

Experiences with Government Sponsored Health Insurance Schemes in Indian States: A Fiscal Perspective

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Abstract

The implications of expanding GSHI schemes in India has not been analyzed from a fiscal perspective. This paper analyzes the experiences of some of the early and largest GSHI schemes implemented in Indian States – in Andhra Pradesh, Tamil Nadu and Karnataka to understand the fiscal implications of initiating such schemes. We analyze three aspects: (a) the extent of fiscal burden on account of GSHI schemes and its consequences on other health expenditures, (b) the factors contributing to the extent of fiscal burden and (c) the effectiveness of spending on the schemes in terms of reducing out of pocket expenditure, extent of hospitalization coverage, and improved access to hospitalization services. Results suggest that expansion of GSHI schemes may skew expenditure away from primary and secondary care towards tertiary care, if fiscal space is limited. Although the schemes are largely dependent on private health providers for delivering services, a competitive public health system may help in containing costs and the corresponding fiscal burden. The evidence on effectiveness of public spending through such schemes has been mixed.

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I. Introduction

India has taken a major stride in expansion of Government Sponsored Health Insurance (GSHI) schemes in India since the last decade. Several GSHI schemes have been initiated both at the level of Central and State governments, the most recent and largest of which has been the Ayushman Bharat - Pradhan Mantri Jan Aarogya Yojana (PMJAY). The AB-PMJAY is a country-wide scheme which aims to upscale the earlier initiatives significantly. The scheme has been rolled out to about 10 crore underprivileged households across the country, and offers a benefit package, which is wider than any such scheme at the national-level so far. This has opened up the possibility of a significant increase in public spending on GSHI schemes in India. However, not much is known on the implications of expanding GSHI schemes from a fiscal perspective. This paper tries to derive insights on the issue through an analysis of some of the early and largest GSHI schemes implemented in Indian States.

The analysis assumes importance from the fact that AB-PMJAY has been rolled out in a scenario where public spending on health receives a low priority, and fiscal space is limited at both levels of the government. Although State governments bear only 40 per cent of the cost of the scheme (the remaining is borne by the Central government), the concentration of eligible beneficiaries in some of the resource constrained States with low levels of public spending, can potentially impose a substantial burden on public resources in those States. The increased fiscal burden within a relatively rigid resource contour for health may lead to compression of other health spending. Early major initiatives of GSHI schemes in India have been confined to relatively less fiscally constrained States, and our analysis here pertains to those State-level initiatives. However, we use learnings from their experience to derive an understanding of the implications of GSHI schemes in relatively more fiscally constrained States as well.

In this paper, we focus on the experience with GSHI schemes in the three States of Andhra Pradesh, Tamil Nadu and Karnataka. Specifically, we analyze three aspects. First, what is the extent of fiscal burden imposed by the introduction of GSHI schemes in the three States, and the impact of the burden on squeezing of other health expenditures, if any. Second, we highlight the factors that affect expenditures on such schemes and in turn determine the degree of fiscal burden. Third, we examine to what extent public spending on these schemes has resulted in reduced out of pocket expenditure on hospitalization care and improved access to services. While the first two aspects have implications for fiscal sustainability of these schemes, the third aspect throws light on the effectiveness of public spending on such schemes.

II. Basic Features of the GSHI Schemes in the Selected States

Andhra Pradesh was one of the first states to initiate a major government sponsored health insurance scheme in India. In 2007, it launched 'Rajiv Aarogya Sri', in three districts of the state, which was then expanded in a phased manner to the entire state by the latter half of 2008. The scheme covered all BPL families identified by white card holders in the state's public distribution system. Official figures suggest that about

86 per cent of the state's population were eligible under the scheme, and primary surveys have confirmed that the official claim on the coverage of the scheme was likely to be true (Sofi *et. al.* 2014, Mitchell *et. al.* 2011). Between 2009 and 2014 (in undivided Andhra Pradesh) the scheme provided financial coverage upto 2 lakhs per family (with a buffer of Rs. 50,000). Post bifurcation, Andhra Pradesh renamed the scheme as NTR Vaidya Seva Scheme (NTRVS), marginally expanded the list of covered procedures, and increased financial coverage to 2.5 lakhs per family (Table 1). In Telangana, the scheme continues under the name of 'Aarogyasri', with a financial coverage upto 2 lakhs per family. Both the newly created States initiated several other schemes (Table 1). The number of procedures, households covered, eligible group of population, year of implementation and other details are shown in Table 1.

Tamil Nadu launched the Chief Minister's Kalaignar Health Insurance Scheme in 2009. The scheme extended insurance coverage to underprivileged sections of the population for about 696 high-end procedures with a financial ceiling of 1 lakh per family. In 2012, a larger version of the scheme "Chief Minister's Comprehensive Health Insurance Scheme" (CMCHIS) with substantially more number of procedures was initiated, which extended financial coverage to any family with an annual income of less than 72000 in the State. As of 2016, around 60 per cent of the State's population was covered under the scheme. The scheme covered 1016 procedures with a financial coverage of Rs. 1 lakh per family per annum (2 lakhs for certain high-end ailments and procedures).

In Karnataka, a number of schemes have been initiated. One of the earliest health insurance schemes "Yeshasvini" was operationalized in Karnataka as early as 2003. The scheme was introduced for co-operative farmers of the State and extended cover for about 823 surgical procedures. The state also implemented the Rashtriya Swasthya Bima Yojana (RSBY) for the BPL population, which was launched by the Central government in 2007. While Yeshasvini was confined to a small section of the population, RSBY provided only limited financial coverage for secondary care. To expand benefits, the Government of Karnataka introduced the "Vajpayee Aarogyasri" for the BPL population in 2009. The scheme which was initially launched in six districts, was gradually extended to the entire state by mid 2012. It extended insurance for 663 high-end procedures with a financial coverage upto Rs. 1.5 lakhs (with a buffer of Rs. 50,000) to each BPL family. As of 2016, the scheme covered about 65 per cent of the population in the State. The details of schemes operating in the State with some of their basic features are shown in Table 1.

Table 1: Selected features of Government Sponsored Insurance Schemes in Andhra Pradesh, Telangana, Tamil Nadu and Karnataka

Scheme	Year of Implementation	Eligible group	Households covered	Financial Coverage	Procedures Covered (No.)
Andhra Pradesh					
NTR Vaidya Seva Scheme (NTRVS)	2007	White Ration card Holders (BPL families)	150.95 Lakhs	2.5 Lakhs	1044
Employees Health Scheme (EHS) (60 govt:40employees sharing)	2013	State Government employees and pensioners & family	8.34 Lakhs	2 Lakhs/episode, with no limit on episodes	1885
Working Journalists Health Scheme (WJHS) (50:50 sharing)	2015	Serving and Retired Journalists/Dependents	5120	No cap	1885
Amravathi Residents Health Scheme	2017	Residents of Amravati capital city area	37182	2.5 Lakhs	1044
Aarogya Raksha (self-funded)	2017	Aarogya Raksha Card/APL	39188	2 Lakhs	1044
Amrutha scheme	2018	Orphans and Destitute	2812 cards	2.5 lakhs	1044
Telangana					
Aarogyasri Scheme	2007	White Ration card Holders (BPL families)	77.19 Lakhs	2 lakhs	945
Employees Health Scheme (EHS)	2014	State Government employees/pensioners	3.9 Lakhs	No cap	1885
Working Journalist Health Scheme	2015	Serving and Retired Journalists and Dependents	4759	No cap	1885
Karnataka					
Vajpayee Aarogyashree (VAS)	2009	BPL Families	107 Lakhs	2 lakhs	663
Rajiv Aarogya Bhagya (RAB)	2015	APL Families	6 Lakhs	2 lakhs	663
Mukhyamantrigala Santhwana Harish Scheme	2016	Victims of Road Accidents		25000	25 packages
Jyoti Sanjeevani Scheme	2015	State Government Employees/ dependents		No cap	663
Rashtriya Bala Swasthya Karyakrama	2015	Government aided school and Anganwadi children		30,000	883
Indira Suraksha Yojana	2018	Dependent family members of farmers committing suicide		2.3 lakhs	Primary and secondary care
Yeshasvini	2003	Co-operative farmers		2 lakhs	883
RSBY	2007	BPL Population		30,000	Secondary care
Tamil Nadu					
CMCHIS	2009	Annual income Rs.72, 000/ per annum or less	157 lakhs	1 lakh (2 lakh for specified procedures)	1027

Source: NTR Vaidya Seva Trust, Andhra Pradesh and Aarogyasri Health Care Trust Telangana, Suvarna Aarogya Suraksha Trust, Karnataka, TNHSP Tamil Nadu

III. Data and Methodology

Information on public spending and claims under insurance schemes were provided by the State agencies implementing the schemes.⁵

In Andhra Pradesh (undivided and divided) and Telangana, expenditures on the schemes were met from two sources: partly from the health budget and partly from the Chief Minister's Relief Fund (CMRF). In the State budget, while the amount released from the health department can be easily identified, the contribution from CMRF for the scheme is not separately recorded. We therefore, used information on receipts from CMRF reported in the annual audited financial statements of the implementing agencies (trusts) to identify this contribution. The sum of releases from both the sources (health department and CMRF) is taken as the total burden on the state exchequer on account of the schemes.

In Karnataka, the expenditure of Vajpayee Aarogyasri was also borne from two sources: the state's resources and contributions from the World Bank. It is important to note that only part of the contribution of the World Bank is derived from the State exchequer. Total releases including and excluding the World Bank contribution has been computed to derive a broad sense of the extent of burden on State resources on account of the scheme. Information provided by Suvarna Arogya Suraksha Trust (SAST) and its audited financial statements has been used for culling out information on funds received by the trust for all the schemes.⁶

In Tamil Nadu, information on public spending on the scheme has been extracted from the State budget document. Notably, in the case of schemes implemented through trusts (as in Karnataka, Andhra Pradesh and Telangana), the actual expenditure incurred in various schemes in any year, differ from budget releases for the schemes in that year.⁷ We use the actual expenditure incurred in the scheme in any year (not budget releases) as scheme expenditure.

We focus on States' own spending on health (i.e. exclude expenditure under schemes initiated by the Central government) to analyze the fiscal burden and changes in expenditure patterns. This is because, the State has very limited discretion on the amount spent on central schemes, and any adjustment required to accommodate the additional expenditure on insurance schemes had to be made out of its own spending on health. Information on State's own expenditure and expenditure on centrally sponsored and central sector schemes (CS/CSS) have been sourced from Finance Accounts. For some of the early years where data on CS/CSS expenditure was not reported in Finance Accounts,

⁵ These included the NTR Vaidya Seva Trust in Andhra Pradesh, Aarogyasri trust in Telanagana, Suvarna Arogya Suraksha Trust (SAST) in Karnataka and the Tamil Nadu Health Systems Project (TNHSP)

⁶ In Andhra Pradesh and Karnataka, figures provided by the trust on contribution from the State budget were verified with the figures reported in the budgets of the two State governments.

⁷ This happens primarily due to the availability of funds in the form of opening balance in the trusts.

these have been sourced from budget documents or from the finance department of the respective states.⁸

To examine whether the burden of GSHI schemes (which primarily cater to tertiary care) led to squeezing of other health expenditures, we examine squeezing of public spending on primary and secondary care *vis-à-vis* tertiary care. For this, we classify health expenditures into primary, secondary and tertiary health care services using data from the Detailed Demand for Grants of the respective State governments for each of the years between 2004-05 to 2016-17. To discern changes following the implementation of GSHI schemes, we compare expenditures between pre- and post- implementation periods of GSHI schemes in the respective States. In Andhra Pradesh, much of the expenditure on secondary-level hospitals (district hospitals, area hospitals, community health centers, etc.) was incurred through the Andhra Pradesh Vaidya Vidhana Parishad (APVVP), a division of the Department of Health and Family Welfare. We include expenditures on APVVP and other expenditures on district hospitals and taluk hospitals as expenditure on secondary care. In Tamil Nadu, expenditure on secondary care included expenditure on district headquarters hospitals, taluk headquarters hospitals, non-taluk hospitals, in addition to expenditure on Directorate of Medical and Rural Health Services (DMS). Expenditure on primary care included spending under the budget head of rural health services, family welfare and public health. Tertiary care included all expenditure under the head of 'hospitals and dispensaries' under 'urban health' (excluding expenditure on secondary-level facilities), and medical education training and research.

In Andhra Pradesh and Karnataka, where schemes were expanded in phases (coverage was partial in the early years), the fiscal burden was examined after the schemes were operational in the entire State. In Andhra Pradesh, we analyze expenditures after 2009-10, and in Karnataka, since 2012-13. In Tamil Nadu, we examine the expenditure separately for Chief Minister's Kalaighnar Health Insurance Scheme, which was operational between 2008-09 and 2011-12, and the ongoing Chief Minister's Comprehensive Health Insurance Scheme since 2012-13. For all States, analysis was carried out upto 2016-17, the last year for which 'Actual' expenditures were available at the time of analysis.

We supplement the above information with two sets of data. First, data on claims under insurance schemes in public and private hospitals and districts from each of the three States provided by the respective implementing agencies. Second, information from the 60th and the 71st round of survey conducted by the National Sample Survey Organization (NSSO) to examine the effectiveness of the GSHI schemes. To ensure comparability between the two rounds, information from Andhra Pradesh and Telangana in the 71st round of survey conducted in 2014 was combined for the analysis.

⁸ These have been compiled by NIPFP databank

IV. Fiscal Burden of Insurance Schemes and their Effect on Health Spending

In former Andhra Pradesh, nearly a quarter of the state's health expenditure between 2009-10 and 2013-14 was incurred on the scheme (Rajiv Aarogyasri) (Table 2). As a proportion of state's own spending (health expenditure net of expenditure on centrally sponsored and central sector schemes), this expenditure was about 29 per cent on average (Table 2). After Telangana was carved out of Andhra Pradesh in 2014, the average expenditure on the insurance schemes continued to be substantial in the years 2015-16 and 2016-17 (23 per cent in Andhra Pradesh and 19 per cent in Telangana) (Table 2). In addition, the two newly formed States implemented the Employees Health Scheme (EHS), which accounted for another 5 per cent and 3 per cent of the own health spending of Andhra Pradesh and Telangana respectively. Together, the two insurance schemes accounted for 20 to 30 per cent of the states' own spending in the first two years of the newly formed States (Table 2).⁹ The figures for the two new states however, should be read with caution as the first two years may be the years of transition.

In undivided Andhra Pradesh, with a quarter of health budget directed towards Rajiv Aarogyasri, public expenditure on other health services slowed down. A comparison of average real expenditures in the years prior to implementation of the scheme (2004-05 to 2008-09), with the years when RAS was fully operational (2009-10 to 2013-14), shows that more than half the increase in real per capita public spending on health between the two periods (59 per cent) was on account of the insurance scheme (Table 6). In addition, average increase in expenditure on tertiary-level hospitals was more than primary and secondary level facilities. This was possibly required to strengthen major public hospitals for RAS. Expenditure on major public hospitals (including medical education, training and research) increased by about 18 per cent in the period, while the increase in spending on primary and secondary level facilities accounted for only about 12 per cent and 6 per cent respectively (Table 6). Together, insurance and tertiary-level hospitals alone accounted for around three-fourths of the increase in public spending on health between the two periods [Table 6]. In rural health services and public health, the increase was less than 2 per cent of the total (Table 6). The burden on the state exchequer due to Aarogyasri, and its adverse effect on expansion of other health infrastructure has also been documented in the State's draft approach paper for the twelfth plan.¹⁰ Due to the fiscal burden of the scheme, the State government also had to approach the Central government (Planning Commission) for financial assistance in 2009.¹¹

It may be argued that the National Rural Health Mission (NRHM) provided funds for primary and secondary health facilities in Andhra Pradesh, and therefore, the State government focused relatively more on tertiary than primary and secondary health services. It is important to note that NRHM spending is largely complementary in nature,

⁹ The Working Journalist Scheme was also operational in the two new States since 2015. However, discussion with officials of the trusts in the two States, and information on the population covered by the schemes suggest that the expenditure on the schemes were negligible.

¹⁰ http://www.cess.ac.in/cesshome/pdf/draft_approach_to_12th_plan_for_discussion.pdf

¹¹ <http://164.100.47.5/qsearch/QResult.aspx> (Answer to Rajya Sabha question in 2012)

and bulk of the recurring spending in primary and secondary facilities are required to be carried out by the State governments. The slow expenditure in primary and secondary health care services therefore, has adverse implications for lower levels of care.

In Tamil Nadu, the fiscal burden on account of the insurance scheme was lower than Andhra Pradesh and Telangana. In the first phase of the scheme (2008-09 to 2010-11), expenditure on the insurance scheme accounted for about 10 per cent of its own spending on health (Table 3). In the second phase between 2011-12 and 2016-17, this amounted to about 13 per cent (Table 3). The corresponding figures for expenditure on the scheme as proportion of total health expenditure of the State was about 8 per cent and 11 per cent respectively (Table 3).

Unlike Andhra Pradesh, the insurance scheme accounted for only about 20 per cent of the increase in real per capita health spending in Tamil Nadu between the pre- and post-implementation period (2004-05 to 2007-08 and 2008-09 to 2016-17 (Table 7). With a relatively small share of expenditure towards insurance in the health budget, the state also increased expenditure towards primary and secondary health care services significantly in the same period (Table 7). In contrast to Andhra Pradesh, the increase in public spending in primary care between the pre- and post- implementation period in Tamil Nadu was higher than the increase in spending on the insurance scheme in that period (Table 7). Interestingly however, as in Andhra Pradesh, there was a substantial increase in tertiary-level hospitals (including medical education training and research) between the pre- and post-implementation phase. Again, this could have been partially driven by the need to strengthen public hospitals for rendering insurance services.

In Tamil Nadu, accommodating the additional fiscal burden of the insurance scheme was possibly easier than Andhra Pradesh due to two facts. First, the level of spending on the insurance scheme was lower than that in Andhra Pradesh. The average increase in real per capita expenditure due to the insurance scheme in Tamil Nadu was about Rs. 51 per capita, while that in Andhra Pradesh was about Rs. 79 in comparison to the average expenditure between 2004-05 and 2007-08, the years prior to the initiation of insurance scheme (Table 6 and Table 7). Secondly, per capita public spending on health in Tamil Nadu increased more than that in Andhra Pradesh in that period providing room for insurance spending. These two factors together resulted in the fact that only 20 per cent of increase in per capita health spending in Tamil Nadu in that period was on account of insurance, in contrast to Andhra Pradesh, where the insurance scheme accounted for nearly 60 per cent of the increase in real per capita health spending.

In Karnataka, as many as 8 health insurance schemes were being operated by the state government for different sections of the population in 2016-17. The total expenditure on these government sponsored health insurance schemes along with the state share towards the Central government scheme (RSBY) was about 6-7 per cent of its (own) health spending (about 5 per cent of total health spending) in 2016-17 (Table 4 and Table 5). Of these, much of the expenditure was towards VAS (the scheme for the BPL population), followed by Yeshasvini, (for members of cooperative societies) (Table 4 and Table 5). Expenditure towards the other schemes was negligible (Table 4 and Table 5).

Table 2: Public Spending on Health Insurance Schemes sponsored by Governments of Andhra Pradesh and Telangana (Rs. Crore)

	Years	Grants from State Government	Chief Minister's Relief Fund (CMRF)	Total grants received (Govt. + CMRF)	Total Exp on the scheme (1)	Total Exp on Health and Family Welfare (including CMRF releases for scheme) # (2)	State's Own Exp on H & FW [(2) – CSS] (3)	Scheme exp as share of own exp (1 as % of 3)	Average share of scheme exp on State's own health exp (%)
Rajiv Aarogyasri/Aarogyasri/NTR Vaidya Seva Scheme									
Undivided Andhra Pradesh	2008-09	505	110	615	633	3122	2822	22.4	Partial Coverage
	2009-10	819	309	1128	1171	4127	3334	35.1	28.8
	2010-11	880	348	1228	1346	5118	4079	33	(23.4)*
	2011-12	773	578	1351	1313	6604	5130	25.6	
	2012-13	469	289	758	1303	6357	5348	24.4	
	2013-14	926	425	1351	1553	7030	5982	26	
New Andhra Pradesh	2015-16	500	440	940	1246	6344	5207	23.9	22.7
	2016-17	1301	100	1401	1251	6587	5795	21.6	(19.3)*
Telangana	2015-16	326	108	434	551	3867	3413	16.1	18.9
	2016-17	840		840	833	4940	3852	21.6	(15.6)*
Employees Health Insurance Scheme									
New Andhra Pradesh	2015-16	120		120	218	6344	4070	5.4	4.6
	2016-17	192		192	196	6538	5100	3.8	(3.2)*
Telangana	2015-16	20		20	61	3867	2959	2.1	2.5
	2016-17	6		6	80	4940	2764	2.9	(1.6)*

Source: Audited Balance Sheets, NTR Vaidya Seva Trust, Audited Balance Sheets, Aarogyasri Health Care Trust and Annual Reports of the trust in undivided Andhra Pradesh, Finance Accounts of the respective States published by the Comptroller and Auditor General and compiled at NIPFP databank, # includes off-budget transfers, Figures in parenthesis indicate share in total health expenditure in the State (including CSS)

Table 3: Public Spending on Chief Minister’s Comprehensive Health Insurance Scheme (CMCHIS) sponsored by Government of Tamil Nadu (Rs. Crore)

	Government Expenditure on the Scheme (1)	Total Expenditure on Health and Family Welfare (2)	State’s own Expenditure on Health and Family Welfare [(2)-CSS] (3)	Scheme exp as share of total exp (1 as % of 2)	Scheme exp as share of own exp (1 as % of 3)	Average share of scheme exp on State’s own health exp (%)
2008-09	50	3173	2194	1.6	2.3	9.5 (7.6)*
2009-10	444	4021	3138	11.0	14.1	
2010-11	670	4882	4003	13.7	16.7	
2011-12	327	4920	3936	3.9	4.9	12.9 (11)*
2012-13	750	5852	4804	12.8	15.6	
2013-14	739	7008	5291	10.4	13.8	
2014-15	758	7509	6594	10.1	11.5	
2015-16	953	8383	7531	11.0	12.3	
2016-17	928	8756	7996	10.6	11.6	

Source: Tamil Nadu Health Systems Project (TNHSP) and Finance Accounts published by the Comptroller and Auditor General of India, compiled at NIPFP databank

Table 4: Public Spending on Health Insurance Schemes sponsored by the Government of Karnataka (Rs. Crore)

		Grants from State Government	Receipts from World Bank (WB)	Total grants received (Govt. + WB +other receipts)	Total Exp on the scheme (1)	Total Exp on Health and Family Welfare (including WB Receipts) (2)	State's own Expenditure on Health and Family Welfare [(2)-CSS] (3)	Scheme exp as share of total (1 as % of 3)	Average share of scheme exp on State's own health exp (%)
VAS	2009-10	5		5	2	2585	1915	0.1	Partial coverage
	2010-11	40	13	54	28	3331	2398	1.2	
	2011-12	40	27	71	50	4125	2834	1.8	
	2012-13	60	4	69	83	4420	3443	2.4	4.0 (3.3)*
	2013-14	118	48	169	177	5074	3804	4.7	
	2014-15	140	57	200	207	5906	4974	4.2	
	2015-16	143	86	233	237	5915	5015	4.7	
2016-17	171	53	224	254	7006	6238	4.1		
Rajeev Aarogya Bhagya (RAB)	2014-15	11		11	0.3	5906	4974	0.2	0.2 (0.2)*
	2015-16	11		12	6	5915	5015	0.2	
	2016-17	6		6	16	7006	6238	0.1	
RAB Journalist Scheme	2016-17	2		2	0	7006	6238	0.0	0
Mukhyamantrigala Santhwana Harish Scheme	2014-15	5		5	0.02	5906	4974	0.1	0.2 (0.1)*
	2015-16	10		11	0.5	5915	5015	0.2	
	2016-17	10		11	16	7006	6238	0.2	
Jyoti Sanjeevani Scheme	2014-15	7		7	0.1	5906	4974	0.1	0.2 (0.1)*
	2015-16	10		10	10	5915	5015	0.2	
	2016-17	10		10	16	7006	6238	0.2	
Rashtriya Bala Swasthya Karyakrama	2014-15	4		4	0	5906	4974	0.1	0.2 (0.2)*
	2015-16	9		10	14	5915	5015	0.2	
	2016-17	20		20	12	7006	6238	0.3	
Indira Suraksha Yojana	2016-17	2		3	0.1	7006	6238	0.0	0

Source: Suvarna Aarogya Suraksha Trust (SAST), Karnataka and Finance Accounts of the respective States published by the Comptroller and Auditor General and compiled at NIPFP databank

Table 5: Public Spending by Government of Karnataka on RSBY and Yeshasvini (Rs. Crore)

	RSBY (State share budget releases) (1)	Yeshasvini (Releases from Government of Karnataka (2)	Total Exp on Health and Family Welfare (including WB Receipts)# (3)	State's own Expenditure on Health and Family Welfare [[2]-CSS] (4)	RSBY share (1 as % of 4)	Yeshasvini share (2 as % of 4)	Average share of RSBY exp on State's own health exp (%) (State share)	Average share of Yeshasvini exp on State's own health exp (%)
2009-10	6	30	2585	1915	0.3	1.6	0.4 (0.4)*	1.6 (1.2)*
2010-11	8	30	3331	2398	0.3	1.3		
2011-12	11	30	4125	2834	0.4	1.1		
2012-13	0	35	4420	3443	0.0	1.0		
2013-14	3	45	5074	3804	0.1	1.2		
2014-15	37	72	5906	4974	0.7	1.4		
2015-16	29	110	5915	5015	0.6	2.2		
2016-17	66	170	7006	6238	1.1	2.7		

Source: Information provided by Suvarna Aarogya Suraksha Trust (SAST), Karnataka,

Information compiled at NIPFP databank from Finance Accounts of the State published by the Comptroller and Auditor General

includes off-budget transfers, *Figures in parenthesis indicate share in total health expenditure of the State (including CSS)

Table 6: Per Capita public spending under major sectors in Health in undivided Andhra Pradesh, 2004-05 to 2013-14 (Rs. 2004-05 prices)

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Av (04-05 to 07-08)	Av (08-09 to 13-14)	Change
Per capita Primary	81.0	81.8	83.3	109.3	92.6	81.3	89.0	98.0	133.4	113.7	88.9	101.3	12.4
Per capita secondary	22.2	22.1	29.8	30.0	27.8	24.9	31.4	34.1	37.1	35.1	26.0	31.8	5.8
Per capita Tertiary (excluding insurance)	41.2	45.4	50.1	65.9	58.9	59.6	70.4	90.5	80.1	87.8	50.6	74.5	23.9
Per capita insurance	0.0	0.0	0.0	0.0	55.8	96.2	95.2	96.9	49.1	82.6	0.0	79.3	79.3
Total Health Expend.	167	172	186	234	261	284	315	368	349	366	189	324	134

Note: Expenditure on tertiary care includes spending under Urban Health (excluding expenses under APVVP), Medical Education Training and Research and releases from Chief Minister's Relief Fund for RAS. Expenditure on secondary care includes spending under APVVP and other expenditures on district hospitals and taluk hospitals. Expenses on primary care includes spending under the budget heads of Rural Health Services, Family Welfare and Public Health.

Table 7: Per Capita public spending under different heads in Tamil Nadu, 2004-05 to 2016-17 (Rs. 2004-05 prices)

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Avg 2004-05 to 2007-08	Avg 2008-09 to 2016-17	Change
Per capita Primary	46	54	61	67	83	96	107	108	113	115	161	196	186	57	129	72
Per capita Secondary	27	26	27	27	39	88	113	84	112	109	112	126	119	26	101	75
Per capita Tertiary (excl. insurance)	84	126	117	117	143	165	190	186	171	183	205	208	240	112	188	76
Per capita insurance	0	0	0	0	6	49	69	31	61	56	54	66	63	0	51	51
Total Health Exp	157	206	205	211	265	349	410	378	396	407	478	530	545	195	418	223

Note: Expenditure on tertiary care includes spending under Urban Health (excluding expenses under secondary hospitals) and Medical Education Training and Research. Expenditure on secondary care includes expenditure on district headquarters hospitals, taluk headquarters hospitals, non-taluk hospitals, in addition to expenditure on Directorate of Medical and Rural Health Services (DMS).. Expenses on primary care includes spending under the budget heads of Rural Health Services, Family Welfare and Public Health.

V. Factors Contributing to Fiscal Burden of Insurance Schemes

A. Expanding Coverage of Population, Procedures and Financial Ceiling

Population coverage under the government insurance schemes has been gradually expanding over time, and this has fiscal implications. In both Andhra Pradesh and Karnataka, the scheme was initially targeted to the population below poverty line (BPL), but were later expanded to other sections of the population as well. In Andhra Pradesh, new schemes were initiated for working journalists and State government employees. Later, after bifurcation, in newly formed Andhra Pradesh, the state initiated an additional scheme for the population above poverty line (APL). Similarly, in Karnataka, following the initiation of the scheme for BPL population, as many as five different schemes were added by the State government for different sections of the population (APL population, State government employees, govt. aided school children, road accident victims and dependent family members of farmers who have committed suicide). Although the fiscal burden on account of these schemes is not very large at present, it points towards the potential for increased fiscal burden over time.

The financial ceiling of insurance coverage, the extent of government subsidy and the number of procedures covered under the scheme has also been increasing over the years, which further adds to the potential increase in cost to the government. After bifurcation, Andhra Pradesh raised the upper limit of the financial coverage from 2 to 2.5 lakhs per family. In Telangana, the extent of government subsidy on schemes for working journalists and state government employees was increased: from partial funding (in undivided Andhra) to full funding by the Telangana State government. In Tamil Nadu too, when the new government came to power around 2012, it significantly increased the number of procedures covered under the scheme: from about 696 to 1000. Further, as per the report of Insurance Regulatory and Development Authority of India (IRDAI), the claims to premium ratio (claims ratio) in government health insurance schemes (implemented through insurance companies) was about 122 per cent in 2016-17. With claims more than the premiums paid by the Government, the premium rates would need to be revised upwards soon. Possibly due to this, in Tamil Nadu, the premium rates per family per year increased from Rs. 497 in the period (2012-2016) to Rs. 699 for four years beginning 2017.

B. Relative Strengths of Public and Private Sectors in Health Service Delivery

In both Andhra Pradesh and Karnataka, private hospitals have strongly advocated for increased package rates in the past, which can further translate to increased cost to the government. In 2013, the Andhra Pradesh Private Hospitals and Nursing Homes Association (APNA) and Andhra Pradesh Specialty Hospitals Association (ASHA) submitted representations to the Government asking for revision of package rates for Rajiv Aarogyasri Scheme and issued a notice to the then State Government that if the request was not heeded to, they would stop providing services under RAS.¹² Following this, the Government of Andhra Pradesh undertook a detailed costing exercise and

¹² Government Orders of Government of Andhra Pradesh

revised package prices upwards. In Karnataka too, private hospitals threatened to withdraw from Vajpayee Aarogyasri if the package rates were not revised.¹³

There are indications that in Tamil Nadu, due to the presence of a strong public health system, the prices for various procedures fixed for the majority of the private hospitals are lower than that in Andhra Pradesh and Telangana (See appendix Table A3) for comparable prices of procedures in Tamil Nadu, Andhra Pradesh and Telangana). Hospitals empaneled under the scheme in Tamil Nadu are graded between A1 to A6 (for multispecialty hospitals), and package prices reduce gradually as one moves from high to low grade hospitals (i.e. A1 to A6). Interestingly, around 80 per cent of the private hospitals empaneled in the scheme are classified in A3 and lower grades of hospitals, while all Government hospitals are classified in A1. This indicates that the Government of Tamil Nadu has been able to negotiate a price with private hospitals, which is not only lower than the corresponding price in Andhra Pradesh and Telangana, but also lower than the price offered to public hospitals in the State. The strong competitive public system in the State is likely to have contributed to the lower rates of package prices negotiated with private hospitals.

With a relatively strong public health system, claims are also more in public hospitals of Tamil Nadu than Andhra Pradesh or Telangana. In Tamil Nadu, on average, between 2012-13 and 2016-17, about 32 per cent of the insurance claims were in public hospitals, whereas in Andhra Pradesh it was only about 18 per cent between 2009-10 and 2013-14. A similar pattern is also indicated in the 2014 NSSO survey. As per the survey, of the hospitalization cases which had coverage under government insurance schemes in the three poorest quintiles, about 41 per cent opted for public facilities in Tamil Nadu, as against 33 per cent in Andhra Pradesh. A comparison of the ratio of amount claimed to amount finally approved in public and private hospitals in Tamil Nadu (in 2015-16 and 2016-17) suggests that the ratio between the two was only about 8 per cent in public hospitals as opposed to about 40 per cent in private hospitals. If this mirrors a lower moral hazard problem in public hospitals, the relatively high use of public hospitals for the scheme may contribute to containing cost and the corresponding fiscal burden on account of the scheme.

VI. Effectiveness of Public Spending on the Schemes

A. Effect on Out of Pocket Expenditure

The primary objective of insurance schemes is to extend financial protection against out of pocket expenditures (OOPE) for inpatient treatment, and several scholars have assessed the effectiveness of the schemes in terms of achievement on this parameter (Selvaraj and Karan 2012, Karan Yip and Mahal 2017, Rao *et. al.* 2014).

Much of the evidence suggests that out of pocket expenditure has not reduced following the initiation of GSHI schemes. Studies using different rounds of NSSO's

¹³ <https://blogs.bmj.com/bmj/2014/03/07/n-devadasan-and-p-bore-gowda-private-healthcare-providers-threatened-by-the-vajpayee-aarogyashree-scheme/>

consumer expenditure surveys to compare the effect of pre- and post- implementation of government sponsored health insurance schemes did not find any significant reduction in out of pocket spending for inpatient care (Selvaraj and Karan 2012, Karan Yip and Mahal 2017). Some studies however, argued that although the rate of increase of OOPE increased in States like Andhra Pradesh following the implementation of RAS, the increase in OOPE was lower than Maharashtra (Rao *et. al.* 2014) and to that extent there is a positive effect on OOPE. This was based on a comparison of surveys conducted in Andhra Pradesh and Maharashtra in 2004 and 2012 by two different organizations, and may have been affected by non-sampling errors. We compared out of pocket spending on hospitalization in 2004 and 2014, based on the last two rounds of household surveys on health care conducted by NSSO, and found that the increase in out of pocket spending in Andhra Pradesh, Tamil Nadu and Karnataka has been higher than the average increase for the country as a whole (Table 8).

Table 8: Annual expenditure per household for inpatient care in selected States and groups of population 2004, 2014 (Rs. current prices)

	60 th Round		71 st Round		Difference (60 th and 70 th)	
	All	Eligible Population@	All	Eligible Population@	All	Eligible Population@
Andhra Pradesh	753	546	3477	2550	2724	2004
Karnataka	737	531	3266	2749	2529	2218
Tamil Nadu	1135	515	3559	1957	2424	1442
All India (Poorer 60 %)	901	532	3060	1773	2159	1241
All India (Poorer 80 %)		684		2123		1439

Source: Estimated from household-level data of the 60th and 71st round of NSSO survey 2004, 2014.
 @ Eligible population in Andhra Pradesh consists of the 4 poorer quintiles of the population (bottom 80 per cent). In Karnataka and Tamil Nadu, the eligible population broadly covers the poorer 3 quintiles (bottom 60 per cent)

The increase in OOPE following the initiation of GSHI schemes could be due to translation of some of the latent demand for hospitalization into effective demand by releasing financial constraints. If due to realization of latent demand, the rate of hospitalization increases OOPE can rise following the implementation of the schemes. A comparison of the rates of hospitalization in Andhra Pradesh, Tamil Nadu and Karnataka between 2004 and 2014 from NSSO health surveys suggests that there has indeed been an increase in hospitalization rates in Andhra Pradesh and Karnataka, and to a lower extent in Tamil Nadu (Table 9). Rao *et. al.* (2014) also found an increase in hospitalization rates in Andhra Pradesh following the implementation of RAS. Similarly, Sood (2014) also found weak evidence of increase of utilization following the implementation of VAS. With increase in hospitalization rates, the effect of GSHI schemes on OOPE remains ambiguous.

Table 9: Hospitalization rates in selected States and groups of population 2004, 2014 (per cent)

	60 th Round		71 st Round			Difference (60 th & 70 th) Eligible Population@
	All	Eligible Population@	All	Eligible Population@	All	
Andhra Pradesh	2.7	2.6	4.8	4.5	2.1	1.9
Karnataka	2.5	2.3	4.4	4.4	1.9	2.1
Tamil Nadu	4.2	4.0	5.6	4.8	1.4	0.8
All India (Poorer 60 %)	2.8	2.3	3.7	3.0	0.9	0.7
All India (Poorer 80 %)		2.7		3.4		0.7

Source: Estimated from household-level data of the 60th and 71st round of NSSO survey 2004, 2014.

@ Eligible population in Andhra Pradesh consists of the 4 poorer quintiles of the population (bottom 80 per cent). In Karnataka and Tamil Nadu, the eligible population broadly covers the poorer 3 quintiles (bottom 60 per cent)

A. Extent of Hospitalization Coverage

The extent of hospitalization covered by GSHI Schemes can also be used as an indicator of their effectiveness. Higher coverage of hospitalization will render the schemes more effective. We therefore, examine the number and volume of hospitalization claims settled under insurance schemes to the total number and volume of hospitalization in the selected States.

Our analysis suggests that the value of hospitalization claims settled under state insurance schemes constituted a small proportion of the total out of pocket expenditure on inpatient care. In 2014, the amount of hospital claims settled under state insurance schemes in Andhra Pradesh and Telangana was only about 15 per cent of the total out of pocket expenditure on hospitalization by eligible households. In Karnataka, this share was even lower among eligible households: around 7 per cent. In Tamil Nadu on the other hand, this was about a quarter of all hospitalization expenses incurred by the eligible households.¹⁴¹⁵ In terms of the number of hospitalizations, the coverage was even smaller. The ratio of total number of claims settled to total number of hospitalization cases in the states was about 10 per cent in Andhra Pradesh and Telangana, 3 per cent in Karnataka and about 16 per cent in Tamil Nadu.

It is notable that the limited coverage of hospitalization by insurance schemes is primarily due to their focus on coverage of tertiary level hospitalization. An analysis of disease category wise claims in the selected States in 2015-16 and 2016-17 suggests that

¹⁴ In Andhra Pradesh and Telangana, households belonging to the bottom four quintiles (80 per cent) was considered eligible under the insurance scheme, while in Tamil Nadu and Karnataka, the bottom three quintiles (60 per cent) were considered eligible. These broadly correspond to the share of eligible population in the respective States.

¹⁵ Expenses by eligible households on hospitalization were estimated from the 71st round of NSSO survey.

much of the claims in these insurance schemes are for five disease conditions: cardiology or cardio-thoracic surgery, oncology, nephrology/genito-urinary issues, polytrauma and neuro issues (Table 10). In Andhra Pradesh, Telangana and Karnataka, more than 80 per cent of claims (both in terms of amount and number) are for these five disease conditions (Table 10). In Tamil Nadu too, these conditions accounted for more than half the claims (Table 10). Notably, in Tamil Nadu, there are significant claims in other disease conditions as well, which indicates a wider coverage in the State than others.

B. Access to Insured Services within States

An analysis of the distribution of hospital claims settled across districts in combined Andhra Pradesh and Telangana and Tamil Nadu for the top five disease conditions (in terms of claims) in 2015-16 and 2016-17 suggests that the claims were relatively high in rich districts of the State.¹⁶ The correlation coefficient between per capita income and the share of claims across districts (both in terms of number and value) was significantly positive in both combined Andhra Pradesh and Tamil Nadu (correlation coefficient around 0.4 in both the States) (Table 11 and Table 12). This is largely due to the fact that the number of private hospitals empaneled was more in relatively rich districts of the States (Choudhury and Datta 2019). The correlation coefficient between the share of claims and the number of private hospitals empaneled across districts was as high as 0.7 to 0.8 in both the States (Table 11 and Table 12). The high claims in relatively rich districts is also mirrored in the fact that a substantial share of patients from relatively poor districts migrate to relatively rich districts for availing insured services (Table 11 and Table 12). In Andhra Pradesh, more than half the patients from poor districts like Vizianagaram, Srikakulam and Y.S.R Cuddapah, migrated to other districts for availing benefits of the scheme. Even in not so poor districts like Prakasam, more than half the patients availing services travel out of the district, specifically to Guntur, a neighboring district with relatively better empaneled private hospitals. Similarly, in Telangana, more than 80 per cent of patients in Adilabad, Medak and Nalgonda, traveled out of the district for availing benefits of the scheme. In general, more than half the patients availing benefits travel out of their districts. Most of these migrating patients travel either to Hyderabad or to Ranga Reddy for treatment. In Tamil Nadu too, more than half the patients availing benefits travel to other districts to access insured services. Of these, a substantial proportion travel to Chennai, Madurai, Coimbatore and Tiruchirapalli which are among the richer parts of the State.

Notably, specialized public hospitals are also concentrated in large cities. In 2015-16, more than 60 per cent of the claims settled in public hospitals in Telangana were confined to four public hospitals: Gandhi Hospitals, M.N.J Hospitals, NIMS Hospitals and Osmania General Hospital, all of which were located in Hyderabad. Similarly, in 2016-17, nearly 75 per cent of the claims in public hospitals of Karnataka was concentrated in 3 hospitals: Sri Jaydeava Institute of Cardiovascular Research, Bengaluru, Sri Jaydeava Institute of Cardiovascular Research, Mysore and Kidwai Memorial Institute of Oncology, Bengaluru. In Andhra Pradesh too, four public hospitals accounted for more than half the claims in public hospitals in 2016-17: Sri Venkateswara Institute of Medical Sciences,

¹⁶ Top five disease conditions include cardiology or cardio-thoracic surgery, oncology, nephrology/genito-urinary issues, polytrauma and neuro issues

Chittoor, King George Hospital Vishakhapatnam, Government General Hospital, Guntur and Government General Hospital Kakinada. In Tamil Nadu however, the share of claims in public hospitals are relatively more spread out. This is possibly facilitated by the fact that relatively well functioning public hospitals are spread out in the state more than others.

Table 10: Number and amount of claims against top five disease conditions* under State sponsored insurance schemes, 2015-16 and 2016-17

	Andhra Pradesh		Telangana		Tamil Nadu		Karnataka	
	Share (per cent) in		Share (per cent) in		Share (per cent) in		Share (per cent) in	
	Amount of Claims	Number of Claims	Amount of Claims	Number of Claims	Amount of Claims	Number of Claims	Amount of Claims	Number of Claims
Cardiology and Cardio-thoracic Surgery	28	12	27	11	27	8	51	37
Poly Trauma	17	16	18	16	0.2	0.3	0.1	0.1
Renal (including Nephrology & Genito Urinary)	16	22	18	27	15	26	11	21
Cancer (Radiation, Surgical and Medical)	14	24	14	25	10	16	28	31
Neurology and Surgery	7	5	7	5	7	5	6	7
General Surgery and Medicine	5	5	3	3	7	7		
Pediatrics (Neonatal and surgery)	5	5	5	5	5	5	3	3
Orthopedic Surgery and Procedures	2	3	2	2	3	4		
Ophthalmology Surgery and Procedure	2	3	1	1	2	3		
ENT Surgery	1	3	1	1	4	5		
Gastro-Enterology and Surgery	1	1	1	1	1	1		
Gynecology and Obstetrics Surgery	1	1	1	1	4	9		
Plastic Surgery	1	0	1	1	2	1		
Pulmonology	1	1	1	1	0	0		
Critical Care	0	0	0	0				
Cochlear Implant Surgery	0	0	0	0				
Endocrinology	0	0	0	0	0	0		
Rheumatology	0	0	0	0	0	0		
Dermatology	0	0	0	0	0	0		
Replacement					7	2		
Total Claims (Rs.) and Total Number	18,094,104,567	684,875	4,370,719,301	182,022	18,635,439,812	782,508	4,689,750,817	107,960

Source: NTR Vaidya Seva Trust, Andhra Pradesh and Aarogyasri Health Care Trust Telangana, Suvarna Aarogya Suraksha Trust, Karnataka, TNHSP Tamil Nadu

* Cardiology or cardio-thoracic surgery, oncology, nephrology/genito-urinary issues, polytrauma and neuro issues

Table 11: District-wise share of insurance claims (both number and amount), share of population availing treatment outside district, and number of private empaneled hospitals in combined Andhra Pradesh and Telangana in 2015-16 and 2016-17

	District per Capita Income	Share in number of claims	Share in amount of claims	Share of population availing treatment outside the district	Number of private hospitals empaneled
	(Rs. 2015-16)	Per cent	Per cent	Per cent	
Hyderabad	299997	4.7	5.9	15	78
Krishna	161097	5.3	5.6	29	46
West Godavari	152153	4.7	4.9	51	33
Visakhapatnam	142821	5.1	4.1	8	52
S.P.S. Nellore	137159	3.5	4.3	34	35
Prakasam	122939	4.0	4.1	34	25
Guntur	121145	5.8	6.7	18	85
Y.S.R	119244	3.4	3.4	61	24
East Godavari	118249	6.1	6.5	15	58
Chittoor	109141	4.9	3.7	7	38
Kurnool	99116	4.8	4.0	18	49
Anantapur	97912	4.8	3.4	41	43
Vizianagaram	94772	2.8	2.9	58	11
Srikakulam	94118	3.2	3.1	47	9
Adilabad	76921	3.2	2.2	87	2
Karimnagar	90184	4.5	5.4	34	16
Khammam	102919	3.3	2.9	60	11
Mahbubnagar	80121	4.8	4.7	69	8
Medak	121639	3.6	3.3	83	1
Nalgonda	114353	4.1	4.8	85	6
Nizamabad	78828	3.0	2.7	50	14
Rangareddy	180039	6.3	5.5	66	37
Warangal	81221	4.2	6.2	35	35

Source: NTR Vaidya Seva Trust, Andhra Pradesh and Aarogyasri Health Care Trust Telangana,

Table 12: District-wise share of insurance claims (both number and amount), share of population availing treatment outside district, and number of private empaneled hospitals in Tamil Nadu in 2015-16 and 2016-17

	District per Capita Income (Rs. 2010-11, 2004-05 prices)	Share in number of claims (Per cent)	Share in amount of claims (Per cent)	Share of population availing treatment outside the district (Per cent)	Number of private hospitals empaneled (Number)
Ariyalur	16559	0.9	0.9	76.1	3
Chennai	57706	6.9	6.5	12.9	55
Coimbatore	65781	4.9	5.8	8.3	64
Cuddalore	47042	2.8	2.6	76.9	18
Dharmapuri	46828	1.9	2.1	62.5	11
Dindigul	47812	2.9	3.1	61.6	27
Erode	61631	3.9	4.2	42.1	39
Kancheepuram	70667	5.6	5.1	45.1	37
Kanyakumari	81094	2.8	2.5	10.8	27
Karur	61181	1.5	1.6	63.2	12
Krishnagiri	55719	1.7	1.8	63.7	11
Madurai	56506	5.2	5.1	10.2	52
Nagapattinam	34640	1.4	1.6	85.6	4
Namakkal	58133	3.1	3.5	60.1	20
Perambalur	17922	1.3	1.2	53.1	7
Pudukottai	37390	1.8	2.0	100.0	7
Ramanathapuram	37707	2.5	2.1	50.5	2
Salem	48802	5.1	5.5	30.6	48
Sivagangai	41912	2.1	2.1	57.4	11
Thanjavur	40366	2.4	2.6	43.7	23
The Nilgiris	44993	0.7	0.9	100.0	3
Theni	35539	2.2	2.3	42.3	15
Tiruchirapalli	65011	3.3	3.6	100.0	32
Tirunelveli	54259	3.5	3.3	29.7	15
Tiruppur	72479	3.1	3.4	100.0	23
Tiruvallur	70778	5.8	5.2	100.0	19
Tiruvannamalai	35241	3.7	3.4	72.6	6
Tiruvarur	27408	1.3	1.4	67.9	6
Tuticorin	63467	2.4	2.1	100.0	9
Vellore	52900	5.0	4.9	50.0	16
Villupuram	30181	4.9	4.7	100.0	12
Virudhunagar	70689	3.3	2.9	100.0	15

Source: TNHSP Tamil Nadu

VII. Summary and Discussions

The implications of expanding GSHI schemes in India has not been analyzed from a fiscal perspective. This paper analyzes the experiences of some of the early and largest GSHI schemes implemented in Indian States - Andhra Pradesh, Tamil Nadu and Karnataka to understand the fiscal implications of initiating such schemes. We analyze three aspects: (a) the extent of fiscal burden on account of GSHI schemes and its consequences on other health expenditures, if any (b) the factors contributing to the extent of fiscal burden and (d) the effectiveness of spending on the schemes in terms of reducing out of pocket

expenditure, extent of hospitalization coverage, and improved access to hospitalization services.

Our analysis suggests that in Andhra Pradesh, about a quarter of the health budget was directed to the insurance scheme in the State. With limited fiscal space, the burden of insurance spending led to a slowdown of expenditure on primary and secondary health care services. This may have long term cost implications. Reduced spending on primary and secondary care may result in more hospitalizations in the long run, which in turn may increase the cost of insurance schemes, and further skew expenditure towards tertiary care *vis-à-vis* primary and secondary care. Also, as the cost of providing primary and secondary health care is lower than the cost of reimbursing tertiary-level hospitalization, the prevention of hospitalizations may be more effective from a fiscal point of view.

The fiscal burden of the insurance scheme was lower in Tamil Nadu than Andhra Pradesh: about 10 – 13 per cent of the health budget. With a relatively high fiscal space and low fiscal burden on account of the insurance scheme in Tamil Nadu, the increase in insurance spending in Tamil Nadu did not slow down increase in spending in primary and secondary health facilities. The increased insurance spending was accommodated by way of increased health spending in the State, without squeezing spending on primary and secondary care. Also, there are indications that the strong public health system in Tamil Nadu has contributed to the relatively low fiscal burden arising from lower cost of the scheme *vis-à-vis* Andhra Pradesh. On average, for a number of major packages covered by the insurance scheme, the package rates were lower in Tamil Nadu than in Andhra Pradesh. Besides, in most cases, public hospitals got a higher package rate than private hospitals in the State. This indicates that the State has been able to negotiate a relatively low package price with private hospitals, which affects cost. Also, the share of insurance claims in public hospitals was higher in Tamil Nadu than Andhra Pradesh. With potentially low moral hazard problems in public hospitals, this may have contributed further to the lowering of cost of the scheme in the State *vis-à-vis* Andhra Pradesh.

In Karnataka, the fiscal burden on account of the insurance scheme was only about 5 per cent of the health budget. In general, as expected, the extent of fiscal burden on account of insurance is directly proportional to the scale of scheme. In Andhra Pradesh, more than 1000 procedures were covered for about 85 per cent of the population and this resulted in significant fiscal burden. In Tamil Nadu, although the number of procedures covered was around the same range, the population covered was relatively small: only about 60 per cent. The corresponding fiscal burden was less. In Karnataka, both the number of procedures covered and the extent of population covered was small (about 663 procedures covered for about 60 per cent of the population), which translated to a relatively small fiscal burden. In all the three States however, there has been a gradual expansion of the schemes in terms of the population and procedures covered as well as the financial ceiling over time. These have cost and fiscal implications in the long run.

The effectiveness of the schemes in terms of out of pocket expenses remains ambiguous in all the States. While there has been an increase in out of pocket expenditure on inpatient care, this is partially driven by the latent demand for hospitalization. This is

reflected in the fact that the rates of hospitalization have increased following the implementation of the schemes.

In terms of hospitalization coverage, the scheme has not been very effective in Andhra Pradesh. Even with around a quarter of the health budget directed to the scheme, only about 10 per cent of hospitalizations in the State (15 per cent in terms of out of pocket expenditure on hospitalization) were covered by the scheme. This is in contrast to Tamil Nadu, where with 10 per cent of the health budget, about 16 per cent of hospitalizations in the State (a quarter in terms of out of pocket expenditure on hospitalization) was covered by the scheme. In Karnataka, the scale of the scheme was too small to have a substantial impact. With 5 per cent of the health budget directed to the scheme, only about 3 per cent of hospitalizations were covered (7 per cent in terms of out of pocket expenditure on hospitalization).

Access to insured services is concentrated in a few districts. This is because much of the private hospitals extending tertiary services are located in the relatively rich districts of the States. Bulk of the claims are concentrated in hospitals of those districts, and a high proportion of patients from poor districts migrate to the rich districts for availing insured services. With GSHI schemes often targeted towards the poorer sections of population, the low access to tertiary care health facilities in poor districts may reduce the access to benefits from such schemes. To the extent that availability of private facilities is strongly related to per capita income of States and districts, access to insured services could be even less in poor States of the country.

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Appendix Table
Table A1: Per Capita public spending under different heads in undivided Andhra Pradesh, 2004-05 to 2013-14 (Rs. 2004-05 prices)

Heads	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Avg. (2004-05 to 2007-08)	Avg. (2008-09 to 2013-14)	Change
Urban Health	64	68	79	94	127	150	163	167	142	167	76	152	76
<i>RAS Trust</i>	0	0	0	0	46	70	68	55	30	57	0	54	54
<i>APVVP@</i>	22	22	30	30	28	25	31	34	37	35	26	32	6
Major Hospitals*	26	30	34	44	36	38	43	51	48	49	33	44	11
<i>Others</i>	15	15	16	20	17	18	20	26	27	26	17	22	5
Rural Health	35	33	32	57	36	36	37	46	50	48	39	42	3
Medical Education Training and Research	15	16	17	23	24	23	28	40	33	39	18	31	13
Public Health	28	31	32	31	29	27	30	29	29	27	30	28	-2
General	7	6	6	7	7	4	7	21	22	21	6	14	7
Family Welfare	17	18	19	21	27	18	22	24	54	39	19	31	12
Chief Minister's Relief Fund for RAS					10	26	27	41	19	26	0	25	25
Total Health Expenditure	167	172	186	234	261	284	315	368	349	366	189	324	134

Source: Based on data compiled from Budget Documents of Andhra Pradesh at NIPFP databank

@ Andhra Pradesh Vaidya Vidhana Parishad (APVVP). Includes expenditure on secondary-level hospitals

*Major Hospitals include expenditures under the budget head of 'Hospitals and Dispensaries' excluding expenditures under Andhra Pradesh Vaidya Vidhana Parishad (APVVP)

Table A2: Per Capita public spending under different heads in Tamil Nadu, 2004-05 to 2016-17 (Rs. 2004-05 prices)

Heads	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Avg. (2004-05 to 2007-08)	Avg. (2008-09 to 2016-17)	Change
Urban Health	81	129	120	118	142	163	185	178	165	171	194	188	216	112	178	66
<i>Secondary-level hospitals</i>	23	22	24	26	29	31	35	38	36	39	44	42	43	24	37	14
<i>Major Hospitals *</i>	54	58	67	68	78	79	92	89	86	86	102	100	106	62	91	29
<i>Others</i>	4	49	29	25	36	53	59	51	43	46	48	46	67	27	50	23
Rural Health	29	26	31	33	38	42	46	54	46	50	56	66	65	30	51	22
Medical Education Training and Research	26	19	21	24	29	33	39	46	42	51	55	62	67	23	47	25
Public Health	13	18	21	21	23	24	31	32	32	30	29	33	33	18	30	11
General	4	5	4	3	10	57	78	45	75	69	67	83	77	4	62	58
<i>Insurance</i>	0	0	0	0	6	49	69	31	61	56	54	66	63	0	51	51
Family Welfare	4	10	9	13	22	30	30	22	35	35	76	97	88	9	48	39
Total Health Expenditure	157	206	205	211	265	349	410	378	396	407	478	530	545	195	418	223

Source: Based on data compiled from Budget Documents of Tamil Nadu at NIPFP databank

*Major Hospitals include expenditures under the budget head of 'Hospitals and Dispensaries' excluding expenditures on secondary-level hospitals

Table A3. Package rates of various procedures in Tamil Nadu, Andhra Pradesh and Telangana (Rs.)

Categories	Tamil Nadu		Andhra Pradesh	Telangana
	Average	Tamil Nadu (A3-S2)		
SURGICAL ONCOLOGY				
Abdominal wall tumors resection without reconstruction	25658	24078	52480	52480
Colostomy	16037	15049	20000	20000
Laryngectomy any type -for ca	29066	27276	68180	68180
Laryngo pharyngo oesophagectomy	59335	55680	97000	97000
Marginal mandibulectomy	18001	16892	44120	44120
Maxillectomy any type -for ca	20046	18811	30770	30770
Oesophagectomy with three field lymphadenectomy	58333	54740	120000	120000
Oesophagectomy with two field lymphadenectomy	48310	45334	117000	117000
Abdomno perineal resection (apr) + sacrectomy	36563	34311	60000	60000
Head & neck cancer composite resection with reconstruction	37566	35252	65060	65060
Inguinal block dissection one side	11827	11099	29780	29780
Mastectomy any type	16037	15049	30000	30000
Ovarian transposition	35481	33295	50010	50010
Radical trachelectomy	27462	25771	50570	50570
Sleeve resection ca ear	15636	14673	44310	44310
Submandibular gland excision- any cause	15636	14673	26000	26000
Total abdominal hysterectomy+bilateral salphingo oopherectomy+bilateral pelvic lymph node dissection+omentectomy	27823	26109	62140	62140
Whipples any type	66151	62076	100000	100000
Wide excision/ lumpectomy - tumors of breast (malignant)	5212	4891	5150	5150
Abdominal wall tumors resection with reconstruction	35681	33483	59000	59000
Abdominoperinial resection	31552	29608	50690	50690
Amputations - fore quarter / hind quarter with or without hemipelvectomy	32073	30097	78230	78230
Chest wall resection with reconstruction	41976	39390	70000	70000
Emasculatation	19805	18585	40560	40560
Full thickness buccal mucosal resection & reconstruction	33557	31490	63310	63310
Gastrectomy any type - any cause	31953	29985	50000	50000
Gastrostomy/feeding/percutaneous endoscopic gastrostomy	16037	15049	20000	20000
Hemimandibulectomy	20166	18924	37760	37760
Ileotransverse colostomy	20046	18811	60000	60000
Orbital exenteration/ evisceration with implant	18963	17795	42090	42090
Orchidectomy /high orchidectomy u/l	9622	9029	22000	22000
Palatotomy any type	20246	18999	39786	39786
Parotidectomy any type- for ca	15636	14673	25000	25000
Posterior exentration- any site	33476	31414	65000	65000
Radical hysterectomy+bilateral pelvic lymph node dissection+bilateral salphingo oopherectomy	29868	28028	50010	50010

Categories	Tamil Nadu		Andhra Pradesh	Telangana
	Average	Tamil Nadu (A3-S2)		
Radical nephrectomy	32073	30097	50000	50000
Radical prostatectomy	40091	37622	86646	86646
Radical vaginectomy with reconstrucion b) without lnd	29066	27276	60550	60550
Radical vaginectomy without reconstrucion b) without lnd	20647	19375	53120	53120
Retro peritoneal lymph node dissection(rplnd) (for residual diseases)	25258	23702	78000	78000
Retro peritoneal lymph node dissection(rplnd) (for staging)	17039	15989	40000	40000
Segmental mandibulectomy	18001	16892	34736	34736
Sleeve resection ca lung	19404	18209	108000	108000
Total pelvic exentration - any site	56729	53235	98000	98000
Vulvectomy	12228	11475	45860	45860
Wertheims / radical hysterectomy	22892	21482	55660	55660
GYNAECOLOGY OBSTETRIC SURGERY				
Abruptio-placenta with coagulation defects (dic)	20487	19225	26820	26820
Cystocele, rectocele & perineorrhaphy	12067	11324	20000	20000
Eclampsia with complications requiring ventilatory support	22251	20880	40000	40000
Laparoscopic / laprotomy - ectopic resection	17119	16065	22130	22130
Laparoscopic myomectomy	16878	15839	30000	30000
Laparoscopic sling operations	18883	17720	32500	32500
Laprosopic assisted vaginal hysterectomy	16077	15086	30000	30000
Caesarean hysterectomy with bladder repair	16878	15839	46780	46780
Rupture uterus with tubectomy	15275	14334	32500	32500
Vaginal hysterectomy with pelvic floor repair	14473	13581	30000	30000
Vault prolapse abdominal repair with mesh	13671	12829	40000	40000
NEPHROLOGY				
Maintanence hemodialysis for crf (8 dialysis) including seropositive	8000	8000	10280	12500
Nephrotic syndrome	12905	12110	16890	16890
Rapidly progressive renal failure (rprf)	29142	27347	30766	30766
RADIATION ONCOLOGY				
Brachytherapy interstitial ldr per application	15000	15000	16330	16330
Adjuvant treatment with photons/electrons	33000	33000	45000	45000
Brachytherapy intracavitary hdr per application	7000	7000	15018	3250
Brachytherapy -intracavitary ldr per application	4500	4500	5850	5850
Palliative treatment with cobalt 60 external beam rt	10000	10000	13000	13000
Radical treatment with cobalt 60 external beam rt	21250	21250	26000	26000
GENERAL SURGERY				
Appendicular perforation	12027	11287	25870	25870
Hemimandibulectomy	20166	18924	42780	42780
Isthmectomy	17640	16554	24300	24300
Lap cholecystectomy- radical with /without cbd exploration	40091	37622	30000	30000

Categories	Tamil Nadu		Andhra Pradesh	Telangana
	Average	Tamil Nadu (A3-S2)		
Lap. Appendicectomy	14433	13544	20910	20910
Operation for acute intestinal obstruction (including volvulus / malrotation/intususception)	32073	30097	48000	48000
Operations for recurrent intestinal obstruction (noble plication /other)	28064	26335	48000	48000
Pyloromyotomy	17640	16554	30000	30000
Resection & enucleation of thyroid nodule	17640	16554	25000	25000
Resection and anastomosis /segmental resection - small intestine- any cause	32073	30097	65000	65000
Ventral and scar / femoral /spigelian/obturator/sciatic with mesh	16037	15049	40000	40000
Ventral and scar /spigelian/obturator/sciatic-without mesh	12829	12039	30000	30000
Anterior resection	40773	38261	50000	50000
Cysto gastrostomy/ pseudocyst of pancreas	26460	24830	41926	41926
Cysto jejunostomy	32073	30097	50000	50000
Epigastric hernia / abdominal /umbilical / femoral hernia-without mesh - open	12027	11287	25000	25000
Gastrostomy/feeding/percutaneous endoscopic gastrostomy	16037	15049	20000	20000
Ileostomy	16037	15049	20000	20000
Open cholecystectomy- any type/ cbd exploration	17640	16554	40000	40000
Operation for bleeding peptic ulcer	32073	30097	48000	48000
Operation for hydatid cyst of liver	28064	26335	40000	40000
Parathyroidectomy - any type	20046	18811	30000	30000
Total colectomy - open/ laproscopic -any cause	33677	31602	60000	60000
CARDIOTHORACIC SURGERIES				
Lung lobectomy - any cause	41976	39390	60000	77000
Mitral valvotomy (open)	51563	50417	110000	110000
Open pulmonary valvotomy	75000	73333	77000	77000
Pericardiectomy	35625	34833	49450	49450
Pericardiocentesis	15000	14667	15000	15000
With special conduits	114375	111833	150000	150000
Arterial switch	136875	133833	150000	150000
Coronary bypass surgery-post angioplasty	112500	110000	118720	118720
Intrathoracic aneurysm - requiring bypass (with graft)	93750	91667	180540	180540
Myoplasty (bronchopleural fistula/others)	29066	27276	75150	75150
Systemic pulmonary shunts without graft	39375	38500	55400	55400
Thoracotomy/explorative thorocotomy/ thoraco abdominal	20046	18811	55000	55000
Aneurysm resection & grafting	120000	117333	181470	181470
Annulus aortic ectasia with valved conduits	148125	144833	158200	158200
Aorto-aorto bypass with graft	68438	66917	100000	100000
Aorto-aorto bypass without graft	54375	53167	85000	85000
Bronchoscopy foreign body removal	7938	7449	20000	20000
Cabg with aneurysmal repair	116250	113667	154250	154250

Categories	Tamil Nadu		Andhra Pradesh	Telangana
	Average	Tamil Nadu (A3-S2)		
Cabg with iabp pump	125625	122833	139678	139678
Closed mitral valvotomy	46875	45833	40000	40000
Coarctation-aorta repair with graft	45000	44000	100000	100000
Coarctation-aorta repair without graft	35625	34833	70000	70000
Coronary bypass surgery	93750	91667	115846	115846
Decortication - any cause	33957	31866	60000	60000
Diaphragmatic eventeration	32073	30097	50000	50000
Diaphragmatic hernia	32073	30097	60000	60000
Dissecting aneurysms	77813	76083	180000	180000
Double valve replacement with mechanical valve	142500	139333	178000	178000
Intra cardiac repair of asd	76875	75167	80000	80000
Intra cardiac repair of vsd	76875	75167	85000	85000
Intrathoracic aneurysm - not requiring bypass	68438	66917	100000	100000
Lung cyst	54375	53167	40000	40000
Pericardiostomy	15000	14667	25000	25000
Pneumonectomy- any cause	41976	39390	60000	80286
Ruptured sinus of valsalva correction	100000	100000	130000	130000
Sennings procedure	115313	112750	150000	150000
Surgery for intracardiac tumors	86250	84333	100000	100000
Surgery-pda	35625	34833	40000	40000
Systemic pulmonary shunts with graft	48750	47667	63600	63600
Tapvc correction	100000	100000	119840	119840
Thorocoplasty (bronchopleural fistula/others)	33075	31038	67350	67350
Total correction of tetralogy of fallot - any type	96563	94417	104270	104270
Transpleural bpf closure	34439	32317	65000	65000
With prosthetic ring	93750	91667	140000	140000
Without prosthetic ring	90938	88917	110000	110000
Without special conduits	93750	91667	109510	109510
MEDICAL ONCOLOGY				
Breast cancer - dose dense ac (adriamycin/cyclophosphamide)	3000	3000	3600	3600
Cervical cancer - cisplatin	1800	1800	2000	2000
Colorectal carcinoma - folfox (stage - iii)	8000	8000	11500	11500
Gestational trophoblast diseases - ema-co (complete)	6400	6400	7000	7000
Lung cancer - nslc - cisplatin & etoposide	4900	4900	7000	7000
Vulval cancer - cisplatin + 5fu	4700	4700	5000	5000
Breast cancer - cmf (cyclophosphamide/methotrexate/fluorouracil)	2700	2700	2000	2000
Gestational trophoblast diseases - actinomycin	2200	2200	5000	5000
Gestational trophoblast diseases - methotrexate - weekly	1300	1300	2000	2000
Ovarian cancer - paclitaxel + carboplatin	7000	7000	11000	11000
Ovary- germ cell tumor - bep (bleomycin + etoposide + cisplatin)	10800	10800	8000	8000

Categories	Tamil Nadu		Andhra Pradesh	Telangana
	Average	Tamil Nadu (A3-S2)		
Retinoblastoma - carboplatin + etoposide + vincristine	6800	6800	5000	5000
Testicular cancer - bep	10000	10000	8000	8000
CARDIOLOGY				
Infective endocarditis	28125	27500	25000	25000
Pulmonary embolism	37500	36667	35000	35000
Acute mi (conservative management with angiogram)	28125	27500	30000	30000
Acute mi (conservative management without angiogram)	18750	18333	10000	10000
Acute mi requiring iabp pump	50625	49500	55000	55000
Acute mi with cardiogenic shock	33750	33000	30000	30000
Pericardial effusion/tamponade	28125	27500	16000	16000

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