Original Article

Health Seeking Behavior in Karnataka: Does Micro-Health Insurance Matter?

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ABSTRACT

Background: Health seeking behaviour in the event of illness is influenced by the availability of good health care facilities and health care financing mechanisms. Micro health insurance not only promotes formal health care utilization at private providers but also reduces the cost of care by providing the insurance coverage. **Objectives:** This paper explores the impact of Sampoorna Suraksha Programme, a micro health insurance scheme on the health seeking behaviour of households during illness in Karnataka, India. **Materials and Methods:** The study was conducted in three randomly selected districts in Karnataka, India in the first half of the year 2011. The hypothesis was tested using binary logistic regression analysis on the data collected from randomly selected 1146 households consisting of 4961 individuals. **Results:** Insured individuals were seeking care at private hospitals than public hospitals due to the reduction in financial barrier. Moreover, equity in health seeking behaviour among insured individuals was observed. **Conclusion**: Our finding does represent a desirable result for health policy makers and micro finance institutions to advocate for the inclusion of health insurance in their portfolio, at least from the HSB perspective.

Keywords: Government, health-care financing, health seeking behavior, informal providers, micro-health insurance, private

Introduction

Health seeking behavior (HSB) denotes visiting the health-care facility, which includes privately owned hospitals, public hospital, clinic, ayurvedic hospitals, nursing homes or home medicine. The desired HSB has been related to visiting official channels in a formally recognized health-care.[1] However, public hospitals in India are known for low quality treatment, long waiting period, long distance, inconvenient location and inadequate facilities in public hospitals.[2] So, private care was preferred due to easy accessibility even in the night, quick relief and individual attention.[3] Owing to lack of money to access care at private hospitals, poor people resort to self-treatment and by-pass primary care providers[4] and substitute drug vendors for formal care in Vietnam.[5] Micro Health Insurance (MHI) reduces financial barriers to care by meeting the cost of illness. A study in Vietnam[6] documented the positive impact as insured used inpatient facilities and public providers more than uninsured and health-care was sought from formal providers by the insured members in Ghana and Mali[7] and Rwanda,[8] China[9] and India.[10] In contrast, another study conducted in Senegal[11] documented minimal effect of MHI on the HSB. In addition to health insurance, HSB has been found to be associated with type of illness and gender of ill-person,[1,12,13] income class,[3,14,15] area of residence,[15] age and duration of illness.[10] Studies on the impact of MHI on HSB from India are scarce. Hence, this paper addresses this knowledge gap by assessing the HSB behavior of insured and uninsured households using logistic regression analysis. Sampoorna Suraksha Program (SSP), a MHI scheme in Karnataka state, India has been considered for this study. "Sampoorna Suraksha" means "total security" in Kannada language. It is a welfare scheme to give financial assistance to the poor people for hospitalization, maternity, death and other hazards in Southern Karnataka [Table 1].

Table 1: Key features of Sampoorna Suraksha Program

Ownership and governance	SKDRDP Trust and Insurance Companies
Micro-health insurance model	Partner-agent model for hospitalization benefit and full service model for special benefit cover
Insurance company	United Insurance Company Ltd., Oriental Insurance Ltd., Company Ltd., New India Assurance Company Ltd., National Insurance Company Ltd. in 2011-2012
Enrolment	420,302 households, 1,660,185 members in 2011-2012
Eligibility	Age group between 3 months to 85 years
Benefit package	Life, health, and assets; Rs. 5000/- for hospitalization per person in a family; Rs. 5000/- for maternity and natural death; Rs. 1500/- for rest allowances; Rs. 12,500/- for accident
Network hospitals	110 in 9 districts of SKDRDP and Bangalore and Hassan in 2011-2012
Process of reimbursement	Cashless; payment directly to the hospital
Method of reimbursement to hospital	Paid by real time gross settlement
Community involvement in scheme design and management	Feedback given at the annual or monthly meetings is used to improve the scheme design

SKDRDP: Shree kshetra dharmasthala rural development project

We hypothesize that insured members seek care at private facilities than public hospitals due to superior quality of network hospitals and higher level of awareness owing to frequent health education programs conducted by SSP. Network hospitals were selected after rigorous scrutinization based on various criteria that include the range and quality of services, cost of treatment, location and proximity to members and preferences of members. Hence, these hospitals would be preferred than public hospitals. This assumption is supported by various studies from India.[16-18] Section 2 explains the methods of the study and Section 3 outlines the results of the study including logistic regression analysis. Section 4 discusses the results of the study.

Materials and Methods

Cross-sectional descriptive survey method was adopted to collect data from the insured and uninsured households in Karnataka, India during the first half of 2011. As any impact evaluation study suffers from the endogeneity bias, newly enrolled members were taken as the comparison group due to similar unobservable characteristics between them and insured groups. The logic is that both group members self-select into the program, so the unobservable characteristics can be assumed to be similar and this may reduce the potential error due to endogeneity. In addition, both groups are members of self-help groups (SHG); hence observable characteristics will be similar. In addition, uninsured members were also considered. To test endogenetiy statistically, Durbin-Wu-Hausman test was applied.

Stratified random sampling method was adopted to select three districts of Karnataka namely Dakshina Kananda, Uttara Kannada and Gadag, 10 taluks (administrative divisions) in these districts. In the third stage, list of circles in the selected taluks were used to select 18 circles (1-2 per taluk) and 2-3 divisions from each circle (called karyakshetras) were selected based on the number of divisions in each circle, a total of 84 divisions were chosen. By using the list of SHG members available at the taluk project office, required sample was selected under the category of the insured group (who renewed their membership in the year 2011-2012), newly insured group (who enrolled for the first time in the year 2011-2012) and uninsured group. Data were coded and statistical analysis was carried out using the International Business Machines (IBM) Inc., Statistical Package for the Social Sciences (SPSS) version 17.0 software.

Results

The total sample households were 1146 that included 416 insured households (1850 individuals), 366 newly insured households (1594 individuals) and 364 uninsured households (1517 individuals). Insured households were predominantly headed by males compared with uninsured households (both newly insured and uninsured) and most of sampled household head worked as waged laborer. Insured households had more family members, on an average than uninsured families and resided in rural areas. Average distance to hospitals was less for insured families than uninsured households [Table 2].

In the survey, 371 individuals reported sickness in the last 1 year of which 10 persons did not seek treatment. Of 361 persons who sought treatment, 19 resorted to self-treatment and the remaining 342 individuals availed health-care services one or more times resulting in 429 visits to private and public facilities including homeopathy/ayurveda treatment [Figure 1]. Table 3 illustrates HSB of individuals from the insured and uninsured groups. Higher proportion of insured individuals visited district hospitals (38.1%) and regional hospitals (35.5%) than newly insured (27.5% and 28.9% respectively) and uninsured (31.2% and 24.8% respectively) individuals. Income of the family was a determinant of HSB with rich people accessing more of

Table 2: Basic characteristics of sampled households

Variables	Insured	Newly insured	Non-insured	*P* value
Median age of household head (years)	48	47	48	0.495[a]
Gender of household head (%) male	83.7	84.7	79.9	0.199[b]
Occupation of head of the household (%)				
Unskilled labor (beedi roller, daily laborer)	38.2	43.4	43.1	0.396[b]
Skilled labor	18	16.9	15.7	
Self-employment	10	5.4	8.5	
Formal sector employment	2.9	5.2	5.8	
Unemployed	12.3	12.8	10.7	
Unskilled salaried (informal sector)	5.8	5.2	5.2	
Skilled salaried (informal sector)	3.1	2.2	3.6	
Agriculture	3.6	3.8	2.5	
Mean annual income (in Rs.)	116,850	102,630	107,926	0.310[a]
Income quintile (%)				
Q1 <14,100	18.5	20.5	22	0.784[b]
Q2 14,101-19,010	20.9	20.5	22	
Q3 19,011-24,000	19	22	18.4	
Q4 24,001-34,800	21.9	21.3	22.3	
Q5 >34,800	19.7	15.6	17.6	
Mean size of households	4.5	4.36	4.2	0.011[a]
Area of residence (%)				
Rural areas	44	49.2	54.5	0.000
Urban areas	7.2	14.2	12.1	
Semi-urban areas	36.6	34.4	40	
Gender of ill-person (%) male	82 (50.9)	60 (50)	45 (50)	0.984[b]
Distance to nearest hospital (in km) mean (SD)	2.6 (2.4)	3.3 (2.7)	2.4 (2.3)	0.000[a]

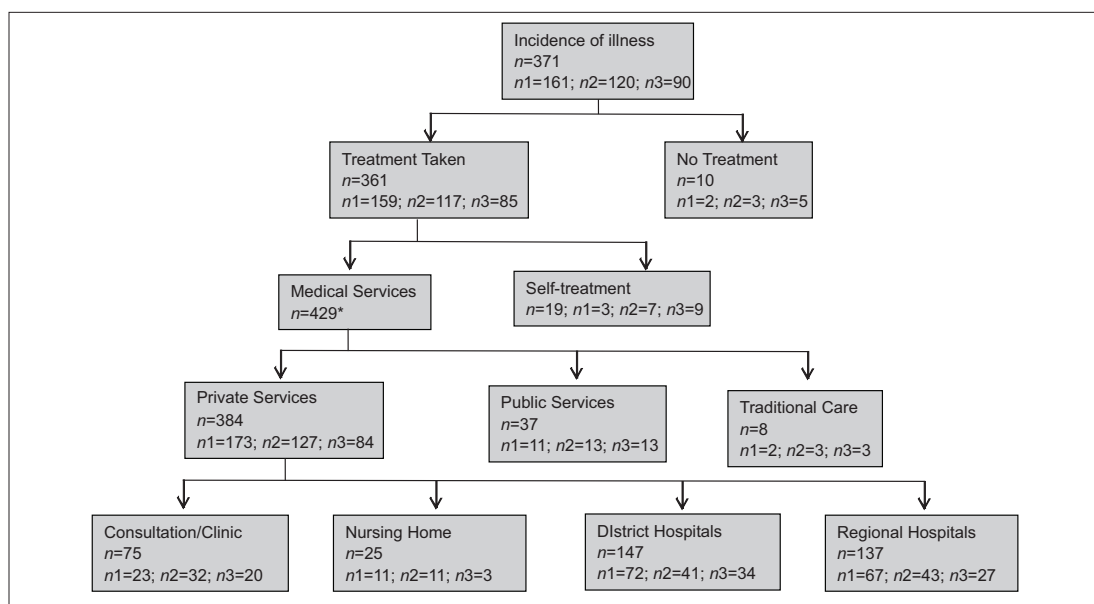[a]Kruskal wallis Chi-square, [b]Chi-square test

Figure 1: Overview of health care seeking behavior of insured and uninsured individuals, *Number of visits to a health facility by ill-persons, *n* = total, *n*1 = insured, *n*2 = newly insured, *n*3 = uninsured

private expensive care than poor people [Table 4]. When sick, usually individuals seek care one or more times and the sequence of a visit to a health facility is displayed in Figure 2. Insured and newly insured who self-treated visited private hospitals in their second line of treatment whereas uninsured consulted doctors at clinic, visited

government hospital and district hospital. A comparison of type of health facility visited for secondary and tertiary care by insured, newly insured and uninsured individuals is given in Table 5. A higher percent of newly insured (13.2%) and uninsured individuals (20.4%) went to the government hospital compared to a small percent

Table 3: Health seeking behavior: A comparison by insurance status

Source of healthcare	Insured	Newly insured	Uninsured
Home medicine	1.6	4.7	8.3
Clinic	12.1	21.5	18.3
Nursing home	5.8	6.7	2.7
Government hospital	5.8	8.7	11.9
District hospital (<100 beds)	38.1	27.5	31.2
Regional hospital (>100 beds)	35.5	28.9	24.8
Ayurvedic hospital	1.1	2	2.8

χ^2 (6, N=361)=23.921, P=0.02

Table 4: Health seeking behavior: A comparison by income quintile

Type of care by health insurance status	Income quintiles				
	Q1	Q2	Q3	Q4	Q5
Insured[a]					
Government hospital	19.4	2.8	9.7	4.8	0
Private hospital	80.6	97.2	90.3	95.2	100
Newly insured[b]					
Government hospital	10	5	23.5	16	13.3
Private hospital	90	95	76.5	84	86.7
Uninsured[c]					
Government hospital	12.5	15.8	30.8	21.4	0
Private hospital	87.5	84.2	69.2	78.6	100

[a]χ^2 (4, N=316)=12.299, P=0.015, [b]χ^2 (4, N=316)=3.064, P=0.547, [c]χ^2 (4, N=316)=4.794, P=0.309

Table 5: Type of care sought by individuals: Comparison by type of facility

Type of care by health insurance status	Type of care	
	Secondary[a]	Tertiary[b]
Insured		
Government hospital	7	6.7
Private hospital	93	93.3
Newly insured		
Government hospital	13.2	14.3
Private hospital	86.8	85.7
Uninsured		
Government hospital	20.4	5
Private hospital	79.6	95

[a]χ^2 (2, N=316)=6.52, P=0.038, [b]χ^2 (2, N=316)=1.36, P=0.508

of insured individuals (7%). However, for tertiary care, majority of them visited private health facilities.

The binary logistic regression analysis was performed [Table 6] considering health insurance status, gender of the ill-person, area of residence and income class as independent variables and hospitalization in private and public hospitals as dependent variable. A small percent of insured individuals got admitted in public hospitals (6.9%) than newly insured (13.4%) and uninsured (16.2%) individuals. Sizeable percent of insured got care from private hospitals (93.1%) compared to newly insured (86.6%) and the uninsured (83.8%) individuals. Considerable proportion of women sought care from public hospitals (12.5%) than private hospitals in comparison to men (9.8%). Almost 15% of households from quintile 1 (Q1), 6.7% from Q2, 18% from Q3 visited public hospitals and almost 97% from Q4 and 89% from Q5 income class sought care from private hospitals. Higher percent of individuals living in urban areas (15.2%) and 12% of rural residents got treated in public hospitals. Larger proportion of individuals in semi urban areas sought care from private hospitals (91.3%) compared with urban or rural areas.

The robustness of the logistic regression model was tested and the results of these tests showed that 88.9% of cases were correctly predicted by the model. Gender of the ill-person and the area of residence were not significantly associated with HSB. After controlling for socio-demographic variables, the odds of being hospitalized in private hospitals than public hospitals decreases by a factor of 0.407 if the individual is newly insured rather than insured and by a factor of 0.373 if the individual is uninsured than insured, controlling for other variables in the model. The odds of being admitted in private hospitals increases by a factor of 4.676 if the households are in Q5 than Q1, controlling for other variables in the model. Thus, income class and health insurance increases the likelihood of hospitalization in private hospitals than public hospitals.
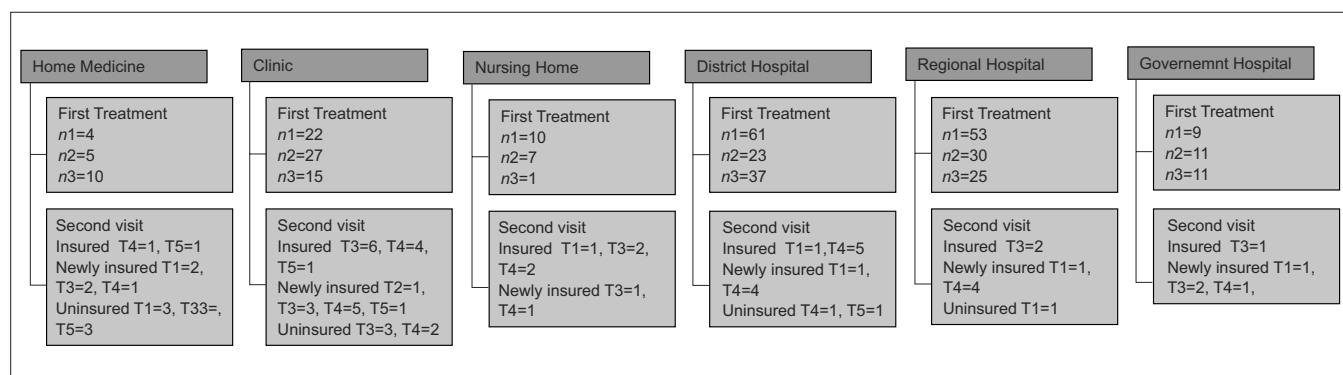
Home Medicine	Clinic	Nursing Home	District Hospital	Regional Hospital	Governemnt Hospital
First Treatment $n1$=4 $n2$=5 $n3$=10	**First Treatment** $n1$=22 $n2$=27 $n3$=15	**First Treatment** $n1$=10 $n2$=7 $n3$=1	**First Treatment** $n1$=61 $n2$=23 $n3$=37	**First Treatment** $n1$=53 $n2$=30 $n3$=25	**First Treatment** $n1$=9 $n2$=11 $n3$=11
Second visit Insured T4=1, T5=1 Newly insured T1=2, T3=2, T4=1 Uninsured T1=3, T33=, T5=3	**Second visit** Insured T3=6, T4=4, T5=1 Newly insured T2=1, T3=3, T4=5, T5=1 Uninsured T3=3, T4=2	**Second visit** Insured T1=1, T3=2, T4=2 Newly insured T3=1, T4=1	**Second visit** Insured T1=1,T4=5 Newly insured T1=1, T4=4 Uninsured T4=1, T5=1	**Second visit** Insured T3=2 Newly insured T1=1, T4=4 Uninsured T1=1	**Second visit** Insured T3=1 Newly insured T1=1, T3=2, T4=1,

Figure 2: Sequence of health seeking behavior 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, Source: Primary survey

Table 6: Determinants of health seeking behavior

Independent variables	B	SE	Wald	df	Sig.	Exp (B)	95% CI for Exp (B)	
							Lower	Upper
Health insurance (base=insured)			5.272	2	0.072			
Newly insured	−0.899	0.469	3.672	1	0.055	0.407	0.162	1.021
Uninsured	−0.985	0.474	4.324	1	0.038	0.373	0.148	0.945
Area of residence (base=rural)			0.885	2	0.643			
Urban	0.169	0.511	0.109	1	0.741	1.184	0.435	3.222
Semi urban	0.408	0.434	0.884	1	0.347	1.504	0.642	3.525
Income quintile (base=Q1)			7.538	4	0.110			
Q2	0.956	0.588	2.643	1	0.104	2.602	0.822	8.239
Q3	−0.202	0.498	0.165	1	0.685	0.817	0.308	2.167
Q4	0.383	0.540	0.501	1	0.479	1.466	0.508	4.229
Q5	1.542	0.810	3.627	1	0.057	4.676	0.956	22.872
Gender of ill-person (base=female)	0.258	0.377	0.468	1	0.494	1.294	0.618	2.709
Constant	2.205	0.547	16.235	1	0.000	9.069		
Number of observations	316							

Omnibus test model coefficient: χ^2=18.018, df=10, P=0.055. −2 log likelihood=201.982, Cox and Snell R^2=0.055, Negelkerke R^2=0.111, Hosmer and lemeshow χ^2=4.076, df=8, P=0.850 (dependent variable: Hospitalization in private facility; 1=yes), CI: Confidence interval, df: Degree of freedom, SE: Standard error

Discussion

Using logistic regression analysis and household survey data, this paper empirically evaluated the influence of SSP on the use of public and private health services by the individuals faced with illness. The model has been subjected to a number of specification and diagnostic tests; especially the possible endogeneity has been tested using Durbin-Wu-Hausman test. In this model, health insurance was found to be exogeneous with prob (χ^2) = 0.994. 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 0.850 indicates excellent discrimination). The area under the curve was 0.697 with 95% confidence interval (0.614, 0.780). The area under the curve was significantly different from 0.5 since the *P* value was 0.000. Hence, the model classifies the group significantly better than by chance. The results of this study indicate that the insured individuals sought care from private facilities than public hospitals. Moreover, insured individuals sought secondary care more from private hospitals than public hospitals compared to uninsured and newly insured individuals. Tertiary care was availed in private hospitals by the majority of sick individuals irrespective of health insurance status. By removing financial barriers to access care, SSP could make health-care at private hospitals or nursing homes affordable. Income is another factor associated with treatment sought with individuals from low socio-economic status accessing care at public facilities. However, SSP improved equity in access to care as lower income (Q2 and Q3) insured households could seek timely and efficient treatment in private hospitals. This paper adds to existing world literature on the positive impact of MHI on HSB in developing courtiers like India.

Uninsured individuals self-treating or public hospitals visited district or regional hospitals in their second visit. Hardly few individuals visited public hospitals in their second visit. This may be due to ineffective treatment in public hospitals as found in a study from India.[2] Insured individuals sought treatment at private hospitals in their first as well as second visits. However, SSP could remove financial barriers to access quality care at private hospitals to some extent. Sizeable percent of individuals in the lowest income class (Q1) got hospitalized in public hospitals rather than private hospitals despite having insurance coverage. Since SSP has not increased the benefit amount over the years, even when the cost of treatment escalated in India, poorest individuals had to incur out of pocket expenses that might have compelled them to rely on public hospitals. However, poor individuals in income Q2 and Q3 could seek timely and efficient treatment in private hospitals. Does this denote incentive effect or moral hazard as uninsured households in the respective income quintile got hospitalized in public hospitals? To some extent moral hazard is to be taken as welfare-promoting especially in low income countries like India where financial barriers to access care are quite high.

Except income class and health insurance, gender of ill-person and area of residence was found not to be associated with HSB. Our study finding that MHI schemes increases the use of formal health services when sick represents a desirable result for health policy makers and micro-finance institutions which are planning to include health insurance in their portfolio. Despite MHI, poor people seek care in public hospitals that signals possible financial and non-financial barriers to access care at network hospitals. Identification and removal of these barriers is the need of the hour to ensure equity in HSB.

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