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Nature Of Health Insurance Demand In India

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Key words: health insurance schemes; India; rural areas; urban areas; Orissa; Tamil Nadu

In this study an attempt is made to explore elasticity of health insurance demand in India. It is important to note that both the Central and state governments have been trying to help people through their budgetary policies. Keeping in view their efforts and rural urban disparities in the country, we have tried to make an attempt to evaluate whether the people have been provided appropriate information about these governmental policies and how other socio economic factors are influencing the individual household choices to adopt a particular type of health insurance scheme.

This is based on latest National Family Health survey which provides health insurance demand data for rural and urban areas as well as aggregate level using household as units. Using logit model our results indicate that both in rural and urban areas these efforts have helped people to adopt suitable alternatives and the results indicate that socioeconomic factors and rising levels of income in urban areas relatively to rural areas have been reflected in more responsive nature of choices for different health insurance schemes. By contrast, though the impact of these factors is also significant in rural areas but with a lower elasticity of demand for health care insurance.

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Introduction

In the wake of recent Corona pandemic, across the globe the weakness of health care systems has emerged as a bone of contention. While public hospitals are trying hard to accommodate the pandemic affected patients, their limited beds and staff strength makes it nearly an impossible task. On the other hand, there are plenty of reported cases of denial, on one or other pretext, to such patients by the private hospitals due to the fear of pandemic spread in their facilities. To overcome monetary crisis, the recent IRDA instructions have led the insurance companies to include permissibility of Corona treatment costs within the ambit of existing policies. The recently initiated government sponsored policy like PMJAY (Pradhan Mantri Jan Arogya Yojana or Ayushman Bharat) has also done the same and now permits all costs of Corona treatment in it[1]. Thus, utility of insurance mechanism to help overcome financial problems caused by the pandemic has increased considerably. Even prior to the pandemic situation the PMJAY and other state sponsored health insurance schemes got wide acceptance both in rural and urban areas. This was largely due to public private cooperation between government sponsored health insurance and reimbursement by public limited govt. insurance companies and onus of treatment to such insured population by private sector hospitals. Thus, health insurance plays an important role to safeguard against financial crunch to affected patients and provides an easier possibility of treatment within

[1] Recently some studies have raised doubts about the impact on catastrophic health expenditure and enrolments under PMJAY (see, for instance, EPW (Engage; 8th July, 2020) and (Garg et al, 2020).

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the private sector.

The contribution of our study is to find out: 1. whether the presence of PMJAY and availability of other state sponsored schemes in the last few years has added to the utilization of these insurance schemes and if simultaneously the other private health insurance has increased or changed the pattern due to invigorated insurance market situation. Also, we try to explore socio economic variables through logit analysis to provide possible clues pertaining to public or private health schemes insurance utilization; and, 2. To find out the differences in the responses by a low income and a high income state both of which belong to coastal areas of India. However, our exercise is limited to utilization as viewed from NFHS 4 Survey conducted in 2015-16.

This study is organized as follows. The next section provides a review of both theoretical and empirical studies. This is followed in section 3 on Models of choices in health insurance (or logit framework methodology) and Data set used. Section 4 provides a discussion of Results. Concluding remarks comprise the final section.

Literature review

Among the theoretical literature on health insurance the pioneering paper by Arrow (Arrow, 1963) entitled "Uncertainty and the Welfare Economics of Medical Care," stated that "the welfare case for insurance of all sorts is overwhelming. It follows that the government should undertake insurance where the market, for whatever reason, has failed to emerge" (Arrow, 1963, p. 961). He argues that the benefits of insurance (financial risk reduction) …and the Demand for Healthcare

outweigh the potential costs, such as moral hazard. However, this was criticized by Pauly (1968, p. 532). He opined that "even if the incidence of illness is a random event, whether the presence of insurance will alter the randomness of medical expenses depends on the elasticity of demand for medical care." There could emerge responses to the insurance-induced lower price of healthcare. Patients may demand more healthcare if they are insured. This kind of moral hazard effect of insurance could be overcome according to another study by Arrow (1974) by three possible ways :(a) close monitoring of all medical bills, only allowing those that are normal (where "normal" is defined as what would have been bought without insurance), (b) reliance on the professional ethics of physicians "not to prescribe frivolously expensive cost of treatment," and (c) the reliance on "the willingness of the individual to behave in accordance with some commonly accepted norm." Thus, Arrow imposed high ethical responsibility on both the supply and the demand sides of medical care. Arrow (1963) also provided results for the optimal design of health insurance. In another study, for instance, by Pauly (1968) as well as by Zeckhauser (1970), the analysis of health insurance was approached from healthcare demand side. These studies indicated that the observed quantity of healthcare is determined solely by demand, with the supply side providing whatever the patients demand (the supply curve is horizontal with constant marginal cost). Apart from this, some studies analysed the supply side with a focus on the effects of payment systems on the quantity of healthcare that is provided. This literature assumed that patients are passive and accept any treatment offered by physicians.

In the study by Holmstrom (1979), the role of imperfect information in a principal-agent relationship subject to moral hazard is considered. This study derives a necessary and sufficient condition for imperfect information to improve on contracts based on the payoff alone and a characterization of the optimal use of such information is given.

Another strand of theoretical literature is on physician agency. It provides clear predictions on how physicians behave under different reimbursement systems. The model by Ellis and McGuire (1986) predicts that under a fee-for-service system physicians have an incentive to provide more healthcare than the (insured) patient would demand, even if they are perfect agents of the patient. Under a prospective system physicians have an incentive to provide less healthcare than the patient would demand unless they are perfect agents of the patient. Agency is measured by the weight the physicians give to patient benefits relative to profits in their utility function.

Another study by Nyman (2003) provides a model which contradicts the conventional theory that moral hazard--the additional health care purchased as a result of becoming insured--is an opportunistic price response and is welfare-decreasing because the value of the additional health care purchased is less than its costs. The theory of the demand for health insurance presented by Nyman (2003) suggests that moral hazard is primarily an income transfer effect.

Therefore, the theoretical debate in health insurance remained more focused on the issue like moral hazard. It suggests that it could be avoided if both the supply and the demand sides of medical care are careful about it. Basically, optimal health insurance should be actuarially fair to satisfy a risk averse individual to opt for a suitable insurance plan[2].Thus optimal insurance plans should be offered to satisfy risk averse individuals without the problems of either moral hazard or supplier induced demand due to different reimbursement systems like fee for service or others which allow cream skimming of insured patients[3].

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[2]Arrow (1963) also provided results for the optimal design of health insurance. He showed that if insurance is not actuarially fair (which it never truly is) and if utility is not state dependent, the optimal health insurance contract was full insurance above a deductible. Later, Arrow (1974) showed that with health state dependent utility the optimal deductible fluctuates depending on how marginal utility varies with health status. (see for instance, Gerfin, 2019)

[3]Over the years in the literature on health insurance focus has been on either only on demand side (for instance Pauly, 1968); Zeckhauser, 1970 and other researchers) or supply side (like McGuire, 2000); or both like Chandra, Cutler, and Song, 2012; . Arokiasamy Perianayagam and Srinivas Goli, 2013.
In the Indian context, see for instance, Berman, 1998; Ellis *et al.*, 2000; Kutzin, 2001; Mahal, 2002; Ahuja, 2004;

Yet moral hazard could appear, for instance, due to physician behavior and productivity changes in response to the reimbursement method, in outpatient as well as in inpatient settings (Ellis and McGuire 1986; Nicholson et al. 2008). A cut in physician fees under a reimbursement plan could reduce the number of visits for government insured patients compared to privately insured patients. Even cream skimming or the selective treatment of patients that demand few resources while providing high economic refunds could occur. A provider that selects good risks will be a net contributor, thus reducing incentives to cream skim the market. A provider with high costs per patient will have an incentive to be more efficient. If the company has a lot of bad risks, higher inefficiency means higher transfer. However, the actual costs of delivering health care to patients counteracts the incentive and keeps an interest of the provider in achieving efficiency. In fact, the ability to observe patients' severity can be used for self-interest-advantage by the hospital (principal-agent) through horizontal or vertical cream skimming. The former includes choosing to treat only patient with specific diseases. In the latter, physicians can affect the state-of-the-world probability distribution opting for specific "patient type" within the same ailment group (or "vertical" cream skimming). These behaviors will be defined as "market cream skimming" and they alter the competition among hospitals causing relevant effects in the whole market system (Ellis, 1997, Lewis and Sappington,1999).

In the Indian context, literature on demand for health care and healthcare insurance is scarce[4]. It is

Wagstaff*et al*., 2009.

[4]See for instance, Purohit Brijesh C. (2013), Demand for Healthcare in India, Healthcare in Low-resource Settings 2013; 1:e7]

presumed in India that health insurance will help to overcome excessive out of pocket expenses which could have catastrophic proportion and cause indebtnesss for a low-income individual or household.

Besides theoretical literature, there are some empirical studies in both developing and developed countries which also throw light on: methods of health insurance which were adopted to finance health insurance to all and the various socio-economic determinants which could be considered for different gender and occupation groups in a nation which intends to provide coverage to everybody.

The study by Abu Bakar et al (2012)[5] for Malaysia, for instance, has identified the factors influencing individuals to purchase private health insurance. A national health insurance programme requiring individual premium contribution, and any intervention programme meant to increase individual participation, is likely to be more successful. However, the study identifies two different sets of variables. For the former, it was found that income level, age, gender, race-religion, education level, job sector and risk attitude affected the decision to purchase private insurance. In contrast, for the non-salaried individuals, the determining variables were race-religion, education level, marital status and out-of-pocket (OOP) health expenditures. The effect of price on the likelihood of purchase was found to be significant for the salaried individuals, but not for the non-salaried individuals. Thus, this study suggests us that both socio-economic considerations should be considered prior to a successful launching of a nationwide health insurance scheme.

[5]Abu Bakar et al.: Factors affecting demand for individual health insurance in Malaysia. BMC Public Health 2012 12 (Suppl. 2): A10.

A comprehensive literature review is presented by Anita Ho (2015)[6]. Among others it suggests that there could be two general categories of national insurance models. One could be like Germany's (Bismarck) social health insurance which relied on household premiums and payroll taxes, many risk pools, and services purchased largely from private but nonprofit insurance providers (Lagomarsino et al. 2012; Thomson et al. 2013). Another broad category may be on the lines of Beveridge National Health Service model in the United Kingdom which relied on general taxes, one national risk pool, and publicly provided services (Lagomarsino et al. 2012). Many systems could be seen which basically relied on either of these two broad categories yet had their unique features like enrollees and/or their employers required by national legislation to pay contributions, either through taxation (e.g., Australia, Canada, United Kingdom, Thailand) or separate levies (Doetinchem et al. 2010). Another sort of distinguishing feature may be like Singapore insurance model, where a portion of residents and citizen's contribution to the Provident Fund goes to a Medisave account that can be drawn upon for healthcare expenses. Sometimes like in Australia, Canada, United Kingdom, Thailand, a package of services available to the insurees and their dependents may also differ. Other models may be like China which mandates urban employers and employees of state-owned or private enterprises to contribute to the insurance program administered at municipal level (Barber and Yao 2010). Other models also include voluntary and private health insurance and community-based health insurance (Purohit, 2020).

Thus, these empirical studies provide us the inputs regarding suitability of health insurance models according to tax based and government subsidized or financed models or employer-employees based self -financed models. However, it should be highlighted that in the Indian context both the

[6]Anita Ho (2015), Health Insurance, Encyclopaedia of Global BioethicsSpringer Science- Business Media Dordrecht 2015; DOI 10.1007/978-3-319-05544-2_222-1.

types are prevalent. In the former category we have national level schemes like PMJAY or RSBY and other state specific and state government sponsored schemes. In the latter category we have CGHS and ESIS and some community-based health insurance schemes run by some NGOs. We intend to cover all these categories based on survey of NFHs which is explained further in our data description below.

Models of choices in health insurance (or logit framework methodology) and Data set used.

Theoretically, which ever type of system is adopted, preferred choice of a consumer will depend upon his marginal utility in healthy and sick states and the actuarially fair premium charged by a public or private insurer. As depicted in Zweifel et al (1997; pp. 163-164), an individual may have a probability π of being sick and $1-\pi$ of remaining healthy where $0<\pi<1$; cost of treatment takes on a fixed value M and health insurance is characterized by two parameters, the premium P to be paid and insurance benefit "I" received in the event of illness I ($0\leq I\leq M$). Individual earns an exogenously given gross income Y and derives utility u(Y) from disposable income. It is assumed that individual is risk averse (or u'(y)>0 and u" (y)<0). If the individual is healthy, disposable income is Y-P, and with sickness it is Ys=Y-P-M+I.

The expected utility EU of individual is given as:

EU= $(1-\pi)$ u(Yh) +π u(Ys); where Yh and Ys denotes expected utility in healthy and sick states.

The individual is presumed to maximize expected utility:

EU= $(1-\pi)$ u(Yh) +π u(Ys)=$(1-\pi)$ u(Y-P) +πu(Y-P-M+I)

The conditional demand for health insurance can be specified as:

[I|Yi=1] =b1+b2Pi+b3Yi+b4Ei+ei, i=1, 2... m

E is a vector of individual, household and community variables and I is the choice of health insurance provider taking binary values 0 or 1; I=0 if no insurance, or taking treatment without any kind of reimbursement of medical expenditure; I=1, if a respondent is enrolled in any health insurance scheme. The respondents are separated by schemes and rural/urban locations.

Based on the optimization process, the reduced-form demand functions for health insurance can be derived as:

I=I (P, Y, H, E; et)

et is the unobserved initial endowment. However, the utility maximization with income is a basic framework and we can incorporate an all catch set of other factors including gender, region (i.e., rural-urban), religion, caste, distance, and quality etc. to estimate their impact in the consumers' utility maximization which ultimately translates into a regression framework or set of regression equations with some or all of these factors along with or without income. Thus, demand and supply side of health insurance should also be such that optimal insurance plans are offered to satisfy risk averse individuals without the problems of either moral hazard or supplier induced demand. This may happen due to different reimbursement systems built with various insurance plans like fee for service or others which allow cream skimming of insured patients[7].

Thus, using the inputs from above theoretical and empirical studies, in the following discussion of methodology we incorporate logit framework to capture socio-economic factors and choices of different models of national or state sponsored schemes and other private or privately purchased schemes.

[7]See earlier footnote 3 and Wagstaff*et al*., 2009.

Data Set used

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Also bearing in mind the fact that in the Indian context, literature on demand for health care and healthcare insurance is scarce[8] we explored the dynamics of health insurance in India using NFHS 4 data. The National Family Health Survey 2015-16 (NFHS-4)[9], the fourth in the NFHS series, provides information on population, health and nutrition and insurance status for India and in each State/Union territory[10]. We use the choice of a particular health insurance plan as dependent variable. It is analyzed using basic socio-economic variables. The latter include income or wealth index from NFHS 4 survey, sex of individual, age and education levels of individuals[11]. We also consider rural or urban location of individuals by segregating the rural and urban population covered in NFHS survey. Using the survey data, numeric value 1 to 5 for wealth index denotes poorest, poorer, middle, richer and richest, respectively[12]. This is based on all India average income of INR 77,659 (i.e., Per capita income 2015-16 at Constant 2011-12 prices) and INR58165 and INR1145811 for Orissa and Tamil Nadu respectively[13] which represent a low income and a high per capita income coastal state. BPL is included by respondents with wealth index value as 1. Thus, from the numeric value of wealth index the respondents falling into 2 to 5 wealth index values

[8]See for instance, Purohit Brijesh C. (2013), Demand for Healthcare in India, Healthcare in Low-resource Settings 2013; 1:e7]

[9] International Institute of Population Sciences, *National Family Health Survey, 2015-16*, Government of India.
[10]NFHS-4 fieldwork for India was conducted from 20 January 2015 to 4 December 2016 by 14 Field Agencies and gathered information from 601,509 households, 699,686 women, and 112,122 men.

[11] An explicit and clear data for number of dependents and senior citizens in one family under a household's head is not available from this data set and thus we have not used this variable among socio-economic variables as a separate explanatory variable.

[12] According to Survey methodology the wealth index combines information about income level of households as well as other sources of income including rental if any.
[13] Central Statistical Organization, New Delhi, 2019]

were denoted by us as above BPL population. Likewise, we segregated the respondents according to NFHS criteria into educated or uneducated based upon the respondents' numeric value belonging to middle, secondary or higher education (educated) and others (uneducated) respectively.

Results and discussion

Our objective is to explore the socio-economic correlates of health insurance and the demand for health insurance generated with the existence of newly initiated national and existing state sponsored health insurance schemes. The idea is to observe whether elasticity of health insurance demand has changed or not and to exhibit whether now people in different areas (rural or urban) or in rich and poorer states consider it an essential or a choice good. For this, as mentioned above we conducted logit analysis and using it we also derived marginal effects or average elasticities regarding different independent variables used in analyzing the results.

Thus, an individual or household may decide to go for a particular health insurance plan being offered by the public or private sector. It may be based upon his/her circumstances which are largely related to socio economic factors. Since the choice is involved between two types, either to opt or not to opt for a particular health insurance plan or a binary choice variable as dependent one, the analysis involving logit regressions is useful. Thus, four sets of elasticities results are provided below which are termed as below BPL and uneducated respondents rural or urban and above BPL and educated respondents belonging to rural and urban areas separately. We presume the results of our analysis may provide us an idea that what are the main socio-economic correlates of making a choice about opting for an insurance plan. Thus, we investigate different types of health insurance plans which the NFHS 4 survey covers which among others include, ESIS

(employees state insurance scheme), CGHS (central government health scheme), State health insurance plan (SHI), RSBY (Rashtriya Swasthya Bima Yojan), community health insurance (CHI) and privately purchased health insurance plan (PHI). Out of these plans, ESIS and CGHS require certain basic requirements and there is no choice for others not belonging to above two categories which are predefined by their occupation either in central government or in factory sector with certain income slab. Therefore, we only focus into other six types of health insurance decisions involving either of: any health insurance (public/private), SHI, RSBY, CHI, PHI and any other insurance not included in these categories. The results of our logit analysis are discussed below.

Table 1: Summarized Results for elasticities: Rural All states, Orissa, and Tamil Nadu

a. Dependent variable: any insurance								
Rural all states			Orissa			Tamil Nadu		
Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	Yes/-	-0.369	POT	Yes/+	0.363	POT	Yes/+	0.008
HEL	Yes/-	-0.018	HEL	Yes/+	0.033	HEL	Yes/+	0.04
WI	Yes/+	0.117	WI	Yes/-	-0.0137	WI	Yes/-	0.031
AGE	Yes/+	0.152	AGE	Yes/+	0.039	AGE	Yes/+	0.045
note: POT=place of treatment; HEL=highest education level;WI=wealth index								

Source: Estimated

b. Dependent variable: State health insurance								
Rural all statesb			Orissa			Tamil Nadu		
Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	not included		POT	no/+	0.0183	POT	yes/-	-0.011
HEL	yes/-	-0.091	HEL	yes/+	0.017	HEL	yes/-	-0.021
WI	yes/+	0.082	WI	yes/-	0.048	WI	yes/-	-0.035
AGE	yes/-	-0.212	AGE	yes/-	-0.078	AGE	yes/-	-0.016
note: POT=place of treatment; HEL=highest education level; WI=wealth index								

Source: Estimated

c. Dependent variable: RSBY								
Rural all states			Orissa			Tamil Nadu		
Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/-	-5.24	POT	yes/-	-0.04	POT	n/+	0.159
HEL	yes/-	-0.001	HEL	yes/-	-0.048	HEL	n/-	-0.51
WI	yes/-	-0.315	WI	yes/-	-0.133	WI	n/+	0.62
AGE	yes/+	0.071	AGE	no/+	0.033	AGE	n/-	-0.008

note: POT=place of treatment; HEL=highest education level; WI=wealth index

d. Dependent variable: CHI								
Rural all states			orissa			Tamil Nadu		
Explanatory Variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/+	0.257	POT	no/-	-1.14	POT	no/+	0.25
HEL	no/+	0.063	HEL	no/+	0.249	HEL	no/-	-0.282
WI	yes/+	0.721	WI	no/+	0.647	WI	no/+	0.4

note: POT=place of treatment; HEL=highest education level; WI=wealth index

e. Dependent variable: Health insurance through employer								
Rural all states			Orissa			Tamil Nadu		
Explanatory Variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/+	0.295	POT	yes/+	0.807	POT	no/-	-0.004
HEL	yes/+	0.291	HEL	no/+	0.273	HEL	yes/+	0.278
WI	yes/+	1.462	WI	yes/+	3.389	WI	yes/+	1.189
AGE	yes/+	0.02	AGE	no/+	-240	AGE	no/-	-0.35

note: POT=place of treatment; HEL=highest education level; WI=wealth index

f. Dependent variable: Medical reimbursement through employer								
Rural all states			Orissa			Tamil Nadu		
Explanatory	Sign/	elasticity	Explanatory	Sign/	elasticity	Explanatory	Sign/	elasticity
Variable	significance		variable	significance		variable	significance	
POT	no/-	-0.021	POT	no/-	-0.624	POT	no/-	-0.223
HEL	yes/+	0.316	HEL	no/+	0.534	HEL	yes/+	0.435
WI	yes/+	1.749	WI	no/-	-0.261	WI	yes/+	1.78
AGE	yes/+	0.544	AGE	no/+	3.517	AGE	no/-	-0.252

g. Dependent variable: other privately purchased insurance								
Rural all states			Orissa			Tamil Nadu		
Explanatory	Sign/	elasticity	Explanatory	Sign/	elasticity	Explanatory	Sign/	elasticity
Variable	significance		variable	significance		variable	significance	
POT	yes/+	0.306	POT	not inluded		POT	yes/+	0.654
HEL	yes/+	0.355	HEL	yes/+	0.261	HEL	yes/+	0.329
WI	yes/+	1.572	WI	yes/+	1.908	WI	yes/+	0.429
AGE	yes/+	0.398	AGE	yes/+	0.817	AGE	no/-	-0.153

note: POT=place of treatment; HEL=highest education level;WI=wealth index

h. Dependent variable: Other insurance								
Rural all states			Orissa			Tamil Nadu		
Explanatory	Sign/	elasticity	Explanatory	Sign/	elasticity	Explanatory	Sign/	elasticity
Variable	significance		variable	significance		variable	significance	
YPOT	n/+	0.028	POT	yes/-	-0.211	POT	yes/+	0.282
HEL	yes/+	0.171	HEL	yes/+	2.31	HEL	yes/+	0.275
WI	yes/+	0.258	WI	n/+	1	WI	yes/+	0.501
AGE	yes/+	0.238	AGE	n/+	1.49	AGE	n/-	-0.49

note: POT=place of treatment; HEL=highest education level; WI=wealth index Source: Estimated

Looking at the results of rural all states and rural poor and rich states namely Orissa and Tamil Nadu respectively in the choice of having insurance either through public or private insurer (Table 1.a.), at the aggregate rural level both of the variables, viz., Place of treatment (POT) and highest education level (HEL) have a negative impact denoting that suitability of POT and probably the need and awareness presumably revealed by highest education level or HEL constrains the

decision to avail health insurance[14]. However, the elasticity for these variables is less than one thus choices may be largely constrained for rural population at large.

As summarized in Table 1 it suggests that the decisions to avail any health insurance in rural areas are not that elastic or responsive. Yet the place of treatment and education level standout to be somewhat more influential than other factors to create scope for insurance providers in private sector.

Further the role of wealth index comes out positive to suggest that there is a general trend to go for health insurance with wealth index moving across different groups gradually, better off to the richest class. However, at the individual state level, the state specific factors[15] operate differently depending upon population group's coverage in the surveyed population.

Further looking at the results of SHI and RSBY, age stands out positive and significant at the aggregate level which reinforces our overall general impression that people by keeping in view their increasing need for health care opt for state sponsored health insurance schemes. Among other explanatory variables for SHI and RSBY, POT is significant and negative for Tamil Nadu suggesting that preference for a better place of treatment is dominant as income level is higher in a state[16].

The role of HEL is negative and significant at aggregate levels in SHI and RSBY but rather inconclusive across two income categories of states. This could be considered as the impact of an

[14]These signs are imbibed in the marginal effects or the regression coefficients. From these the elasticity coefficients at the average level is computed. Thus, in a way these elasticity coefficients capture the signs and significance derived from marginal effects.

[15] These state specific factors, for instance, include climatic variations, epidemiological profiles, morbidity factors, and administrative styles in specific states.

[16] By contrast in poorer state like Orissa, due to low-income levels in general the preference for POT does not emerge significant as there are more respondents relative to a richer state, who cannot exercise their preference for POT due to their limited resources.

increasing awareness about different health insurance plans (other than SHI and RSBY). Yet across two states considered here, both HEL and WI do not indicate any thing conclusive. Interestingly at the aggregate rural level, all states result for CHI, medical reimbursement through employers and other health insurance uniformly suggest a positive significance of three factors, namely, HEL, WI and AGE. This strongly suggests that an interest and understanding that emerged with age and education levels of health and insurance needs backed by income status, does impact on decision to avail health insurance. This result also corroborates earlier studies of Purohit (2013). Unlike this impact of POT does not have any such conclusive results at aggregate rural level.

For poorer state of Orissa, the CHI results (Table 1d) do not indicate any statistically noticeable influence of any of the four factors. Likewise, for Orissa age is not a significant determinant except for other privately purchased insurance (Table 1g).

Further in medical reimbursement through employers as expected POT has no statistical impact. This holds true for Tamil Nadu also. This is since generally medical reimbursement is based on a panel doctor or empaneled hospital which generally cannot be changed to exercise choice by the respondents.

For Orissa HEL has no statistical significance except for privately purchased insurance schemes or other schemes (Tables g and h). This contrasts with richer states results where it is positively significant for four categories namely health insurance through employers, medical reimbursement through employers, privately purchased insurance and other insurance.

Table 2: Summarized Results for elasticities: Urban All states, Orissa and Tamil Nadu:

a. dependent variable: any insurance

Urban all states			orissa			Tamil Nadu		
Explanatory variable	Sign/significance	elasticity	Explanatory variable	Sign/significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/-	-0.232	POT	no/-	-0.046	POT	yes/+	0.039
HEL	yes/+	0.089	HEL	yes/+	0.117	HEL	no/+	0.017
WI	yes/+	0.18	WI	yes/+	0.14	WI	no/-	-0.01
AGE	yes/+	0.23	AGE	no/-	-161	AGE	no/-	-0.016

note: POT=place of treatment; HEL=highest education level; WI=wealth index

b. Dependent variable: State health insurance

Urban all states			Orissa			Tamil Nadu		
Explanatory Variable	Sign/significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	not included	...	POT	yes/-	-0.376	POT	yes/-	-0.057
HEL	yes/-	-91	HEL	no/-	-0.005	HEL	yes/-	-0.05
WI	yes/+	0.082	WI	no/-	-0.149	WI	yes/-	-0.173
AGE	yes/-	0.212	AGE	yes/-	-0.381	AGE	yes/-	-0.036

c. Dependent variable: RSBY

Urban all states			Orissa			Tamil Nadu		
Explanatory Variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/-	-0.267	POT	yes/-	-0.341	POT	no/-	-1.01
HEL	yes/-	-0.049	HEL	yes/-	-0.118	HEL	no/-	-0.373
WI	yes/+	-1.12	WI	yes/-	-0.899	WI	no/+	0.866
AGE	yes/+	0.379	AGE	no/+	0.123	AGE	yes/+	3.421

d. Dependent variable: CHI

Urban all states			Orissa			Tamil Nadu		
Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/significance	elasticity
POT	yes/+	0.187	POT	no/+	0.135	POT	yes/+	0.406
HEL	no/+	0.072	HEL	no/-	-0.932	HEL	no/-	-0.112
WI	yes/+	0.542	WI	yes/+	2.656	WI	no/+	0.389
AGE	no/+	0.16	AGE	no/-	-0.113	AGE	no/+	0.432

note: POT=place of treatment; HEL=highest education level; WI=wealth index

e. Dependent variable: Health insurance through employer

Urban all states			orissa			Tamil Nadu		
Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/+	0.458	POT	no/+	0.075	POT	no/+	0.061
HEL	yes/+	0.174	HEL	no/+	0.249	HEL	yes/+	0.403
WI	yes/+	1.401	WI	yes/+	2.378	WI	yes/+	1.056
AGE	yes/-	-0.231	AGE	no/-	-0.203	AGE	yes/-	-0.595

f. Dependent variable: Medical reimbursement through employer.

Urban all states			orissa			Tamil Nadu		
Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/+	0.251	POT	no/+	0.249	POT	yes/+	0.735
HEL	yes/+	0.493	HEL	no/+	0.181	HEL	yes/+	0.616
WI	yes/+	1.703	WI	yes/+	4.563	WI	yes/+	1.622
AGE	no/+	0.104	AGE	yes/+	4.196	AGE	no/-	-0.222

g. Dependent variable: other privately purchased insurance

Urban all states			orissa			Tamil Nadu		
Explanatory Variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/+	0.424	POT	no/+	0.044	POT	yes/+	0.373
HEL	yes/+	0.406	HEL	no/+	0.171	HEL	yes/+	0.326
WI	yes/+	1.579	WI	yes/+	2.098	WI	yes/+	1.212
AGE	no/+	0.108	AGE	no/+	0.417	AGE	yes/-	-0.515

note: POT=place of treatment; HEL=highest education level;WI=wealth index

h. Dependent variable: Other insurance

Urban all states			orissa			Tamil Nadu		
Explanatory Variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity	Explanatory variable	Sign/ significance	elasticity
POT	yes/+	0.434	POT	yes/+	0.272	POT	yes/+	0.534
HEL	no/+	0.029	HEL	yes/-	-0.568	HEL	no/+	0.158
WI	yes/+	0.356	WI	yes/+	1.185	WI	yes/+	1.245
AGE	no/-	-0.025	AGE	no/-	-0.058	AGE	no/-	-0.298

note: POT=place of treatment; HEL=highest education level; WI=wealth index

Source: Estimated

The summarized results of urban areas are presented in Table 2. It is noteworthy in these results that there are four variables that are significant. These include POT, HEL, AGE and WI. In last three cases, i.e., medical reimbursement through employers, other privately purchased insurance and other insurance, AGE is not significant in Urban all States results. However, this general trend of significance is not followed either in Orissa or Tamil Nadu. Yet one notable feature of urban significance is like rural areas results. It is significant and high elasticity coefficients in all the three cases, namely, health insurance through employers, medical reimbursement through employers, and other insurance (except for urban all states). This thus indicates that in Urban areas,

both in richer and poorer states under our consideration, purchasing of private insurance schemes is guided by higher education and better income. Thus, it is this reason that we see somewhat better scope for private health insurance. Yet in rural areas this market works more through SHI, RSBY and CHI where public private partnerships is noted through recent and earlier government health insurance schemes. Thus, in a way this State initiative is influencing rural health insurance segment positively. On the other hand, increasing or higher income level with urban consumer is raising hopes for expanding the private sector insurance business. This result also corroborates a study like that of Abu Bakar et al (2012). Further our results are also in consonance of other studies like that of Lagomarsino et al. 2012; Thomson et al. 2013.

Concluding remarks:

Looking at the results of rural areas, we observe that choices of availing public or private insurance are also influenced by liking or convenient place of treatment as well as education level of respondents. This probably denotes impact of increasing awareness in rural areas about different types of health insurance schemes. Rural areas also seem to be making decisions about state sponsored schemes (like SHI and RSBY) which are chosen based on either age or wealth index. These results at the State level for the two states considered by us, are, however, not too conclusive. Except for three types of insurance schemes namely medical reimbursement through employers, other privately purchased insurance and other insurance, elasticity coefficient in rural areas is less than one but in the above three categories observed elasticity coefficients are generally higher than one across aggregate level, and Orissa as well as Tamil Nadu state level. Further the results of urban areas both at the aggregate and individual state level also indicate responsive nature of above mentioned three categories of health insurance schemes.

Thus overall, our results suggest more elastic response both in rural and urban areas supporting a promising role of insurance markets in times to come. Our results also emphasize that public policy of a number of central or and state sponsored schemes has created a better environment both to rural and urban respondents which permits now more choices and thus the consumers based on their liking linked to their rural/urban locations, wealth status and age opt for a central or state sponsored scheme and wherever more feasible with their financial status and other health care requirements, also decide to have a suitable private medical insurance. This newly created better environment also provides at least a good monetary support to avoid additional medical cost, or out of pocket expenses in the adverse times of a pandemic like current COVID-19.

References

Abu Bakar et al. (2012), Factors affecting demand for individual health insurance in Malaysia. BMC Public Health 12 (Suppl 2): A10.

Ahuja, R. (2004), 'Health insurance for the poor', Economic and Political Weekly 34(28): 3171-3178

Anita Ho (2015), Health Insurance, Encyclopedia of Global Bioethics Springer Science- Business Media Dordrecht 2015; DOI 10.1007/978-3-319-05544-2_222-1.

Arrow, K. J. (1963). Uncertainty and the welfare economics of medical care. American Economic Review, 53, 941–973.

Arrow, K. J. (1968). The economics of moral hazard: Further comment. American Economic Review, 58, 537–539.

Arrow, K. J. (1974). Optimal insurance and generalized deductibles. Scandinavian Actuarial Journal, (1), 1–42.

Barber, S., & Yao, L. (2010). Health insurance systems in China: A briefing note. World Health Report, Background Paper, 37. Geneva.

Berman, P. (1998), 'Rethinking health care systems: private health care provision in India', World Development 26(8): 1463-1479.

Bevan, G., Karanikolos, M., Exley, J., Nolte, E., Connolly, S.,&Mays, N. (2014). The four health systems of the United Kingdom: How do they compare? London: The Health Foundation and Nuffield Trust.

Boyle, S. (2011). United Kingdom (England) health system review (Health systems in transition, 13:11). Copenhagen: European Observatory on Health Systems and Policies.

Canadian Health Services Research Foundation. (2002). Medically necessary: what is it, and who decides? Retrieved from http://www.cfhifcass.ca/Libraries/Romonow_Commission_ENGLISH/ Discussion_Paper_Medically_necessary_What_is_and_who_decides.sflb.ashx. Accessed 5 Mar

2015.

Chandra, A., Cutler, D., & Song, Z. (2012). Who ordered that? The economics of treatment choices in medical care. Handbook of Health Economics (Vol. 2, pp. 397–432). Amsterdam, The Netherlands: Elsevier.

Costa, J., & Garcia, J. (2003). Demand for private health insurance: How important is the quality gap? Health Economics, 12, 587–599. doi:10.1002/hec.756.

Daniels, N. (2013). Justice and access to health care. In Stanford encyclopedia of philosophy. Retrieved from http://plato.stanford.edu/entries/justice-healthcareaccess/. Accessed 1 Mar 2015.

Doetinchem, O., Carrin, G., & Evans, D. (2010). Thinking of introducing social health insurance? Ten questions. World Health Report Background Paper, 26. Geneva.

EPW Engage (2020), 'Ayushman Bharat and the false promise of Universal Healthcare', July 8th.

Ellis, R. P., & McGuire, T. G. (1986). Provider behaviour under prospective reimbursement: Cost sharing and supply. Journal of Health Economics, 5, 129–151.

Ellis, R., M. Alam and I. Gupta (2000), 'Health Insurance in India: prognosis & prospectus', Economic & Political Weekly 22: 207-216.

Ellis R (1997) Creaming, skimping and dumping: provider competition on intensive and extensive margins, Journal of Health Economics, vol.17, 537-555

Garg Samir, K. K. Bebarta and N.Tripathi (2020), 'Performance of India's national public health funded health insurance scheme, Pradhan Mantri Jan Arogya Yojana (PMJAY) in improving access and financial protection for hospital care: findings from household surveys in Chhattisgarh state', BMC Public Health 20:949.

Gerfin Michael (2019), Health Insurance and the Demand for Healthcare,
Online Publication Date: Mar; DOI: 10.1093/acrefore/9780190625979.013.257

The Henry J. Kaiser Family Foundation. (2013). Summary of the Affordable Care Act. Retrieved fromhttp://kff.org/health-reform/fact-sheet/summary-of-the-affordable-care-act/. Accessed 1 Mar 2015.

Bengt Holmstrom (1979), Moral Hazard and Observability, The Bell Journal of Economics, Vol. 10, No. 1 (Spring,), pp. 74-91; Published by: The RAND Corporation Stable URL: http://www.jstor.org/stable/3003320

International Institute of Population Sciences, National Family Health Survey, 2015-16, Government of India.

Kutzin, J. (2001), 'A descriptive framework for country level analysis of health care financing

arrangements', Health Policy 56: 171-204.

Lagomarsino, G., Garabrant, A., Adyas, A., Muga, R., &Otoo, N. (2012). Moving towards universal health coverage: Health insurance reforms in nine developing countries in Africa and Asia. Lancet, 380, 933–943.

Lewis, T. R. and Sappington, D.E.M. (1999), Cream skimming, cost sharing, and subjective risk adjusting in the health industry, Journal of Economics and Management, vol.8(3), pp.351-382.

Mahal, A. (2002), 'Assessing private health insurance in India: political impact and regulatory. issue', Economic and Political Weekly 5: 59-71.

McGuire, T. G. (2000). Physician Agency. In Handbook of Health Economics (Vol. 1, pp. 461–536). Amsterdam, The Netherlands: Elsevier.

John A. Nyman (2003), The Theory of the Demand for Health Insurance, University of Minnesota January at: https://www.researchgate.net/publication/45131639.

Odeyemi, I. A. O. (2014). Community-based health insurance programmes and the national health insurance scheme of Nigeria: Challenges to uptake and integration. International Journal for Equity in Health, 13, 20.

Perianayagam, Arokiasamy and Goli, Srinivas (2013), Health insurance and health care in India: a supply-demand perspective, International Institute for Population Sciences (IIPS), Giri Institute of Development Studies (GIDS), 31 October Online at https://mpra.ub.uni-muenchen.de/51103/ MPRA Paper No. 51103, posted 01 Nov 2013 09:52 UTC.

Pauly, M. V. (1968). The economics of moral hazard: Comment. American Economic Review, 58, 531–537.

Purohit B.C. (2013), "Demand for healthcare in India", Healthcare in Low-resource Settings 2013; 1:e7, pp. 25-30; doi:10.4081/hls.2013.e7; PAGEPress, Italy.

Purohit Brijesh C. (2020), Economics of Public and Private Healthcare and Health Insurance in India, Sage publications.

Saloner, B., & Daniels, N. (2011). The ethics of the affordability of health insurance. Journal of Health Politics, Policy and Law, 36(5). doi:10.1215/03616878-1407631.

Spaan, E., Mathijssen, J., Tromp, N., McBain, F., ten Have, A., & Baltussen, R. (2012). The impact of health insurance in Africa and Asia: A systematic review. Bulletin of the World Health Organization, 90, 685–692. doi:10.2471/BLT.12.102301.

Thomson, S., Squires, D., &Jun, M. (2013). International profiles of health care systems 2013. New York: The Commonwealth Fund. WHO (2013). Research for universal health coverage. Geneva: World Health Organization.

Wagstaff, A., M. Lindelow, G. Junc, X. Ling and Q. Juncheng (2009), 'Extending health insurance to the rural population: an impact evaluation of China's new cooperative 102 medical schemes', Journal of Health Economics 28: 1–9.

Zeckhauser, R. (1970). Medical insurance: A case study of the tradeoff between risk spreading and appropriate incentives. Journal of Economic Theory, 2, 10–26.

Zweifel P., Bryer F. and Kifmann M. (2009), Springer-Verlag Berlin Heidelberg