

**Distribution of Public Spending across Health Facilities: A study of
Karnataka, Rajasthan, Madhya Pradesh and Assam**

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Introduction

An important determinant of the effectiveness of public spending on health is its distribution across primary, secondary and tertiary health care services. In most developing countries, these services are required to be provided through a chain of health facilities structured in the form of a pyramid. The broad base of the pyramid corresponds to health facilities providing primary care with relatively more and more specialized care services provided towards the apex of the pyramid. The pyramidal structure of the health system is based on the argument that the volume of health care services required by population reduces as one move from primary to tertiary. The structure is also considered to be important for cost effectiveness of health interventions. Primary health care services provided at the base of the pyramid have lower operational costs and can act as screening centers for referring patients to higher level facilities, where operational costs are higher. The pyramidal structure also ensures better access to health care services for the population, as adequate health care services at lower levels reduce the requirement of patients to travel large distances to access higher level health facilities. Broadly, there is a consensus on the effectiveness of larger volume of health services provided at lower levels of health facilities.

The ideal mix of services and the appropriate level of expenditure at different levels of health facilities in any country is an empirical issue. Expenditure on different tiers of the health system, not only depends on the allocation of resources, but also on factors like availability of manpower, drugs and other institutional features, which are country (or region) specific. Possibly due to this, cross-country empirical evidence on the issue is limited. Differences in the structure of health systems, through which health services are delivered, make it less meaningful to compare facility level expenditure across countries. Moreover, in many developing countries, due to weak referral system, many facilities provide multiple levels of health care services, which make it difficult to disaggregate expenditure by type of services. Yet, some studies in developing countries have attempted to compare public health

expenditure across countries at an aggregate level by comparing ‘hospital’ and ‘non-hospital’ services. In these studies, hospitals in individual countries have been reclassified into uniform groups to take into account the differences in the structure of health systems across countries (Mills 1990, Barnum and Kutzin 1993) These studies have shown that about 30 to 50 per cent of total health expenditure and about 50 to 60 per cent of the public health expenditure in developing countries is incurred on hospital services. Some evidence on the extent of health services provided by different levels of health facilities is also provided by analysis of the nature of patients using hospitals. Akande (2004) showed that in Nigeria, a high proportion of patients bypassed the referral system and approached higher level facilities directly. However, as the authors of some of these studies have pointed out, these studies are affected by problems of comparability across countries.

In recent years, the compilation of the National Health Accounts (NHA) in a number of countries has provided some indication of the distribution of expenditure across health facilities at the country-level. These accounts are primarily based on budget classifications of Governments and are dependent on the budgeting and accounting systems adopted in individual countries. Moreover, these data provide expenditure at a relatively aggregate level. In India, NHA 2004-05 (GoI 2009) provides expenditure on a single category ‘public hospitals’ as a whole, without disaggregating expenditure on its components like district hospitals, sub-divisional hospitals and the like. It also provides expenditure on aggregate categories like ‘primary, secondary and tertiary’ health care facilities, without further disaggregation. Differences in the structure of health facilities and budgetary classifications across States make it impossible to provide disaggregated expenditure for each tier of the health facility in the country at the National level.² This study focuses on selected individual States -- Karnataka, Rajasthan, Madhya Pradesh and Assam, and provides estimates of expenditure on different types of health facilities in these States.

Five broad tiers constitute the pyramid of the public health system in any district in India. The first tier at the bottom of the pyramid is the ‘Sub-center’ (SC), which is the first point of contact between the community and the public health system. A sub-centre has two to three

² Mahapatra and Berman provided some estimates for the State of Andhra Pradesh in 1995 (Mahapatra and Berman 1995).

paramedical personnel, who deal with primary health care and normally services a population of 3000 to 5000 population. The second tier of the public health system is the 'Primary Health Centre' (PHC), which is the first point of contact of the community with a doctor. A PHC acts as a referral unit for six sub-centers and is required to have among others, one or two doctors, one to three staff nurses, a laboratory technician and a pharmacist as per the Indian Public Health Standards (IPHS). PHCs service on average, a population of about 20000 to 30000 persons and usually have 4 to 6 beds. The SCs and the PHCs together form the core of the primary health care system in India. The third tier of the public health system is the Community Health Centre (CHC), which acts as a referral unit for four PHCs, and is the first tier of the secondary health care system in India. A CHC is required to have specialists including a surgeon, a gynecologist and a pediatrician. It has around 30 beds and is provided at the rate of one per 80,000 to 120,000 population. The fourth tier of the health system is the sub-district hospital. These hospitals are usually larger than CHCs and consist up to 100 beds. The sub-district hospitals are referred to as Taluk hospitals (as in Karnataka), civil hospitals (as in Madhya Pradesh) or Sub-divisional hospitals (as in Rajasthan) in different States. The next tier is the 'district hospitals', which form the highest layer of the health system in any district. The district hospital, the sub-district hospital and the CHCs together constitute the secondary health care system in every State. The tertiary health care system lies above the district and includes the medical colleges, tertiary-level hospitals and hospitals for specialized care like TB and cancer hospitals.

This study provides estimates of public spending on each of the different tiers of the health system in four selected States of India: Karnataka, Rajasthan, Madhya Pradesh and Assam. Specifically, the study uses a combination of information from budgetary data and withdrawals from State treasuries to derive the estimates. The study adds to the information provided in the NHA by highlighting the expenditure on health facilities at a disaggregated level. It also shows how expenditure on each tier of health facility in the country can be derived by adding information on withdrawals from the State treasury, wherever data are available.

Data Sources and Methodology for Estimation of Health Expenditure at the Facility level

In India, the primary responsibility of expenditure on health facilities lies with the State governments and thus, the predominant source of information for public spending across facilities are the State budgets. The budget documents of the States identify different types of health facilities by budget codes and indicate the expenditure on them. This forms the basis of most analyses of public health expenditure on facilities in India including the National Health Accounts.

Estimation of facility-level expenditure from budgetary data is however, associated with a number of problems. First, the extent to which expenditure on every tier of health facility can be identified from budgets is limited, and often varies across States. In States like Rajasthan and Madhya Pradesh, expenditure on SCs, PHCs and CHCs is indicated under separate heads, while in Karnataka, these are clubbed under the budget head 'Assistance to Zilla Panchayats/Taluk Panchayats'. Such differences in administrative structure and accounting methods make it difficult to compare expenditure across States for each type of health facility. Expenditure on higher tiers of health facilities such as district hospital, taluk hospital or sub-divisional hospitals are also often clubbed together under the same budget head, which limits the level of disaggregation at which an analysis can be carried out. Secondly, a significant part of health expenditure incurred in health facilities cannot be disaggregated by type of health facilities based on budgetary data. Budget codes identifying health facilities are not provided for expenditure heads like 'Public Health and Family Welfare', although most of these expenditures are incurred through health facilities. This leads to an underestimation of facility-level expenditure estimated from budgets. Thirdly, even when budget codes are available for identifying facilities and expenditures are reported against the budget codes of respective health facilities, the reported expenditure may not reflect the true expenditure in that category of facilities. This is due to the way in which expenditure is compiled in budgets. Budgetary expenditure is compiled by aggregating the withdrawals of 'Drawing and Disbursal Officers' (DDOs) in every State in any financial year. In many States, each health facility (PHCs and above) has a DDO who withdraws funds for expenditure towards that facility. Sometimes, DDO of a lower level facility may withdraw

funds for a particular scheme under the budgetary head of a higher level of facility. These expenditures, although incurred at lower level facilities, will be booked against the budget head of the higher level facility as these are drawn from the budget head of the higher facility. This results in an error in the estimation of expenditure on each tier of health facility from budgets. This error, as shown later, is relatively small in most cases.

Many of these problems can be overcome by using information on individual withdrawals by DDOs from Government treasuries. Withdrawals by a DDO of any facility reflect expenditure on that facility, and the sum of all withdrawals by DDOs of a particular type of facility indicates expenditure on that tier of health facility. Identification of DDOs associated with different types of health facilities enables one to classify expenditure even under budget heads where disaggregation of health expenditure is otherwise not possible on the basis of budget codes. For example, expenditure under the budget head 'Public Health' and 'Family welfare' can be disaggregated by types of facilities based on identification of the DDOs withdrawing funds. Also, in most States, for certain facilities like district hospitals, taluk hospitals, and sub-divisional hospitals, as there are no budget codes associated with these facilities, using information on DDO withdrawals facilitates estimation of expenditure on these facilities. Such an analysis however, is possible only in States where a DDO can be identified at every tier of health facility. In some States like Madhya Pradesh and Assam, one or two officers at the district level withdraw funds for all the facilities in that district and this makes it impossible to classify health expenditure on different health facilities using unit-level data on DDO withdrawals.

This study analyzes expenditure on different tiers of health facilities in Karnataka, Rajasthan Madhya Pradesh and Assam. In Karnataka and Rajasthan, as a DDO is designated for each facility (other than sub-centers), DDO wise withdrawals have been used as the primary source of information for classification of expenditure into different tiers of health facilities. This classification has then been refined on the basis of details provided under the 'scheme heads' in budgets, which indicates the purpose for which the expenditure has been incurred. For example, if withdrawals are made by the DDO of a taluk/sub-divisional hospital, it has been classified as expenditure on taluk/sub-divisional hospital in the first stage. In some cases, the budget head against this withdrawal indicates expenditure on lower level facilities

for example 'expenditure on PHCs'. These cases have been reclassified in the second stage, as expenditure on PHCs. This is done with the assumption that expenditures incurred for a facility under any budget head is towards that facility, even if it is withdrawn by the DDO of a different level of facility. This assumption does not alter the results much as the proportions of such withdrawals (where DDOs of one type of facility withdraw for a different type of facility) are relatively small (discussed later).

Importantly, not all DDOs are associated with specific facilities. Officers of the health department like the 'Chief Medical and Health Officer' at the district level or the 'Taluk Health Officer' at the block level often withdraw funds for expenditure on certain health facilities. Such withdrawals cannot be attributed to any facility based on the identification of the DDO. Budgetary codes against such withdrawals sometimes allow one to identify the facility against which these expenditures have been incurred. For example, withdrawal by 'taluk health officer' against the budget head of 'PHC' can be classified into PHC expenditure based on the budget head, but not on the basis of the identification of the DDO. Even after examining both the identification of the DDO and the corresponding budget code, one cannot categorize all withdrawals into health facilities. For example, withdrawal by 'district health and family welfare officer' against the budget head 'Prevention and Control of Diseases' cannot be classified into any specific type of health facility. We indicate the share of such withdrawals in Karnataka and Rajasthan, and classify them by the purpose for which these have been withdrawn. The classification of these expenditures by purpose provides some indication of the range of facilities for which these expenditures can be incurred. In Rajasthan, a number of withdrawals are towards AYUSH services, which cannot be classified towards any facility based on budget codes. Some of these withdrawals may be towards services provided in district/sub-divisional and other hospitals. To the extent that these cannot be attributed to these facilities, there may be some underestimation of expenditure towards different types of health facilities.³

In States like Madhya Pradesh and Assam, as DDOs are not identified with every level of health facility, budget codes have been used to classify expenditure. Unlike, Karnataka and Rajasthan, the budget document of Madhya Pradesh allows one to identify expenditure on

³ In Karnataka also, such withdrawals exist, but the number of such withdrawals are relatively less.

district hospitals and civil hospitals through budget codes. The budget document of Assam does not allow identification of district and sub-divisional hospitals, but provides a classification called “General Hospitals and ‘Other hospitals’ in urban areas. In the absence of other information, these codes have been used to classify expenditure in the State. Notably, there is no separate DDO for Sub-Centers (SCs) even in Rajasthan and Karnataka. Classification of expenditure towards SCs therefore, has been carried out solely on the basis of budget codes identifying SCs in these States.

Expenditure on nursing, dental, pharmacy and AYUSH education indicated in this analysis reflect expenditure on independent colleges. In many cases, such colleges form a part of medical colleges, and the expenditure incurred on them cannot be separated out from the expenditure on medical colleges. Expenditure on these heads, therefore, is likely to be more than the level indicated in this analysis. Also, in some cases, medical colleges have a tertiary level hospital integrated into it and the expenditure on medical colleges includes expenditure on these hospitals. Wherever hospitals attached to medical colleges can be identified separately they have been classified as ‘tertiary level hospitals’. Also, specialized hospitals like Cancer hospitals and TB hospitals have been categorized into tertiary level hospitals. The sum of expenditure on medical colleges, tertiary hospitals and specialized hospitals broadly corresponds to the expenditure on tertiary level health facilities in the selected States. Similarly, expenditure on PHCs and SCs may be considered together as expenditure on primary health care facilities. The remaining expenditure on CHCs, ‘Taluk hospitals’, ‘sub-divisional hospitals’ and ‘district hospitals’ may be considered as expenditure on secondary level facilities. Notably, expenditure on drugs is often incurred at the State or district level by ‘drug controllers’ collectively for a number of facilities and cannot be categorized across different types of facilities.⁴ We therefore, report expenditure on drugs separately. Also, as administrative and training expenditures are not specific to any facility, these expenditures have been indicated separately. Further, as ESI facilities are available only to certain sections of the population, expenditure on these facilities has been reported separately.

Data on DDO wise withdrawals of funds have been collected from each State for the years 2009-10 and 2010-11. In Karnataka, data were provided by the Department of Treasuries

⁴ except for some withdrawals where facilities can be identified through budget codes.

under the Finance Department. In Rajasthan, data were provided by the Finance department with inputs from the Auditor General's office. In both Madhya Pradesh and Assam, although the analysis is based on budget codes, DDO wise withdrawals provided by the Directorate of Treasuries and Accounts under the Finance Department have been used. Each of these datasets had records of every withdrawal by DDO for expenditure towards 'Health and Family Welfare' on the revenue account (Budget heads 2210 and 2211). Against every withdrawal, the dataset had information on the designation of the DDO withdrawing funds, the amount of funds withdrawn and the budget head under which the withdrawal has been carried out. The dataset for Karnataka had about 90000 records, for Rajasthan, about 35000 records, for Madhya Pradesh, about 23000 records and for Assam, about 3000 records. Classification of expenditure into different tiers of health facilities involved examination of each of the records and categorizing them into different tiers of health facilities. The data provided by individual States were validated by cross checking the total expenditure reported in the datasets with the total expenditure reported in the Finance Accounts of each of the States. In the case of Assam, the total expenditure for the year 2010-11 provided by the Directorate of Treasuries and Accounts was significantly lower than the revised estimates of that year (reported in the Detailed Demand for Grants) or the actual expenditure reported for the previous year 2009-10. We therefore do not provide estimates of expenditure by type of facilities for Assam for the year 2010-11. In Karnataka, a significant part of expenditure is incurred through Zilla Panchayats and Taluk Panchayats. DDO-wise withdrawals for Zilla and Taluk Panchayats were also obtained from the State to account for these expenditures. To avoid double counting of these expenditures, block grants given to Zilla and Taluk Panchayats were subtracted from the State-level withdrawals.

Distribution of Health Expenditure in Selected States across Type of Facilities

Table 1, Table 2, Table 3 and Table 4 show the distribution of expenditure across different types of health facilities in the States of Karnataka, Rajasthan, Madhya Pradesh and Assam.

Table 1: Distribution of Expenditure Based on DDO and Budget Heads in Karnataka, 2009-10 and 2010-11 (per cent)

Expenditure Class	2009-10	2010-11
Direction and Administration	3.4	3.1
ESI	3.6	3.2
Training	0.8	0.8
Drugs	5.6	4.1
Medical Colleges, Nursing Colleges, Dental Colleges and Tertiary Hospitals including TB Hospitals	20.3	21.4
Of which		
Medical Colleges	13.4	14.7
Dental, Nursing and AYUSH Colleges	1.7	1.7
Tertiary Hospitals	4.8	4.6
TB Hospitals	0.4	0.4
District Hospitals	7.8	5.8
Other Hospitals in districts	0.5	0.9
CHC and Taluk level hospitals	8.5	8.5
PHC and Sub-Centers (SCs)	33.3	31.1
Of which SC	13.6	12.2
Health Officers	16.3	21.2
For AYUSH Services	1.9	2
Of which for rural health services	1.5	1.5
For Family Welfare	3.5	2.3
For Public Health	2.5	4.1
Rural Health	1.2	5.4*
XII Finance Commission Grants	4.2	-
State Schemes for Maternal and Child health care (Thayi Bhagya and Arogya Kavacha)	1.4	4.4
Others	1.6	3.1
Primary health care services (including NRHM State share and Rural Health Expenditure)	43.4	48.8
Secondary health care services	16.8	15.2
Tertiary health care services	20.3	21.4
Total Expenditure (Actual in lakhs) Treasury Data	202019	244523
Total Expenditure (Actual in lakhs) Finance Accounts	192717	-

*includes State share towards NRHM; *Note:* Expenditure on primary health care services include expenditure on PHCs, SCs, State schemes for maternal and child health care, unclassified expenditure towards public health, family welfare and rural health (including AYUSH). Expenditure on secondary health care services includes expenditure on facilities above the PHCs up to the district hospital. Expenditure on facilities above the district hospital is termed as tertiary.

Table 2: Distribution of Expenditure Based on DDO and Budget Heads in Rajasthan, 2009-10 and 2010-11 (per cent)

Expenditure Class	2009-10	2010-11
Direction and Administration	3.2	3.6
ESI	2.2	2.1
Training	0.7	0.7
Drugs	3.0	3.3
Medical Colleges, Nursing Colleges, Dental Colleges and Tertiary Hospitals including TB Hospitals	20.6	20.8
Of which		
Medical Colleges	8.4	8.5
Dental, Nursing and AYUSH Colleges	0.4	0.5
Tertiary Hospitals	11.7	11.6
TB Hospitals	0.1	0.1
District Hospitals	7.6	7.6
Other Hospitals in districts	0.7	0.7
CHC and Sub-divisional hospitals	10.1	10.1
PHC and Sub-Centers (SCs)	23.4	22.3
Of which SC	11.3	11.0
Health Officers	23.0	22.6
For AYUSH Services	13.9	14.2
Of which AYUSH Services in Rural areas	10.3	10.4
For Family Welfare	0.9	0.7
For Public Health	4.76	4.45
Others	3.4	3.3
Other Officers	5.6	6.3
Of which towards Public Health and Family Welfare	4.4	6
Primary health care services (including NRHM State share and Rural Health Expenditure)	43.8	43.9
Secondary health care services	18.4	18.4
Tertiary health care services	20.6	20.8
Total Expenditure (Actual in lakhs) Based on Treasury Data	231355	252035
Total Expenditure (Actual in lakhs) Based on Finance Accounts	232443	-

Note: Expenditure on primary, secondary and tertiary health care services is based on the same classification as in Table 1. Spending on primary health care include part of the expenditure by 'other officers' incurred towards 'public health and family welfare'. Unlike Karnataka, State schemes for maternal and child health care is not indicated separately.

Table 3: Distribution of Expenditure Based on Budget Heads in Madhya Pradesh, 2009-10 and 2010-11
(per cent)

Expenditure Class	2009-10	2010-11
Direction and Administration	3.5	1.7
ESI	2.9	2.1
Training	1.1	1.2
Drugs	0.4	0.4
Medical Colleges, Nursing Colleges, Dental Colleges and Tertiary Hospitals including TB Hospitals	15.5	17.6
Of which		
Medical Colleges	10.9	11.8
Dental, Nursing and AYUSH Colleges	1.4	1.4
Tertiary Hospitals	1.8	3.1
TB Hospitals	1.4	1.3
District Hospitals	13.1	13.2
Ayush Hospitals	5.9	6
CHC and Civil hospitals	2.7	2.5
PHC and Sub-Centers (SCs)	26.1	25.6
Of which SC	9.5	9.3
Others	34.6	35.8
Of which		
For AYUSH Services	0.8	0.6
Of which AYUSH Services in Rural areas	0.1	0.02
For Family Welfare and other primary health care services	1.8	3.5
For Public Health	11.7	10.8
NRHM and Rural Health Institutions	7.7	6.8
Expenditure which cannot be identified with any facility which includes exp under (State-level Patient Assistance Fund, Grants to Indian Red Cross Society, Chikitsa Guarantee Yojana, Vikramaditya Free Education Scheme for the Poor, Green Card Holder Scheme)	3.9	3.5
Others	2.8	4.6
Primary health care services (including NRHM State share and Rural Health Expenditure)	47.4	46.7
Secondary health care services	21.7	21.7
Tertiary health care services	15.5	17.6
Total Expenditure (Actual in lakhs) Treasury Data	158570	203717
Total Expenditure (Actual in lakhs) Finance Accounts	158299	

Note: Expenditure on primary, secondary and tertiary health care services is based on the same classification as in Table 1. Spending on primary health care includes expenditure on NRHM and rural health institutions

Table 4: Distribution of Expenditure Based on Budget Heads in Assam, 2009-10
(per cent)

Expenditure Class	2009-10
Direction and Administration	26.9
Of which 12 th Finance Commission Award	13.19
Headquarters establishment under Urban Health	11.45
ESI	0.1
Training	0.4
Drugs	0.3
Medical Colleges, Nursing Colleges, Dental Colleges, Pharmacy institutes attached to medical colleges and Tertiary Hospitals including TB Hospitals	23.8
Of which	
Medical Colleges	15
Dental, Nursing, Pharmacy and AYUSH Colleges	0.8
Tertiary Hospitals	7.5
TB Hospitals	0.5
General and Other hospitals in districts	5.4
CHC	1.6
PHC and Sub-Centers (SCs)	6.5
Others	34.9
Of which	
For AYUSH Services	0.6
Of which AYUSH Services in Rural areas	0.5
For Family Welfare	8.5
For Public Health	3.6
NRHM	14.4
XII Finance commission Award for up gradation of Standard of Administration	4.5
Rural hospitals and dispensaries	1.8
Others	1.5
Primary health care services (including NRHM State share and Rural Health Expenditure)	35.3
Secondary health care services	7.0
Tertiary health care services	23.8
Total Expenditure (Actual in lakhs) Treasury Data	142094
Total Expenditure (Actual in lakhs) Finance Accounts	149642

Note: Expenditure on primary, secondary and tertiary health care services is based on the same classification as in Table 1. Spending on primary health care include expenditure on rural hospitals, rural dispensaries and NRHM

Estimates suggest that expenditure on primary health care services account for around 43 to 49 per cent of total expenditure in Karnataka, Rajasthan and Madhya Pradesh. The share of

primary health care services in Assam is relatively lower (around 35 per cent). These estimates are however, likely to be biased upwards as these include the State share towards NRHM and unclassified expenditure towards 'rural health'. As both of these include some expenditure towards secondary health care services, the estimates are biased upwards. Even after accounting for the fact that these estimates are biased upwards, the share of expenditure towards primary health care services appear to be higher than the figure of around 38 per cent reported in the National Health Accounts, 2004-05.

At the secondary level, the structure of health system varies across States. In Karnataka, CHCs and Taluk hospitals provide secondary health care services below the district hospitals i.e. at the taluk level. Taluk hospitals are similar to CHCs in nature, but larger in size. Much of the expenditure towards these facilities (CHCs and Taluk hospitals) is drawn from the same budget head and is considered similar for untied and other grants provided at the facility level under the NRHM.⁵ We therefore club the expenditure on these two categories of facilities under a single head. Similarly, CHCs and sub-divisional hospitals in Rajasthan, and CHCs and Civil hospitals in Madhya Pradesh are clubbed under a single head. These constitute the secondary health care facilities below the district hospital in both the states. Additionally, there are some 'other' hospitals providing secondary health care services in districts. We classify them into a separate category called 'other hospitals in districts'. In Assam, as it is not possible to identify district hospitals separately, all secondary level 'general hospitals' and 'other hospitals' have been clubbed under a single head.

Karnataka and Rajasthan spent around 15 to 18 per cent of their total health expenditure on secondary health care services. Keeping in view that the State share towards NRHM and unclassified expenditure towards 'Rural Health' is included in primary health care services in this analysis; the estimates reported here appear to be close to the figure of 18 per cent reported in NHA 2004-05. In Madhya Pradesh, the higher estimate of around 22 per cent can partly be attributed to the fact that expenditure on AYUSH hospitals is also included in secondary health care services. In fact, in Madhya Pradesh, less than 3 per cent of total health expenditure of the State was incurred on CHCs and Civil hospitals. This implies that, if one excludes AYUSH hospitals, secondary health care services in Madhya Pradesh are

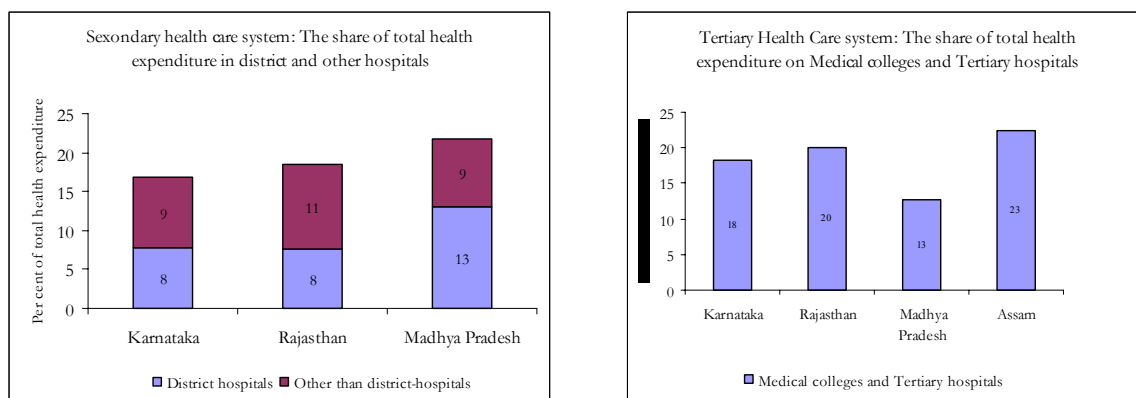
⁵ These expenditures are accounted for under the budget head 'hospitals and dispensaries' in rural and urban areas

provided primarily only at district hospitals. In Karnataka and Rajasthan, the corresponding share was significantly higher. This implies that accessibility to secondary health care facilities was better in Karnataka and Rajasthan than in Madhya Pradesh. Again, in Assam, the share of expenditure on secondary health care services was significantly lower than the other three States (7 per cent).

Tertiary health care services accounted for about 21 per cent of total expenditure on health and family welfare in Karnataka and Rajasthan. This was close to the country-level estimate of 21 per cent indicated by the NHA. In Madhya Pradesh, this share was relatively smaller. On the other hand, in Assam, this share was unduly high in comparison with the share of expenditure in primary and secondary health care services in the State (around 24 per cent). The share would be even higher if one included the award of the Twelfth Finance Commission for ‘Medical Education Training and Research’.

Notably, there are significant variations in the distribution of expenditure within the secondary and tertiary health care system in the selected States. In the secondary health care system of Karnataka and Rajasthan, the share of expenditure incurred towards sub-district hospitals is marginally higher than the share of district hospitals. In contrast, in Madhya Pradesh, the share of expenditure incurred on district hospitals is higher than the sub-district hospitals. Similarly, in the tertiary health care system, the share of expenditure towards medical colleges and tertiary level hospitals is significantly lower in Madhya Pradesh than in States like Rajasthan and Karnataka.

Figure 1: Share of selected components in secondary and tertiary health care system in selected States, 2009-10



Notably, administrative expenses accounted for around 3 per cent of total health expenditure in Karnataka, Madhya Pradesh and Rajasthan. It must be noted that, in Assam, more than a quarter of the total health expenditure of the State in the year 2009-10 was towards administrative expenses. Bulk of this is however, a one time expenditure like the Award of the 12th Finance Commission and 'Headquarters establishment' in urban areas. The distribution of health expenditure in the State needs to be read keeping this in view. If one excludes these items of expenditure, administrative expenditure in the State was similar to the other States. The share of expenditure on drugs was also significantly smaller in Madhya Pradesh and Assam than in Karnataka and Rajasthan.⁶

A concern that arises in the analysis is the fact that in certain cases, DDOs of different types of health facilities have withdrawn from the same budget head. For example, in Karnataka, under the scheme head "Dental units to Taluk hospitals" or "X-ray Facilities to Taluk hospitals" (which are classified as expenditure on Taluk hospitals based on budgets), bulk of the expenditure have been withdrawn by DDOs, who are not identified with Taluk hospitals. Similarly, in some cases, DDOs of PHCs have withdrawn from the budget head identified with CHCs and vice-versa. In such cases, there is likely to be a significant difference in the estimates of expenditure based on DDO withdrawals and budgets. Also, if withdrawals by the DDO of a particular facility are actually incurred on that facility, using DDO withdrawals for classifying expenditure is likely to be more accurate. On the other hand, if withdrawals made against a budget head are incurred on that head (irrespective of the drawing officer), using budget heads for classifying expenditure is likely to be more accurate. In practice, it is difficult to ascertain which of the two is actually true.

To analyze whether estimates based on DDO withdrawals differ substantially from the estimates arrived at from budget codes, we examined the share of expenditure on facilities estimated in Karnataka and Rajasthan separately based on (a) DDO withdrawals and (b) budget heads, where budget codes were available for identification of facilities. Comparative figures suggest that while there may be significant differences in estimates based on DDOs

⁶ In Rajasthan, a number of withdrawals from the State treasury were by officers who did not belong to the Department of Health and Family Welfare. These constituted about 6 per cent of the total health expenditure of the State and have been categorized as expenditure by 'other officers'. These included a number of withdrawals by principals of schools, colleges, jail superintendents and others.

and budgets for certain schemes, the aggregate results do not differ significantly by whether one uses DDO withdrawals or budgets to classify the expenditure.

Conclusion

In most developing countries, the health care system is designed in the form of a pyramid with larger volume of health services required to be provided at lower tiers of the pyramid. The distribution of public spending across these tiers provides some indication of the level of services provided at each level, and has implications for the effectiveness of public spending on health care.

Empirical evidence on the level of expenditure on different tiers of the health system in developing countries is limited. Existing cross-country evidence provides information primarily on expenditure towards hospital and non-hospital services. In India too, the National Health Accounts (NHA) provide information on expenditure at an aggregate level and the distribution of expenditure within these broad aggregates is not known. This study provides disaggregated information on expenditure at individual tiers of the health system in four specific States of India: Karnataka, Rajasthan, Madhya Pradesh and Assam. Specifically, it combines information from budgets with identification of the officers (DDOs) withdrawing funds from State treasuries wherever available (like Karnataka and Rajasthan) to provide the estimates. In Madhya Pradesh and Assam, DDOs are not identified with different levels of health facilities and the estimates are provided on the basis of budget classification.

Estimates suggest that expenditure on primary health care services account for around 43 to 49 per cent of total expenditure in the three States of Karnataka, Rajasthan and Madhya Pradesh. The share in Assam is relatively lower (around 35 per cent). These estimates are however likely to be biased upwards as these include the State share towards NRHM and unclassified expenditure towards 'rural health'. Even after accounting for the fact that these estimates biased upward, the estimates appear to be higher than the figure of around 38 per cent reported in the National Health Accounts, 2004-05. The estimated share of expenditure towards secondary health care is around 15 to 18 per cent in Rajasthan and Karnataka.

Keeping in view that the State share towards NRHM and unclassified expenditure towards 'Rural Health' is included in primary health care services in this analysis; the estimates reported here appear to be close to the figure of 18 per cent reported in NHA 2004-05. The share of expenditure towards tertiary health care system in Karnataka and Rajasthan appears to be around the country-level estimate of 21 per cent by the NHA. In Madhya Pradesh, this share is relatively small. In Assam, while the share of secondary and primary health care services is significantly smaller than the other three States, the share of tertiary health care services is higher.

The analysis highlights that the distribution of public spending across different levels of health facilities can vary significantly across States. The share of expenditure on primary and secondary healthcare services in Assam appears to be significantly lower than the other three States. Similarly, expenditure on the lower tiers of secondary health care facilities in Madhya Pradesh is negligible in comparison to Karnataka and Rajasthan. The analysis also adds to the information provided in NHA by providing estimates of expenditure at different levels of health facilities with the secondary and the tertiary health care system. The analysis also shows that estimates of expenditure at various levels of health facilities in States can be derived by combining unit-level data on DDO withdrawals with information in budgets. This underlines the importance of a more disaggregated system of treasury accounts in States like Madhya Pradesh and Assam, where such information is not yet available.

The analysis has important policy implications. First, the distribution of expenditure between the secondary and the tertiary health care system in India do not follow the desired pyramidal structure of expenditure in three of the four States analyzed in this study. In other words, the share of expenditure in tertiary health care facilities is higher than secondary health care facilities, in Karnataka, Rajasthan and Assam. The unfavorable distribution is particularly striking in States like Assam. This calls for a look into the reasons for the existing pattern of expenditure in these States and undertake steps to improve the distribution of expenditure between secondary and tertiary health care facilities. Secondly, within the secondary health care system, there is little difference in the distribution of expenditure between the district and sub-district hospitals in States like Karnataka, and the pyramidal structure is not very conspicuous. In Madhya Pradesh, the share of expenditure in sub-

district hospitals is, in fact, lower than the share in district hospitals. In Assam, a negligible share is spent on CHCs. These issues have implications for the effectiveness of public spending in these States and are important to rectify for deriving higher benefits out of public spending.

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