

LANGUAGE IN INDIA

Strength for Today and Bright Hope for Tomorrow

Volume 12 : 6 June 2012

ISSN 1930-2940

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Analysis of Demand for Health Insurance A Micro Level Study

D. Hemalatha, Ph.D. Candidate

T. S. Kalyani, Ph.D.

ABSTRACT

Health care costs are rising rapidly in India. Today, the best health care involves high technologies that latest advancements in medical field facilitate. Now-a-days the medical expenditure are unbearable to the middle and lower income class people. To meet unpredictable medical expenses health insurance will be of much help to the middle and lower income group people. In this context, the present paper discusses the demand for health insurance by the various income groups and also the awareness of the people about health insurance.

Introduction

Health Insurance market in developing economies depends on the composition of health delivery providers – whether private or public and the government's involvement in health insurance provision. However there is strong tendency in poorer economies for households to bear responsibility for paying a much higher proportion of overall health costs out of pocket than in richer economies, which leads to underinvestment in health services (particularly on the preventive side) and vulnerability to health related consumption stocks. Thus, a strong case can be made for

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improving health outcomes in poor countries through a varied combination of public and private insurance provision depending on the institutional setting (Lal Brainand, 2011). Indeed, countries such as Mexico and Colombia have undertaken interesting reforms in their area in recent years and this is likely to be an area of strong growth.

Statement of the Problem

Health care costs are rising rapidly in India. Today, the best health care involves high technologies that latest advancements in medical field facilitate. Added to this is the expertise of professionals and utilities. A citizen has to pay huge fees to avail such health care. Low and middle income people who are not prepared to pay for their emergency health care expenses, during an unforeseen accident or major illness, find health insurance a viable alternative. Health insurance helps in ensuring that no one is deprived of the minimum healthcare (Anitha, 2005). Its primary aim is to protect a patient and his family from financial disaster and simplifying the mode of payments. For eg. instead of making separate payments say for the doctor, surgeon, pathologist, nurse etc. the insured will pay premium to the insurer who in turn will take care of all these expenses. It also helps in eliminating sickness as a cause of poverty and helps reduce anxieties of different nature – economic, medical and moral. Health Insurance Companies provide financial assistance to the insured in case of disability or loss of health, so that he/she can take curative measures and also maintain their dependents during the period of sickness / disability with the benefits the insurer provides. Now a days the medical expenditure are unbearable to the middle and lower class income people. To meet such unpredictable medical expenses there is an instant need to meet medical expenditure.

Health Insurance helps the middle and lower income group people to meet the unexpected health expenditure. In this context, the present paper discusses the demand for health insurance by the various income groups and also the awareness of the people about health insurance.

Review of Literature

Nyman, (2002) in his book on the *Theory of demand for Health Insurance* critically examined two core issues in health economics. 1. Health insurance induces individuals to over consume care and that the demand for insurance is primarily driven by individuals desire to avoid risk. The individuals desire to increase their ability to afford healthcare, when they fall ill is an important motivator for the purchase of health insurance.

The article by Cagaray Koc, (2004) analysed the effects of uncertainty and increase in risk aversion on the demand for health insurance using a theoretical model that highlights the

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interdependence between insurance and health care demand decisions. Two types of uncertainty faced by the individuals are examined. The first one is the uncertainty in the consumer's pretreatment health and the second is the uncertainty surrounding the productivity of health care. Comparative statistics results are reported indicating the impact on the demand for insurance or shifts in the distributions of pretreatment health and productivity of health care in the form of first-order stochastic dominance.

Yogeshwar Phatakes and Shilpimalaya, (2004) in their article titled, *Study of factors influencing health insurance cover* discussed various factors influencing health insurance coverage. They opined that affordable health service and medical care-diagnostic, restorative, therapeutic and rehabilitative care are assuming greater importance and stated that insurance enables the use of medical treatment entitlement. Both state and private insurance (both for individual and group) need to educate the public with regard to need of health insurance coverage. They suggested that factors like wider range of coverage for health related problems, lower premium, greater government incentives, convenient and cashless hospitalization for the insured persons need to be advocated to increase the level of health insurance coverage in India.

Satheesh Kumar, et.al., (2007) in their article on *Health insurance for sustainable living: Need of hour* analysed number of health insurance schemes available in the market and selection of appropriate schemes in accordance with their socio-economic conditions. They opined that health insurance market lacks development of proper regulatory mechanisms both on the supply of health services and on the demand for the health insurance.

Rohit Kumar, (2011) examined the Indian health insurance market by empirically observing the provider's perceptions and its relationship with the insured, the insurer and the Third Party Administrators. The study tried to find out the awareness level among the insured population and their attitude towards treatment cost. It then examined the role of Third Party Administrators and the impact of cashless services on the cost of treatment by studying a few cost drivers. Apart from studying the provider's perceptions it also tries to look at some of the evidence of moral hazards and that of fraudulent activity. The findings suggest that the awareness level regarding policy terms and condition is low among the insured population and most of them do not care for the cost of treatment. The providers increase their rates quite frequently and prefer the middle income group for extending cashless benefits.

Saravanakumar and Sangamithra, (2011) in their article on *Health insurance: An investment approach* examined the factors influencing the demand for health insurance. They also proved the

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association between education and demand for health insurance. From the multiple regression model, they concluded that age and occupation of the insurers were negatively significant to purchase health insurance whereas income, education and the premium amount were positively significant.

Based on the literature reviewed the following objectives and hypotheses are framed in the present study.

Objectives

1. To identify the factors determining the demand for health insurance.
2. To examine the extent of relationship between the demand for health insurance and socio-economic characteristics.

Hypotheses

1. Awareness of the people towards health insurance is associated with their educational levels.
2. Demand for health insurance is significantly influenced by the socio-economic status of the respondents.

Methodology

The study is based on primary data. A sample of 100 insured respondents in public and private insurance companies in Chidambaram town is selected for the study, because many public and private insurance companies are located in the town to capture market for their companies. The information regarding the socio-economic and demographic characteristics besides the sum of insurance, premium amount, tax benefits of insurance etc. are collected from the respondents. The health insurance policies taken by the insurers cover five year period from 2008 – 2012. The sample insurers are selected from various occupational categories. Irrespective of the gender, the sample selection covers both male and female.

ANALYSIS OF HEALTH INSURANCE AWARENESS

Table-1 presents the age-group wise classification of the sum of Insurance and premium paid per year by the sample respondents. Sum insured by the respondents vary from Rs. 1 Lakh to Rs.5 lakhs.

In 20-35 age group, 16 are in Rs. 1 lakh to Rs. 2.5 lakhs level of sum insured, 20 are in Rs.2.5 lakhs to Rs.5 lakhs level of sum insured. Premium paid per year by the respondents vary from Rs.<5000, Rs.5000-10,000 Rs.10000-15,000 and Rs.>15,000.

In this age group, 10 pay Rs. <5000 premium per year. Another 10 are found in Rs.5000-10000 premium payment per year and another, 10 are found in Rs.10000 – 15,000 premium per year

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6 are in Rs.>15,000 premium payment per year. 3 are found in Rs. 10,000-15,000 premium payment per year and another 3 are in >15,000 payment per year.

In 35-50 age group, 20 have Rs. 1 lakh to Rs. 2-5 lakhs level of sum insured. In this age group, 10 pay Rs.<5000 level of premium per year. 10 are found in Rs. 5000-10,000 premium payment per year, 14 are in Rs.10,000-15000 premium payment per year and 15 pay >Rs.15,000 premium per year.

In 50-65 age group, 3 are found in Rs.1 lakh to Rs.2.5 lakhs level of sum insured. In this age group, 6 have Rs.2.5 lakhs to 5 lakhs level of sum insured and one is found with Rs. 5000-10000 premium per year, 3 are in Rs.10,000-15,000 premium payment per year and 5 are in >15,000 premium payment per year.

In above 65 age group 2 are in Rs. 1 Lakh to 2 lakhs level of sum insured and 4 are in Rs. 2.5 lakhs to 5 lakhs level of sum insured and 3 are found in Rs.10,000-15,000 premium per year and another 3 are in Rs.>15,000 premium payment per year.

From Table No.2, it is followed that out of 11 in the sample who have completed school level education, 6 are having high awareness and 5 are having low awareness towards insurance. Out of 40 graduates, 21 revealed high awareness while 19 expressed low awareness regarding health insurance. 49 post graduates are found in the sample. Out of 49, 39 are having high awareness and 10 expressed low awareness regarding health insurance.

To test the association between awareness of the people to take health insurance and their educational levels, χ^2 is applied and the result is presented below.

$$\chi^2 = \frac{\sum (O - E)^2}{E}$$

$$\chi^2 = \left[\frac{(6 - 7.26)^2}{7.26} + \frac{(21 - 26.40)^2}{26.40} + \frac{(30 - 32 - 34)^2}{32.34} \right]$$

$$+ \frac{(5 - 3 - 74)^2}{3.74} + \frac{(19 - 13.60)^2}{13.60} + \frac{(10 - 16.66)^2}{16.66}$$

$$\chi^2 = 6.72$$

Co-efficient of

$$\text{contingency} = \sqrt{\frac{\chi^2}{N + \chi^2}} = 0.1589$$

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d.F= (C-1) (r-1)=2

The table value of χ^2 for 2 degrees of freedom at 5% level of significance is 5.99. The calculated value of χ^2 is 6.72 higher than the table value. Hence the hypothesis stands proved and there is association between awareness about health insurance and educational level of the respondents.

Age, Income, educational levels, tax benefits, premium amount, occupational status and gender are the important socio-economic characteristics of the people determining the decision to take health insurance. In order to see the influence of these characteristics on the insured respondents, they are classified according to their age, education and income levels, tax benefits, premium amount, occupational status and gender and they are presented in Table Nos 3,4 and 5.

Table No.3 presents the age group-wise classification of the income and educational levels of the sample respondents. The age groups are divided into four viz., 20-35, 35-50, 50-65 and > 65. Totally 58 males and 42 females form the sample. The income groups are divided into 3 viz, low (Rs.1 lakh to 3 lakhs), middle (Rs.3 lakhs to 4 lakhs), high (Rs.4 lakhs to 5 lakhs).

In 20-35 age group, 5 have completed school level education, 15 are graduates and 13 are post graduates. In this age group, 7 are in low income group, 10 are in middle income group, and 16 are in high income group.

In 35-50 age groups, 6 have completed school education, 20 are graduates and 26 are post graduates. In this age group, 11 are found in middle income group and 25 are found in high income group, 3 are graduates and 6 are postgraduate. In this age group, 2 are in middle income group and 7 are in high income group.

In the above 65 age group, 2 are graduates and 4 are post graduates. In this age group, 2 are found in middle income group, and 4 are found in high income group.

From Table No.3, it is followed that, in middle age group (35-50) 28 males and 21 females are found and also in this age group, 26 are post graduates and 20 are graduate. 25 are found in high income group. Out of 49 sample insured respondents in this age group, only 12 are found in low income group.

Regarding the other age groups, in 20-35 age group, 7 are found in low income, 10 in middle income and 16 in high income groups. In this age group, only 5 are having school level education and 28 are found with college level education.

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In the 50-65 age group, 9 are education. In 50-65 age group 9 are with college level education and in this age group 7 are found in high income group. In above 65 age group, out of 6, are post graduates and they are found with high income recipients.

Table No.4 presents the age group wise classification of the occupational categories of the sample respondents. The occupational categories are classified into primary sector, secondary sector and tertiary sector. Primary sector relates with agricultural workers. Secondary sector relates with the workers employed in public and private institutions like schools, colleges and industrial establishments. Tertiary sector covers the self-employed business people.

In primary sector, totally 19 males and 9 females are found in various age groups. In secondary sector, 17 males and 14 females are found. In tertiary sector, 22 males and 19 females are found.

It is observed from the table that in the 20-35 age group, 8 males and 2 females are agricultural workers. In the above 65 age group, 6 males and 3 females are engaged in agricultural works.

In secondary sector, 6 males and 6 females are found in 20-35 age group. In above 65 age group, 4 males and 3 females are found.

In tertiary sector, in the 20-35 age group, 4 males and 6 females are found. In above 65 age group, 2 males and 1 female are found.

In tertiary sector, 10 males and 8 females are found in 35-50 age group and in secondary sector, 3 males and 3 females are found. In primary sector, 3 males and 2 females are found in the same age group.

In tertiary sector, 6 males and 4 females are engaged in 50-65 age group in tertiary sector. In secondary sector, 4 males and 2 females are found. In primary sector, 2 males and 2 females are employed in the same age group.

Thus it is observed from the table that female working population is almost the same as male working population. There is no much sexwise difference in the occupational status of the sample respondents.

Table No.5 shows the age group Wise classification of the tax benefits of the sample respondents. The tax benefits vary from a minimum of Rs.34 to a maximum of Rs.1460 per year. The table presents that 38 respondents are enjoying minimum amount of tax benefits, 62 are enjoying maximum benefits per year. It is also observed from the table that 39 middle aged respondents (35-

50 age group) are enjoying maximum tax benefits than the tax benefits enjoyed by the respondents in the other age groups.

Thus from the 3, 4 and 5 tables it is observed that age, education occupation, tax benefits, sex and income levels of the sample respondents are the various socio-economic characteristics determining their demand for health insurance. These characteristics of the insured sample respondents reveal that irrespective of gender, people demand health insurance. In the sample 58 male and 42 female respondents opt for health insurance. This shows that more than 40% of female and 40 to 60% of the male have taken health insurance policies for various amounts of sum insured. Middle age group respondents show greater interest in taking health insurance policies. Graduate and post graduate respondents are found more in number than the other insurers with various levels of education.

Income of the respondents show greater positive effect on the sum insured. Tax benefits and occupational status also considerably influence the respondents to take health insurance. In below Rs.5000 level premium per year, 41 insurers are found. This indicates that the insurers are ready to pay premium for longer years to protect this health insurance.

From the socio-economic characteristics of the respondents, it is followed that age, education, income, gender, premium amount, tax benefits and occupational status influence the people's demand for health insurance. To know the significant impact of these factors on the demand for health insurance the multiple regression model is applied.

Framework of the model

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \mu$$

α – constant regression parameter

$\beta_1, \beta_2, \beta_3, \beta_4, \dots, \beta_7$ - slope or partial regression parameters.

- Y -sum of insurance
- X₁ -Premium Amount per year
- X₂ -Tax benefits per year
- X₃ -Income of the insurer per year
- X₄ -Age of the insurer
- X₅ -Occupation
- X₆ -Educational level

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X₇ -Sex of the insurers and

μ -Error term

-Thus the fitted regression equation is

$$Y = 44853.456 + 43.953 X_1 + (-161.125) X_2 + (-254)X_3 + (-3451.095) X_4 + (15174.965) X_5 + (50705.485) x_6 + (-3037.597) x_7 + \mu_9$$

$$R^2 = 91\%$$

Table No.6 presents the results of the multiple linear regression explaining the determinants of demand for health insurance. Sum of Insurance is (a proxy for the demand of Health Insurance) determined by the premium amount, tax benefits, income of the respondents, age, occupation, education and sex of the respondents. From the results presented in Table-6, among the seven variables considered in the model sum of insurance is significantly influenced by the annual income of the insurer, age of the insurer and educational level of the insurer. Level of income has positive effect on the sum of insurance. I.e. higher the level of income, higher is the sum of insurance. It is significant at 1% level, whereas age of the insurer has negative effect on sum of insurance i.e. higher the age, lower is the sum of insurance. It is also significant at 1% level. Educational level of the insurers has positive effect on sum of insurance and found to be significant at 5% level. The R² value is 91% which implies that the sum of insurance is influenced by 91% by the variables included in the model. The remaining 9% is due to the variables which are excluded from the model. The estimated function is the best fit as 91% of change in the endogenous variable viz., sum of insurance is due to the linear influence of income, age and educational level of the insurers. Thus the second hypothesis framed in the study that is also validated by the results of the multiple linear regression model.

Conclusion

1. The study finds that awareness of the people to take health insurance policies is closely associated with their educational levels.
2. The demand for health insurance by the people is significantly influenced by their age, income and educational levels.

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Table -1

Age-Group wise Classification of the Sum of Insurance and Premium Paid Per Year by the Sample Respondents

Age Group	Sum Insured (Rs.)		Premium paid per year (Rs.)			
	1 to 2.5 lakhs	2.5-5 lakhs	<5000	5000-10,000	10,000 – 15,000	>15,000
20-35	16	20	10	10	10	6
35-50	20	29	10	10	14	15
50-65	3	6	-	1	3	5
Above 65	2	4	-	-	3	3
Total	41	59	20	21	30	29
Grand total	100		100			

Source: Computed

Table -2

Age – Groupwise Educational Levels and Health Insurance Awareness of the Sample Insured Respondents

Educational level	Awareness	Total
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	High	Low	
School	6	5	11
Graduate	21	19	40
Post Graduate	39	10	49
Total	66	34	100

Source: Computed

Table – 3

Age – Group wise Classification of the Income and Educational Levels of the sample respondents

Age groups	Male	Female	Educational Level			Income (Rs.)		
			School	Graduates	Post Graduates	Low (1 lakhs to 3 lakshs)	Middle (Rs.3lakhs to 4 lakshs)	High (Rs. 4 lakhs to 5 lakshs)
20-35	18	12	5	15	13	7	10	16
35-50	28	21	6	20	26	12	15	25
50-65	7	5	-	3	6	-	2	7
Above 65	5	4	-	2	4	-	2	4
Total	58	42	11	40	49	19	29	52
Grant Total	100		100			100		

Source: Computed

Table -4

Age-Group wise Classification of the Occupational Categories of the Sample Respondents

Age Group	Male			Female		
	Primary Sector	Secondary Sector	Tertiary Sector	Primary Sector	Secondary Sector	Teritor Sector
20-35	8	6	4	2	6	6
35-50	3	3	10	2	3	8
50-65	2	4	6	2	2	4

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> 65	6	4	2	3	3	1
Total	19	17	22	9	14	19

Source: Computed

Table- 5

**Age- Groupwise Classification of the Tax Benefits of the Sample Respondents
Tax Benefits**

Age group	Minimum	Maximum
20-35	15	15
35-50	10	39
50-65	7	5
>65	6	3
Total	38	62

Source: Computed

Table- 6

Multiple Linear Regression Model of Determinants of Health Insurance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	44853.456	40204.673		1.116	.267
X1	43.953	43.857	.862	1.002	.319
X2	-161.125	446.937	-.310	-.361	.719
X3	.254	.046	.329	5.579	.000
X4	-3451.095	671.193	-.283	-5.142	.000
X5	15174.965	19490.868	.080	.779	.438
X6	50705.485	18060.129	.268	2.808	.004
X7	-3037.597	13583.015	-.010	-.224	.824

a. Dependent Variable: Y

Model Summary

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Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.906 ^a	.821	.808	57761.81850

a. Predictors: (Constant), X7, X4, X6, X3, X1, X5, X2

b. Dependent Variable: Y

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D. Hemalatha

Assistant Professor, Economics Wing, DDE

Annamalai University

Annamalai Nagar

Tamilnadu

India

hemamesh1973@gmail.com

T. S. Kalyani, Ph.D.

Professor

Economics Wing, DDE

Annamalai University

Annamalai Nagar

Tamilnadu

India

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