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Title of the paper: Free Medicines in Tamil Nadu: sustainable reforms and effective financial protection

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Abstract:

While majority of Indian states were rolling back delivery of health services during 1990s, Tamil Nadu brought in a crucial reform in the procurement and distribution of medicines in the state to ensure free distribution of essential medicines. The authors study the implications of this model in providing financial protection for its population using data from various sources including unit records of National Sample Survey Organisation data, health system level data and medicine procurement and distribution data as well as government budgets. The study points out that states with centralized procurement and decentralized distribution model have achieved significant efficiencies in terms of lower procurement prices, higher availability of medicines and higher percentage of people receiving free or partially free medicines.

Key words: Out-of-pocket expenditure, centralized procurement, decentralise distribution; medicines; Tamil Nadu Medical Service Corporation; impoverishment, health budget

Introduction:

Expenditures on medicines have historically constituted a significant proportion of OOP, especially in low and middle income countries (McIntyre *et al.* 2006; Saksena *et al.* 2006; Niens *et al.* 2010). Numerous studies from India also demonstrate that medicine expenditure is a major driver of OOP, and consequently catastrophe and household poverty (Berman *et al.* 2010, Karan *et al.* 2014; Garg and Karan, 2009). The most recent Indian study found that the poorest 20 percent of households experienced a faster increase in the proportion reporting any OOP for outpatient care than the better off 20 percent households. The study concluded that the financial burden of OOP increased faster among the more underprivileged groups, in comparison to their more privileged counterparts (Karan *et al.* 2014). Another Indian study recommends that expenditures on drugs need special focus, expressly for the poor. Targeted policies in just five poor states to reduce OOP expenditure could help to prevent almost 60% of the poverty headcount increase through OOP payments (Garg and Karan, 2009).

There is adequate evidence to indicate that because of the unpredictable nature of expenses on health care, many non-poor households are plunged into poverty and those who are already poor are pushed further down (known as poverty deepening; Doorslaer *et al*. 2006). Using the nationally representative data from the consumer expenditure survey (CES) of the NSSO, Doorslaer *et al*.(2006) and Garg and Karan (2009) report that OOP caused approximately a 3.2% increase in the poverty ratio in the year 2000. Shahrawat and Rao (2011) report similar findings with additional information on higher increase in poverty among lower expenditure quintiles of households. Using the health and morbidity survey data of the NSSO, Berman et al. (2010) decomposed the poverty impacts of OOP into inpatient and outpatient expenses separately and

reported that increase in poverty due to outpatient expenditure is significantly higher than what is due to inpatient expenditure. Analyzing the long-term trend for the period 1993–94 to 2004–05, Ghosh (2011) provides estimates by states of catastrophic impacts leading to impoverishment arising out of households spending at disaggregated levels.

It is observed that reductions in public spending, sustained neglect of public health services and above all, a gradual withdrawal of medicine supplies in the government health system have driven people away from public services. They have been forced to either access the private retail market for purchasing medicines or to opt out due to financial barriers (Baru 2003; Selvaraj 2011; Mukhopadhyay 2012). Medicine budgets shrank across the states since the early 1990s with the exception of Tamil Nadu, which recognized the importance of enhancing medicine supplies through the public health system.

The various models of procurement and distribution of medicines and other medical supplies observed in different states of India are a function of the state's prioritization of the issue, institutional capacity, demography and other factors. The common procurement models operational in the Indian health sector are: centralized procurement, decentralized procurement, autonomous agency, and through procurement agents. The Tamil Nadu Medical Services Corporation (TNMSC) established in 1995 is a model of centralized procurement and decentralised distribution through an autonomous procurement agency. TNMSC is recognized as successful model for medicine procurement and distribution, though its replication was beset with hesitation in several states, hampering its full potential. Some state governments, and more recently the Union Government, have recognized the need to ensure availability of medicines through the public system. Though several states attempted to put in place a medicine distribution

system in line with the TN model of centralized procurement and decentralised distribution through an autonomous procurement agency, few could succeed. Kerala was among the few states that could successfully replicate the Tamil Nadu model in the past three years. Among the high-focus[1] states, Rajasthan was the first to be able to put in place a system of centralized procurement and decentralized distribution with the creation of the Rajasthan Medical Services Corporation (RMSC). Rajasthan also institutionalized the Chief Ministers Free Medicines Scheme in 2011, to provide access to free medicines in the public health system. In this paper we would like to study the extent of financial protection offered by the TNMSC model to people of Tamil Nadu, with particular focus on OOPs due to consumption of medicines and trends of medicines related impoverishment. We would compare average OOPs incurred by people who access public facilities in TN and compare with all India averages.

Methods:

Seven surveys from the National Sample Survey Office (NSSO) were used to capture out-of-pocket expenditure on health and particularly on medicines and utilization of public sector facilities. NSSO was set up in 1950 as a permanent survey organization to collect varied data through nation-wide sample surveys. The 42nd round (July 1986 – June 1987) and 52nd round (July 1995 – June 1996) collected data on social consumption and morbidity through household surveys. The 60th round (January – June 2004) was undertaken at the request of the Ministry of Health and Family Welfare and data was only collected on morbidity and health care. For the 71st round again data on social consumption and morbidity is collected by NSSO. We have also analysed

[1] Certain states have been designated as "High Focus States" by the Government of India on the basis of low fertility and mortality indicators. These states include Bihar, Madhya Pradesh, Chhattisgarh, Odisha, Himachal Pradesh, Rajasthan, Jammu & Kashmir, Uttar Pradesh, Jharkhand, Uttarakhand and the north-east states.

quinquennial rounds of NSSO the Consumer Expenditure Surveys (CES) -53th round (1993-94), 61st (1999-2000) and 68th round (2011-12) to measure overall OOP estimates, OOP on medicines and impoverishment due to medicines.

Public spending data has been used from various sources. Overall public spending on health by state governments has been captured from "State Finances: a study of Budgets" an annual publication of the Reserve Bank of India. The Health Management and Information System (HMIS) provide data on utilization of central grants by states of National Health Mission funds. Both the RBI data and HMIS data have been added to capture total public spending at the state level. Detail demand for grants of the TN Budget has been used to capture total public spending on medicines at the stare.

Results:

When we compare public spending on medicines across States there are considerable variations. As evident from the table below, per capita public spending on medicines is much higher in Tamil Nadu and Kerala, compared to other states. Tamil Nadu spends around ₹60, five times more than states like Jharkhand, Bihar and Rajasthan. Though the table represents statistics before the implementation of Free Medicine Initiative in Rajasthan, the State has stepped up public spending significantly since then (Sakthivel et al 2014).

Table 1: Interstate comparison of public spending on health: high-focus states vis-à-vis benchmark states

State		Public spending on health (average 2010 to 2013) (₹10 million)	Per capita public spending on health (₹)	Per capita public spending on medicines (₹)	Growth of public spending (2005–06 to 2010–11) (%)	Growth rate of public spending (2011–12 to 2012–13) (%)
High-focus (non-NE) states	Bihar	3107	299	12.9	20.5	-17.3
	Himachal Pradesh	965	1408	16.4	18.8	11.2
	J and K	1415	1127	36.3	14.6	-7.4
	Jharkhand	1565	475	8.2	6.5	-13.5
	Madhya Pradesh	3369	464	16.8	19.9	-0.2
	Rajasthan	3476	507	11.1	23.5	7.1
	Uttar Pradesh	8850	443	15.8	20.1	9.5
Bench-mark states	Kerala	2977	892	74.5	17.8	7.0
	Tamil Nadu	5033	698	60.5	24.9	2.6

Sources: RBI State Finances: A study of budgets, various years; NRHM-MIS

Consequence of low public spending - High OOP

Persistent inadequacy in public spending results in high OOP. This has been amply demonstrated in the past as India is amongst the worst performers in OOP. OOP as a share of households' overall spending has risen significantly from around 3% in the mid-1990s to close to 7% in 2011–12. A significant part of this increase is associated with a rise in households' spending on medicines. Although overall OOP and households' spending on medicines do not provide a clear picture and show wide variation between States, this is primarily due to variation in overall expenditure of households. However, households' spending on medicines as a percentage of overall OOP suggests that almost all states reported a higher share of over 65% on medicines as against a mere 56% in Tamil Nadu (Figure1).

Per capita OOP has increased significantly between 1993–94 and 2011–12 (Table 2) at the national level as well as in Tamil Nadu. Growth of per capita spending is more significant in Tamil Nadu as compared to the national average. It has to be noted however, that per capita OOP and OOP on medicines was lower in Tamil Nadu during 1993-94, as compared to the national average. However over the years, both the OOP and OOP on medicines in Tamil Nadu have surpassed the national average of expenditure. We also observed that there was not much of a difference in per capita spending between rural and urban areas.

Table 2 Per capita out of pocket expenditure on health care and medicines in Tamil Nadu and All States (INR)

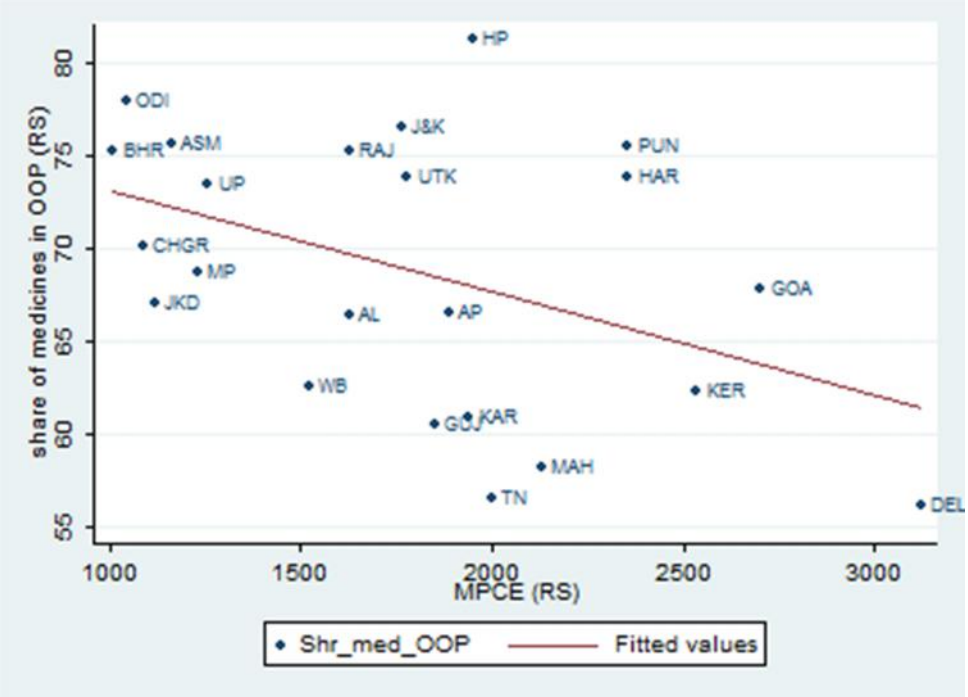
INR		PC_OOP			PC_Medicines		
		Rural	Urban	Total	Rural	Urban	Total
1993-94	Tamil Nadu	13.8	17.9	15.23	9.6	11.7	10.3
	India	18.6	18.3	18.5	14.2	13.6	14.0
2004-05	Tamil Nadu	37.4	54.0	43.8	24.9	36.0	29.1
	India	36.5	57.6	41.8	26.9	38.1	29.8
2011-12	Tamil Nadu	125.9	160.1	141.14	70.5	91.4	79.8
	India	95.3	151.2	111.2	65.4	95.2	73.9

Source: Authors' calculation based on NSSO consumer expenditure survey, various rounds

As per the latest estimates based on consumer expenditure data of NSSO in 2011–12, more than two third of the overall OOP was due to medicines. During 1993–94, share of medicines was more than three fourth of the total OOP. Though there is a decline in the share of medicines in total spending in 2011–12 compared to 1993–94, its impoverishing potential has intensified. In 2011–12, as many as 34.3 million people, constituting 3.1% of the population fell below the poverty line because they had to bear expenses on medicines. This is a significant jump from 2004–05 (Fig 2).

There are various factors determining the share of medicines in household health expenditure, including level of development of health system, penetration of public services & its access and prescription practices. As States develop and people's income grows, more and more expenditure is incurred on other items rather than medicines. Among the Indian States, the High Focus States have a larger share of medicines in OOP along with low Monthly Per-capita Consumption Expenditure (MPCE) (Fig 2). Similarly, States like Delhi, Goa, Kerala and Maharashtra have a much higher MPCE coupled with low share of medicines in OOP. However, Tamil Nadu has a much lower share of medicines in OOP compared to States which have comparable MPCE. One major factor that stands out is the provision of good quality care at public facilities supplemented by adequate supply of medicines in Tamil Nadu. The decade long experience of TNMSC clearly demonstrates that.

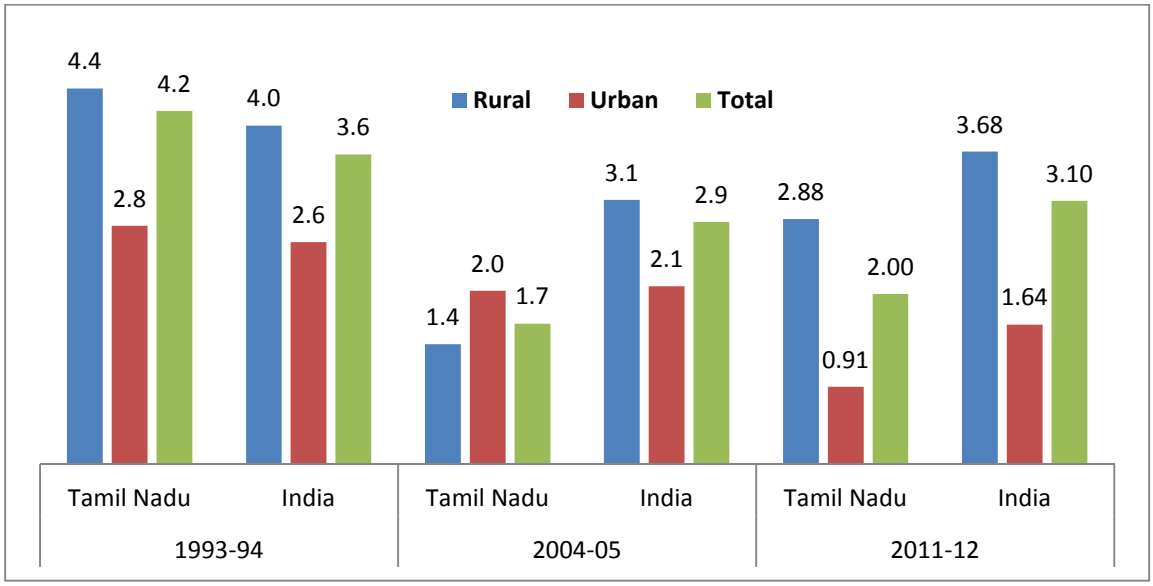
Figure 1 Share of medicines in household OOP and MPCE: Major states



Source: Author's calculation based on unit records of NSSO CES 2011-12

There is also adequate evidence to indicate that because of the unpredictable nature of expenses on health care, many non-poor households are plunged into poverty and those who are already poor are pushed further down (known as poverty deepening) (van Doorslaer et al., 2006). Using the nationally representative data from the consumer expenditure survey (CES) of the NSSO, van Doorslaer et. al. (2006) and Garg & Karan (2009) reports that OOP caused approximately a 3.2% increase in the poverty ratio in the year 2000. Shahrawat and Rao (2011) report similar findings with additional information on higher increase in poverty among lower expenditure quintiles of households. Using the health and morbidity survey data of the NSSO, Berman et al. (2010) decomposed the poverty impacts of OOP into inpatient and outpatient expenses separately and reported that increase in poverty due to outpatient expenditure is significantly higher than what is due to inpatient expenditure. Analysing the long-term trend for the period 1993–94 to 2004–05, Ghosh (2011) provides estimates by States for catastrophic impacts leading to impoverishment, arising out of households spending at disaggregated levels. Between 2004–05 and 2011–12, the percentage of people falling below the poverty line due to health-care spending increased to 3.1% from 2.9%, with significant increase in rural areas and some decline in urban areas (Figure 2).

Figure 2 Percentage of people impoverished due to OOP on medicines

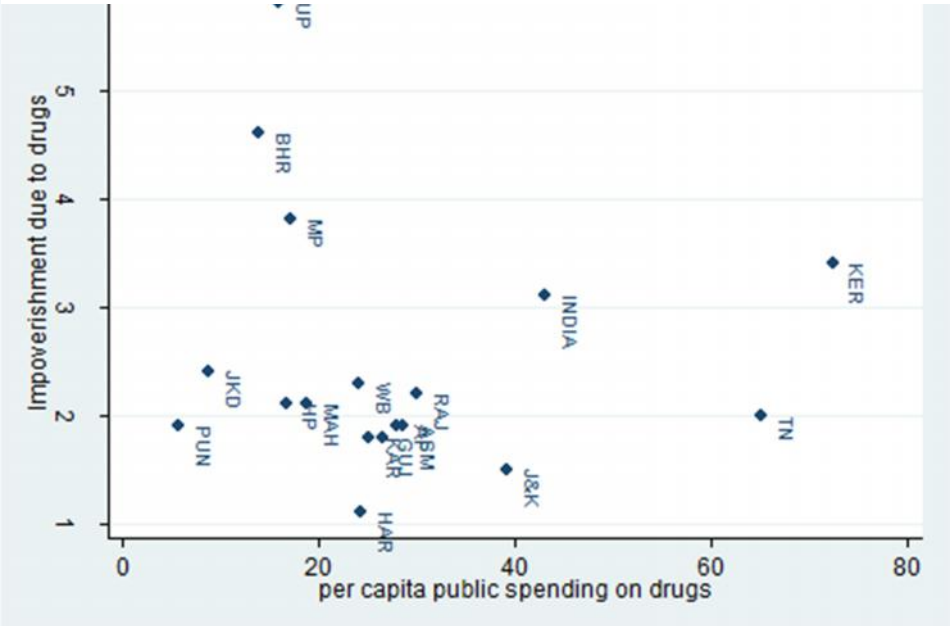


Source: Authors' calculation based on NSS, CES unit records, various rounds

Between 1993-94 and 2004-05 there was a decline in the percentage of people falling below poverty line due to OOP on medicines across states. Against 3.98% people impoverished in 1993-94, in 2004-05 the percentage went down to 3.11. However, it has been observed that there was a reversal of trend in 2011-12, when 3.68% of people fell below the poverty line due to OOP on medicines. As depicted in Fig 4, there is a sharp decline in impoverishment in 2004-05 in Tamil Nadu compared to 1993-94 average. It is worth noting that the percentage of people impoverished due to medicine purchase was higher in Tamil Nadu as compared to the national average in 1993-94. Within a decade of implementation of providing free medicines from government hospitals, Tamil Nadu could observe a sharp decline in the percentage of people impoverished. The trend was more significant in rural areas. In 1993-94, as much as 4.4% people were impoverished in rural Tamil Nadu; by 2004-05 this declined to only 1.4%, a sharp three percent decline. This can be clearly attributed to the successful implementation of the TNMSC model in the state.

When we study per capita public spending on medicines vis-à-vis impoverishment due to medicines, a negative relationship emerges (figure 3). States like UP, Bihar and Madhya Pradesh have a high incidence of poverty, whereas Tamil Nadu shows high public spending as well as low impoverishment. Kerala remains an exception among the States with high public spending coupled with high impoverishment. Kerala is among the most developed States and the people display a high health seeking behaviour. They rely on the private sector despite having the best government primary health care infrastructure. Higher reliance on the private sector has led to higher OOP and related impoverishment.

Figure 3 Public spending on medicines (₹) and poverty due to OOP on medicines (%)



Source: Authors' calculation; public spending from state budgets; poverty OOP based on NSSO

OOP at the time of utilizing public hospitals in Tamil Nadu

Increased role of private sector and decline in public provisioning has enormous implications for cost of health care for households. People are forced to access private care & incur higher OOP

and accessing public services become costlier. One important reason for higher OOP is on account of purchase of medicines. In this section, we would like to study variations in OOP during the period of 1985-86 to 2014 and examine whether the Tamil Nadu initiative to provide free medicines have resulted in lower OOP in public services. The analysis is based on the four rounds of NSSO data – 42nd, 52nd and 60th rounds (NSSO, 1992; NSSO 1998; NSSO 2006).

At the national level, per episode non-hospitalized treatment at government facilities was ₹242 in 2004-05, whereas for private facilities it was ₹310, when costs of medicines purchased from outside are added. If we keep the medicine costs out, average expenditure of non-hospitalized treatment in public facilities (Rural – ₹11, Urban – ₹7) is a fraction of what it costs in private facilities (Rural – ₹246, Urban – ₹299). For in-patient facilities the average costs in public and private facilities are ₹9352 and ₹3859 respectively.

Compared to all-Indian average OOP on non-hospitalisation care per episode in public facilities is lower in Tamil Nadu. Medical expenditure per treated ailment in the rural areas in Tamil Nadu was ₹184, while in the urban areas it was ₹277. It is quite encouraging to note that households do not incur any cost while accessing public facilities in rural Tamil Nadu. However, at the national level and in both rural and urban areas, private costs are much higher than public costs. This clearly shows the efficacy of providing free medicines in Tamil Nadu.

Table 3 Average medical expenditure by households on hospitalization and non-hospitalization treatment (2004-05 and 2014)

		Rural				Urban			
	States	Govt.		Private		Govt.		Private	
		2004-05	2014	2004-05	2014	2004-05	2014	2004-05	2014
Hospitalisation	Tamil Nadu	637	459	8,360	19,554	1,666	780	15,680	33,261
	India	3,238	5,636	7,408	21,726	3,877	7,670	11,553	32,375

Non-hospitalisation	Tamil Nadu	0	21	183	539	17	59	260	640
	India	11	515	246	645	7	467	299	794

Source: NSSO, 60th round and 71st round unit records

Hospitalisation costs are significantly higher than out-patient costs, even in government facilities. Costs in private sector are generally higher than costs in public hospitals, but the public-private differential in costs is less pronounced than non-hospitalisation care. In rural areas, at the All-India level, the ratio of private to public sector average hospitalisation cost is little more than two, and for urban areas it is less than two. Average medical expenditure on hospitalisation in government facilities is among the lowest in Tamil Nadu. This shows that public sector is quite efficient and provides hospitalisation at a very low cost for households. Yet private sector has emerged strongly and attracts three fifth of the total hospitalisation cases in Tamil Nadu.

Why are the cost differentials so high? Is it because there is class disaggregation in accessing public and private services? Or is it because certain facilities which are cheaper are provided in public sector and the costlier procedures and facilities are available only at the private sector? A careful analysis is required about the component of service provisioning which is driving costs. Is it medicine cost, bed charges, costs of diagnostic services, doctor and consultant fees or a combination that is driving the costs in public sector? But before that, let us look at the trends in the cost of provisioning hospitalisation.

Over the two decades under consideration there is substantial increase in the cost of hospitalisation in both public and private facilities. The increase is more pronounced in private sector. Compared to an 82% increase in government health expenditure on hospitalisation, for private facilities costs have increased 120% between 1986-87 and 2004-05, at constant prices. For both public and private facilities the increase is higher in rural area than urban area. At the same

time private sector utilization has increased faster in urban areas than rural areas. It needs to be emphasized here that doubling of costs within the span of two decades, even when inflation is taken care of, is a matter of serious concern and needs deeper analysis.

Inter-state comparisons of growth in medical expenditure on hospitalisation throw up some interesting facts. At the national level, between 1986-87 and 1995-96 medical expenses doubled in both rural and urban areas for public sector. Later on costs have either declined or increased marginally in government facilities. In Tamil Nadu medical costs have gone down in rural areas in public sector between 1995-96 and 2014 in current prices, in real terms this decline would be much more prominent. In fact in Tamil Nadu there is continuous decline in costs since 1986-87 in rural areas. In urban areas of Tamil Nadu costs increased between 1995-96 and 2004-05, but since then costs have declines further.

Table Error! No text of specified style in document. **Average medical expenditure on hospitalisation (in ₹ at current prices)**

	States	Govt. hospitals				Private hospitals			
		1986-87	1995-96	2004-05	2014	1986-87	1995-96	2004-05	2014
Rural	Tamil Nadu	346	751	637	459	681.4	4333	8,360	19,554
	India	320	2080	3,238	5,636	735	4300	7,408	21,726
Urban	Tamil Nadu	728	934	1,666	780	1,070	5827	15,680	33,261
	India	385	2195	3,877	7,670	1,206	5344	11,553	32,375

Source: NSSO various rounds; 1986-87 and 1995-96 reports; 2004-05 and 2014 authors' calculation based on unit records

Private costs have multiplied (around 400% increase) during the two decades in Tamil Nadu. This is in contrast to the declining costs in public sector in the state. In the context of growing utilisation of private sector in the State, coupled with skyrocketing costs, there seems to be greater possibility of exploitation of people while accessing private hospital care.

Compared to national average, cost of hospitalisation in public facilities of Tamil Nadu is fractional. While more than ₹1400 (₹1467 in rural and ₹1422 in urban) is spent by households per hospitalisation episode at the national level, it is only ₹255 in Tamil Nadu. Cost of medicine per hospitalisation case is ₹100-140 in Tamil Nadu, one-eighth of the national average. Medicine costs are around two-thirds of the total hospitalisation cost in public sector nationally, but for Tamil Nadu it constitutes only 40% of the total cost. Even the costs of diagnostic tests are much lower in Tamil Nadu compared to other states or the national average. This shows the commitments of the State towards provisioning free services to the majority of the population. The success of the TNMSC in delivering free or cheaper medicines in government hospitals effectively gets reflected in the low out-of-pocket expenditure on medicine in the state.

Table 3: Average medical expenditure (₹) on different items during stay at public hospitals as inpatient per hospitalisation case receiving medical treatment: 2004-05

	States	Doctor's fee	Diag. test	Other services, bed	Medicine	Blood etc	Food	Total
Rural	Tamil Nadu	15	20	27	102	1	90	255
	ALL	61	175	64	976	55	137	1467
Urban	Tamil Nadu	7	25	10	138	16	60	255
	ALL	66	215	83	886	65	107	1422

Source: NSSO 60th Round Report

Public health services in India were free for all to start with. However several forms of user-charges were introduced in different States from mid 1970s and free services gradually got limited. User-charges became one of the important components of health sector reforms agenda and got introduced in various services and in varying rates. The official explanation of introducing user-charges was that it would help hospitals generate revenues and would help better targeting of the poor. In reality user-charges could not generate enough revenue and the conditionalities imposed for accessing free services denied access of services to the poor (Ravindran, 2010). Let us now look at the state-wise differences in the provision of free services in public health facilities to draw their implications on costs of care.

On an average, less than one-fifth of people receiving medicines from public health facilities in rural area, get it free. Rest get it on payment, either from the hospital itself or from the open market. For urban areas, one-fourth of people get free medicines. In contrast, almost 94% people get free medicine in Tamil Nadu while all who access public health services (fig 4). This is higher than all other states, reflecting positively of the free medicines scheme in the state.

This gets reflected in costs of accessing public health services in the States. Costs are much lower in Tamil Nadu compared to the national average. Nationally, one-fifth of the hospitalisation cases in public health sector go through surgery. Out of the total surgery cases more than one-third are free nationally, but in Tamil Nadu almost all of the surgery cases are free (97%) in rural areas and more than nine out of ten (92%) are free in urban areas. At the national level more urban people get diagnostic tests (39%) and radiographies (44%) free than their rural counter parts (29% and 38% respectively). In Tamil Nadu where 80-90% of these services are free, rural people get the benefit of

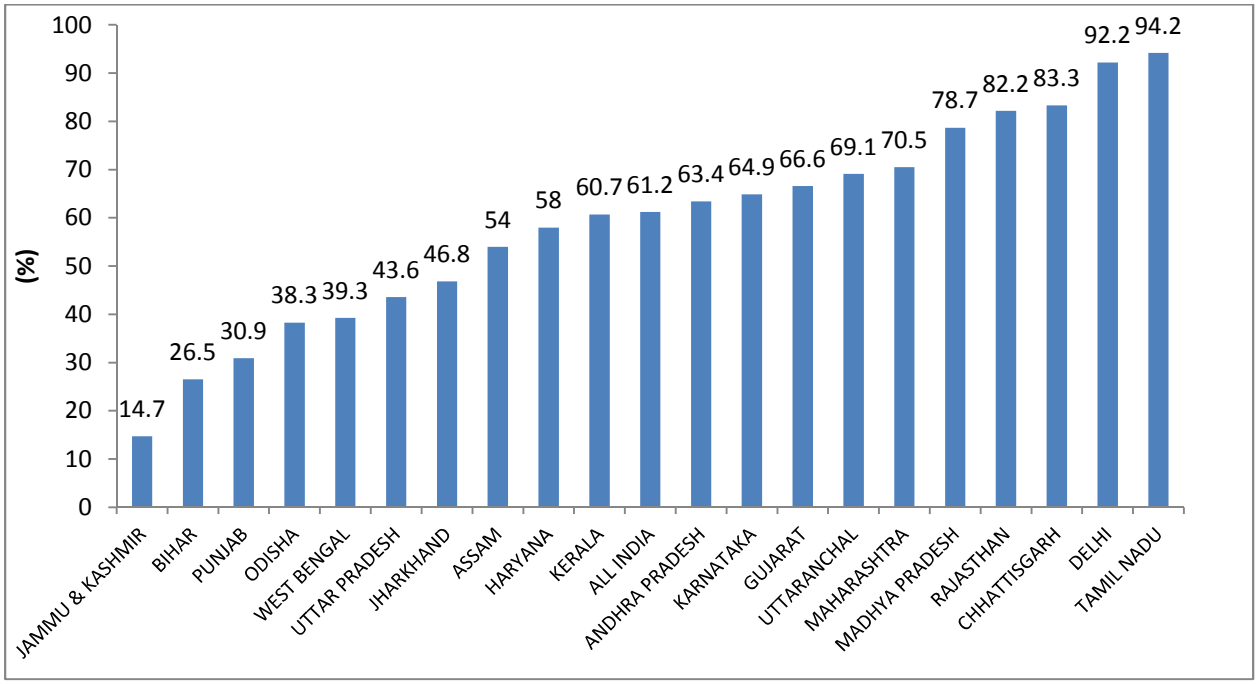
free services more than the urban people. It can be comfortably argued that lower average cost of government health care in Tamil Nadu can be attributed to the provisioning of wide range of services free. The Tamil Nadu example in some sense has defied the policy of user-charges advocated by the World Bank.

Table 4: Free services in different types of services in Public hospitals: 2004-05

		Rural			Urban		
		Total per 1000 cases receiving services	Free per 1000 cases	On payment per cases	Total per 1000 cases receiving services	Free per 1000 cases	On payment per cases
Tamil Nadu	Medicine	1000	797	203	1000	814	186
	Surgery	249	965	36	228	920	80
	X-ray/ECG	523	864	136	656	816	184
	Diagnostic tests	808	943	58	890	906	94
All India	Medicine	966	190	810	973	246	754
	Surgery	204	704	296	213	662	338
	X-ray/ECG	477	289	711	569	387	613
	Diagnostic tests	694	378	623	734	444	556

Source: NSSO 60th Round Report

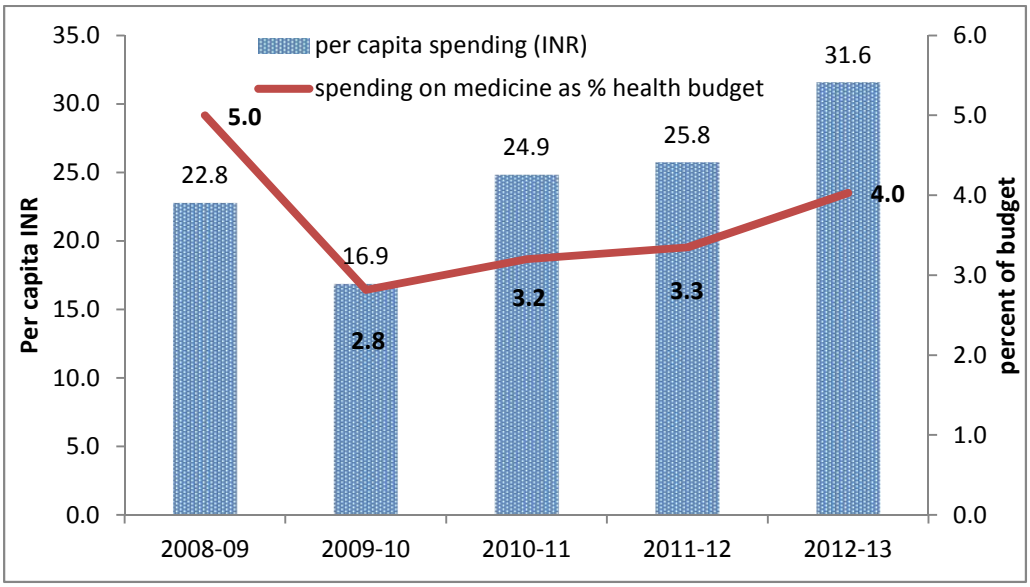
Figure 4: percent of people receiving free medicine while accessing public facilities: 2014 (%)



Source: Author's calculation, based on unit records of NSSO 71st round

There is a gradual increase in public spending on medicines even in constant prices (Fig 5). Of the total budget only 4% is spent on medicines, which is not a significant investment, compared to its effectiveness in providing 94% of those who come to public facilities in TN receive free treatment.

Figure 5: Per capita public spending on medicines and medicine budget as % of state budget



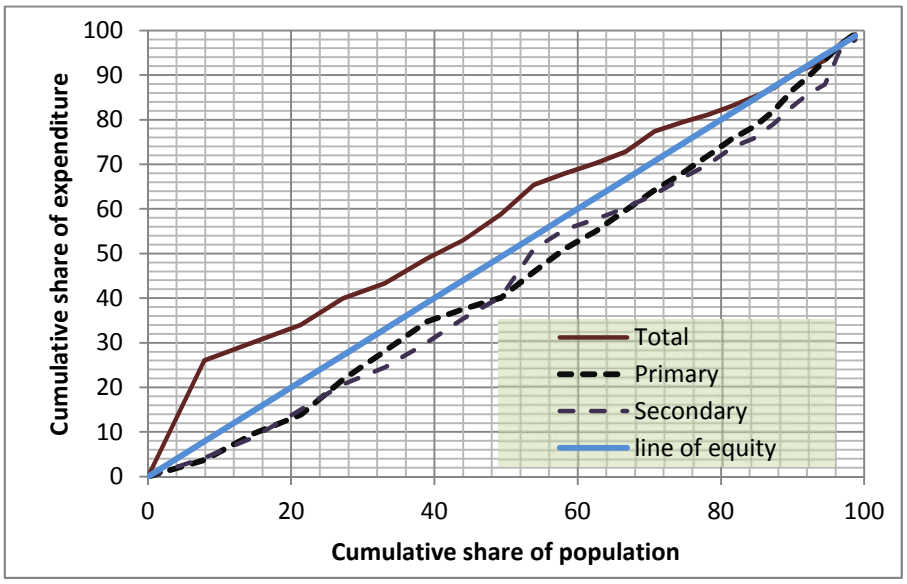
Source: Author's calculation from detailed demand for grants for various years, TNMSC pass book data.

District level variations in utilisation of fund by various levels of care have been summarized in Fig 6. Here we have plotted the cumulative share of population of districts on the X-axis. On the Y-axis, the cumulative shares of total expenditure by the district are represented. Districts have been ordered in terms of their share of population. The district with the highest population is placed at the extreme left and the district with the lowest population is at the extreme right. The straight line (blue) starting from origin represents the line of equality. Any deviation from the equality line would represent inequality in spending across districts. We find that in case of certain districts have received more funds than others. However, at the primary and secondary level the extent of

inequality diminishes. Thus the variations in district level allocation are largely due to the tertiary level institutions present at few districts.

Evidence in this graph goes to suggest that district-level variation is limited; the presence of variation can be explained because districts with medical colleges tend to consume and spend relatively more than other comparable districts. At the aggregated level, we observe significant inequalities as the total line goes farthest from the line of equality. The extent of deviation reduces at the secondary level and eventually at the primary level there seems to be not much of inequality in spending. This is because districts with medical colleges draw plenty of resources and hence the inequalities exist at the tertiary level rather than at primary and secondary levels. The other related issue is districts with tertiary institutions are receiving less funds for the primary and secondary levels because district hospitals in these districts represent tertiary level rather than secondary level, whereas in other districts these represent secondary level care.

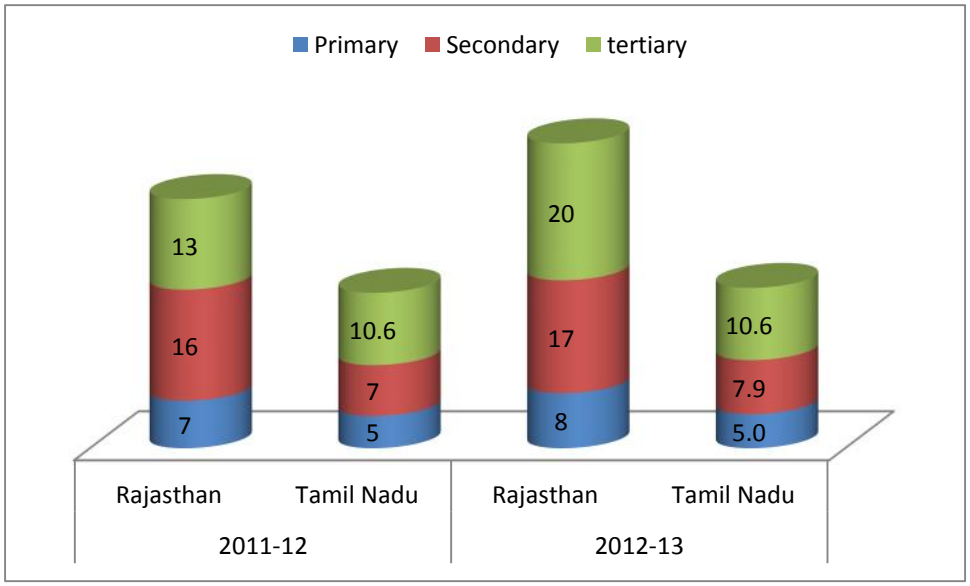
Figure 6: Variations in district level spending across levels of care:



Source: Authors' calculation based on pass book data of TNMSC

Allocation of budgets across various levels of care represents the priorities accorded to various levels. It is often the case that the tertiary level attracts most of the resources while lower levels of care, especially primary level care, get neglected. In our categorization we have categorized PHCs, SCs, dispensaries & mobile medical units as primary level; CHCs, SDHs & DHs as secondary level; and medical colleges & satellite hospitals as tertiary level. When we compared per capita allocation across various levels of care over the three years of RMSC and TNMSC between 2011-12 and 2012-13, we observe that there are significant variations in allocations. In Rajasthan, most of this increase is at the tertiary level. (Fig 7) Per capita spending at tertiary level was ₹13 in 2011-12 which increased to ₹20 in 2012-13. In case of Tamil Nadu, total spending is much evenly distributed across various levels of care. Thus allocation patterns clearly lay out the emphasis on primary and secondary care in Tamil Nadu in comparison to Rajasthan, where allocations are very much in favour of tertiary level care.

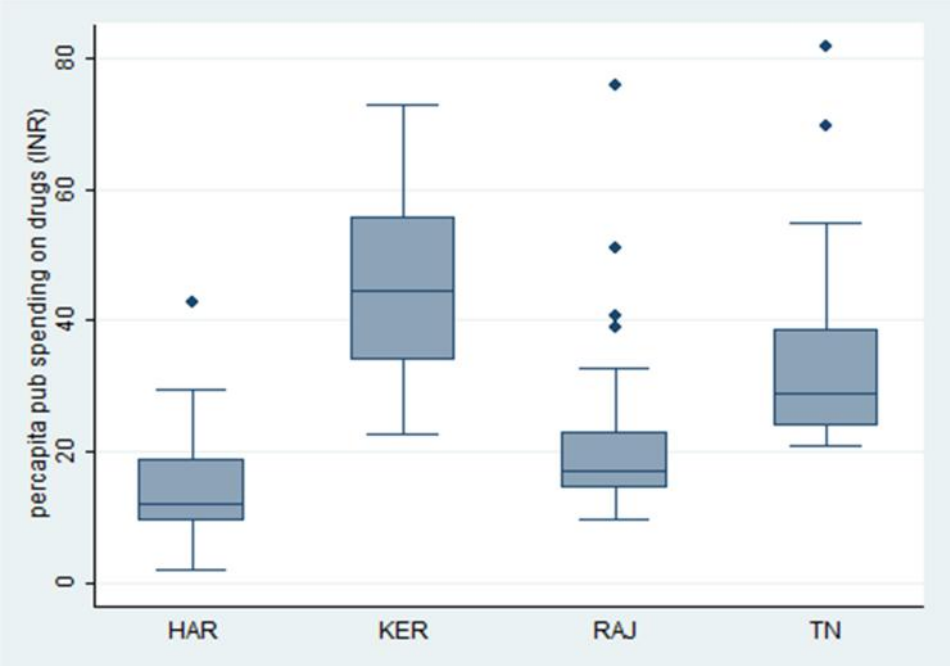
Figure 7: Budget allocation on medicines by levels of care: A comparison of Rajasthan and Tamil Nadu



Source: Extracted from passbook details of e-aushadi database of RMSC and passbook data from TNMSC

Inter-district variations in per capita public spending on medicines for four study states have been captured in fig 8 to compare the situation in TN with other states. Here each box represents each State and interquartile ranges are also presented here. We observe that Kerala has the highest overall per capita expenditure on medicines across districts and at the same time variations are also quite large. In contrast Haryana has low per capita spending and lower variations. TN has high per capita spending and moderate variations across districts.

Figure 8: Inter-district comparison of public spending on medicines (2012–13)



Source: Author's calculation based on passbook data from various states, dots represent outliers

Discussion and Conclusions

This paper highlights the trends and patterns in both private and public spending on medicines. We have clearly observed that overall levels of public spending on health and especially medicines remain quite low in India compared to many other countries. Low level of public spending has correspondingly led to high OOP on medicines, which constitute a total of two-third of total spending on medicines. Across Indian states we find share of medicines decreases with level of MPCE.

Medicine budgets shrank across States since the early 1990s with the exception of Tamil Nadu, which recognized the importance of enhancing medicine supplies through the public health system. The Tamil Nadu model of centralized procurement and decentralized distribution led to a remarkable fall in medicine related Out-Of-Pocket Payments (OOP) as well as overall OOP (NSSO 60^{th} round). The TNMSC thus became a model for many States, though its replication was beset with hesitation in several States, hampering its full potential. Some State governments, and recently the Union Government, have recognized the need to ensure availability of medicines through the public system.

However, Tamil Nadu remains an important deviation with the lowest share of medicines. OOP on medicines also causes significant impoverishment and intensity and extent has increased significantly over the decades, but not in Tamil Nadu. As an important trend we observe steady level of public spending in Tamil Nadu seems to have achieved an adequately stable level of spending over the years. The advantage of Tamil Nadu's systems come out clearly in terms of equitable inter-district allocations at secondary and tertiary level as well as across districts. The reduction of impoverishment due to medicines is a major indicator of success for Tamil Nadu.

Low levels of per capita expenditure in public facilities of Tamil Nadu is clear reflection of the effectiveness of health policies in the state. The other encouraging fact is that the ability of public hospitals to provide free care for a large section of population, this clearly contrasts the overall development at the national level.

India being one of the largest pharmaceutical market that exports 2/3rd of its medicines to rest of the world, is struggling to make the medicines available to its own country members. The recent NSSO report reveals that nearly 70% of the household OOPE on health and subsequent impoverishment is due to medicines, which throws light on the fact that improving access to medicines and making these medicines available at affordable cost will lead to considerable financial risk protection for the households. With the aim of overcoming the barriers in accessibility and ensuring availability of medicines at zero cost to the consumers an independent corporation was established after a massive drug scam in Tamil Nadu that brought reform in its drug purchase, storage and distribution systems. The central strategy of this model is the cost efficiency attributed to its centralized tendering and purchasing, creating a monopsony thereby reducing the drug costs by shrinking the existing medicine market. Also the bulk purchase and distribution leads to reduction in overall cost by leveraging economies of scale in the entire system and help in reducing financial burden on the state as well as on the individuals.

Success of this model is a result of the structural inputs and processes within the Tamil Nadu medicine Health system see fig 9.1. The strength of the system lies in strong governance for institutionalizing this medicine and procurement reform and making it sustainable. This is evident from the fact that the incorporation happened through a government order, which is very rare in our political system and is suggestive of strong political will of providing universal access to

medicine in the state. Health financing also contributes to the success - discussed later in the chapter. Sufficient budget allocation to meet drug demand and administration in Tamil Nadu as compared to rest of the states is root to the efficient its system. The key processes to the success of the model lies in its tendering and passbook system each ensuring affordability and availability respectively. Tenders are floated at the beginning of every year to identify suppliers for about 302 drugs, which are the most used and usually cover the treatment spectrum. When the purchases are state funded, it follows a two-tier tendering process where first technical bids are evaluated and then price bids decide the supplier. There is also a Quality Assurance mechanism in place, any drop in quality and the supplier is immediately blacklisted. Once blacklisted, they can't return for four years. And when they return, they are subject to intense scrutiny. Once the tests approve the drug, TNMSC places regular orders through the year depending on inventory levels in its warehouses drugs the drugs are then delivered to the district warehouses by the supplier in stipulated quantities. From here the drugs are distributed to the facilities based on a value-based passbook system (each facility is allotted a fixed amount and can requisition for any quantity of drugs in the Essential Drug List (EDL) within that amount. Also there are dedicated vehicles for distributing the drugs to the facilities. A computerized management information system makes the backbone of the system and constantly keeps a track of inventories in warehouses and helps place orders and clear payments within 15 days, thus the strong supply chain management system has put an end to excess as well as shortage of drugs ensuring availability of medicines across health facilities. Also yearly updating of EDL through scientific demand estimation and for casting is another factor that ensures efficiency in the system.

Per capita public spending on medicines is much higher in Tamil Nadu and Kerala, compared to other states. Tamil Nadu spends around ₹60, five times more than states like Jharkhand, Bihar and Rajasthan. From the NSSO estimates from 2004-05, it was evident that on an average an individual's spends 8 times less on medicines in Tamil Nadu than all India estimate. Average medicine expenditure was 7-8 times higher than Tamil Nadu.

Tamil Nadu has a much lower share of medicines in OOP compared to States which have comparable MPCE. One major factor that stands out is the provision of good quality care at public facilities supplemented by adequate supply of medicines in Tamil Nadu. The reduction of impoverishment Low levels of per capita expenditure in public facilities of Tamil Nadu is clear reflection of the effectiveness of health policies in the state. The other encouraging fact is that the ability of public hospitals to provide free care for a large section of population.

This model is recommended to all the other states by several organizations like the World Bank, the World Health Organization, the Department for International Development and the High-Level Expert Group (HLEG) constituted recently to propose methodologies of Universal Health Care (UHC) in India (High Level Expert Group 2011). Prabal Vikram Singh et al have published the experiences of two states – Kerala and Odisha – that have gone a long way into incorporating the TNMSC model. While Kerala has successfully adopted, modified and customized it to suit the local context, Odisha is grappling with several monetary, administrative and infrastructural challenges that prevent it from accruing the advertised benefits. Rajasthan independently has made its way in adopting this model and has considerably reduced the OOPE. The Rajasthan EDL has more than 400 medicines covering most of the treatment conditions. Adopting a model in true sense does not only mean creating a centralized system of drug procurement but also trained

personnel, streamlined processes, infrastructure and IT enablement in order to procure, store and distribute the large quantities of drugs required to user institutions with minimal delays. This requires a significant budget to cover the fixed costs incurred before benefiting from the discounts on drugs. Adopting the model without the necessary prerequisites would result in a state spending more money without necessarily improving outcomes. Also it is important to make health care providers the part of the system involving them in demand estimation process and formation of EDL. Since the availability of the medicine to the consumer at the health facility is the function the provider's prescription practice, it is important to sensitize them about rational drug use. In Tamil Nadu per say the prescription analysis revealed high doctors adherence to EDL with 78-80% of the prescribed drugs from the EDL, this is suggestive of the systems effort in sensitizing their providers the importance of rational drug use to bring about and efficient system that is pro- social both in terms accessibility and affordability.

Although the trends from both demand and supply side have been captured, the Impact of this model on financial risk protection has not been established. Despite the efficient drug procurement system and high availability of medicines in Public Health facilities provided free of cost, low utilisation is still a question. Around 60% of the people still prefer private care over public in Tamil Nadu. This estimates are from the state Tamil Nadu, that has highest number of people receiving free medicines in public health facilities of India(238/1000) compared to economically more developed states like Punjab Haryana where only 9/1000 avail free medicines (NSSO). No patient perspective was captured on differential access to Public and private care in this study. Most of the prescription in the analysis had drugs from EDL which suggest better involvement of providers in drug list formation. However rational use of Drugs studied is studied

only from provider's perspective and more insight on patient care indicators and actual consumption is needed not only to explicitly elicit demand and supply relation but also to assess the awareness of prescribed drugs dosage from consumers perspective. Lastly both availability and rationality in this study is representation of a snapshot of data ie. One point of time and doesn't take in to consideration the seasonality of the morbidity and its effect on the prescription practise as well as medicine stocks. Thus a panel data of same would be more conclusive estimate. Most importantly to agree with these estimates a consumer perspective of availability of free medicine needs to be captured for the state.

Although the state of Tamil Nadu is relatively better placed in terms of public spending on medicines and has a relatively robust procurement and distribution system of medicines, this relative performance with respect to other states must not result in complacency. According to data from IMS India, nearly INR 4000 crores are spent on medicines, bought by households from private pharmacies. It may be observed that close to one-fifth of such spending on medicines was accounted by cardiac market (including anti hypertensives) and nearly one-tenth is accounted by anti-diabetics market. Therefore, there is a need to step up spending on medicines substantially by the government and make their procurement & distribution mechanisms even more robust and accessible to the public. We need innovative delivery mechanisms for common man to access such outlets.

Moreover, it has been observed from the list of medicines procured by TNMSC that the state procures and supplies very limited quantity of non-communicable disease related medicines, especially at the primary care level. This compels the patients to use private health care facilities for their treatment or to purchase medicines directly from the pharmacy without any follow up.

Therefore, procurement of medicines for non-communicable diseases would not only reduce out-of-pocket (OOP) expenditure by the households and its catastrophic consequences, but would have additional spin offs in terms of higher utilization of public facilities and better compliance of treatment regimen for non-communicable diseases.

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