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Universal access to medicines: evidence from Rajasthan, India

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ABSTRACT

India has outlined its commitment to achieving universal health coverage and several states in India are rolling out strategies to support this aim. In 2011, Rajasthan implemented an ambitious universal access to medicines programme based on a centralized procurement and decentralized distribution model. In terms of the three dimensions of universal health coverage, the scheme has made significant positive strides within a short period of implementation. The key objectives of this paper are to assess the likely implications of providing universal access to essential medicines in Rajasthan, which has a population of 70 million. Primary field-level data were obtained from 112 public health-care facilities using multistage random sampling. National Sample Survey Organization data and health system data were also analysed. The per capita health expenditure during the pre-reform period was estimated to be ₹5.7 and is now close to ₹50. Availability of essential medicines was encouraging and utilization of public facilities had increased. With additional per capita annual investment of ₹43, the scheme has brought about several improvements in the delivery of essential services and increased utilization of public facilities in the state and, as a result, enhanced efficiency of the system. Although there was an attempt to convert the scheme into a targeted one with the change in government, strong resistance from the civil society resulted in such efforts being defeated and the universality of the scheme has been retained.

Key words: drug availability, drug stock-outs, essential medicines, financial risk protection, universal health coverage

INTRODUCTION

The role and relevance of medicines, vaccines and other supplies are critical, as these are considered to be important elements of the health-care system.[1] Access to medicines in resource-poor settings has been intrinsically linked to the fulfilment of a broader right to health mandate.[2] It assumes an extremely vital role in low- and middle-income countries (LMICs), as lack of access to essential medicines and vaccines leads to poor financial risk protection, causing substantial poverty.[3] This is often the result of households spending a large share of their out-of-pocket (OOP) expenditure on medicines.[4-6] Despite being the "pharmacy of the global south", over 65% of India's population does not have access to essential medicines.[7]

Global evidence and evidence from India point to several barriers to access to medicines. Firstly, health-care financing and provision is largely a private affair in most LMICs. India perhaps leads the way with nearly 70% of all health-care financing derived from households, while 70% of all household expenditure goes to buying medicines from the private market.[8,9] As a result of persistent public underinvestment, the private medicine market has thrived, leaving households to incur catastrophic payments and making them vulnerable to poverty. Out of 100 million people who are globally impoverished as a result of household OOP expenditure,[10] over 40 million are in India.[11] Since expenditure on medicines accounts for a larger share of household OOP expenditure on health care, a main reason for medical impoverishment is because of household spending on medicines.

Poor financial risk protection of households in India, resulting from gross underinvestment in the health sector, especially on medicines, has led to a scenario where access to essential medicines has become extremely difficult.[12] According to several national household surveys, the availability of free essential medicines in public health-care facilities has been dwindling. It has been reported that during the mid-1980s,

approximately a third of the medicines prescribed during hospitalization in public health-care facilities were supplied for free; however, during 2004, the mean availability declined sharply to approximately 9%. For outpatient care, free medicine supply declined from 18% to about 5% over the same period.[12]

While the evidence is limited, available data from several Indian states demonstrate significant variations in the availability and stock-outs of essential medicines. For example, a recent survey in Tamil Nadu and Bihar showed that the mean availability of a selected basket of essential medicines for Bihar was about 43% as compared with 88% for Tamil Nadu,[13] while a study by Cameron et al.[6] noted that the median availability of critical medicines in the public health system was about 30% in Chennai, 10% in Haryana, 12.5% in Karnataka, 3.3% in Maharashtra (12 districts) and 0% in West Bengal. A recent survey of health-care facilities operated by either the State Government or the Municipal Corporation of Delhi showed that the mean availability of essential medicines was 41.3% and 23.2%, respectively; in tertiary health-care facilities operated under the federal government, the availability was about 50%.[14]

Several factors can influence the provision and use of essential medicines via the public health-care system. These factors include: poor and incomplete stocking of essential medicines because of inadequate budgetary support; poor supply chain management, leading to frequent stock-outs; prevailing prescription practices leading to inessential and costlier prescriptions for medicines from outside the public health-care system; and a lack of confidence in the quality of medicines supplied through the public health-care system. In addition, while availability may not be a significant barrier in the private sector, affordability often becomes a critical issue.

Health-care systems in several LMICs are in disarray because of persistent underinvestment. Lack of a strong tax-based financed health-care system or a social health insurance system precludes households from prepayment and risk-pooling strategies. It is argued that by extending health insurance coverage to outpatient care, access to medicines could be substantially improved, thereby leading to a reduction in OOP payments.[15] Others suggest that increased access – both physical and financial – can be enhanced by scaling up public spending to strengthen the government health system; this is expected to bring down household OOP expenditure, and improve prescription patterns in specific and overall rationality of care.[12]

While sustainable financing for drug procurement is essential, the allotted funds may not reach the intended beneficiaries without a concomitant reliable and efficient supply chain management system extending from manufacturer to patient. Even if the funds reach front-line service facilities, the drugs required for dispensing may not be delivered in a timely and uninterrupted manner. Therefore, it is important to ensure that the medicine supply chain is strengthened. A transparent procurement procedure influences quality and affordability and is essential to ensure a reliable supply of medicines. Inefficient procurement systems have been found to pay up to many times the world market price for essential medicines. Poor-quality medicines or delayed deliveries from unreliable suppliers contribute to an unnecessary waste of budgets, life-threatening shortages, antimicrobial resistance and avoidable fatalities.[16]

Procurement and supply chain systems involving public health-care institutions are weak and poorly governed. On the one hand, an inefficient medicine procurement system leads to suboptimal use of resources with poor value for money. A decentralized procurement system fails to optimize monopsony power, thereby leading to a bloated government budget for procuring medicines. On the other hand, an unreliable distribution system causes chronic shortage and acute stock-outs of essential medicines. However, pooled procurement models in some states of India (e.g. Tamil Nadu) have demonstrated their effectiveness in ensuring timely availability of free essential medicines and avoiding stock-outs of medicines.[13]

In an effort to address the issues outlined above, the State Government of Rajasthan in India introduced the Mukhyamantri Nishulk Dawa Yojana (MNDY; Chief Minister's free medicine scheme) by establishing the Rajasthan Medical Services Corporation (RMSC) in May 2011. The scheme was launched on 2 October 2011 with the primary objective of procurement and distribution of generic medicines and surgical and diagnostic equipment to all patients visiting public health-care facilities. Essential medicines were identified initially by alignment with the National List of Essential Medicines of India, but they were modified and expanded to add more medicines as per the need of the population. While the RMSC began with about 240 medicines initially, at present there are more than 600 medicines on the RMSC essential medicines list. The RMSC procures medicines and surgical items through an open tender (two bid) system and also procures high-end medicines for cancer and other complex diseases directly from the importers. Supply chain management is carried out through "e-Aushadhi", a web-based application developed for continuous monitoring and smooth functioning of the organization (medicine management system), and by the establishment of one medicine warehouse in each district, which is linked to public health-care facilities.

This paper sets out to evaluate the scheme by examining the financial implications of providing free medicines to everyone for the 70 million people in the region. We generated evidence by looking at the implications of financial and physical access to medicines in the State of Rajasthan in the post-2011 period.

METHODS

The basic framework for this paper is derived from the WHO universal health coverage (UHC) concept. The framework essentially describes three dimensions to achieve universal health coverage: breadth of coverage (population covered), depth of coverage (services offered) and height of coverage (financial risk protection provided). Extending the framework to universal access to medicines, we examined all three dimensions. We used the number of outpatient and inpatient visits as a proxy for population coverage, while the number of medicines covered in the essential drug list – availability and stock-outs – as a surrogate for service coverage. For proportion

of costs covered, we used current trends in household OOP expenditure in addition to the cost borne by the government in procuring medicines.

We used a variety of data/information available from secondary data sets as well as conducting a large primary survey of health-care facilities. From the electronic information system (e-Aushadhi) of the RMSC, we were able to obtain the financial allocation made to each district and facility for supplying medicines. Passbook data from facilities were used to determine financial allocations and utilization of medicines across facilities. The study also analysed unpublished unit-level records of the consumer expenditure surveys (CES) conducted by the National Sample Survey Office (NSSO), for the respective years. The CES collect information on household expenditure on about 350 items. These include food and nonfood items, while the relevant nonfood items that are examined here are institutional and non-institutional medical spending of households.

Survey of health-care facilities: sampling

The primary objective of the survey of health-care facilities was to evaluate the availability of essential medicines in health-care facilities, and stock-outs. The State of Rajasthan in India is not only large but is also characterized by a high level of population heterogeneity. In view of its social, economic, demographic and cultural diversity, the selection of a representative number of facilities at the appropriate level of care was deemed vital to conduct a large-scale study. We used the statistical software N-Master to determine minimum sample size required to evaluate the availability of medicines and stock-outs at each level of health-care facility. Once a representative number of public health-care facilities had been chosen, we adopted a two-stage cluster sampling that followed two stages of selection: selection of districts in the State of Rajasthan, and selection of health-care facilities within the identified districts. The criteria for selection at each level of facility are outlined below.

In order to capture the socioeconomic diversity of the state, 10 (30%) of the total number (34) of districts were selected, based on economic and geographical indicators. The economic criteria identified per capita net district domestic product (NDDP) were used to rank the districts and then districts were selected using systematic sampling, to include the highest-ranked district, the lowest-ranked district and districts at equal intervals of economic ranking. (Per capita NDDP used for the study was an estimation for the year 2004–2005 at current prices, obtained from the Directorate of Economics and Statistics, Rajasthan.) This selection was then adjusted to include geographical criteria by mapping the districts on a political map to capture the best geographical representation of the state, to essentially ensure a spread of districts (see Table 1)

Health-care facilities are the primary sampling unit for capturing the scenario of availability of medicines and stock-outs, and prescription and dispensing patterns, in public health-care facilities. For the purpose of this study, health-care facilities were selected at each level of care, from medical colleges, representing the highest level of care, to primary health-care centres (PHCs), denoting the lowest level of care. Ideally, subcentres should have been the lowest level of care selected, but, because of the low volume and value of medicines dispensed at that care level, PHCs were used as the lowest level in this analysis.

One specialty tertiary-care hospital was selected: a government medical college in the state capital (Jaipur) that is the largest public sector hospital in the state. At the district level, one district hospital from each selected district was selected, making a total of 100 district hospitals.

Subsequently, 30% of community health-care centres (CHCs) were selected from each chosen district using the following formula: $N = A \times D \times 30\%$, where N is the number of CHCs selected, A is the mean number of CHCs per district, and D is the total number of districts chosen.

In all, 34 CHCs were selected from the 10 districts. Four CHCs were chosen from larger districts such as Udaipur, Barmer, Bharatpur and Jhalawar, whereas three CHCs were chosen from Karauli, Chittorgarh, Jaipur, Churu, Bikaner and Baran. The selection of CHCs was made on the basis of accessibility, distance from the district headquarters and geographical location, so that the CHC chosen was the most representative of the district population. Finally, 68 PHCs were selected on the basis of two PHCs reporting to each selected CHC, using random sampling.

For the purpose of this study, a list of common medicines was identified from the National List of Essential Medicines and the RMSC state essential medicines list. A total of 160 medicines from different therapeutic categories were identified and segregated based on their availability in different care levels, as suggested by national public health guidelines. However, not all of these drugs were procured by the RMSC. In order to capture the availability of drugs that have been procured by the RMSC, we excluded non-procured drugs from the list. As

Table 1: Summary of selected health-care facilities

Type of facility	Number of sample facilities selected	Total number of facilities in 10 districts	Number selected as a percentage of total
Community health-care centre	34	376	9.04
Primary health-care centre	68	1517	4.48
Medical college	1	7	14.29
Total number of facilities	113	1900	5.42

Source: information on the total number of public health-care facilities was obtained from the Ministry of Health and Family Welfare, Government of India.[18]

a result, there were 75 drugs relevant for the PHCs, 122 drugs relevant for the CHCs, 130 drugs for the district hospitals, and 141 drugs for the medical college surveyed. The medicines were also further segregated based on dosage and types (injectable, tablets/capsules, suspension). The essential generic medicines were then segregated based on the Anatomical Therapeutic Chemical Classification System as per WHO guidelines. Data missing from the primary survey was estimated to be 0.6%.

For assessing availability and stock-outs of essential medicines at the facility level, the facility availability and stock-out tool was completed directly by each facility to record data on medicine availability on the day of the survey, medicine stock-out position for the previous 6 months from the date of the survey and duration of stock-outs. Additional data on inpatient and outpatient visits over the past 3 years (2011, 2012, 2013), dispensing and other relevant information were also collected. The survey was conducted during the month of June 2013.

RESULTS

The study findings are presented vis-à-vis the three dimensions of UHC: cost coverage, population coverage and service coverage. Bearing in mind the inherent difficulties in measuring coverage, there was no attempt to measure these dimensions. Rather, the UHC framework has been used to explain the results.

Cost coverage

Before the introduction of MNDY, per capita public spending on medicines was particularly low in Rajasthan. During the years 2010–2011, per capita government spending on medicines was as low as ₹5.7 and increased sharply to about ₹50 during 2012–2013. Between 2006–2007 and 2010–2011, per capita public spending on medicines declined at an average rate of 20% per annum, while between 2010–2011 and 2013–2014 there was an annual mean growth rate of 105%, reflecting a doubling of expenditure every year (Figure 1). However, additional investment of ₹3000 million in the RMSC was less than a tenth (8%) of the state budget on health and family welfare (2012–2013). Persistent inadequacy in public spending results in high OOP payments. Per capita OOP expenditure has risen significantly in the State of Rajasthan as well as in India as a whole over the period from 1993–1994 to 2011–2012 (Table 2). However, per capita OOP spending on health care, as well as on medicines, was lower in Rajasthan than that for all India for the period under consideration. The difference in spending widened further in 2011–2012. Although this demonstrates an early trend, we note that the spending pattern of households in Rajasthan is undergoing significant change, as the OOP trend demonstrates that it is declining due to a notable decline in spending on medicines.

A decline and a lower level of OOP spending on medicines had a salutary effect on poverty. During 1993–1994 to 2011–2012, the national average for poverty as a result of OOP spending on medicines was 3.1%, versus 2.2% for Rajasthan (Figure 2). This scenario for Rajasthan is almost comparable to 2.1% in the state of Tamil Nadu, which has been supplying medicines free in its public health-care facilities for the past 16 years. Most significant is the low level of poverty in urban areas in 2011–2012. Compared with 1.64% of people falling below the poverty line owing to spending on medicines at the national level, in Rajasthan only 0.94% of urban residents were impoverished. Though it might be little early to attribute this to MNDY, since the NSSO survey was conducted between

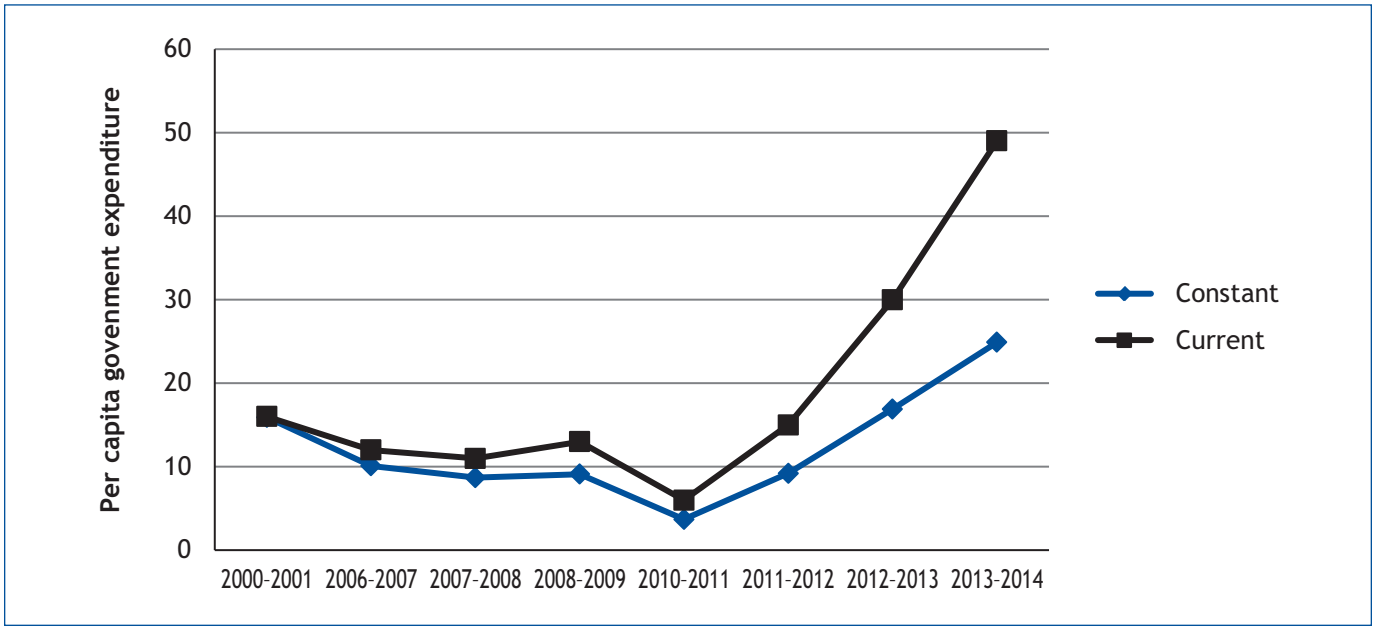

Figure 1: Rising per capita public spending on medicines in Rajasthan: current and constant prices

Source: Department of Medical and Public Health, Government of Rajasthan (various years)[19]

Table 2: Trends in monthly per capita out-of-pocket expenditure on health care and on medicines, from 1993–1994 to 2011–2012, in Rajasthan and India

Year	State/country	Per capita OOP expenditure on health care (₹)			Per capita OOP expenditure on medicines (₹)		
		Rural	Urban	Total	Rural	Urban	Total
1993–1994	Rajasthan	12.5	18.0	13.7	12.2	17.6	13.4
	India	18.6	18.3	18.5	14.2	13.6	14.0
2004–2005	Rajasthan	31.2	47.9	34.9	25.9	40.0	29.0
	India	36.5	57.6	41.8	26.9	38.1	29.8
2011–2012	Rajasthan	91.5	107.4	95.3	72.0	70.4	71.6
	India	95.3	151.2	111.2	65.4	95.2	73.9

OOP: out-of-pocket

Source: values have been estimated by the authors from unit level records of respective consumer expenditure surveys by the National Sample Survey Office.

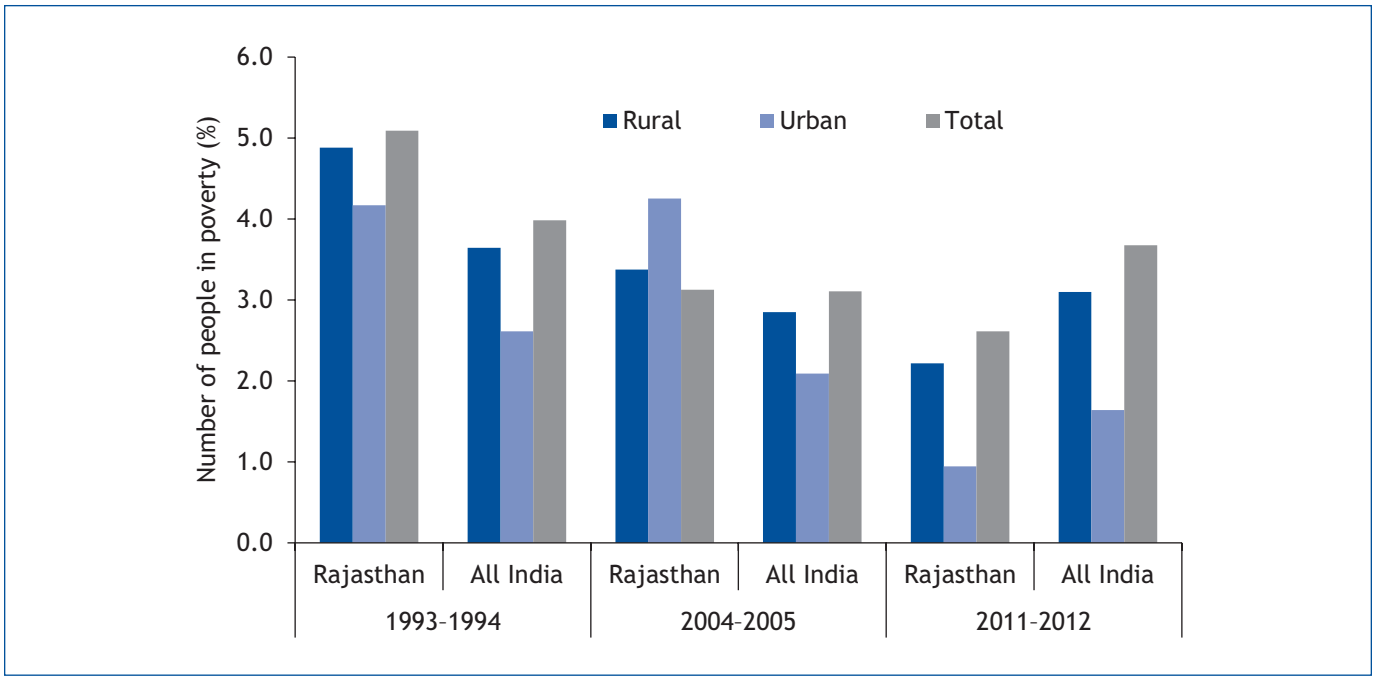

Figure 2: Poverty caused by out-of-pocket spending on medicines in India and Rajasthan, 1993–1994 to 2011–2012

Source: values have been estimated by the authors from unit level records of respective consumer expenditure surveys of the National Sample Survey Office.

July 2011 and June 2012, this could be taken as an early trend suggesting a marginal decline in poverty. It should be mentioned that the scheme was first rolled out in urban areas and then gradually spread to rural areas.

Population coverage

One encouraging outcome of the initiative is that the patient load in public health-care facilities has risen since the introduction of MNDY. A triangulation of the primary survey findings with government management information system data on outpatient and inpatient visits was attempted as part of this study. During 2011–2012, the growth in-patient load was 42.6% compared with 13.8% during 2010–2011. While it is too early to estimate the growth in the year 2012–2013, the growth is expected to be significantly higher than the previous years, as the overall number of visits (including outpatient and inpatient load) stood at 7.7 million in July 2013 as against 5.4 million in July 2012 according to data from the Health Management Information System, Rajasthan.

The evidence is further corroborated from the survey data, which demonstrate that in all health-care facilities, patient visits – both inpatient and outpatient visits – increased substantially. Figure 3 shows a substantial rise in outpatient care visits between 2011 and 2013 across all the districts surveyed. Results from the facility survey also show that annual average load has increased across PHCs, CHCs and district hospitals (Table 3). For instance, a PHC was handling

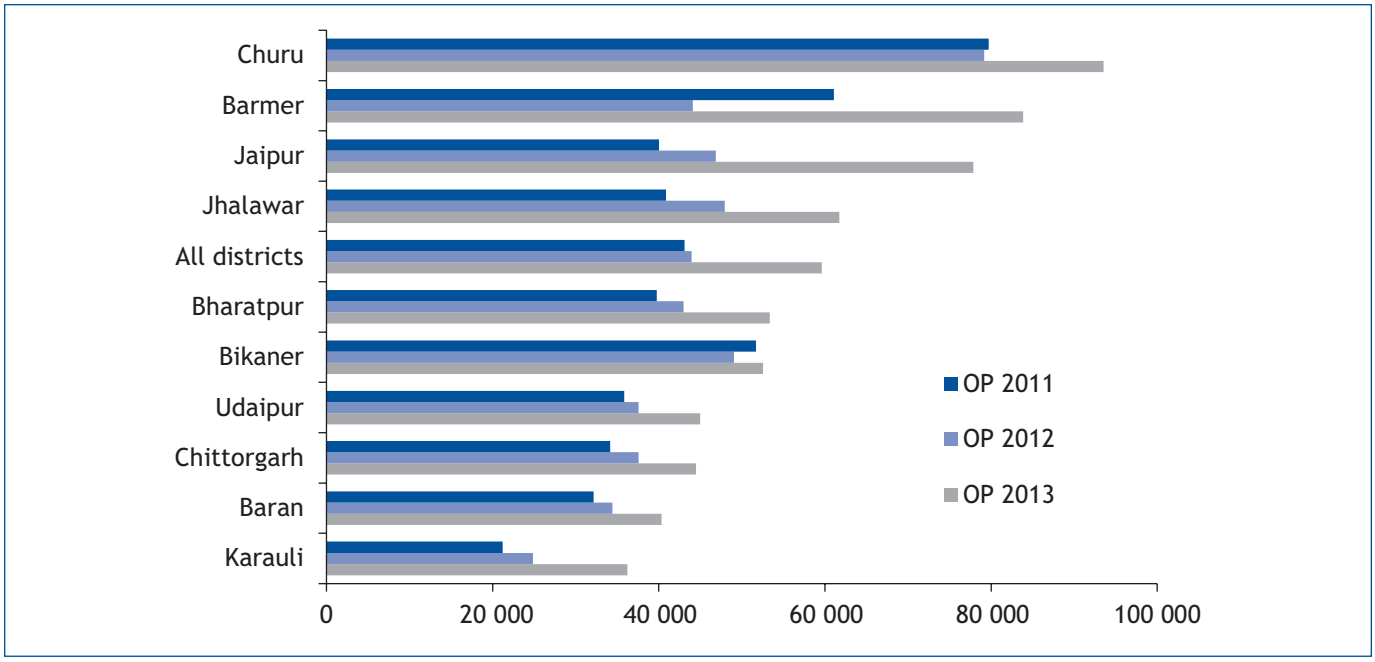

Figure 3: Number of outpatient visits during 2011–2013 in selected districts of Rajasthan

OP: outpatient visits; All districts: average of all study districts

The data for 2013 is for 6 months (up to June); the data for Jaipur exclude outpatient visits to medical colleges.

Source: visits are estimated based on survey data.

Table 3: Average number of outpatient and inpatient visits and estimated total number of visits (million) by level of care

Level of care	OP/IP	Year	Number of facilities	Mean number of visits	95% CI	Estimated total number of visits across all facilities (millions)
PHC	OP	2011	61	7334	5845–8823	11.21
		2012	66	7912	6348–9475	12.75
		2013a	66	9806	7646–11 967	15.81
	IP	2011	62	256	199–314	0.39
		2012	65	271	213–329	0.44
		2013a	65	330	240–420	0.53
CHC	OP	2011	30	42 805	29 249–56 361	16.27
		2012	34	48 919	35 124–62 714	20.94
		2013a	33	64 381	46 239–82 524	27.56
	IP	2011	28	3769	2128–5411	1.43
		2012	32	3791	2483–5100	1.62
		2013a	31	3904	2654–5154	1.67
DH	OP	2011	10	262 232	211 980–312 485	8.92
		2012	10	264 765	197 626–331 904	9.00
		2013a	10	372 601	280 279–464 924	12.67
	IP	2011	10	31 485	17 407–45 563	1.07
		2012	10	34 998	18 607–51 388	1.19
		2013a	9	34 825	17 866–51 784	1.18

CHC: community health-care centre; CI: confidence interval; DH: district hospital; IP: inpatient; OP: outpatient; PHC: primary health-care centre[a]

[a]2013 data are for 6 months (up to June 2013). The data for Jaipur exclude those of the medical college.

Source: estimated based on survey data.

an average of 7334 outpatient visits in 2011. This increased to 7912 visits in 2012. However, by June 2013, PHCs had an average of 9806 visits. Similar trends can be seen at CHCs and district hospitals. It was observed from the survey data that increases in inpatient visits were relatively moderate during the survey period, compared with outpatient visits. Based on the average number of visits across the facilities surveyed, the total outpatient and inpatient visits at various levels of care have been estimated. The estimated outpatient load at PHCs increased from 11.2 million in 2011, to 15.8 million by June 2013. Similarly for CHCs, the estimated load increased from 16.3 million to 27.6 million, and for district hospitals the estimated load increased from 8.9 million to 12.7 million. The results clearly show that CHCs have emerged as major points of service delivery for both outpatient and inpatient care and this suggests future possibilities for strengthening the system.

Service coverage

Regarding medicines, the benefit package offered currently in the public health-care facilities in Rajasthan is perhaps the most comprehensive, as over 600 essential medicines are covered, which is more than double the number on the National List of Essential Medicines. However, identifying a comprehensive list of essential drugs is only the first step in the commitment by the government, as operationalization is an important challenge. Therefore, the availability and stock-out scenario of key essential medicines in public health facilities was investigated. Figure 4 shows a box plot of the average number of medicines available during the day of the survey across PHCs, CHCs and district hospitals. In Figure 5, it is encouraging to observe that, out of the drugs relevant for each level of care, median availability of medicines at the PHC level was 61% and at the CHC level it was 64%, whereas at the district hospital level availability went up to 75%. There was significant variation across districts, but the variations were most pronounced for PHCs. For instance, the percentage of medicines available in PHCs varied from 30.6% to 88.6% on the day of the survey (Figure 5).

The RMSC has controlled central medicine procurement and the localized (through public health-care facilities) distribution system since October, 2011. In the process, RMSC maintains data on the value of the annual disbursement (consumption) of medicines in the e-Aushadi database. During 2012–2013, 442 types of medicines, worth ₹1850 million, were disbursed by the RMSC via 34 district drug warehouses located in 33 districts of Rajasthan. In order to determine the coverage of these medicines in terms of disease conditions, they have been categorized into therapeutic supergroups as per WHO guidelines. Of these, more than half (52%) were anti-infectives (Figure 6). The other important categories included blood and blood-forming agents (10.7%), drugs related to the alimentary tract and metabolism (8.6%), drugs related to the respiratory system (5.3%) and dermatological agents (5.3%). All the major categories of drugs are being provided by RMSC, though there is a strong bias towards anti-infectives.

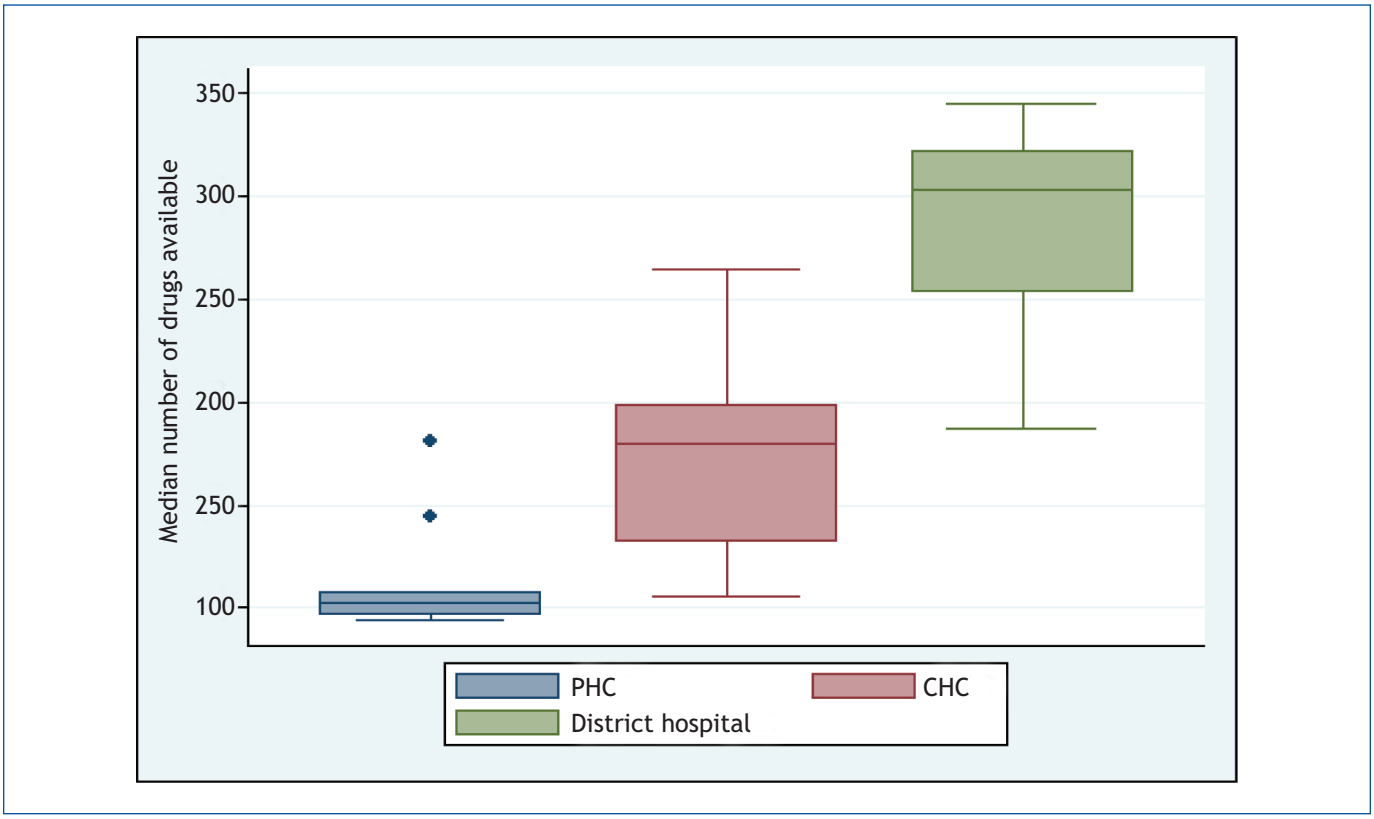

Figure 4: Number of medicines available in Rajasthan on the day of the survey, 2013, by level of care

CHC: community health-care centre; PHC: primary health-care centre

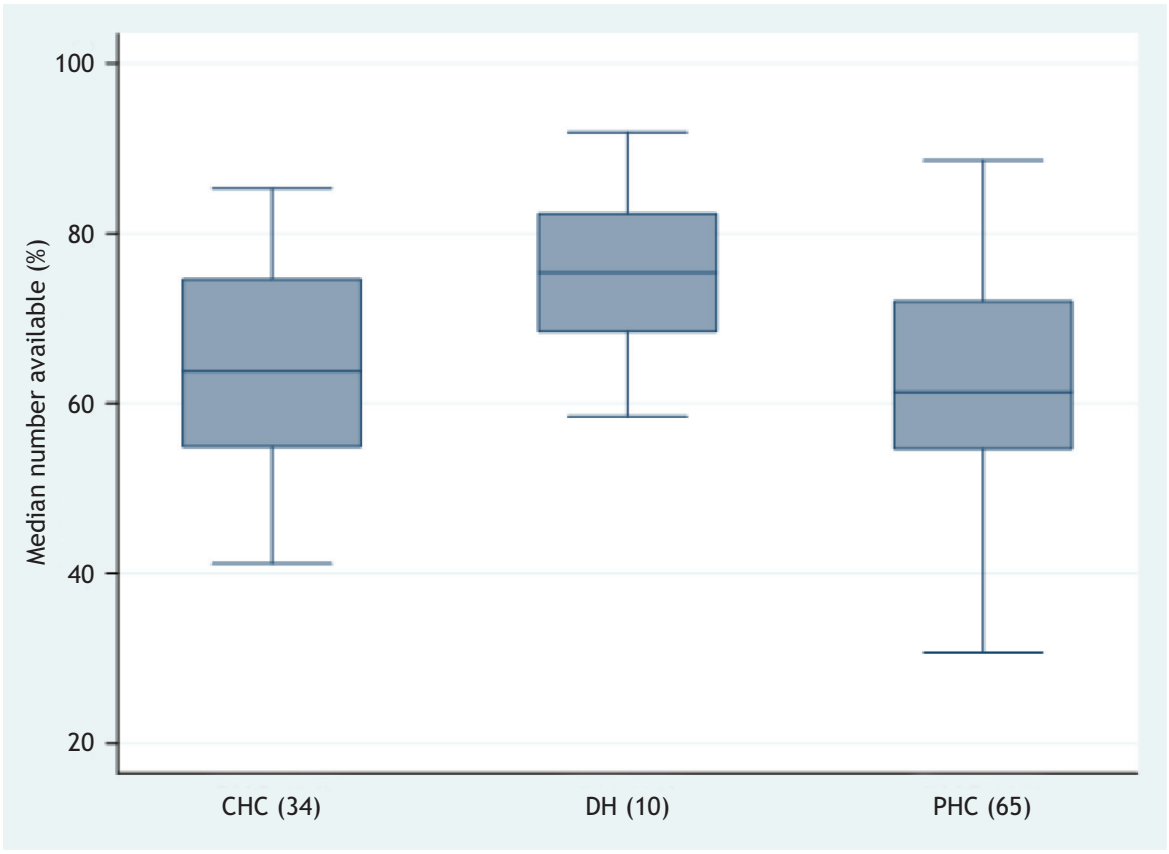

Figure 5: Median percentage of key essential medicines available in Rajasthan on the day of the survey, 2013, by level of care

DH: district hospital; CHC: community health-care centre; PHC: primary health centre

Number of facilities for each care level is given in parentheses.

DISCUSSION

From a health system perspective, achieving universal health coverage would mean providing a basic minimum of health services to the entire population and removing financial barriers to access them. This paper attempts to focus on one very critical aspect of the health system – medicines. In most rich countries, in view of strong prepayment and risk-pooling mechanisms, medicines for specific health problems and health in general are provided free of cost. However, in resource-poor settings, risk-pooling methods are not only weak but their health status has been poor. First, health-care financing and provision is largely a private affair in large parts of LMICs, with India leading the way with nearly 70% of all health-care financing derived from households, while 70% of all household expenditure goes into buying medicines from the private market. Owing to persistent underinvestment, the private medicine market in India has thrived leaving households to incur catastrophic payments and thus vulnerable to impoverishment. In addition to poor public spending on medicines, procurement and supply chain systems involving PHC institutions are weak and poorly governed. On the one hand, an inefficient medicine procurement system leads to suboptimal use of resources with poor value for money. A decentralized procurement system fails to optimize monopsony power, thereby leading to an inflated government budget for procuring medicines. On the other hand, an unreliable distribution system leads to chronic shortage and acute stock-outs of essential medicines. However, pooled procurement models in some states of India (Tamil Nadu and Kerala) have demonstrated the effectiveness of such a model in ensuring timely availability of free essential medicines and avoiding stock-outs of medicines.

Following the success of this model, the Rajasthan government in India adopted a similar system in 2011. This was carried out as a major health sector reform initiative. The commitment of the Rajasthan government was matched by a substantial increase in allocation of funds. During 2013–2014, a sum of ₹3.20 billion was allocated to the scheme in comparison with ₹0.38 billion in 2011–2012. On average, the state was spending less than 5% of its public expenditure on medicines in the pre-MNDY years. The per capita health expenditure during the pre-MNDY scheme was estimated to be ₹5.7 during 2010–2011 which stands close to ₹50 during 2013–2014. This has a salutary impact on OOP reduction in the state. Early trends suggest that household OOP payments have declined

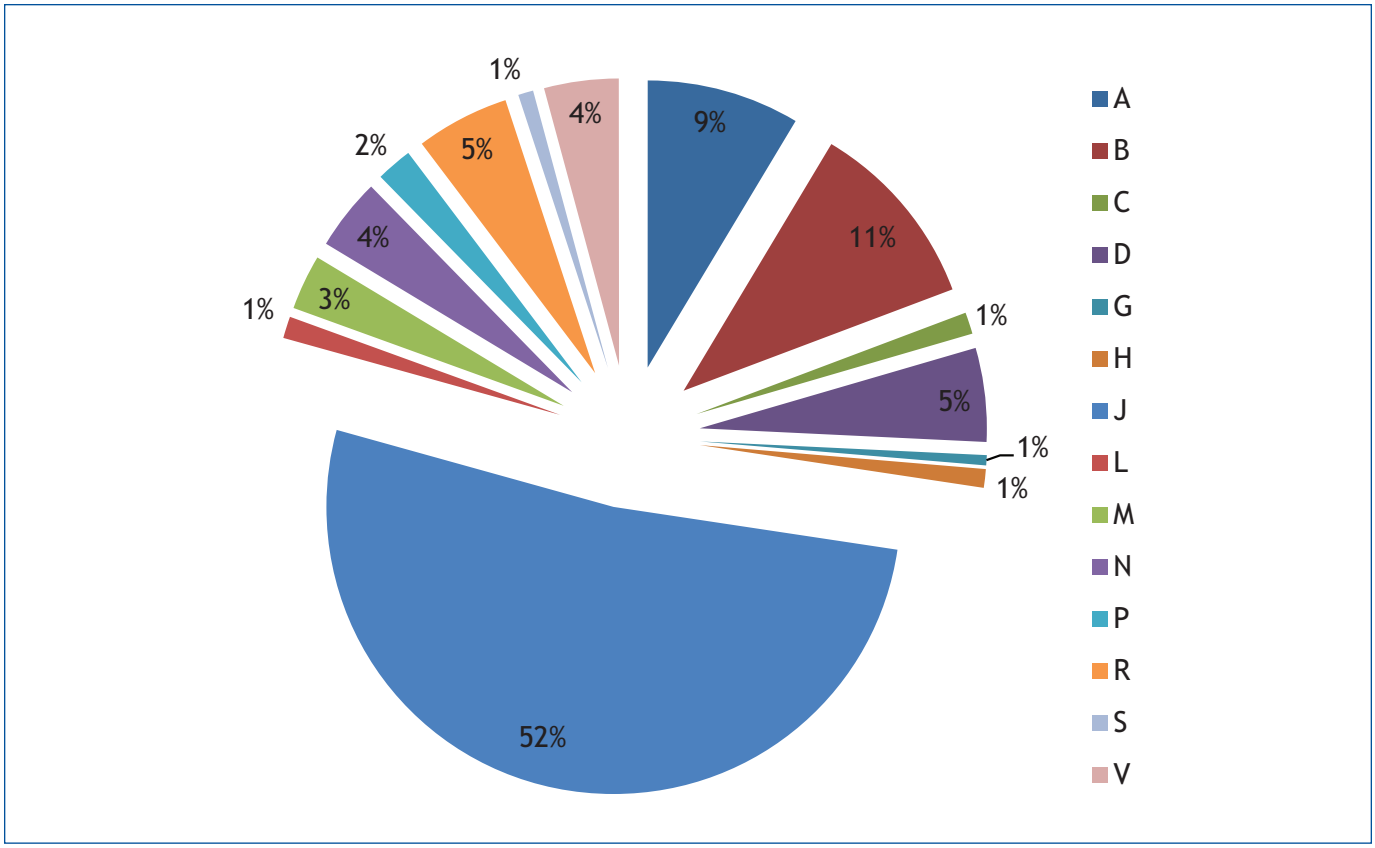

Figure 6: Distribution of drugs by therapeutic group: by value of spending, 2012–2013

A: alimentary tract and metabolism; B: blood and blood-forming organs; C: cardiovascular system; D: dermatologicals; G: genitourinary system and sex hormones; H: systemic hormonal preparations (excluding sex hormones) and insulins; J: anti-infectives for systemic use; L: antineoplastic and immunomodulating agents; M: musculoskeletal system; N: nervous system; P: antiparasitic products, insecticides and repellents; R: respiratory system; S: sensory organs; V: various

Source: RMSC

from 85% in 2004–2005 to nearly 75% in 2011–2012. Poverty caused by high household OOP expenditure on medicines appeared to have been reduced from 3.2 to 2.1%.

In terms of population coverage, it can be observed that any patient visiting the public health-care facilities is provided with medicines free of cost. Before the initiative, patients visiting public health-care institutions did not pay for the consultation, and then they were provided with prescriptions slips and expected to procure the drugs from retail outlets. However, as a result of the new initiative, the Government of Rajasthan has made medicine and diagnostic provision in public health-care facilities a cashless and paperless affair. One of the immediate and positive spin-offs from this initiative is the increase in outpatient visits and moderate rise in inpatient admissions. The combined number of outpatient and inpatient visits experienced a rapid increase from 3.44 million in July 2010 to 7.77 million in July 2013. The unprecedented upsurge in patient visits was caused partly by a significant rise in pent-up demand. As medicines are now available free of cost, people have started to attend public health-care facilities, putting pressure on the health system to improve further.

Regarding the benefit package, it is interesting to note that under the new initiative an unprecedented 600 plus essential drugs were identified and procured for dispensing at public health-care facilities. This is perhaps the most comprehensive coverage in the history of the public health-care system in India. The intention to provide a comprehensive list of medicines free of charge is ambitious, and a concerted strategy was evolved to strengthen the procurement systems and efforts were made to make the supply systems effective. All the 34 districts have well-functioning district warehouses that are interlinked to front-line facilities and to the procurement agency. This is backed up by an able software system that monitors drug movement and stock-out scenarios in government health-care facilities. As a result of this initiative, front-line public health facilities have reported fewer shortages and stock-outs. The results of this survey suggest that a PHC in Rajasthan is currently dispensing an average of 100 essential medicines, while in CHCs and district health facilities the numbers of essential medicines being dispensed are 180 and 300, respectively. The median percentage availability is about 61% in a PHC, and in a district hospital it is as high as 75%. This is substantially higher than the number of medicines found at

PHCs or higher levels of public health-care facilities in other studies.[17] These are the most critical points of service delivery and having a considerably good supply of medicines would clearly lead to better utilization of services. The considerable increase in outpatient load at the PHC level found in the survey actually corresponds to robust availability of medicines. While analysing the budget data, it was found that an increasingly larger share of funds is being spent on medicines dispensed at the tertiary-care level in the state. This leaves further scope for improvement at the PHC level, where human resource shortages are the most limiting factor.

CONCLUSION

Can universal access to medicines be achieved in a resource-poor setting? This paper examines three dimensions of universal coverage from the past 2 years of an experiment in Rajasthan, India. The 2 years' experience of MNDY points to an overall improvement in access to health care, financial risk protection and health system expansion. The efficiency of the procurement process has significantly improved, while delivery of medicines and supplies has been made very effective. This has been made possible by a modest increase in public spending on medicines. While the underlying reforms associated with accelerated investment are a bold and innovative step, there is need to emphasize their sustenance. Rather than treating it as a one-off project-based initiative, the Government of Rajasthan must endeavour to institutionalize these reforms. Improvement in drug availability must go in tandem with the availability of health workforce. Critical shortages of health workforce, especially specialist doctors and pharmacists, needs to be addressed. The recent drive to appoint pharmacists permanently at various levels, including at the primary level, would serve as a critical milestone in effective delivery and management of medicines at various health-care levels in the State of Rajasthan.

As India has recently outlined its intent to roll-out a path of UHC, achieving universal access to medicines could be a first stepping stone. Given its potential as a "pharmacy of the global south", and as the country has been able to achieve rapid and substantial economic growth in the past two decades, fiscal challenges are now less of a concern in allocation of additional resources. The experience and evidence generated from this study clearly points to the need for replication and rapid scale-up of such a model in other states which are struggling to get their act together in medicine procurement and distribution.

Another critical need at present is a large-scale impact evaluation through household sample surveys to help understand the implications of the Rajasthan scheme on the health status of the population and poverty, and the catastrophic impact as a result of a change in household OOP spending, and impact on borrowing and distress asset-selling practices, loss of wages, etc.

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