

## **Role of government sponsored health insurance schemes in improving healthcare access and reducing household out-of-pocket payment for inpatient care**

**Abstract:** Healthcare spending in India is pre-dominantly met through out-of-pocket spending by the households. The central and different state governments have introduced a number of health insurance schemes (GSHIS) to protect the poor and vulnerable population from incurring catastrophic payments for health. Using the data from the Delhi Metropolitan Area Study, we have tried to assess the impact of these GSHIS to increase the demand for inpatient care and reduce the OOP spending on healthcare. Since these schemes were targeted to the poor, we have matched the households from the treatment group using propensity score matching to reach to the unbiased estimate of the treatment effect. Preliminary findings suggests that the GSHIS did not affect the likelihood of a household to report inpatient OOP or catastrophic inpatient payment. The OOP payment for inpatient care has declined only marginally among the GSHIS beneficiary households.

### **Background:**

Public spending on health, though has improved marginally to 1.2% of the GDP, remained critically low in India for long. As a result of low public spending, household out-of-pocket spending appeared to be a dominant option for healthcare financing in India. This often amounts to forgone care among the vulnerable populations and puts them at risk of impoverishment from illness-related catastrophic expenditures. Until 2007, financial protection through health insurance was pitifully low and was limited to the rich households. India saw a major boost in the health insurance access during 2007 to 2010, when the Rashtriya Swasthya Bima Yojana (RSBY) and five other state sponsored health insurance schemes were introduced. This led to a massive increase in the coverage of health insurance from about 75 million people in 2007 to 302 million people in 2010 (La Forgia & Nagpal, 2012; Selvaraj & Karan, 2012). The remaining other states have also joined hand in increasing the access among the poor either from the centrally sponsored RSBY scheme or from their own state sponsored scheme.

Gradual reform in coverage and benefits has made the Government sponsored health insurance schemes (GSHIS) the most accessible health insurance in India. According to the NSS 75<sup>th</sup> round (2017) survey, 96% of the insured persons in rural area and 64% in the urban area in India were covered by a GSHIS. Though there are some differences among these schemes in terms of scopes and coverages, all these schemes provide fully subsidized coverage for a limited package of secondary or tertiary inpatient care and targets the economically vulnerable populations. Ambulatory services including drugs are not covered except as part of an episode of illness requiring an inpatient stay(La Forgia & Nagpal, 2012). Since primary healthcare in India is provided through a vast public health network, these health insurance schemes were meant to provide financial protection for secondary and tertiary level care. These schemes are expected to encourage

the poor households to seek treatment during illness without incurring catastrophic payment for healthcare.

Existing literature suggests that increased health insurance coverage has promoted use of healthcare services; but, the impacts on financial risk protection are less certain and tend to be context dependent, especially for poor beneficiaries (Arnab Acharya et al., 2013; Escobar, Griffin, & Shaw, 2011; Giedion, Andrés Alfonso, & Díaz, 2013; Karan, Yip, & Mahal, 2017). Inadequate handling of the ‘observed’ and ‘unobserved’ heterogeneity through self-selection of sicker individuals into the insurance schemes, differential health seeking behaviour, and various non-price constraints were regarded as the main reason for such ambiguous results (A Acharya et al., 2012; Wagstaff, 2007; Wagstaff & Lindelow, 2008). Literature in this area is inconclusive for India too. Studies based on south Indian states find that health insurance helped in reducing OOP healthcare expenditure (Aggarwal, 2010; Fan, Karan, & Mahal, 2012; Rao et al., 2014; Sood et al., 2014). However, using a nationally representative sample, Karan et al. (2017) concluded that the centrally sponsored scheme Rashtriya Swasthya Bima Yojana (RSBY) did not help in reducing OOP spending, rather claimed that the likelihood of incurring any OOP health spending increased by 30% due to RSBY. The Government of India, in 2018, revamped the RSBY scheme and introduced a new comprehensive health insurance scheme, called the Ayushman Bharat-Pradhanmantri Jan Arogya Yojana (PM-JAY), which broaden the coverage and scope further. The newly introduced scheme has been working in synergy with the existing state level schemes and aims to offer services to 50 crore people.

The preliminary findings from the Delhi Metropolitan Area Study indicates that the annual OOP spending for inpatient care has not reduced much even for households having a government sponsored health insurance scheme (Table 1). In this paper, we will assess the impact of the GSHIS on reducing the OOP payment for inpatient care of the beneficiary households. Since access to the GSHIS is limited to the economically vulnerable population or the poor, we employ the propensity score matching technique to compare households which are similar to each other. Propensity score analysis (Heckman & Navarro-Lozano, 2004; Rosenbaum & Rubin, 1983) is frequently used in the context of non-random treatment assignments in observational studies. Therefore, we will match the non-beneficiary households using propensity score matching (PSM) based on some pre-treatment characteristics before comparing the estimates.

Table 1: Unadjusted total expenditure and out-of-pocket expenditure for inpatient care among households with any government sponsored health insurance scheme at Delhi NCR.

	TIHE	TIHE			OOPE		Number of Hosp. Cases
		No HI	GSHIS	OTHER	GSHIS	OTHER	
<b>State of residence</b>							
Haryana	51862.3	45636.8	45575.0	71621.2	44305.4	63406.1	738
Delhi	35208.9	26166.1	33867.1	39360.8	27903.8	23407.9	376
Rajasthan	24019.7	23268.3	23336.9	25432.7	23335.5	23196.8	456
Uttar Pradesh	41145.0	39769.2	39112.3	59019.8	38969.2	40710.8	647
<b>Religion</b>							
Hindu	41108.5	36003.8	38919.9	48158.0	35675.5	35090.8	1917
Muslim	28270.6	27155.3	27123.7	46811.2	27118.8	34997.3	258
Others	53346.1	53453.0	53433.4	51925.0	53280.2	40192.8	42
<b>Caste</b>							
Forward caste	56489.1	46958.1	48182.0	95425.3	45910.3	72846.1	780
OBC	32094.0	33048.9	34170.2	24650.1	32056.5	15528.6	863
SC/ST	30883.8	26767.4	30337.2	32946.3	27265.8	24267.8	565
<b>Asset quintile</b>							
Poorest	27046.4	29142.0	29179.4	12125.7	29086.9	11559.4	429
2nd quintile	24274.3	25349.7	25058.0	20884.4	24795.2	17765.4	450
Middle q	28106.2	29776.9	29481.4	23942.0	29481.4	18571.9	458
4th quintile	43668.7	34866.5	38979.7	74489.8	38172.9	60181.0	486
Richest	74540.6	74994.8	68629.9	88816.0	55777.9	58265.8	394
<b>Household size</b>							
Less than 4	50599.2	47159.8	54737.8	27660.8	50510.2	15141.8	329
size 4-5	35070.2	29009.2	31692.1	48250.2	27995.4	34721.3	871
6 or more	39042.9	35424.0	35127.1	53935.6	34798.8	41330.3	1017
<b>Type of Hospital</b>							
Public	16286.0	16898.7	16724.7	14580.9	16621.2	10311.9	585
Pvt. Hosp/Nurshing							
Home	49259.0	42882.3	45518.9	65403.1	42149.6	48625.8	1544
Others	33903.9	38672.2	38666.9	22686.9	37398.4	8407.8	88
<b>Delhi NCR</b>	<b>39365.5</b>	<b>34993.2</b>	<b>37219.7</b>	<b>48138.3</b>	<b>34835.3</b>	<b>35156.3</b>	<b>2217</b>

Source: Delhi Metropolitan Area Study, Baseline Survey 2019.

TIHE: Total inpatient health expenditure; HI: Health insurance; OOPE: Out-of-pocket expenditure; GSHIS: government sponsored health insurance scheme

The specific research questions we would like to address in this research paper are:

### Research questions

- Are the members of household with access to a GSHIS more prone to seek inpatient care than those who do not have access to it?
- Are the households who has access to a GSHIS spend less for inpatient treatment than those who do not have access to it?

- Are the households with access to a GSHIS less likely to incur catastrophic payment for inpatient treatment than others?

**Data:**

We use data from the baseline survey of the Delhi Metropolitan Area Study (DMAS) for the present analysis. DMAS is carried out by the National Council of Applied Economic Research, New Delhi. The target geographical area for DMAS is Delhi National Capital Region (NCR), which comprises 31 districts spread across four states, viz., Haryana (13 districts), Delhi (9 districts), Rajasthan (2 districts), and Uttar Pradesh (7 districts) (National Capital Region Planning Board, 2017). Delhi NCR is a highly diverse region covering the metropolitan areas of Delhi as well as both rural and urban areas of districts in Haryana, Rajasthan, and Uttar Pradesh. The findings are based on a representative sample of 5,255 households from Delhi NCR and 27,471 members from these households.

In the DMAS health module, we included questions to capture the utilisation of health insurance schemes in reducing healthcare expenditure. Besides the existing public and private health insurance schemes, DMAS collected data on various other financial assistance mechanisms such as medical reimbursement from the employer, medical facilities provided by the major public employers like railway hospitals, army hospitals, and hospitals set up by private employers to provide treatment to their employees and family members. These schemes have a potential role in reducing private OOP healthcare expenditure. Henceforth, we will refer to all these schemes together as 'health insurance'.

About a quarter of the DMAS sample had access to any health insurance schemes to finance their healthcare needs. Among the households having any form of health expenditure support, 67% were covered by a GSHIS. The share of GSHIS was much higher (87.5%) in rural areas than the urban areas (62%).

**Methodology:**

The present analysis focuses on the government sponsored health insurance schemes (GSHIS) only, which includes the central government sponsored schemes as well as state government schemes prevalent in the Delhi NCR region. Since GSHIS is targeted to the poor and vulnerable people, comparing the GSHIS beneficiary households with non-beneficiary households will not be enough to assess the impact of the insurance. We will reduce the bias using propensity score matching technique. The propensity score is expressed as:

$$e(X_i) = \text{pr}(Z_i=1 \mid X_i = x_i)$$

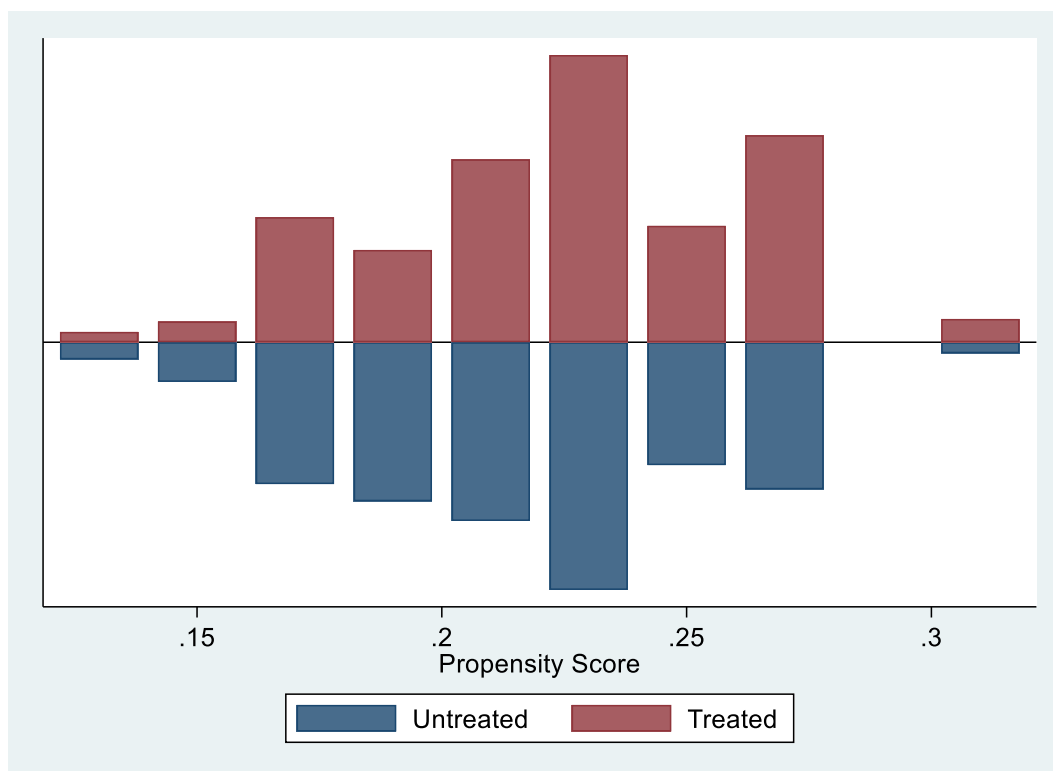
Where, the propensity score for subject  $i$  ( $i = 1 \dots N$ ), is the conditional probability of being assigned to treatment  $Z_i = 1$  vs. control  $Z_i = 0$  given a vector  $x_i$  of observed covariates.

In this analysis, we will match households with each other using the following variables - maximum adult education at the household, religion and caste of the household head, wealth status, urban residence, primary occupation of the household.

THIS IS A WORK IN PROGRESS AND WOULD SHARE THE RESULTS BEFORE THE MEETING SCHEDULE.

Table: Hospitalization rate with respect to access to any government sponsored health insurance schemes.

	No access to GSHIS	Have access to GSHIS	Total
<b>Religion</b>			
Hindu	18.3	25.7	
Muslim	26.0	23.8	
Others	24.7	14.0	
<b>Caste</b>			
Forward caste	19.0	23.8	
OBC	21.1	32.9	
SC/ST	18.3	20.4	
No caste reported	58.5	0.0	
<b>Household asset quintile</b>			
Poorest	21.9	23.2	
Second quintile	16.8	22.9	
Middle quintile	20.8	32.3	
Fourth quintile	24.0	23.8	
Richest	16.5	24.1	
<b>Place of residence</b>			
Rural	27.8	27.8	
Urban	16.0	24.4	
<b>Number of HH</b>	<b>4150</b>	<b>1120</b>	<b>5270</b>



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