Measuring Progress towards Universal Health Coverage

An Approach in the Indian Context

T SUNDARARAMAN, GIRIJA VAIDYANATHAN, S D VAISHNAVI, K RAHUL REDDY, TUSHAR MOKASHI, JITENDRA SHARMA, RAJANI VED, UMAKANT DASH, V R MURALEEDHARAN

This paper proposes an approach to periodically measure the extent of progress towards universal health coverage using a set of indicators that captures the essence of the factors to be considered in moving towards universalisation. It presents the rationale for the approach and demonstrates its use, based on a primary household survey carried out at the district level. Discussing the strengths and limitations of the approach, it points to how these measures could be further refined. The effort is to find a method of measurement that will apply to any of the alternative ways of progressing towards universal health coverage, however defined and implemented.

The authors thank P M Kulkarni, Jawaharlal Nehru University, New Delhi, for his guidance in sample design and analysis; Nikhlesh Kumar and N P Goel from the North Eastern Hill University, Shillong, for organising data collection in Meghalaya; and Rajesh Sinha and Keya Chatterjee from Ekjut, Ranchi, for organising data collection in Jharkhand. They also thank two anonymous referees of this journal for comments.

T Sundararaman (*sundararaman.t@gmail.com*) is visiting professor, Centre of Social Medicine and Community Health, Jawaharlal Nehru University, New Delhi; Girija Vaidyanathan (*gigiv_40@yahoo.com*) is former secretary, Health and Family Welfare, Government of Tamil Nadu; S D Vaishnavi (*vaishnavi.sd@gmail.com)* is an independent researcher with SHReAs, Chennai; K Rahul Reddy, Tushar Mokashi, Jitendra Sharma and Rajani Ved are with the National Health Systems Resource Centre, New Delhi; Umakant Dash and V R Muraleedharan (*vrm@iitm.ac.in*) are with the Department of Humanities and Social Sciences, IIT Madras. V R Muraleedharan is the corresponding author.

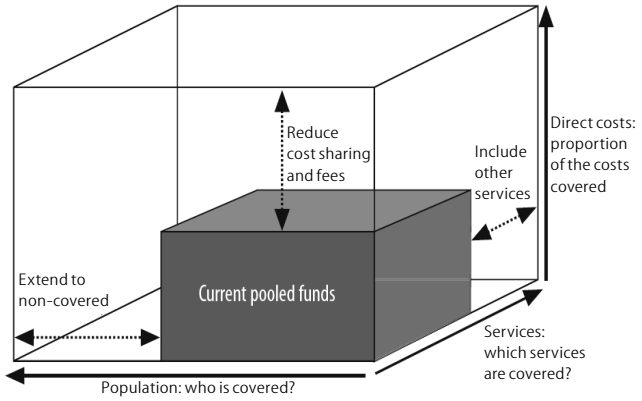
The current discourse on universal health coverage (UHC) acquires importance for two reasons. One, it reminds us of systematic negligence of rights of vast sections of the people of India, particularly the poor, to have access to essential health services, especially those that could significantly enhance their quality of life. Two, it offers yet another opportunity to mobilise all our resources to move forward positively to build a healthier nation. UHC evokes a few key questions in the minds of common people – what services am I entitled to get free or at least without financial hardship, and where will I be able to access these services reliably? For policymakers, too, UHC evokes these questions, along with the challenge of how healthcare services should be organised and paid for so that the above aims are met, and their delivery is efficient, without billing patients for unnecessary care.

The World Health Organization (WHO) framework for UHC addresses three questions. What services are to be covered? To whom are these services provided? And to what extent is the financial burden of such services covered? These are illustrated in Figure 1 (p 61).

These dimensions need to be converted into measurable indicators to assess a country or region's progress towards achieving UHC over time. A more recent publication (WHO-WB 2014) proposes a set of "tracer" indicators, with illustrative examples, for measuring progress on coverage of essential services, and financial protection. Overall, the country-level tracers that this report suggests require a very robust and reliable information system. For example, measures of financial protection (catastrophic health expenditure, and impoverishment due to out-of-pocket expenses) also require the degree of "financial protection received" by households. As we shall discuss in the next section, for a variety of reasons, these tracer conditions are either not available in India and therefore not implementable; or not measurable and therefore not implementable.

Implementation of UHC requires mobilisation of resources and careful planning from the top down, right up to the district level, in a large country like India. This paper proposes a simple, reliable, feasible, and useful method to measure the progress towards UHC in the Indian context. The primary motivation for the proposed method is that it can be used for

Figure 1: Three Dimensions to Consider When Moving towards Universal Health Coverage



Source: WHO (2010).

planning and monitoring (progress) at the district level, following the well-tested and robust National Sample Survey (NSS) methodology (see note 2). We face three specific challenges in developing indicators for measuring progress towards UHC:

(1) First, on cost of care, we only have National Sample Survey Office (NSSO) data at the national and state levels, but not at the district level. The latest year for which this is available is 2004-05.

(2) On service coverage, we have data only on Reproductive and Child Health (RCH) services. But they are not comparable with cost-of-care data. The data available on RCH service coverage indicators (from 2007-08, 2009) (DLHS-3 2007-08; CES 2009) is compared with estimates on financial hardship from the Morbidity and Healthcare Survey 2004-05.

(3) Such large national-level data, on cost-of-care in particular, become available only once in 10 years. Such a long gap between two data sets does not help in commenting on many programmes such as the National Rural Health Mission (NRHM), and publicly financed insurance programmes (Arogyashree, Rashtriya Swasthya Bima Yojana, or RSBY), which are meant to address coverage and costs of care.

This paper proposes an approach to periodically measure the extent of progress towards UHC using a set of indicators, with a view to capturing the essence of the three dimensions in Figure 1, especially at the district level. In Section 1, we present the rationale for the approach; in Section 2, we demonstrate the use of the proposed approach, based on a primary household survey carried out at the district level; and finally, in Section 3, we discuss the strengths and limitations of this approach, as well as how these measures could be further refined.

It is important to keep in mind two related policy questions – what constitutes UHC, and how do we achieve UHC? There have been several national consultations on what services should be covered under UHC, beginning with the report on this subject by the High-Level Expert Group (HLEG) on UHC (2011). But, there is as yet neither an established road map nor any experience in any part of the country to draw lessons from, that address these two questions. The Twelfth Five-Year Plan (2012-2017) called for district-level pilots to demonstrate viable approaches, and urged the states to commit themselves to achieving UHC over a 10 to 15-year period. The effort in this paper is to find a method of measurement that will apply to any of the alternative ways of progressing towards UHC, however defined and implemented.

1 Proposed Approach

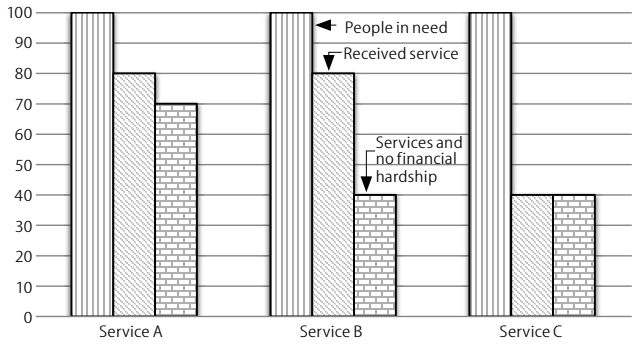
India has 29 states with populations ranging from 1 million to 120 million and infant mortality rates (IMR) ranging from 10 per 1,000 (in Goa) to 62 per 1,000 (in Madhya Pradesh) (SRS 2011). The share of public health expenditure to total health expenditure ranges from 10% in Kerala to around 42% in Himachal Pradesh (NHA 2004-05). Publicly financed health insurance programmes across states vary in financial coverage, benefits packages, and effective access to healthcare services.

In such varied contexts, to serve the multiple needs of policy, governance, and management, we should have a method of measurement that will allow identification of gaps in access to services and protection from financial hardship. Further, a pragmatic approach dictates that, where the gaps are wide, we need a system of measurement that can reliably and accurately record incremental improvements over time and point to additional efforts to be made to fill the gaps.

Eventually, a system of measuring progress should be able to attribute the effectiveness of different approaches to access to services and financial protection within and across states. This should also help to provide a more scientific and fair distribution of public resources to districts and across states. Another requirement of an approach to measurement is that it should be simple, standardised, and affordable, so that it can be repeated periodically in any district.[1]

We propose that in measuring the progress towards UHC, the following three dimensions should be captured: (a) "the proportion of population in need of services, (b) proportion of those in need who are able to access services, and (c) the extent to which they face financial hardship" (WHO 2010). We can represent these using a simple bar chart (Figure 2).

Figure 2: Proposed Indicators



For example, Service A could be "institutional delivery services". Of the three bars, the one on the left indicates those in need of institutional delivery services. The middle one shows those who had access to institutional delivery (in private and public facilities), and the right one, the number of those who had access to institutional delivery with no financial hardship.

In Section 2, we present results for those who required inpatient care (Service A as in Figure 2), those who required outpatient care (Service B as in Figure 2); and those who delivered a baby in a healthcare institution (Service C as in Figure 2). You will notice that our results are presented somewhat differently from what we have described in Figure 2; but you will also notice that we have in spirit captured what we have described above.[2] The results, estimated from a cross-sectional primary household survey, are shown disaggregated by type of providers (private, public, informal), and out-of-pocket expenses for various broad service categories. In the concluding section, we indicate how these results could be further disaggregated to be more helpful for district-level planning and monitoring.

2 Primary Pilot Survey

To demonstrate the simple and direct approach, we present the results of a primary household survey carried out in Villupuram district of Tamil Nadu. The survey was conducted during May-July 2013. A similar primary survey was carried out in Meghalaya and Jharkhand, but we do not present these results here, as the primary objective of this survey is to demonstrate the use of our approach, and what we can do at present in India given the paucity of information.

Tamil Nadu is a relatively more industrialised and economically developed state, with a well-developed public healthcare system and a relatively good private health sector. It has one of the lowest IMR, maternal mortality rate (MMR), and crude birth rate (CBR) in the nation.

A median district as per RCH performance (as measured by a composite score constructed from the District Level Household and Facility Survey, or DLHS-3) was selected for this survey in each of these states. A multistage stratified random sampling method was used to arrive at sample households.[3] A structured schedule was administered to these households, again closely following the structure of NSS questionnaires.

2.1 Results: Coverage and Financial Burden

In this section, we present the results of our primary household survey conducted in Villupuram district of Tamil Nadu. We first present the results and provide some interpretation. We then highlight a set of complementary analyses that should be carried out at the district level that will throw light on the status of health and provider characteristics, which are critical in assessing institutional preparedness to meet UHC goals.

Table 1 shows a summary of the main results on three broad categories of services – inpatient care, outpatient care, and institutional delivery services. Columns 2, 5, and 8, show, respectively, the number of individuals who said they were in need of inpatient care, outpatient care, and institutional delivery services. These figures are disaggregated into those who went to public or private facilities, as shown in the rows below the respective columns. These are represented in the bars on the left of Figures 3, 4, and 5, respectively. The middle bar in these figures represents the number of patients (individual episodes) who spent less than 10% of a household's monthly total consumption (MTC) expenditure on that episode of healthcare – this being the threshold for our determination of financial hardship. The bar on the right in these figures represents those who had no medical financial expenses. Medical costs of care and non-medical costs were measured separately; the bottom portion of the bars shows the number of those

Figure 3: Use of Public and Private Inpatient Services and Financial Burden

Figure 4: Use of Public and Private Outpatient Services and Financial Burden

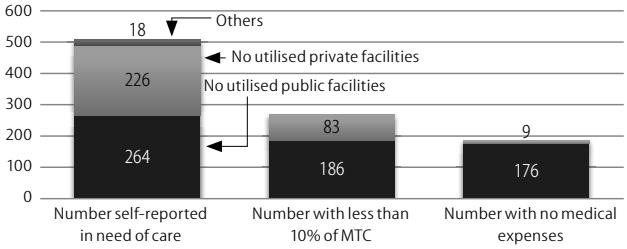


Figure 5: Institutional Deliveries in Public and Private Facilities and Financial Burden

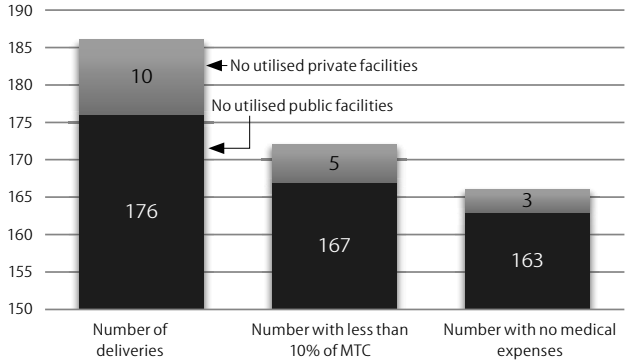


Table 1: Self-Reported People in Need of Inpatient, Outpatient, and Delivery Services, Utilisation of Public and Private Facilities, and People with No Medical Expenses

Col 1	Inpatient			Outpatient			Delivery Services		
	Col 2	Col 3 Number with Less Than 10% of MTC	Col 4 Number with No Medical Expenses	Col 5	Col 6 Number with Less Than 10% of MTC	Col 7 Number with No Medical Expenses	Col 8	Col 9 Number with Less Than 0% of MTC	Col 10 Number with No Direct Medical Expenses
Used public facilities	265	196	148	264	186	176	176	167	163
Used private facilities	190	76	10	226	83	9	10	5	3
Self-reported in need of care	455	272	158	508	269	185	186	172	166

These figures are un-weighted; the weighted figures for inpatient and outpatient are in Table 3, which presents catastrophic health expenditure quintile-wise; MTC = household's monthly total consumption expenditure.
Source: Primary survey, Villupuram district, Tamil Nadu (2013).

who accessed "public facilities" and the top portion of the bars pertains to those who accessed private facilities. Note that we are actually proposing two measures of financial burden. While the goal of making direct medical costs zero is ideal, this may set the bar too high and measuring what percentage of the episodes had expenditures above a threshold value is used as an alternative measure of financial hardship. Taken together, they throw more light on the financial burden of households accessing public and private facilities for various services.

In Table 2, the mean and median out-of-pocket expenses for each of these services are shown for those who used public and private facilities. It also shows the mean and median direct medical costs for each service used in the public and private sector.[4]

Table 2: Out-of-Pocket Expenses (Mean and Median) for Inpatient, Outpatient, and Delivery Services (Rupees)

Facility Category	Inpatient		Outpatient		Delivery Services	
	Mean	Median	Mean	Median	Mean	Median
Medical + non-medical expenses						
Public	6,177	2,300	618	120	1,475	225
Private	19,822	10,800	2,797	1,000	11,050	8,750
Only medical expenses						
Public	3,505	0	348	0	379	0
Private	14,858	6,900	2,287	750	9,350	5,500

Source: Primary survey, Villupuram district, Tamil Nadu (2013).

The key observations from Figures 3, 4, and 5 are as follows.

Inpatient Services: (a) Of 4,534 people from 1,000 households, 455 who reported that they were in need of inpatient services in the previous year were surveyed.[5]
(b) Of these 455, 58% (265) accessed public facilities; and the remaining used private facilities.
(c) On an average, Rs 6,177 was spent out-of-pocket per inpatient episode in public facilities, which is about one-fifth (31%) of the mean out-of-pocket expenses incurred in private facilities. This includes both medical and non-medical costs. Non-medical costs include food bills and transportation costs for patients and attendants. Medical costs include only those expenses directly related to diagnostics, fees, medicines, procedures, and the like.
(d) Note that mean "medical expenditure" in public facilities is Rs 3,505 and Rs 14,858 in private facilities.

Outpatient Services: (a) Of 508 who reported that they were in need of outpatient care, 264 (51.9%) used public facilities, 226 (44.4%) used private facilities, and of the remaining 18 people, 14 (2.7%) used "informal providers" and four did not seek care for various reasons.
(b) Note that the mean out-of-pocket expense in private facilities per episode, on an average, was 4.5 times that in public facilities (including medical and non-medical costs).

Institutional Delivery Services: (a) Of 186 deliveries made in the survey population, only 10 were made in private facilities, the remaining being in public hospitals.[6]
(b) The mean out-of-pocket expense between these facilities is phenomenally different – Rs 1,475 in public facilities compared to Rs 11,050 in private facilities (which is 7.5 times higher) per delivery. If we factor in the fact that women delivering in a public institution got a demand-side cash transfer of Rs 12,000, their net out-of-pocket expense would be zero.

It is evident from these results that mean out-of-pocket expenses (financial burden) for those who used public facilities were significantly lower compared to those who used private facilities. In terms of financial protection provided by public facilities, as per the WHO framework, we should actually look at the proportion between the out-of-pocket expense and the cost of care provided by these facilities. The latter is not available. Through our survey, we can only get an estimate of out-of-pocket expenses, which reflects the financial burden on these patients, but it is adequate for planning further steps to provide financial protection.

2.2 Catastrophic Health Expenditure

It is alarming to note that a large proportion of episodes from all quintiles end up spending more than 10% of their household's monthly total consumption expenditure. Therefore, the aggregate financial effect of each of these episodes for a given household is likely to be much higher than 10% of monthly total consumption.

Table 3: Household Catastrophic Health Expenditure

	Quintiles	Villupuram	
		HH facing CHE at 10% MTC	HH facing CHE at 40% MNFC
1	Q1	58	67
2	Q2	57	56
3	Q3	66	68
4	Q4	81	88
5	Q5	91	81
6	All	353	360
7	HH incurring out-of-pocket expenses	689	689
8	HH facing CHE as a proportion of those HH incurring health expenses	51%	52%

These results have been presented using the weighted sample for inpatient and outpatient care alone; delivery expenses are not included; and the un-weighted figures are in Table 1; HH = households; CHE = catastrophic health expenditure; MTC = monthly total consumption; MNFC = monthly non-food consumption.
Headcount at 10% household monthly total consumption threshold and 40% household monthly non-food consumption threshold according to quintiles.
Source: Primary survey, Villupuram District, Tamil Nadu (2013).

2.3 Complementary Analysis

Our primary objective is to reduce the financial burden, and increase the extent of financial protection for essential services. Our survey shows that we can collect relevant information on key dimensions from household surveys, but we need to supplement this with information on "institutional readiness" and the state of health (measured in terms of morbidity levels in a given population) in each district to plan for the additional resources and organisational efforts required over a period of time to move towards UHC.

Using certain norms as a yardstick, the shortage of facilities and professionals can be gauged, which points, to some extent, to the degree of preparedness of the delivery system. For example, even in states such as Tamil Nadu where the public primary health system is far better than in many other states, it is common to come across sub-centres and primary health centres (PHCs) covering a population far greater than

the prescribed norm. When norms on beds per 1,000 population and other indicators are taken together, we are able to establish a more refined estimate of the degree of preparedness of the public system, and the extent to which it needs to rope in private providers and other relevant mechanisms to proceed towards UHC. As part of this complementary analysis, it is important to have a detailed picture of the prevalence of chronic and non-chronic ailments, and the degree to which various sections of the population suffer from them. We discuss some of these in terms of the strengths and weaknesses of our survey method in the next section.

3 Strengths and Limitations

The main strength of the approach we have proposed here is that it provides information in simple bar charts for assessing where we stand on coverage of services and the degree of financial burden borne by people. If measured periodically, say, once every two to three years, progress towards UHC can be assessed. Monitoring becomes easier and the gaps to be filled become apparent.

The approach can be extended to any number of service categories and diseases, aggregated from several of the self-reported disease entities.

The approach should be used along with information on social determinants and institutional readiness to design new programmes or to scale up existing ones. In the Villupuram survey, we also collected information on key social determinants, particularly access to safe drinking water, sanitary latrines, and female literacy. These, along with secondary data on child malnutrition levels and institutional readiness (such as the density of health professionals and beds, disaggregated by public and private, and enrolment rates in insurance programmes) would be valuable in the planning process towards UHC.

Another important strength of this approach is that it enables district-level strategies that target costs of care better since it provides information on medical expenditure by healthcare needs, on non-medical expenditure and on health equity in both access and costs of care.

The main limitation of this approach is that we collect only "self-reported ailments" and therefore cannot accurately estimate the population in "medical need". Therefore, to estimate the percentage of the population in need that actually accessed services, we either have to use population-based data from epidemiological surveys, or include clinical screening, or use of a clinical algorithm.

4 In Conclusion: Measuring Progress towards UHC

There have been concerns expressed that systems of measurement and indeed the UHC discourse itself may put too much emphasis on financial protection through insurance mechanisms that stimulate healthcare markets without ensuring commensurate benefits in terms of health outcomes.[7] There are studies that equate UHC with insurance, and, in India, equate UHC efforts with very limited publicly financed insurance schemes.[8] Our study provides a direct estimate of the financial protection by free and subsidised public sector provisioning. Therefore, we get a direct estimate of the role of the public system in progressing towards UHC. This study design also provides us with the numbers of those covered by publicly financed insurance, and the out-of-pocket expenses, if any they incur. This was useful to measure financial protection against hospitalisation afforded by the RSBY in the two other district studies. In Tamil Nadu, however, state insurance coverage is limited to a select set of tertiary care services. There were only two cases of hospitalisation in our sample that sought benefits under this scheme, and both had substantial out-of-pocket expenses. This low level of utilisation could be due to the design of the package, or other factors. In subsequent surveys, we will also be able to get a direct estimate of the role of the insurance system, and compare the protection it provides in both public and private facilities.

This approach provides us with insights on which services are to be prioritised and how best to organise access and financing of services to move towards achieving UHC in different contexts. Potentially, the approach we have proposed is the first step towards capturing the depth and spirit of the three dimensions of measures of UHC, as illustrated in Figure 1. To put it differently, to help those wrestling with the various dimensions and the three fundamental questions we raised in the introduction, we hope this approach will help us know where we are and how we got there, where we can go, and where we want to go.

NOTES

1 An average district in India has a population of about 1.9 million, and many large districts have more than 4 million.

2 In Tamil Nadu, of the three services studied, the access gap between self-reported need and utilisation is only for outpatient services and is very small. So while the first bar directly captures utilisation of healthcare services, the second and third bars show two different ways of measuring financial protection. The reason for presenting two measures of financial protection are discussed in detail in Section 2.1.

3 The sampling methodology was similar to the one used by the NSSO's Health and Morbidity Survey. Using a "p" value of 0.1 and a "d" value of 0.02, a sample of 864 households was drawn, adjusted for design and sampling errors, and approximated at 1,000 households. Twenty-five first survey units (FSUs) were identified in Villupuram district (Tamil Nadu), and 28 each in Kodarma (Jharkhand) and Ribhoi (Meghalaya). The FSUs were allocated to urban and rural strata and further to sub-strata, based on their proportion to population size. The selection of FSUs was in accordance with probability proportion to size (PPS). The selection of households was done in two steps. In each FSU, 300 households were screened, and listed in four categories – (a) any member hospitalised in the last 365 days; (b) any woman currently pregnant or delivered in the last two years; (c) any member sought out-patient care in the last 30 days; and (d) other households (includes chronic illness, not seeking care, and those with no illness). In the second step, for every FSU, from each of the categories above, households were randomly picked for administering the main questionnaire. For every 10 households to be interviewed in the FSU, it was ensured that four would be with a member reporting hospitalisation in the last 365 days; two reporting pregnancy/delivery in the last two years; and two reporting seeking outpatient care in the last 30 days. Thus, expecting at least 400 hospitalisation episodes, and 200 in each of the other categories, totalling 1,000 households in each state. A team of researchers and data collectors conducted the data collection. In each state, approximately 15 survey data collectors, divided into five teams and three supervisors, worked for more than 30 days to collect data. The data from

each district were analysed independently, and the results presented as a comparative case study.

4 It can be seen that median values are much lower than the mean and clearly show the inequity of the financial burden, where a few high expenditures tend to increase the mean value. Especially in the case of public sector out-of-pocket expense values, it is significant that the median value of direct medical costs tends to zero, showing the effectiveness of the public sector in providing financial protection.

5 Households with inpatient care were oversampled. Hence this figure is not indicative of the incidence of hospitalisation in the population. The rates of incidence can be derived after weighting the sample using the NSS methodology.

6 It should be noted that in Tamil Nadu overall, 99% of all deliveries are under institutional care; and nearly 60% of all (about 1 million) deliveries take place in public institutions (from interviews with state officials from the Health and Family Welfare Department, Tamil Nadu).

7 One articulation of such a concern was made in the resolution at the International Peoples Health Assembly in Cape Town (July 2012). This was one of the largest and most influential meetings of civil society in the health sector. "While we welcome the recent upsurge of interest in the concept of universal health coverage, we oppose the idea that this be achieved through the promotion of a minimalistic insurance model that would operate within a marketised system of healthcare, or worse still, be used as a context or excuse to dismantle or undermine public hospitals and promote corporate interests in health care delivery. Universal health coverage must be achieved through organised and accountable systems of high quality public provision."

8 Ursula et al (2013) do precisely this. Its definition of "evidence from the impact of UHC schemes" tends to exclude the effect of public health systems funded by taxes from those that automatically entitle the whole population to healthcare benefits without any formal enrolment procedure. For example, the NRHM is a tax-funded scheme covering the rural population without any enrolment criteria. According to criteria set for this study, evaluation of tax-funded insurance schemes (like the Central Government Health Scheme, Employees' State Insurance, RSBY, and Arogyashree) was considered without including the effect of the NRHM on the entire system. This study selects 22 studies of which the vast majority is insurance schemes where the package of services is often limited, and the main outcomes studied are the increase in outpatient and inpatient utilisation, and related RCH indicators. Even in terms of financial hardship, beyond modest decreases in out-of-pocket expenses, there is little to be stated.

REFERENCES

Coverage Evaluation Survey (CES) (2009): UNICEF and Ministry of Health and Family Welfare, Government of India, http://www.unicef.org/india/health_6679.htm

District Level Household and Facility Survey (2007-08): "Reproductive and Child Health Project", Government of India, http://www.rchiips.org/PRCH-3.html

HLEG (2011): "High Level Expert Group Report on Universal Health Coverage for India", Planning Commission of India, New Delhi, http://planningcommission.nic.in/reports/genrep/rep_uhc0812.pdf

Morbidity, Health Care and the Condition of the Aged (2006): "NSS 60th Round Report", March, http://mospi.nic.in/rept%20_%20pubn/507_final.pdf

National Health Accounts (2004-05): Ministry of Health and Family Welfare, New Delhi, http://planningcommission.nic.in/reports/genrep/health/National_Health_Account_04_05.pdf

Planning Commission (2012): *Twelfth Five Year Plan 2012-17*, 3 Vols, http://planningcommission.gov.in/plans/planrel/12thplan/welcome.html

Sample Registration System (SRS) *Bulletin* (2011): Registrar General of India, December, http://censusindia.gov.in/vital_statistics/SRS_Bulletins/SRS_Bulletin_December_2011.pdf

Ursula, G, A Eduardo and D Yadira (2013): "Impact of UHC Schemes in the Developing World: Review of Existing Evidence", UNICO, Studies Series 25, January, World Bank, Washington DC.

WHO (2010): "Health Systems Financing: The Path to Universal Coverage", World Health Report 2010, http://www.who.int/whr/2010/en/index.html

WHO-WB (2014): "Monitoring Progress towards Universal Health Coverage at Country and Global Levels: Framework, Measures and Targets", WHO, Geneva, http://apps.who.int/iris/bitstream/10665/112824/1/WHO_HIS_HIA_14.1_eng.pdf?ua=1