For insured)
    1. Did Sampoorna Suraksha remove barriers to access care?
    2. If you get admitted, do you stay longer days in the hospital?
    3. Are there very rich or very poor members in your group?
    4. Are you happy with Sampoorna Suraksha benefits?
    5. Do you have any complaints regarding Sampoorna Suraksha?
    6. Do you want any changes to be made in Sampoorna Suraksha? If yes, what features are to be modified? Benefit package, network hospitals or premium amount?
    7. How do field staffs behave with you?
    8. Who took the decision to enrol in Sampoorna Suraksha?
    9. Did you have trust in Sampoorna Suraksha since you joined self-help group?
- (For uninsured only)
    1. Why didn't you join Sampoorna Suraksha?
    2. Did you know the credit facility given by Sampoorna Suraksha to pay the premium?

I thank you for participating in this discussion.

AP 3.2: Interviews with Health Care Providers

Name of the hospital:

Town:

Address:

Position of the respondent:

- What types of health care do you provide?

  □ Outpatient (OP) □ Inpatient (IP)

  □ Both OP and IP □ Traditional (ayurvedic, unani, homeopathy)

  □ Others_____

- Is there any protocol or standard treatment guideline?

  □ For all patients □ For insured only

- Do you participate in scheme decision making related to cost of care, health care quality and related issues?

  □ Yes □ No □ Don't know

- Do insured patients have special queues (speedy service)?

  □ Yes □ No □ Don't know

- What is the nature of your interaction with scheme administrators, if any?

_____

- What is the nature of your interaction with insurance company, if any?

_____

I thank you for your kind co-operation.

AP 3.3: Interviews with Scheme Administrators

- When did your Micro health insurance (MHI) start? Year: _____
- Why was your MHI program created?

_____

- Who supported your MHI program financially at the beginning?

_____

- How is your program funded now? What are its sources of revenues? (Check all that apply)

  □ Member Premiums/Contributions □ Government

  □ Donors □ Others _____

- Is membership voluntary or mandatory?

  □ Voluntary for all □ Mandatory/Compulsory for Self help group members

  □ Other_____

- What do members of your MHI have in common? (Check all that apply)

  □ Region □ Community

  □ Professional group □ Other: _____

- Does your MHI offer reduced contributions for certain members?

  □ Yes □ No

- Who was involved in designing benefit package? (Check all that apply)

  □ Insurance company managers □ Target community

  □ Government □ SKDRDP management

  □ Other _____

- How often is this revised/updated?

  □ Every year □ Every two years □ Other _____

- Are SS members involved in the management of the scheme?

  □ Yes □ No

- If yes, what kind of roles/decisions members take?

  □ Fixing benefit package □ Premium collections

  □ Claim management □ Enrolment of new members

  □ Creating awareness about SS □ Renewal of membership

  □ Assessing quality of care of hospitals □ Others (specify)_____

- What is the types of provider payment method used by the scheme?

  □ Global budget □ Capitation

  □ Case -based payment □ Line item budget

  □ Per diem (per day) □ -Fee-for-service

- How do you deal with shortage of funds?
- Are your records regarding your operation (on members, claims, premium and expenditure) computerized [Management Information System]?
- □ Yes □ No
- Was there any incidence of fraud and abuse of the scheme?
- □ Yes □ No
- If yes, what kind of fraud took place?(supplier or insured moral hazard, adverse selection, impersonation)
- Describe the design and management of the scheme.
- How do people join in the scheme?
- What is the nature of your interaction with beneficiaries and health care providers?
- What is the regulatory framework in which your scheme works?

- Do you use referral system to refer insured to different hospitals?

  □Yes □ No

- Do you impose waiting period for newly insured (period during which coverage is not provided)

  □Yes □ No

- Do you crosscheck the beneficiaries?

  _____

- Does it offer reduced premium to enrollees to encourage them to use restricted choice of providers?

  □Yes □ No

- Does the scheme accept in-kind contributions of premium from insured?

  □Yes □ No

- Do you monitor the behaviour of hospitals?

  □Yes □ No

- Do you subsidise the premium for the poorest?

  □Yes □ No

- Do you accommodate the income-generating patterns of households employed in agriculture and the informal sector (irregular, often noncash) for contribution payment?

  □Yes □ No

- Do you have any mechanisms of strategic purchasing?

  □ Gate keeping □ Drug formularies

  □ Selective contracting □ Referral practice

  □ Provider financial incentives

  □ Financial incentives to encourage insured to use particular providers

  □ Others_____

(Human Resource department managers only)

- How the staffs are recruited?

  □ Local community □ Internal candidates

  □ External sources □ Drawn from members

  □ Others_____

- How is SSorganised (organisation structure)?
- What is the basic qualification of different cadre of staff?

- Do you provide any training to your employees in managerial skills?

  □Yes □ No

- Do you provide any training to your employees on health insurance?

  □Yes □ No

- (For field staff only) How often do you contact the members?

  _____

- Do you educate target population regarding health insurance especially Sampoorna Suraksha?

  □ Yes □ No

- How do you assist Sampoorna Suraksha members during admission to hospitals?

  _____

- Do you maintain accurate and up-to-date records of members' addresses?

  □ Yes □ No

- Were there reports of non-sanctioning of the claim? If yes, for what reasons they were rejected?

_____

I thank you for the support and information you have shared with me for this study.

APPENDIX III:PILOT STUDY REPORT

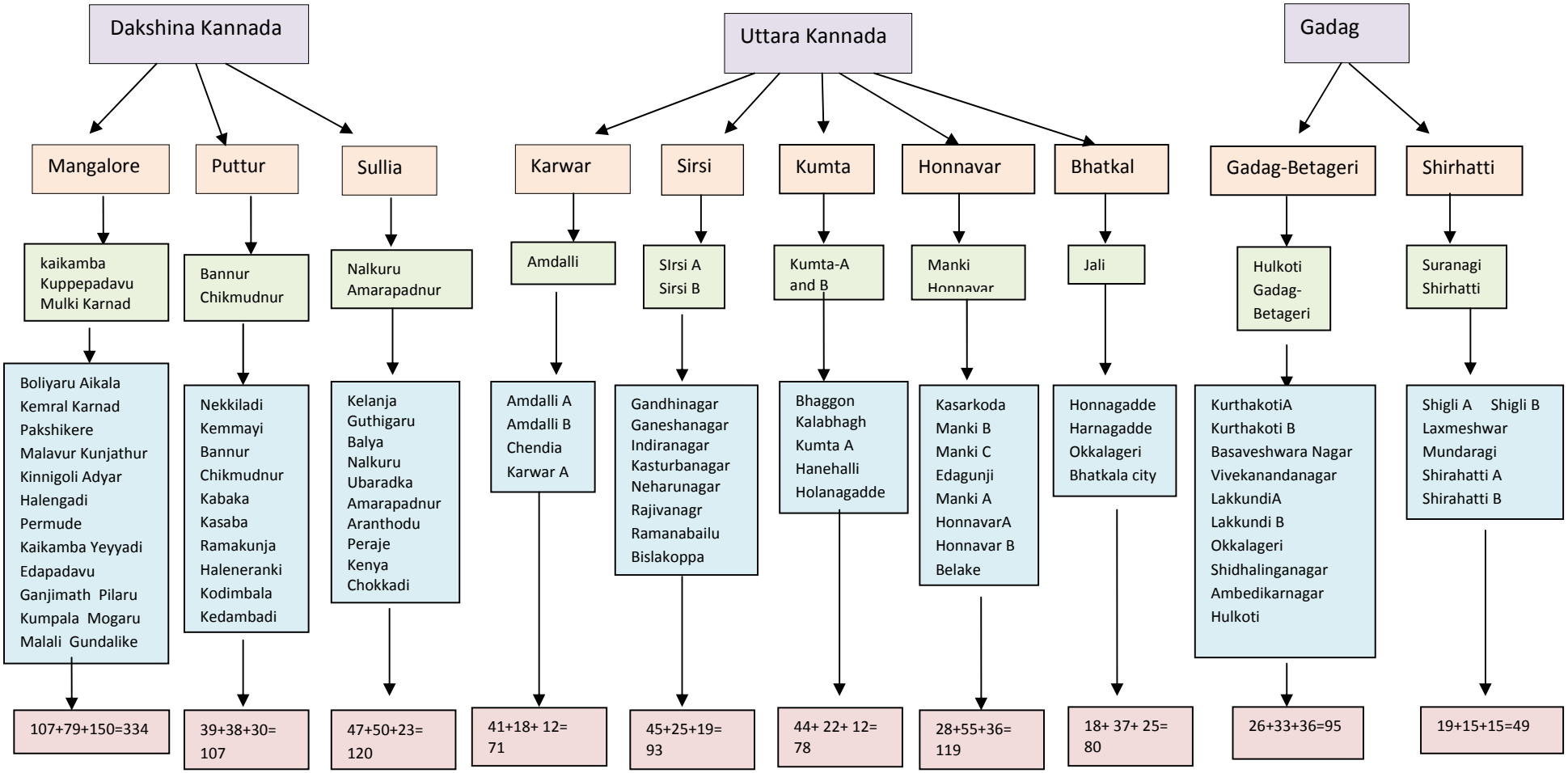
A pilot study was undertaken in December 2010 to test the ideas and measure the validity and reliability of questionnaire that was used to collect data to answer research questions. The questionnaire was drafted based on literature keeping the research objectives in mind. The sample size was 30 and the respondents were selected using convenience sampling method. The study took place in Mangalore and Bantwal *taluk* of Dakshina Kannada district in Karnataka, India. After 15 days, retest was performed on 15 respondents of earlier sample. Statistical testing was done to find out the reliability. The content validity of the questionnaire was scrutinised by subject experts.

The respondents included renewed insured (12 individuals), newly insured (10 individuals) and uninsured (eight individuals) self-help group members to represent the target population. Twenty of thirty respondents had an incidence of illness in the family. One third of respondents was male; either spouse or children of head of household. Majority of them were from informal sector mainly unskilled labourers.

The respondents understood most of the questions easily. Some of the questions that were found to be difficult were re-framed. Some of the options that were not included in the questionnaire but opted by the respondents were later included in the final questionnaire. Retest found recall and response to be reliable. The questionnaire was well understood and had clear instructions.

Questionnaire was re-drafted after making changes to wordings of the sentence, order of questions, range of answers on multiple-choice questions and removal of some questions that was unnecessary or ambiguous. The reliability was checked by calculating kappa coefficient and inter class coefficient. Most of the items in the questionnaire had high value of coefficient (range from 0.634 to 0.99; $p<0.05$). Cronbach's alpha for quality of care questions was 0. 765. The time taken to fill the questionnaire was found to be 20 minutes.

APPENDIX IV: SURVEYED DISTRICTS, TALUKS, VALAYAS AND KARYAKSHETRAS



APPENDIX V: PROFILE OF KARNATAKA AND SAMPLE DISTRICTS

		Karnataka	Uttara Kannada	Dakshina Kannada	Gadag
Population	Persons	61130704	1436847	2083625	1065235
	Males	31057742	727424	1032577	538477
	Females	30072962	709423	1051048	526758
Decadal growth rate (2001-11)		15.67	6.15	9.8	9.6
Sex ratio		968	975	1018	978
Number of	Persons	41029323	1084277	1,666,834	705136
Literates	Males	22808468	585127	866331	401560
	Females	18220855	499150	800503	303576
Literacy rate	Persons	75.6	84.03	88.62	75.18
	Males	82.85	89.72	93.31	84.89
	Females	68.13	78.21	84.04	65.29
Human Development Index		0.65	0.653	0.722	0.634
Health index		0.712	0.781	0.823	0.628

Source: Census of India, 2011; Karnataka Human DevelopmentReport 2010; Directorate of Economics and Statistics, Karnataka

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Research Awards

Awarded 'Best paper' in early proposal category titled "Impact of micro health insurance; the case study of Sampporna Suraksha and Karuna schemes in Karnataka" at the *4th Doctoral Colloquium, Indian Institute of Management Ahmedabad* on 3rd and 4th of January, 2011 at Ahmedabad

BIO-DATA

Name	: Ms. Savitha
Address for communication	: B1 304, Ashoka Paradise, Hoigebail, Ashoknagar, Mangalore-575006, Karnataka, India
Educational Qualification	: M.A (Economics), M.B.A. (Finance), H.G.Dipl.(UK), M.Phil (Management)
Teaching Experience	: 8 ½ years 2 years in Madhava Pai Memorial College, Manipal (July 1999 to December 2000) 1 year in Aloysius Institute of Business Administration, Mangalore (May 2008 to June 2009) 5 ½ years in SDM Post Graduation Centre for Management Studies and Research, Mangalore (from July 2007 to April 2008 and from July 2009 onwards)

Research Publications

a) Research Papers Published in Journals

1. Savitha and Devaraj, K. (2010).“Corporate social responsibility in micro, small and medium enterprises- a study on the awareness and practice in Mangalore.”*Tatva*,8(2), 56-63.
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8. Savitha and Kiran, K.B. (2013c)."Barriers to enrolment in micro health insurance - An empirical study of Sampoorna Suraksha Programme in Karnataka.*"RVIM Journal of Management Research*, December issue, accepted for publication.

b) Research Papers Published in National and International Conference Proceedings

1. Savitha and Santhosh, S. (2009). "Marketing for microfinance institutions."National seminar on *Strategies for Emerging Environment*, Cochin University, Cochin.
2. Savitha and Kiran,K.B. (2010). "Health for all: The role of health financing in mitigating iatrogenic poverty in India."International conference on *Health Care Market and Emerging consumers- Innovation, Efficiency and Effectiveness* (CD-ROM), Manipal Institute of Management, Manipal University.
3. Savitha and Kiran, K.B. (2012). "Impact of Micro Health Insurance on Treatment Seeking Behaviour: Evidence from Karnataka" International Conference on *Inclusiveness and Innovation – Challenges for Sustainable Growth of Emerging Economies*, Symbiosis Institute of Management Studies, Pune.
4. Savitha and Kiran, K.B. (2013). "Micro Health Insurance and Utilisation of Health Services in Karnataka: A Case Study."International Conference on

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c) Research Papers Published as a Book Chapter

1. Savitha and Kiran, K.B. (2012). "Impact of Micro Health Insurance on Treatment Seeking Behaviour: Evidence from Karnataka", Brig. Rajiv Divekar and Londhe B.R. eds., *Inclusiveness and Innovation – Challenges for Sustainable Growth of Emerging Economies*, SIMS and Excel India Publishers, New Delhi, ch.49,377-383.
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d) Research Papers Presented at the Conferences /Workshops Attended

1. Savitha (2008) AICTE sponsored one week Faculty Development Programme on "Econometrics for Management Research" organised by Indian Institute of Management Kozhikode during October 20-25, Kozhikode, Kerala.
2. Savitha (2009). "Marketing for microfinance institutions" in a National Seminar on *Strategies for Emerging Environment*, held on 20-21st February 2009 at Cochin University, Cochin, Kerala.
3. Savitha (2009). "The role of venture capital financing for the development of entrepreneurship in India" in a National Conference on '*Entrepreneurship; " ray of hope*' held on 4th April 2009 at SDM Postgraduate Centre for management education and research, Mangalore, Karnataka.
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e) Books

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