Health Financing and Services in North Kordofan State, Sudan

Federal and State Ministries of Health
Government of National Unity

and

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Preface

This is an analytical report on the health sector drawn from a study of the financing and provision of basic health and education services in North Kordofan State. The study included data collection on public financing of health and education from State and Locality administrations, a survey of health and education facilities, and qualitative discussions with focus groups of service users. Findings of the financing exercise are reported in "Financing of Basic Health and Education Services at the Locality level: Case study of North Kordofan," (March 2007) and findings of the facility survey and focus group discussions are reported in "Basic Health and Education Services in North Kordofan: Report of a Facility Survey and Focus Group Discussions," (September 2006).

The study was implemented by the Federal and State Ministries of Health and Education with support from the World Bank, including the Danish Consultant Trust Fund. Contributors to the study included: Mr. Ibrahim Eldasis (Federal Ministry of Education), Dr. Zahir Ajab Alsiddig (Federal Ministry of Health), …………….., and Dr. Mustafa Khidir Mustafa Elnimeiri, Ms. Ulrika Enemark, and Mr. Patrick Mullen (World Bank).

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1. Introduction

Responsibility for basic health and education services is decentralized to the State and local levels, which are largely dependent on federal transfers which have increased in recent years. Under Sudan's federal system, basic health services are the responsibility of States and Localities, whose governments receive most of their revenue through non-earmarked transfers from the federal level. Social spending was dramatically cut in the 1990s, leading to deterioration of service supply as well as an increasing burden on households for the financing of health services. These factors have led to decreased service accessibility, particularly by the poor. In line with increasing total government revenues, federal fiscal transfers to the States have grown in recent years and are expected to increase further. However, the extent to which these recent increases in resource transfers have been translated into increased spending on basic health and education services by the States and Localities is poorly understood. Also important to assess is the extent to which greater public spending on basic services in recent years has led to reductions in financial barriers to utilization and increased access by the poor. The present study attempts to improve understanding of this process, helping to identify areas of reform so that the further large anticipated increases in government spending are effectively pro-poor.

2. Objectives

The overall objective is to improve the understanding of the financing and functioning of basic health and education service delivery systems at the State and local levels, including assessing access to health services by the poor. The specific objectives are:
- to describe State and Locality financing of basic health services
- to assess accessibility, affordability and utilisation of services from both facility and user perspectives
- to measure simple indicators of technical quality of services and efficiency at facility level
- to pilot data collection and analysis methods

3. Methodology

Materials and methods

The study was undertaken in North Kordofan due to the fact that, while considered among the poorer States, administrative records were thought to be more available than in other States. The State was also chosen as a case study for the Public Expenditure Review (PER) being done by the World Bank and the government in 2006-07.

The question of financing, service utilisation and access to health care is addressed from various angles. The analysis relies on a combination of sources of information. The data have three components: a) Locality administrative data on financing of health and education services; b) cross sectional health and education facility survey data; and c) qualitative information on users' perspectives. Detailed reports on these exercises are annexed.

   a) Data collection from State and Locality administrations

Financing data were collected from the State and local levels. Available documents have been reviewed and complemented with qualitative interviews and data collection at State and Locality

level. A small team including one staff from the Federal and State Ministries of Health was fielded to collect financial data on health services from the Locality Administrations. A template for desirable information, if possible for a period of five years, was developed. In recognition of the fact that the Localities may have difficulties providing the information in the desired breakdown, the team was instructed to collect all available financial information concerning the two sectors in whatever format available such that the team could organise it in relevant tabular form. The team also collected financial data from the State Ministries of Finance and Health.

b) Health and education facility survey

Health service provision and quality were assessed by a facility survey. A sample of health facilities was selected based on the official list obtained from the Federal Ministry of Health (FMoH). All registered hospitals were included in the survey. Non-hospital facilities were selected by probability proportional to size so that results can be generalised for all North Kordofan even for variables sensitive to type of health facility. Such generalisation is, however, based on an assumption that the structure of the health care delivery system is accurately reflected in the official registry at federal level. This assumption is adopted here, even though it should be noted that there is some uncertainty about the actual number and structure of health facilities in North Kordofan. A Health Systems Survey undertaken in 2003 found a number and structure of functioning units which differed from the FMOH register.

Data were collected from 98 health facilities. Data were collected using a questionnaire that included questions related to outputs (pupils, outpatient visits, etc.), resources available, financing and quality indicators. Results were weighted according to the FMoH registry of facilities.

c) Qualitative research on user perspectives

The third component involved focus group interviews to obtain qualitative information on service delivery. The issues for discussion included accessibility, affordability and perceived quality of services, barriers to utilisation (especially for the poor) and community supporting systems. Focus group discussions in groups of approximately 10 were undertaken in all five Localities. Both males and females participated and both users and non-users were included.

Limitations

Main limitations of the study are as follows:

- North Kordofan State at the time of the development of the study consisted of five Localities. Since then, West Kordofan was dissolved and four Localities were added to North Kordofan. Since study planning had already started, and since the four Localities from West Kordofan would in any case not be included in historical data, it was decided to focus on the five "old" Localities.

- At the time of the field visit for collection of the Locality financial data, the road to Sodary Locality was said not to be passable and the data collection team therefore only visited the four Localities of Sheikan, Um Rawaba, Bara and Gabrat el-Sheikh. Revenue information was available for three Localities only. Um Rawaba and Bara Localities provided information on fees generated at Locality administration level and Gabrat el Sheikh provided information on fees related to health service delivery. Information on Locality

expenditures in the desired breakdown turned out to be very difficult to retrieve and generally the collection was restricted to the most recent years.

- The civil service health insurance system was not included in this study although it likely represents a significant source of financing for health services.

- The health facility survey was initially intended to provide information on impact of increased spending on health and education in recent years. However, the cross-sectional survey was not able to collect trend data, so that it is not possible to assess the impact of changes over time in funding levels. Hopefully, the present survey can provide baseline information that can be used for future assessments.

- While all selected facilities participated, there are quite a number of missing responses on individual variables, especially when asked about accurate numbers. Cross-checking for consistency also reveals that inconsistencies prevail (e.g. not reporting user fees as a source of income yet confirming that all patients have to pay), and may be a problem for data validity.

4. North Kordofan

The estimated population of North Kordofan at the time of the survey was 1.6 million in five Localities. The Localities vary considerably by population size, cf. Table 1. More than a third of the State population lives in Um Rwaba Locality. The second largest Locality is Sheikan where the State capital, El Obeid, is located. This is also where the State referral hospital is located. One third of the population in North Kordofan State lives in urban areas. One sixth of the population is under five years old.

Table 1. Population in North Kordofan 2005

	2005	%
Sheikan	449,483	28
Bara	319,561	20
Sodary	169,072	11
Gabrat el Sheikh	100,881	6
Um Rwaba	562,968	35
Total	1,601,965	100

Source: FMOH

Public sector health facilities include hospitals, health centres, dispensaries, dressing stations, and primary health care units, cf. Table 2. These facilities differ in terms of the qualifications and number of staff as well as level of services delivered.

Dispensaries, dressing stations and Primary Health Care (PHC) units are considered basic health units and should in principle be providing the same services. According to FMoH guidelines, they should be staffed with a medical assistant, a nurse and a nutrition educator. Basic health units are expected to deliver preventive (immunisation, ANC), promotive and basic curative services at household, community and facility level. In practice, a service structure remains in which PHC units are manned by community health workers providing essential PHC, dressing stations manned by nurses providing also basic curative services and dispensaries manned by medical assistants.

The primary health care centres constitute the next level of services. They are supposed to be staffed with doctors supported by a team of medical assistants, nurses, laboratory staff and other support staff. Health centres are supposed to have capacity for minor surgery, uncomplicated deliveries, outpatient services and reproductive health.

Table 2 Public sector health facilities in North Kordofan by type of facility

Health facility	Number	%
Hospital	14	2.5
Health center	37	6.7
Dispensary	90	16.2
Dressing station	82	14.8
Primary health care unit	333	59.8
Total	556	100

Source: FMoH Register

Finally, rural and district hospitals have the capacity for surgery, including c-sections. They should be staffed with specialists as well as general physicians and be supported by a team of medical assistants, nurses, laboratory staff and other support staff.

The use of health services depends on a number of factors such as the physical accessibility of services, the quality of services offered including staff, drugs, equipment and hygiene standards and the affordability of the services. These factors in turn depend on the level of financing available at State and Locality level. This chapter starts by summarising the financial context, then the determinants of utilisation and finally use of services.

5. Financing of the health sector

The sources of revenues available to fund health services at State and Locality levels include Federal transfers to the State and State transfers to Localities, as well as own State and Locality own revenues. Consistent with the decentralisation of responsibilities, spending on basic health services is limited at the federal level, aside from subsidies for emergency care, support to vertical programs, and limited development projects. (International financing, if any, is channelled through vertical programs or development projects). The State government has the responsibility for secondary health care (hospitals), while Localities have the responsibility for primary health care. The intergovernmental transfer system includes conditional (earmarked) as well as unconditional transfers (block grants).

Over the period 2000-2005 Federal transfers to the State and State transfers to the Localities increased considerably. Federal transfers financed approximately one third of total North Kordofan State expenditures (all sectors) in 2000, but almost three quarters in 2005. In 2005, 65% of Federal transfers to the State were earmarked, mostly to salaries. State transfers to Localities similarly increased from about 40% of Locality expenditures in 2000 to 80% in 2005. State transfers to Localities are almost entirely for salaries. In 2005, State transfers covered 70% of the salaries paid by Localities, with the remaining 30% coming from the Localities' own revenues. It should be noted that Localities transfer up to the States a proportion of their own revenues. (Source is PER)

Increased Federal transfers have led to substantial growth in State and Locality expenditures (all sectors). Total public spending in North Kordofan State in 2005 was 4-5 times the spending in 2000, with the major increases taking place since 2003. Total State government spending in 2005 was approximately SDD 7,200 per capita (USD 30), while total Locality spending was SDD 4,700 per capita (USD 20), for total public spending of around SDD 12,000 per capita (USD 50). (Authors' calculations from PER)

5.1. Health sector expenditures

State health spending

State government expenditures for health have remained stable at 10-12% of total current expenditures over the period 2001-2005, indicating that health sector expenditures have followed the general growth in expenditures. This growth in expenditures has mainly been used to finance increasing salary costs, cf. Figure 1, although other current expenditures have also increased. In fact, the health sector accounts for an increasing percentage of total State non-salary current expenditures, from 10% in 2003 to 14% in 2005, indicating that non-salary current expenditures has grown more in the health sector than in other sectors.

A significant proportion of State government health expenditures are financed from Ministry of Health revenues (official user fees). In 2005, 22% of SMoH expenditures were financed from own revenues while the remaining 78% was financed from the State government budget. (Source is PER)

Figure 1: Actual recurrent expenditures 2003-2005. SMoH, North Kordofan.
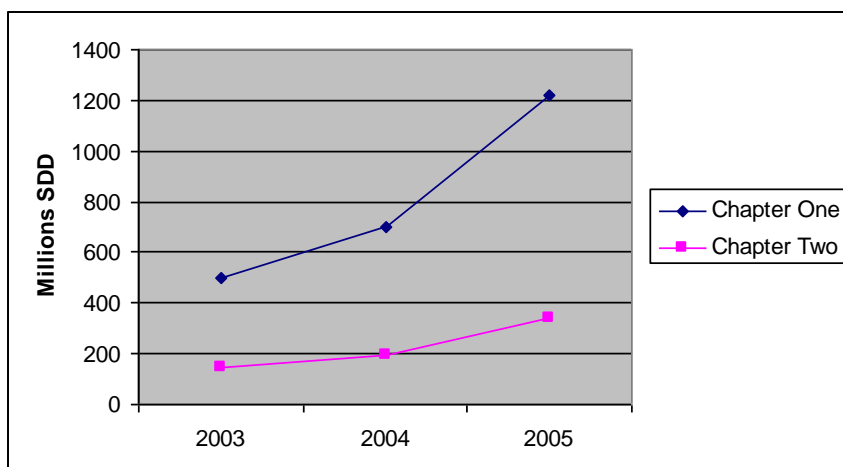
For 2005, half of the SMoH non-salary current expenditure was used for curative medicine – mainly running costs for El Obeid Hospital, other hospitals and the state pharmacy. Primary health care accounted for 45% and preventive medicine for 5%. The majority of PHC expenditures relate to immunisation (immunisation campaigns, including polio vaccination, as well as routine immunisation).

Total State government spending on health in 2005 was approximately SDD 940 or USD 4 per capita. State government health spending in 2005 totalled approximately SDD 1,500 million, or

USD 6.5 million. This is a doubling in absolute terms from 2003, when the total was approximately SDD 700 million, or about USD 3 million.

Unfortunately, information on expenditures by the civil service health insurance scheme was not collected, although it is likely significant judging from information from other states.

Locality health spending

Localities largely depend on transfers from the State to pay health worker salaries, and rely on own revenues for other recurrent costs. Thus, public spending on non-salary recurrent costs is very low and often in-kind from State and federal programs. Locality spending on development is negligible. The main sources of funding for non-hospital health services (which are a Locality responsibility) are the Locality budget; in turn financed by fiscal transfers from the State and Locality revenues, as well as various user fees. Other sources include the SMoH through special programmes and community contributions mainly for development costs.

The Locality administration provides salaries for non-hospital health facility staff, and undertakes regular supervision. The Locality receives and reports salary (Chapter One) transfers from the State un-earmarked for sectors. It has therefore not been possible to establish the amount of Chapter One expenditure for Locality health services directly from the Locality administrations, although estimates are made based on reported number of staff and average salaries.

Funding of expenditures on goods and services (Chapter Two) is purely a Locality responsibility, although there is generally little budget provision for such non-salary recurrent costs at the facility level except on an emergency basis. Resources for operations are often made available in kind, e.g. vaccines through immunisation programme. Service delivery units to a large extent rely on other sources, e.g. user fees, community contributions, donations.

Table 4: Estimated recurrent financing of non-hospital basic health services (health centres and below), North Kordofan, 2005

Expenditure category	Actual expenditures (SDD million)	Distribution by	
		Chapter	source
Chapter One	220	36%	
Chapter Two	391	64%	
o/w Localities	*41*		11%
State	*171*		44%
Users	*179*		46%
Total	611	100%	100%
SDD per capita	382		
USD per capita	1.60		

Assumptions:
1) Chapter One expenditures can be extrapolated from survey data.
2) 50% of SMoH Chapter Two expenditures support PHC and Prevention interventions that are implemented at the lowest level of the health care delivery system
3) Per capita Chapter Two expenditures in Sodary Locality are similar to the average of Um Rawaba, Bara and Gabrat el-Sheikh. Sheikan being the capital is considered atypical and therefore not included in the average.
4) User fee revenues can be extrapolated from survey data. These revenues are used for non-salary operational costs.
5) Number of facilities according to FMOH list.

Estimated spending on non-hospital basic health services in 2005 was about USD 1.60 per capita, including State and Locality expenditures. An overview across sources of financing of non-hospital basic health services for 2005 is provided in Table 4. Based on a number of assumptions, estimated expenditures for non-hospital basic health services, i.e. health centres and below including State-financed PHC activities, in 2005 amounted to SDD 382 per capita or approximately USD 1.60 per capita

Overall, salaries represent 36% of total public spending on non-hospital basic health services, which reflects the poor staffing situation in lower-level health facilities (as well as the weight of the state contribution to non-salary recurrent costs in the form of relatively costly immunization campaigns). However, it is likely that a proportion of Chapter Two expenditures are actually incentives and bonuses for personnel. Locality revenues are largely devoted to salaries. Out of estimated total current health expenditures from Locality revenues (SDD 220 + 41 million), 85% was spent on salaries.

Through official user fees, households are a significant revenue source for Localities in this sector, representing 29% of total recurrent financing, and 46% of non-salary recurrent expenditures.

The State government directly contributes 44% of non-salary current expenditures for ground-level health services, mainly in the form of immunisation campaigns (at the same time as being the ultimate source of most of the salary expenditures by the Localities).

In addition, community involvement is high in rural areas and particularly for maintenance and construction of smaller facilities, e.g. PHC units, but community involvement can be found for all types of facilities. The facility survey found that 59% of facilities, mainly lower-level services, were constructed with community contributions.

Table 5: Overview of current health sector expenditures. Million SDD. North Kordofan 2005.

	Chapter One	Chapter Two	Total
Government:			
o/w SMOH	1221	343	1564
Locality	220	41	261
Sub total – government	1441	384	1933
Users			
o/w Health centers & below			179
Hospitals			326
Sub total – users			505
Grand total			2438
Per capita in			
SDD			1522
USD			6.20

Note: Locality Chapter One expenditures and user payment estimated on the basis of survey data.

Total current health sector expenditures

Total per capita health sector expenditures from State and Locality government sources in 2005 are estimated at USD 4.90. Adding government health spending financed by user fees brings the total to USD 6.20. An overview of health sector expenditures for the State is presented

in Table 5. Per capita expenditures from government sources amount to SDD 1,206, corresponding to USD 4.90. Users are estimated to contribute approximately one fifth of the total government financing, resulting in total per capita public expenditures on health of 1,522 SDD (or 6.2 USD). Not included in this estimate is private household spending on unofficial user fees in public facilities, private providers, and drugs.

Out of total current expenditures funded from State and Locality revenues (including fiscal transfers), 75% were spent on salaries. If it is assumed that all user payments are retained at facility level and that user payments are used only for Chapter Two expenditures, salary expenditures still account for 60% of the current health sector expenditures. It is, however, likely that user fee contributions are also used for salary supplements.

Figure 2: Planned and actual per capita health sector expenditures for Chapter Two.
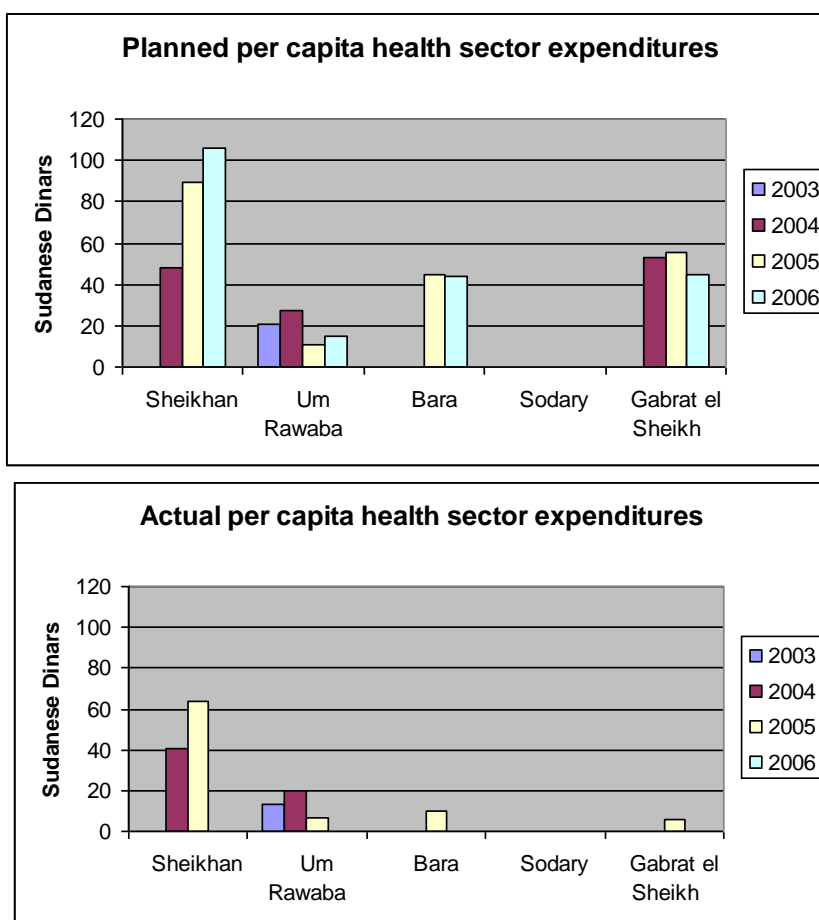
Most government health spending is allocated to hospital services. It is estimated that SDD 382 per capita was spent on non-hospital basic health services in 2005 (Table 4), which is 25% of total estimated government health spending of SDD 1,522 per capita (Table 5).

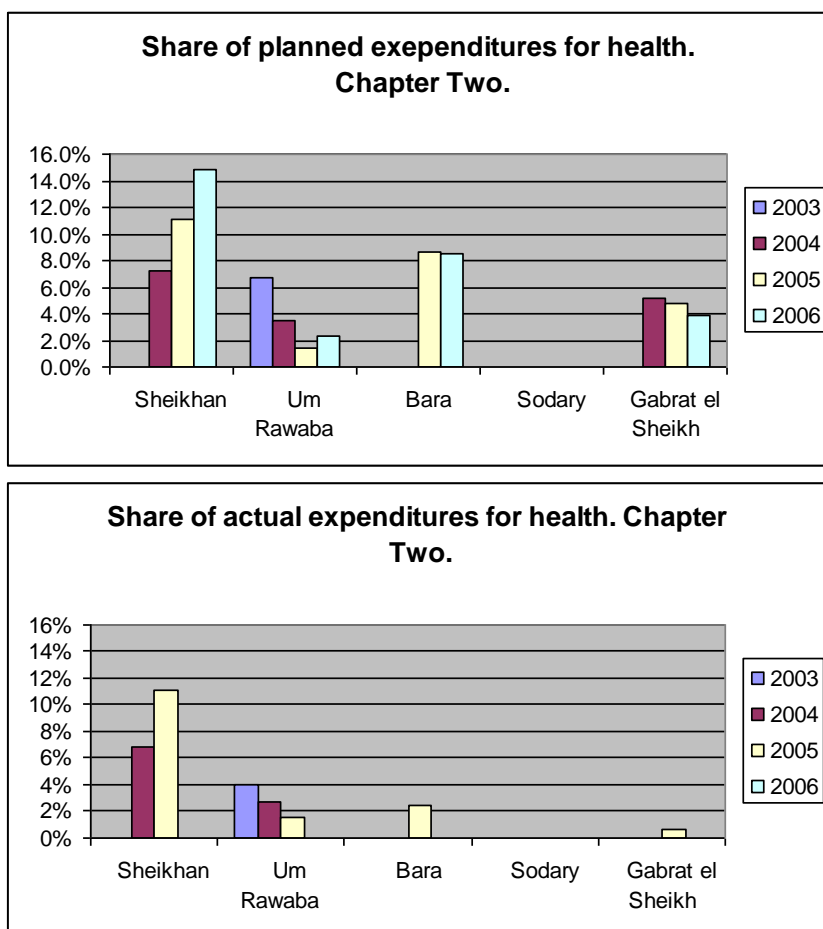### 5.2. Health sector expenditures by Locality

Sheikan and Um Rwaba account for three-quarters of total Locality revenues. Locality expenditures are generally funded from two sources: transfers from the State and own revenues.

The Localities are differently endowed, with Sheikan accounting for more than half of own revenues, while Um Rwaba accounts for at least 25%, reflecting the high level of business activity in these two Localities. Per capita revenues vary considerably between the Localities and thus also their scope for incurring expenditures from own sources.

There are significant differences between Localities in per capita expenditures on health worker salaries. The Locality receives and reports transfers from the State which may be earmarked for Chapter One, but are not sectorally-earmarked. Actual per capita expenditures for Chapter One for all sectors have increased in all Localities, although this is most evident in Sheikan, Um Rwaba and Bara, while Gabrat el Sheikh experienced only limited growth. In 2003, the difference between the highest and lowest per capita Chapter One expenditures (all sectors) was about SDD 1,500, while in 2005 it was SDD 3,400.

A rough assessment of Locality Chapter One expenditures for health can be made based on facility survey data on the number of staff combined with information on salary levels. Given the data gaps, these estimates should be treated with caution. In per capita terms, estimated Chapter One expenditures are highest in Sheikan (approximately SDD 300), little more than half this level in Um Rwaba, Bara and Sodary (SDD 172-188) and least in Gabrat el-Sheikh (SDD 90). While the estimates are uncertain, in particular for Gabrat el-Sheikh, the ranking is likely to be robust.

Figure 3: Share of actual and planned Chapter Two expenditures for health.

Non-salary recurrent spending is far higher in Sheikan than in the other Localities. Planned per capita Chapter Two health sector expenditures were lowest in Um Rwaba, at only 15 SDD per capita in 2006, whereas Bara and Gabrat el Sheikh planned for 44-45 SDD per capita and Sheikan for 106 SDD per capita, cf. Figure 2. The trend seems to be a slight decrease in planned per capita Chapter Two expenditures for health, except in Sheikan. Planned expenditures do not, however, always materialise and actual expenditures per capita are often much lower. In 2005, actual Chapter Two spending in Um Rwaba, Bara and Gabrat el Sheikh were equally low at SDD 6 to 9 per capita compared to SDD 64 per capita for Sheikan.

Non-salary recurrent spending by Localities in the health sector is low and has decreased, except for Sheikan Locality. The Localities tend to have disfavoured the health sector by decreasing budgets (and expenditures) in both absolute and relative terms, compared to total Locality spending. Um Rwaba experienced decreasing budget allocations and expenditures from 2003 to 2005, but the trend appears to have reversed for 2006. In Gabrat el-Sheikh Locality, the budget in SDD remained stable, but the percentage of total Locality spending allocated to health decreased from 5.1 % to 3.9%. That is, out of the little increase in per capita Chapter Two expenditures overall, relatively less of the increase benefited health than other sectors.

The share of the total (all sectors) Locality Chapter Two budget allocated to health to some extent reflects the priority given to health by Locality administrations. The percentage seems to be generally decreasing except for Sheikan, indicating that increases in the overall Chapter Two Locality budgets have mainly benefited other sectors, cf. Figure 3. Priority in terms of budgetary allocation appears to be highest in Sheikan, reaching 11% in 2004 and 15% in 2006, followed by Bara with slightly below 9%. When it comes to actual allocation and expenditures, Sheikan is spending on health significantly more of its total spending for Chapter Two (11% in 2005) than the other Localities (1-2% in 2005).

5.3. Distribution by functional classification

Limited information is available regarding the functional areas of expenditures. Expenditures are often classified only against line items such as utilities, bonus etc. The distribution between expenditures for environmental health, primary health care and unclassified line items for 2005 is shown in Figure 4. It should be noted that drug expenditures under Chapter Two are likely to be small due to a separate drug revolving fund system.

Comparison between Localities is difficult due to the variation in expenditures not classified according to functional area. The balance between the two functional areas appears to vary significantly. The large share of the budget for environmental health in Sheikan is due to an Environmental Health Support Programme. The relatively high allocation of environmental health rather than PHC may reflect the fact that in the past the main responsibility of local government areas was environmental health. For Gabrat el Sheikh, information is available over time and shows no major change in the balance over time.

5.4. Health sector revenues

Health licenses are a relatively important source of revenue for Localities, contributing approximately 50% of revenues in the sector. Revenues generated in the health sector at the administrative level include health licenses to restaurants etc. as well as health cards issued to

individuals allowing them to work in food-handling. Further, fees related to inspection of slaughtering and meat transportation, garbage collection and sewerage are considered part of health sector revenue. The actual revenue collection is lower than the expected revenues either indicating poor projection skills or leakage in the system.

Figure 4: Percentage of Chapter Two actual expenditures by functional area, 2005.
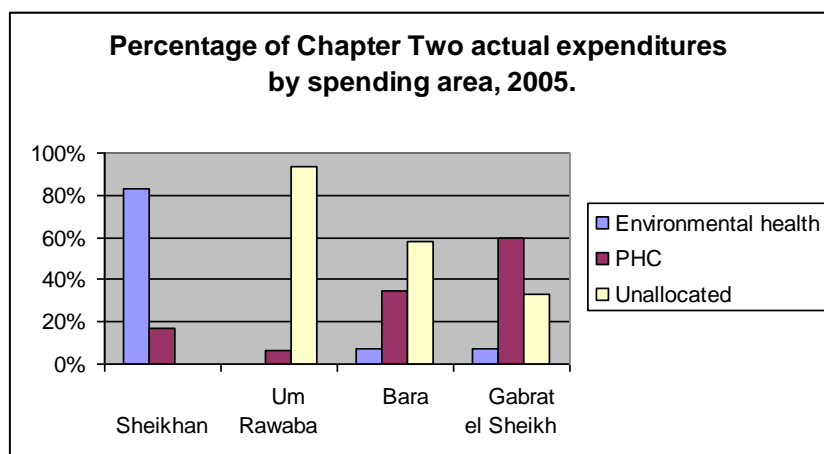
All health facilities collect additional user fees for services which are retained by the facilities. In addition, not included in revenue reports, are user fees collected in relation to service delivery for such items as laboratory services, surgery, and outpatient visits. Revenues from drug sales may be collected by drug revolving funds, but data on this are not available. According to respondents to the facility survey, user fee revenues were retained in 88% of the health facilities. Although the reports from the Localities do not include revenues from health facilities, user fee collections at El Obeid hospital and rural hospitals are reported by the SMoH.

Table 6: Mean annual collection of user fees by category of facility. '000 SDD.

Type of facility	Health and education facility survey			Data from SMOH	
	Mean	90% CI	N	Planned total	Actual total
Federal hospital	175,480	-	1	175,500	147,900
Hospitals	11,572	2,155 – 21,000	9	71,400	90,600
Health centres	1,226	529 -1,923	9	n.a.	n.a.
Below health centres	264	138 - 391	11	n.a.	n.a.

As would be expected, higher-level health facilities collect more revenue in user fees. The facility survey found that user fees are collected in all health facilities. The average user fee collections by health units that reported their collections have been used to estimate total collections in the State, see Table 6. The user fee collections are statistically significantly different between the four categories of facilities and collections increase with increasing levels of service, as could be expected. It is estimated that the Federal hospital annually collects SDD 175 million in user fees, or USD 750,000. Although the estimate based on the facility survey is considerably lower, State hospital revenue from user fees reported by the SMoH indicates that a hospital on average collects SDD 90 million, or around USD 400,000. User fees collected by Health Centers and other basic health facilities are considerably lower, in the order of USD 5,000 or less if the facility survey data are accurate.

User fees are estimated to be around USD 1.30 per capita (not including household spending on drugs), representing 20% of total spending on government health services. If the sampled facilities are representative for facilities in the State, then the total user fee contribution to the running of the government health services can be estimated, cf. Table 4 & 5. In this way, it is estimated that user fees were approximately SDD 180 million (USD 800,000) for non-hospital basic health services and SDD 500 million (USD 2.2 million) for all government health services. This is approximately USD 1.3 per capita annually and can be compared to total estimated health spending from government sources of USD 4.90 per capita.

6. Accessibility

Physical access to services depends on the physical availability of facilities, whether they are open, and to what extent they offer basic services.

6.1. Health facility coverage

In relation to population, basic health facility numbers are better or comparable to standards and averages in Northern Sudan, while hospital numbers are lower. The average population per health facility in North Kordofan is below the FMoH policy guidelines, except for the population per hospital, cf. Figure 5. This means that for non-hospital infrastructure North Kordofan has better coverage with health facilities than the norm.[1] The population per hospital in North Kordofan is higher than average ratios reported for Northern Sudan but is comparable in relative terms, population per health centre is higher by some 20% (indicating poorer coverage) and the population per basic health unit is considerably lower (indicating better coverage).
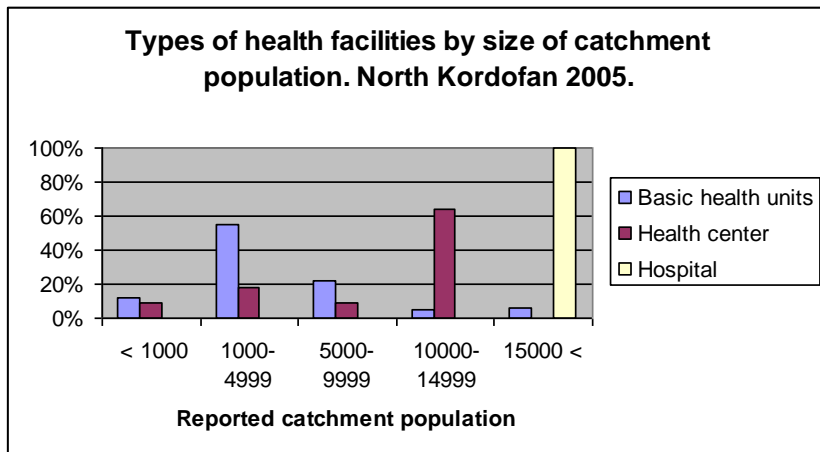
Figure 5
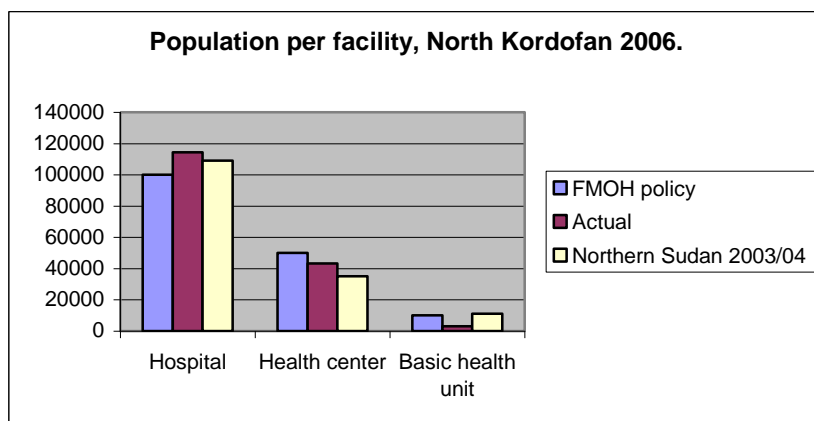
While the majority of basic health units (55%) serve a catchment population of 1,000 to 4,999, reported catchment populations range from less than 1,000 up to more than 15,000, cf. Figure 6. An estimated 11% of basic health units are serving a catchment population above the FMoH norm of 10,000 per basic health unit. Most of the health centres included in the survey (64%) reported catchment populations of 10,000 to 14,999 and none higher than that, which is considerably lower

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[1] This is the case even if the somewhat lower number of functioning health facilities found in the Health System Survey (2003) is applied.

than the FMoH norm as well as the State average based on population and registered facilities,[2] cf. Figure 5. As expected, the general picture is that higher-level facilities serve larger catchment populations.

Figure 6

Types of health facilities by size of catchment population. North Kordofan 2005.

Population per facility varies between Localities, cf. Figure 7. Health centres are mainly found in Um Rwaba and Sheikan Locality. Sheikan and Gabrat el-Sheikh Localities have the highest population per non-hospital facility reflecting a relatively low density of facilities compared to the population. Due to the presence of the referral hospital and the concentration of population in El-Obeid, it must be assumed that in Sheikan many people use the referral hospital for primary services.

Figure 7.

Estimated population per non-hospital facility by Locality, North Kordofan 2006
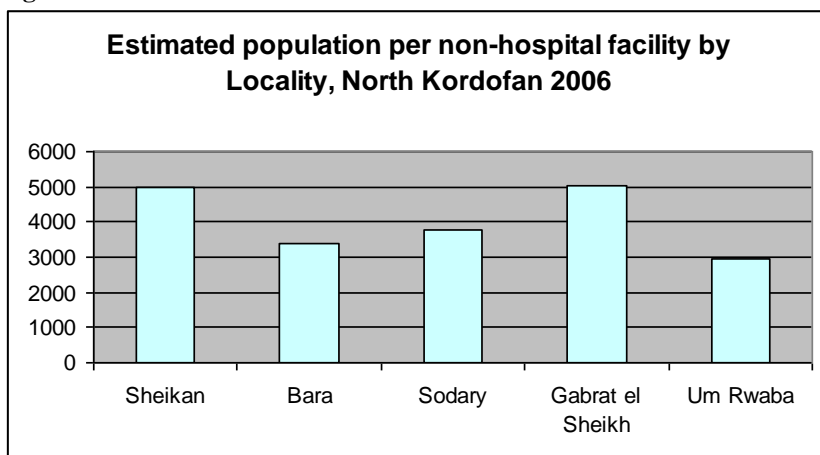
Although the lowest (best) calculated population to facility ratio is in Um Rwaba Locality, this is due to larger numbers PHC units providing limited services. Um Rwaba has 43% of non-hospital health facilities, but only 35% of the population. This is mainly because of a larger network of PHC units.

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[2] There is a difference between the average catchment population reported by Health Center staff and the calculated average based on the number of facilities and estimated total population. Health staff may be more conversant with the size of the nearest town than the larger area that their facility is serving. On the other hand, the population with real access in far-flung rural areas may in fact be closer to the catchment size estimated by the facility staff.

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Table 7. Rural-urban distribution of facilities by facility type

Facility type	Rural area	Urban area	Total
Hospitals	30%	70%	100%
Health centers	46%	54%	100%
Basic health units	100%	0 %	100%
Hospital beds	13%	87%	100%
Hospital beds, excl El Obeid	27%	73%	100%

All Localities have hospitals, but physical access significantly varies by Locality. Reported hospital bed capacity is on average 6.7 beds per 100,000 population in the State, varying from 2.7-3.9 in Bara, Sodary and Um-Rwaba to 8.7 in Gabrat-el-Sheikh and 13.7 in Sheikan. The high ratio in Sheikan is due to the referral hospital in El Obeid, which accounts for 52% of hospital beds in the State. Among non-hospital facilities in rural areas only 9% had admission beds, but 26% had observation beds available. In urban areas no non-hospital facilities had admission beds, but 83% had observation beds. In Sodary and Gabrat el Sheikh, no admission beds were found outside the hospitals, although the share of facilities that had observation beds was quite high in Sodary.

Access to higher-level care is better in urban areas, with 70% of hospitals and 54% of health centres, cf. Table 4. Only 13% of inpatient beds are located in rural areas (27% of non-referral hospital beds). Dispensaries, dressing stations and PHC units are only found in rural areas.

6.2. Operating hours

Opening hours are generally fairly long. More than half (56%) of facilities operate 24 hours services. The shortest opening hours of 8 hours or less were found for 15 dressing stations and PHC units only. These are all located in rural areas. There is no significant difference in access in terms of opening hours between the Localities. A large majority of health facilities (81%) were open 7 days per week, with the remaining 19% operating 6 days per week. Health centres and dispensaries are more likely to have a 6-day week.

In the focus group discussions, users tended to agree that opening hours were sufficient although participants from rural areas mentioned two main difficulties in case of emergencies at night time. The first to find transport (cart or donkey) and the second to find the provider at the facility, as he/she would be on call at home.

6.3. Availability of basic health services

The usefulness of having access to a health facility clearly depends on the nature of services that are provided at that facility (as well as on the quality of those services, cf. chapter 5.3).

Public health services

Urban areas served by higher-level health facilities have a much greater range of services than rural areas. Urban areas are served mainly by hospitals and health centres. In urban areas most non-hospital facilities offer basic public health services like family planning, antenatal care (ANC), child health services and immunisation, cf. Figure 8. More worrying are the services offered in rural clinics, mainly PHC units. Only 13% of rural health facilities offered family planning services, and only 6% offered child health services, although ANC and immunisation is

delivered in most facilities. (The extremely low proportion offering "child health services" is so unexpected that it suggests that there is a problem with the definition of that term). Family planning is mainly offered in hospitals and health centres.

Some differences in service availability between Localities are evident. Family planning services are more available in non-hospital facilities in Sheikan than in other Localities. ANC seems to be more available in Bara than in other Localities. Delivery services in non-hospital facilities are less available in Sheikan and Um Rwaba, no doubt due to the presence of large hospitals. Immunisation services are offered in almost all facilities in all Localities.

Delivery services

Delivery services are available in almost all hospitals but hardly available in non-hospital facilities in rural areas. The one hospital that does not offer delivery services is in Sheikan (El Obeid Alkwiti) where the referral hospital is a likely substitute. Deliveries are made in only one of six urban health centres, most likely because women who choose institutional delivery will choose to go to the hospital. Only 13% of rural non-hospital facilities offer delivery services, essentially giving pregnant mothers in rural areas only the choice between unassisted home delivery or hospital delivery, the latter typically requiring transport to the Locality capital.

Figure 8
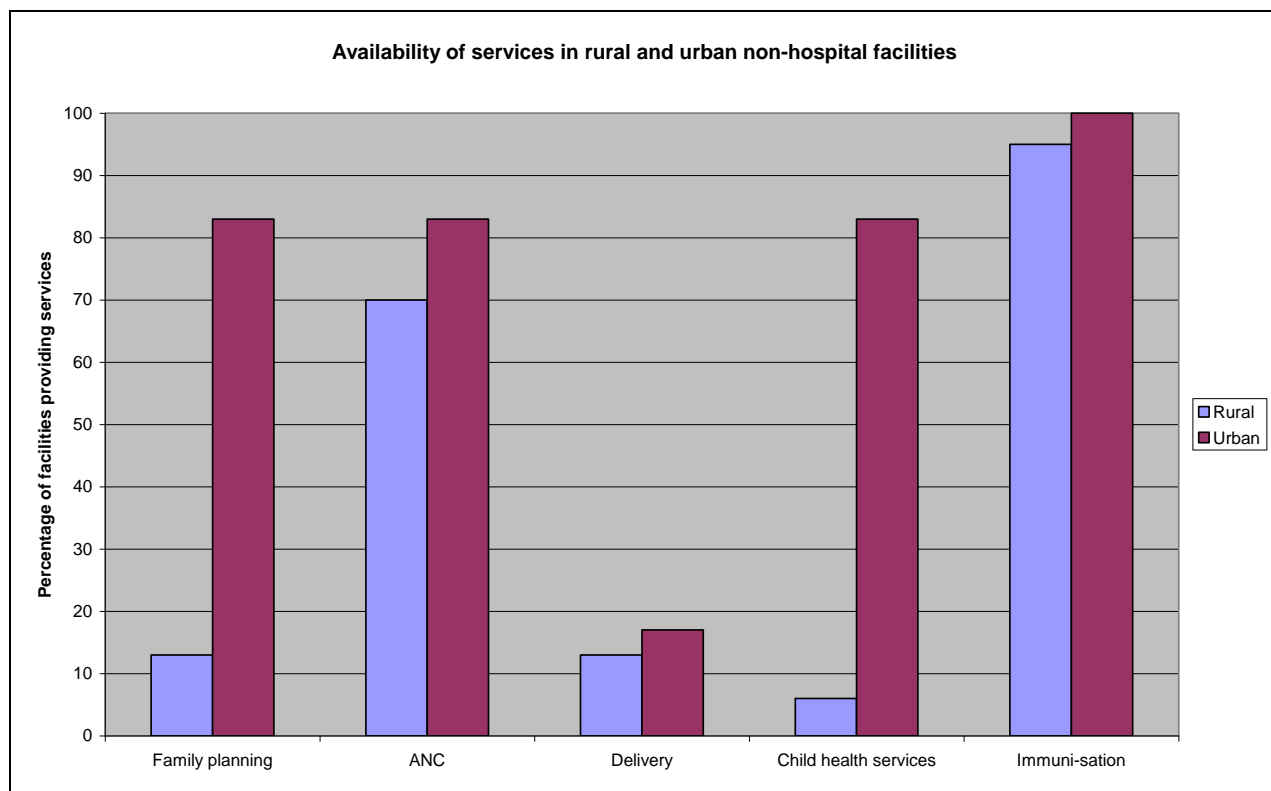
- Support services

Higher-level facilities in urban areas have laboratories and pharmacies, while these are rare in rural areas. All hospitals have surgical theatres, laboratory and pharmacy services. Pharmacies

are available in all urban non-hospital facilities and laboratories in almost all of them. In rural areas, laboratory and pharmacy services are available in only 12 and 9 % of non-hospital facilities respectively. This implies that most patients in rural areas requiring laboratory test for diagnostics either have to travel to the nearest hospital or to rely on assessment of symptoms.

Figure 9: Service availability in non-hospital facilities by Locality, North Kordofan 2006.
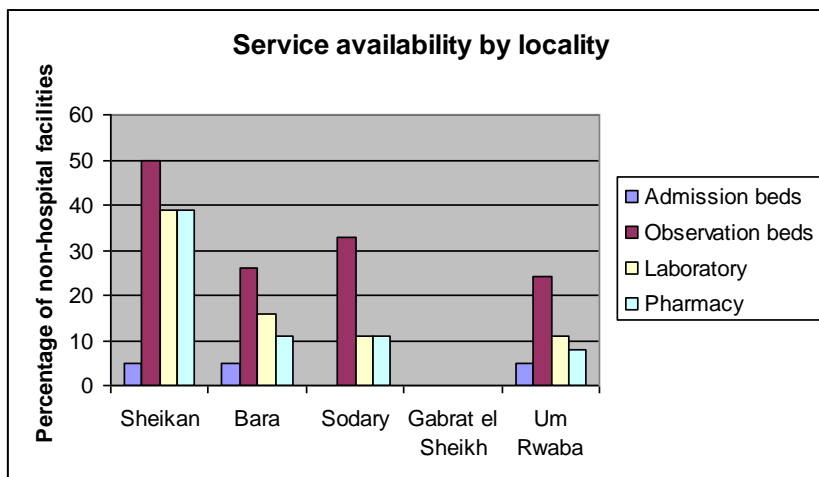
Non-hospital facilities in Sheikan are more likely to have laboratories and pharmacies than in other Localities. The distribution of support services available outside the hospitals shows variation between Localities. A relatively high proportion of the non-hospital facilities in Sheikan had laboratory facilities or a pharmacy, while this was less pronounced in the other Localities, cf. Figure 9. This is despite the fact that Sheikan is more likely also to have private pharmacies.

6.4. Summary

Overall, physical access to services compared to FMOH guidelines and the average for Northern Sudan is fair. There are, however, rural-urban and Locality disparities.

Sheikan Locality is better served than the other Localities with a higher number of beds per population, better access to laboratory facilities and pharmacy services and taking into account the referral hospital also better served with facilities. Um Rwaba Locality also has a notably higher coverage with facilities, although this is due to higher numbers of lower-level services. Gabrat el-Sheikh on the other hand appears to have low coverage of non-hospital facilities, laboratory and pharmacy services.

Access to public health services, delivery services, laboratory services and pharmacies are lower in rural areas than in urban areas, although ANC and immunisation services are offered in most rural health facilities. The majority of hospitals, health centres and admission beds are found in urban areas.

7. Quality of services

Quality of service is difficult to assess. The following will address issues related to availability of human resources, drugs and equipment, and utilities as measured by the facility survey.

7.1. Availability of qualified staff

All hospitals and a third of health centers have doctors, half of health centers have medical assistants, and most dispensaries and dressing stations are staffed with either a medical assistant or nurse. However, 75% of PHC Units, the most numerous basic health facility, are staffed only with community health workers. According to staffing standards, hospitals should be staffed with medical specialists, health centres should be staffed with doctors and basic health units should be staffed by medical assistants, in all cases supported by other health professionals. The facility survey found doctors mainly in hospitals, although 10 of 64 doctors were working in health centres and dispensaries. All hospitals have doctors employed. Only 36% of health centres have doctors employed, and a little more than half of them (54%) had a medical assistant. Half of dispensaries and dressing stations employed a medical assistant, while 87% employed either a medical assistant or a nurse, leaving 13% staffed only by a community health worker. Most basic health units in North Kordofan are, however, PHC units. Only 9% of PHC Units employed either a medical assistant or a nurse, while 7% employed a health visitor[3] or an assistant health visitor, and 9% a village health midwife, leaving 75% staffed with only a community health worker.[4] Among the 25 health facilities (including hospitals) that had laboratory facilities, 17 had no lab technician, 11 facilities had no lab assistant and 8 had no laboratory staff at all.

Absenteeism is relatively low. A health facility may well have qualified staff, but if staff is absent from work the service delivery will be low. In the survey it was found that 6.5% was absent on the day of the survey, many of them for legitimate reasons. Of the 33 staff absent, 18% were off duty, 18% were on ORC, 12% were on sick leave or annual leave. One third had other reasons. This leaves the impression of a relatively low absence rate as reported by the facility in-charges.

Table 8. Estimated staff per 1,000 population by Locality. North Kordofan 2006.

	Sheikan	Bara	Sodary	Gabrat el Sheikh	Um Rwaba	Total
Doctors	12	3	2	4	6	6
Nurses	10	9	24	40	9	13
Medical assistants	26	17	9	4	6	14
Other professional	45	13	15	14	16	23
Village nurse midwife	17	6	6	3	8	10
Community health worker	14	19	27	8	28	21
Total	124	66	82	72	72	87

Shortage of human resources is a problem outside the State capital, with a large proportion of skilled staff working in the main hospital. Almost half of all health cadres are found in Sheikan, mainly in El Obeid hospital. More than a quarter of staff are found in Um Rwaba, leaving around one quarter of staff for the remaining three Localities totalling 37% of the population of North Kordofan. A notable exception is the nurse cadre which is almost equally distributed between Localities in terms of numbers, resulting in very high nurse-population rates in the low density Localities, Sodary and Gabrat el-Sheikh. This suggests that nurses are used to compensate for the lack of other cadres as both doctors and medical assistants to population ratios are low in the two

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[3] Nurse with full range of midwifery skills and 2-3 years of practice.
[4] Volunteer with 9 months on-the-job training.

Localities. In terms of staff to population ratio the worst-off Locality is Bara with only 66 health workers per 100,000 population, including village nurse midwives and community health workers.

Staff of non-hospital basic health facilities are similarly concentrated in Sheikan. When it comes to non-hospital facilities the differences between Sheikan and the other Localities in terms of staff per population widens, but the pattern remains the same although Gabrat tends to be relatively worse off than the other Localities as most of the staff in that Locality are employed in hospitals.

Limited opportunities for in-service training seem to be available to the staff, particularly in rural areas. In 64% of facilities none of the staff had received in-service training, while in a third of the facilities 1-5 staff had received some training. Staff in hospitals, health centres and dispensaries were more likely to have received in-service training as only about 30 % had not had any staff undergo in-service training. In dressing stations and PHC units, 85% of facilities had not had any staff receive in-service training. Correspondingly, 70% of urban facilities had staff that had been on in-service training in the past year as opposed to 23% of the rural health facilities.

Over half of facilities receive supervision, with less supervision of lower-level facilities and in rural areas. Relatively more of the hospitals and health centres had received supervisory visits within the past 6 months (60-70%) compared to lower level facilities (40-50%). In particular, 25% of the PHC units had not received any supervisory visits. The largest proportions of facilities that were never visited (30%) were in Sodary and Um Rwaba – both of which are characterised by a relatively high number of units run by community health workers. One fifth of all rural health facilities had never received visits against 15% in urban areas.

Hospital supervisions tended to involve larger supervisory teams, but for other facilities there were no significant differences and the team would on average involve around two team members. The time spent on supervision, however, varied significantly by level of service ranging from a mean of 1.5 hours for dressing stations and PHC units to almost 10 hours for hospitals and 4.6 to 5.8 hours for dispensaries and health centres. This is reasonable and reflects the complexity of the services delivered at each level.

7.2. Availability of drugs

On average 5 of 13 drugs on the checklist were available in the non-hospital facilities surveyed. The mean was higher in Sheikan (5.7) and Gabrat (8.0) and lowest in Sodary (4.3) and Bara (4.3), but the differences were not statistically significant. Drug availability was significantly lower in health facilities in urban areas (1.7) than in rural areas (5.1), likely reflecting the existence of private pharmacies in urban areas. However, for 3 anti-malarials and 4 antibiotics, availability was not significantly different between urban and rural areas.

In a number of facilities it was reported that providers themselves procured drugs needed to sell on to patients. In some facilities drug revolving funds have been established.

7.3. Availability of equipment

Availability of basic equipment in basic health facilities is poor. Only 57% of basic health units had a stethoscope, 56% had a thermometer, 49% had an examination couch, 38% had a sphygmomanometer and 23% had a weighing scale. Among these five basic items, 16% of basic

health facilities had none of them, 39% possessed 1-2 of the items, 41% had 3-4 of the items, while only 4% of facilities possessed all five items.

Basic health units without any of the five basic types of equipment were most frequently found in Sheikan (35% basic health units in the Locality) and Sodary (22%). Furthermore, in Sheikan 27% of Locality facilities only had one of the items. This suggests that, along with staff, equipment is concentrated in the hospitals. Basic health units with all five items were seen only in Bara (11%) and Um Rwaba (3%).

Hospitals are partially equipped, and C-sections are mostly done in Um Rwaba and Sheikan. In all hospitals, C-section sets and sterilisation drums were available. Anaesthesia machines were seen in all but 3 hospitals, which included all of the hospitals in Gabrat el-Sheikh. Blood transfusion services were only available in 3 hospitals, including El Obeid hospital. Access to comprehensive emergency obstetric care is hence very limited. C-sections are mainly undertaken in Um Rwaba (Al Rahad and Um Rwaba hospitals) and Sheikan (El Obeid hospital) accounting for 94% of reported C-sections.

7.4. Infrastructure quality

More than half (53%) of facilities have no electricity. For those who have electricity, solar cells are the most common source (available in 20% of facilities). On the day of survey, the electricity worked in 94% of the facilities that reported having an electricity supply.

Almost all (99%) of surveyed health facilities have access to water, although on the day of visit the source of water was only available in 83% of the facilities. The most common water sources are village wells (42%) and Cartesian wells (22%). Piped municipal water systems are connected to only 12% of health facilities, mainly in urban areas. The availability of water, however, does not necessarily guarantee cleanliness of the facility, cf. Table 9.

Table 9. Cleanliness and privacy observed.

	Percentage of facilities in which			
	Clean room	Coverage on couch	Separate room	Curtained room
Family planning clinics	64	21	39	9
ANC	61	27	22	4
Deliveries	48	81	91	0
Child health services	43	14	.	.
Outpatient visits	58	22	31	2

Cleanliness in non-hospital facilities is generally poor, and poorest in Sodary, in rural areas, and lower-level facilities. Cleanliness in non-hospital facilities as indicated by the cleanliness of examination couch for outpatients was found to be significantly lower in Sodary than in other Localities, i.e. clean in 12% of facilities compared to 25% for other Localities. Cleanliness was also significantly lower in rural health facilities than in urban facilities and cleanliness decreased with level of health facility and cadre of staff in charge (lowest in PHC units and highest in health centres). Soap and water for hand-washing was available in 80% of facilities

Deliveries usually take place in separate rooms, but otherwise privacy during consultations at least in terms of using a separate or curtained room appears to be fairly limited. Use of

separate rooms for outpatient consultations in non-hospital facilities is highest in Bara (42%) and Sheikan (28%) Locality, practiced in all urban facilities, but only 20% of rural facilities.

7.5. Patient perceptions

Focus groups generally perceived quality of services to be poor. Quality as perceived by patients may differ from technical quality as judged by professional peers. Focus groups identified poor quality of services as a barrier for use of health facilities. Poor quality was identified as poor nursing care, negative attitudes, shortage of staff, overcrowding of wards, long waiting hours, poor hygiene and lack of water, poor laboratory facilities and lack of supplies, for example resulting in reuse of syringes. The general perception of patients regarding quality of services is consistent with the facility survey findings of staff shortages, poor laboratory facilities and relatively poor hygiene.

It was generally felt by the focus groups that privacy was respected. The survey did not indicate a high extent of privacy in terms of consultations taking place in separate or curtained rooms. The felt privacy could either reflect the integrity of the health staff or be due to the selection of focus group participants mainly from the Locality capital, in which facilities tend to provide curtained areas or separate rooms.

7.6. Summary

The availability of qualified staff, drugs and equipment is poor, particularly in non-hospital facilities and in rural areas, although the reported absence rate is low. Shortage of human resources is a problem, especially outside the State capital. Three quarters of the basic health units are staffed with only a community health worker. Drug availability is relatively low in general as is the availability of basic equipment as well as equipment needed for provision of comprehensive emergency obstetrics care. Cleanliness appears to be low, especially at the lowest service levels.

Almost 50% of all staff are found in Sheikan and more than 25% in Um Rwaba, leaving less than 25% of staff to serve the remaining 37% of the population. There is no significant difference in drug availability in non-hospital facilities between Localities, but availability tends to be higher in Sheikan and Gabrat el-Sheikh. In terms of availability of equipment non-hospital facilities are better off in Bara and Um Rwaba and worse off in Sodary and Sheikan. Cleanliness was also found to be particularly poor in Sodary.

In all Localities staff are concentrated in the hospitals and urban areas. Thus, rural health facilities on average are poorer staffed, have less basic equipment, are less clean and offer less privacy. Drug availability appears to be higher in rural areas than in urban areas, likely due to the presence of private pharmacies in the latter.

8. Affordability

Affordability of health services depends on the level of fees charged, the resources available to patients and the extent to which services or patients are exempted from fees. The resources available to patients cannot be assessed directly by a facility survey, but the extent to which patients fail to pay provides some indication of relative affordability.

8.1. Fee levels

All health facilities reported that patients have to pay for services provided. The basis for determining the fee level varied. In principle, the State Cabinet and parliament determine fees based on actual cost estimates for service delivery. However, only 13% of facilities reported using a standard price list prepared by the SMoH. In the rest of facilities fee levels were determined by the provider or the facility administration (which in case of small facilities often coincide). Among non-hospital facilities standard price lists were used by only 7 % of facilities, mainly health centres, and 99% of rural non-hospital facilities charged fees without a standard list from the SMoH.

The fee structure generally appears to support the referral system and seems to reflect the qualifications structure, i.e. higher fees are charged at facilities in which better qualified staff are available. Similarly, the focus groups agreed that consultation fees varied depending on qualifications of the provider. The consultation fee for seeing a medical assistant would be SDD 90 (USD 0.40) against SDD 300 (USD 1.30) for seeing a doctor.

Table 10. Perceived typical fee levels.

Item	SDD	USD
Registration fee	100	0.4
Consultation fee (medical assistant/doctor)	100-300	0.4-1.3
Normal delivery	6,000	26.3
Caesarean section	11,500	50.4
Surgical package	13-18,000	57.0 -78.9
Admission package	11,500	50.4

Source: Focus groups.

The focus groups perceived fees to be high compared to the general ability to pay and that this was an important access barrier. Further, they reported that government clinics would turn into private practices after hours, charging double fees for services. The focus groups reported on what they perceived as typical levels of payment, cf. Table 10.

Table 11. Average cost of services by type of health facility

Health facility	Total fees in SDD to be paid for a				
	Episode of simple malaria	ANC visit	Normal delivery at hospital	Drainage of absces	Appendectomy
Hospital	870	450	4789	2149	14660
Health center	696	334	-	870	-
Dressing station	782	267	-	1100	-
Dispensary	603	227	-	808	-
PHC unit	495	221	-	550	-
Total	610	272	4789	1045	14660

Source: Facility survey

The typical fee levels reported by focus groups appear to be slightly higher, but within the range of, the levels reported by the facilities, cf. Table 11. Treatment for an episode of simple malaria costs on average SDD 870 (USD 3.80) in hospitals and SDD 495 (USD 2.15) in PHC Units. The average

cost of an ANC visit ranges from SD 221 to 450 (USD 1-2). Normal delivery at a hospital costs on an average of SDD 4,800 (USD 20).

The total cost for an episode of malaria was significantly lower in rural areas (average SDD 560) than in urban areas (average SDD 740). However, fees for drainage of abscess and ANC visits were not significantly different between urban and rural areas. Sodary and Gabrat el-Sheikh have higher average fee levels than other Localities in most cases.

8.2. Exemption practices

Exemptions from payment are given in many health facilities, more often in rural areas than in urban areas. In principle there is a standard list of services exempt from payment developed by the SMoH. Only 37% of facilities report using such a list, while 54% base exemptions purely on the opinion of the provider.

Exemptions are generally given for immunisations (which is consistent with national policy), while exemptions are rarely given across the board for deliveries. With regard to emergency services, referral cases, family planning, ANC and TB patients, the practice regarding exemptions varies significantly and users are inconsistently treated. For example, ANC is exempted in 78 % of PHC units that provide ANC services, but in only 22% of health centres. Correspondingly, if a pregnant woman chooses a health facility at random in a rural area (that provides ANC services) her likelihood of being exempted is 62%; however, if she chooses an urban health facility it is only 20%. This does make sense from an equity point of view, insofar as the poorest populations live in rural areas. However, inconsistency in practices within urban and rural areas is a concern. The likelihood of being exempted is largest in Bara and Sodary and lowest in Sheikan (where only 36% of facilities exempt ANC cases).

Facility staff reports and focus groups are contradictory on how patients who cannot pay are treated. Almost half of health facilities reported that if patients arrived without being able to pay they would be treated on credit, while 17% would exempt them and 14% either give credit or exempt. Only 6% of facilities stated that no services would be provided if people came without money. In contradiction with this, it appeared from the focus group discussions that patients without money are not allowed to enter the health facility at all or are not given prescribed tests or treatments until payment is organised. Some participants also stated that they would stay at home when they cannot pay the fees, resort to borrowing cash from neighbours or relatives or even resort to selling livestock or stock of crops.

8.3. Ability to pay

The lack of ability to pay is reflected in the number of people who fail to pay the charges that they are supposed to pay. Overall, in the surveyed facilities 15% of the patients attending over the past month failed to pay; of these, only 10% were supported by a social support system. The percentage of patients that failed to pay varied by Locality and by location of the facility.

Patients attending rural health facilities failed to pay in 25% of contacts, compared to only 5% of contacts in urban health facilities. Among those who failed to pay in urban health facilities, 62% were subsequently supported by the social support system against only 1% of those who attended rural health facilities and failed to pay. Those who failed to pay were in particular

clients of PHC units and dressing stations (accounting for 65% of all non-payers) A third of the clients of these types of facilities, which are concentrated in rural areas, failed to pay.

Patients in Sheikan and Sodary are less likely to fail to pay, while those in Gabrat and Um Rwaba are more likely. The lowest proportions of patients that failed to pay for services were found in Sheikan (4%) and Sodary (8%) Localities. These Localities also provided with social support the largest proportions of those who could not pay (23% and 37% respectively). In Gabrat and Um Rwaba, the percentages that failed to pay were on the other hand close to one third (29-34%). Of these, less than 10% subsequently received social support.

8.4. Summary

Patients have to pay for services in all facilities. User fees are perceived as an important access barrier. Exemptions for payment are, however, given in many facilities. The fees are lower in rural areas and exemptions for payment for specific services are more frequent. Despite this, some patients fail to pay, and this happens more often in rural areas than in urban areas.

Health facilities in Sheikan Locality charge medium level fees, exemptions are not so frequent and only a few patients fail to pay. Fee levels in Um Rwaba and Bara is likewise at medium level, exemptions are less frequent in Um Rwaba and patients are more likely to fail to pay, whereas in Bara exemptions are more frequently given and patients are less likely to fail to pay. Finally, health facilities in Sodary and Gabrat el-Sheikh both charge relatively high fees, but in Sodary exemptions are given more frequently and fewer patients fail to pay.

9. Use of services

Estimated outpatient visits per capita are relatively high compared to other contexts in Sub-Saharan Africa. The total number of outpatient visits during the year in North Kordofan can be estimated based on the reported data from the health facility survey. The mean number of outpatient visits varies by type of health facility. Health centres, dispensaries and dressing stations on average see 3400-3800 patients per year, whereas hospitals (except the referral hospital) see almost the double and PHC units little more than half of that level. The total number of outpatient visits as reported by the health facilities is estimated at around 1.6 million , corresponding to 1.0 outpatient visit per capita per year. This appears to be fairly high in comparison to other contexts in Sub-Saharan Africa. Earlier estimates from FMoH suggest an average of 0.8 outpatient visits per capita for all of Northern Sudan in 2004.

In terms of estimated service delivery per 1,000 population, Um Rwaba is generally above the State average and Gabrat el-Sheikh is generally below the State average, cf. Table 12. Outpatient visits per population last month and number of immunised children were three times higher in Um Rwaba than in Gabrat el-Sheikh. Similarly, the per population institutional deliveries, admissions as well as minor and major surgery were approximately twice as high in Um Rwaba compared to Gabrat el-Sheikh.

Institutional deliveries are not very common. Based on the data reported it is estimated that 3-8% of deliveries take place in health facilities, mainly in Sheikan and Um Rwaba. Of these, a high proportion are Caesarean sections indicating that hospital deliveries are mainly used for emergencies. It is estimated that 2,154 Cesarian sections were undertaken in 2005, corresponding

to less than 5% of expected deliveries. This figure is lower than normally expected in a population served by a well-functioning health system, although it is higher than in some very poor contexts.

Table 12. Estimated service provision per 1,000 population by Locality, North Kordofan 2006.

Locality	Sheikan	Bara	Sodary	Gabrat el-Sheikh	Um Rwaba	Total
OPV last month	76	64	107	40	116	89
OPV last year	685	587	1369	254	1414	967
Immunised children	80	66	47	42	116	84
Institutional deliveries	n.a.	6	6	9	20	n.a.
Admissions	58	6	6	9	20	26
Minor surgery	22	38	35	20	41	33
Major surgery	26	37	34	25	42	35

Note: Number of deliveries at El-Obeid Hospital not available.

The large majority of outpatients are treated at the lowest levels as an estimated 79% of outpatient visits were to dispensaries, dressing stations or PHC units. Outpatient visits were therefore concentrated in rural areas as an estimated 82% of outpatient visits were to rural health facilities. For comparison the rural population amounts to about two thirds of the State population. The estimated per capita utilisation in rural areas is as high as 1.2 against 0.5 outpatient visits per capita in urban areas. This suggests that in urban areas a significant proportion of patients visit private providers (not sampled by the facility survey).

Outpatient utilization rates are relatively high in facilities with smaller catchment populations. The number of outpatient visits could be expected to depend on population in the catchment area, accessibility, quality and affordability of services. The number of outpatient visits is expected to increase with larger catchment populations. The number of outpatient visits reported in 2006 was at a minimum 1,430 per facility in catchment areas of less than 1,000 population, indicating a relatively high utilisation rate of at least 1.4 visits per capita. For catchment areas of 1,000 to 4,999, the per capita use of services were a minimum of 0.41 and a maximum of 2.04, still fairly high, but as catchment populations increase to 5,000 to 9,999, the minimum utilisation per capita remains at 0.34, while the maximum decreases to 0.68. Large catchment populations may reflect high density areas, but may also reflect large geographical areas with longer distances.

10. Linking public financing to results

Simple comparisons of financing levels and results in terms of service delivery and utilization are possible. This cross-sectional study allows for comparisons between facilities and between Localities but does not provide information on time trends. Thus, confounding factors, such as differing socio-economic levels between Localities, may influence both financing and service delivery results but cannot be controlled in the analysis. Nevertheless, simple comparisons across Localities are suggestive. The data allow estimates of per capita public spending on non-hospital services by Locality. As noted above, spending on health worker salaries (Chapter One) is estimated from reported numbers of health workers and information on salary levels. This is by far the most important category of spending. (Table 13) The estimates can be compared to service delivery indicators.

There is a close relationship between level of spending and reported utilization of non-hospital services by facility catchment populations. Figure 10 describes the relationship, showing that per

capita public spending on non-hospital services by Locality tracks closely with Locality averages for utilization per capita. For example, estimated per spending in Sheikan is SDD 367 and reported utilization is 1.6 patient visits per catchment population, compared to spending in Gabrat el-Sheikh of SDD 95 and utilization of 0.3. Among the 87 non-hospital facilities surveyed, the correlation between Locality level of spending and utilization is 0.21. However, the correlation between Locality spending the average utilization by Locality is 0.94. A simple regression indicates that utilization increases by 0.05 visits per capita with each increase in spending of SDD 10.[5]

Table 13. Estimated per capita non-hospital health spending by Locality (SDD), 2005

Locality	Chapter One	Chapter Two	Total	Total (USD)
Sheikan	303	64	367	1.59
Bara	188	10	198	0.86
Sodary	172	7	179	0.78
Gabrat el-Sheikh	89	6	95	0.41
Um Rwaba	176	7	183	0.79

Notes: Chapter One expenditures are estimated from information on salary levels and facility survey data on staff numbers in non-hospital facilities. Chapter Two expenditures for Sodary are imputed from the average of Bara, Gabrat el-Sheikh and Um Rwaba. Chapter Two expenditures are from Locality reports only and do not include resources allocated by the State (mostly vaccines).

Figure 10. Annual non-hospital patients per catchment population compared to Locality per capita public spending on non-hospital services (n = 87 facilities)
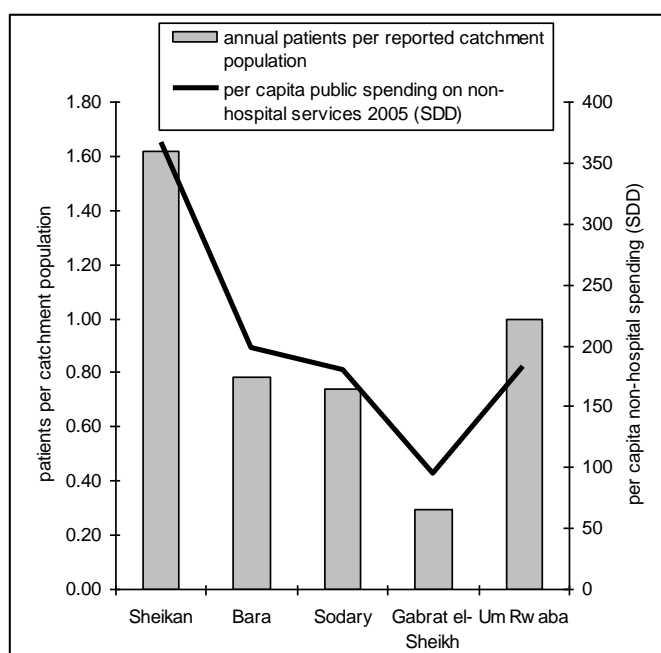

However, such correlation with spending is not evident when the entire locality population is used as the denominator for the utilization indicator (rather than reported catchment population). This suggests that increased spending (largely on health worker salaries) does not affect service utilization by those who do not have geographic access to the services.

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[5] This is statistically-significant after accounting for clustering at the Locality level (p < 0.001).

Spending levels reflect the number of health workers. This is, of course, consistent with the fact that, by construction, the spending estimates depend greatly on reported health worker numbers. Figure 11 illustrates how the Locality spending estimates rise and fall with the total number of non-hospital health workers per 100,000 reported catchment population.

Figure 11. Non-hospital health facility workers compared to Locality per capita public spending on non-hospital services (n = 87 facilities)
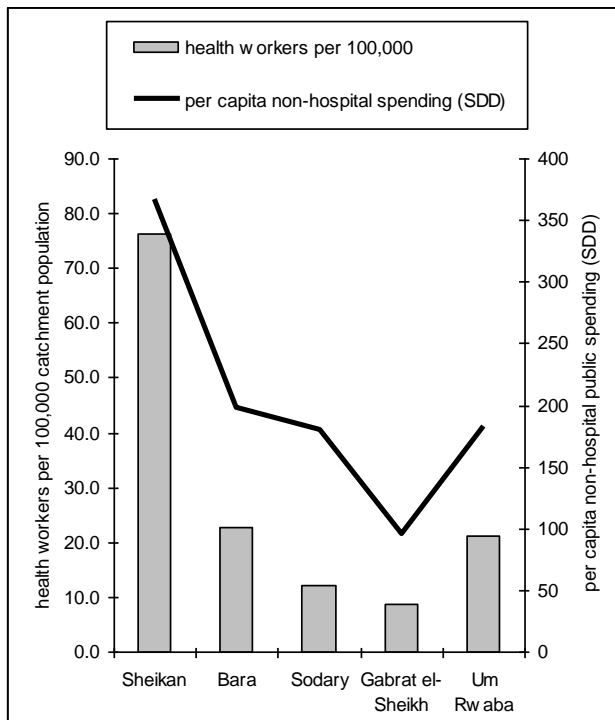
It is notable that the number of lower-level health workers is correlated with service utilization (and spending). Figure 12 illustrates the relationship between utilization (and spending, which is closely correlated with utilization) and numbers of outreach and community-level workers (health educators, vaccinators, village midwives and community health workers). With regard to higher skilled staff (doctors, nurses and medical assistants), there is a large difference between Sheikan and the other Localities that is reflected by utilization rates, but numbers of skilled workers in Sodary, Gabrat el-Sheikh and Um Rwaba do not track closely the utilization estimates. A possible implication of these patterns is that utilization is not dependent on just higher-level health workers, but that lower-level workers are also important (seen particularly in Um Rwaba, which has a large number of community health workers staffing basic health units).

Quality indicators are not evidently related to spending levels (or utilization). Figure 13 compares an indicator for equipment of non-hospital facilities (presence of stethoscope) and indicators of drug availability (presence of antibiotics) with estimated Locality spending on non-hospital services. The graphs suggest little relationship, which is also the case when comparing to estimated utilization. The facility-level correlations between these indicators and spending estimates are low and not statistically-significant. These patterns make sense in that the spending estimates mostly reflect spending on salaries and that expenditures for other operating costs and investments are negligible. (The patterns also reflect that, particularly in Sheikan, significant

resources, such as medical equipment, are concentrated in hospitals, which is not reflected by the graphs).

Figure 12. Non-hospital health facility workers by skill level compared to annual patients per reported catchment population (n = 87 facilities)
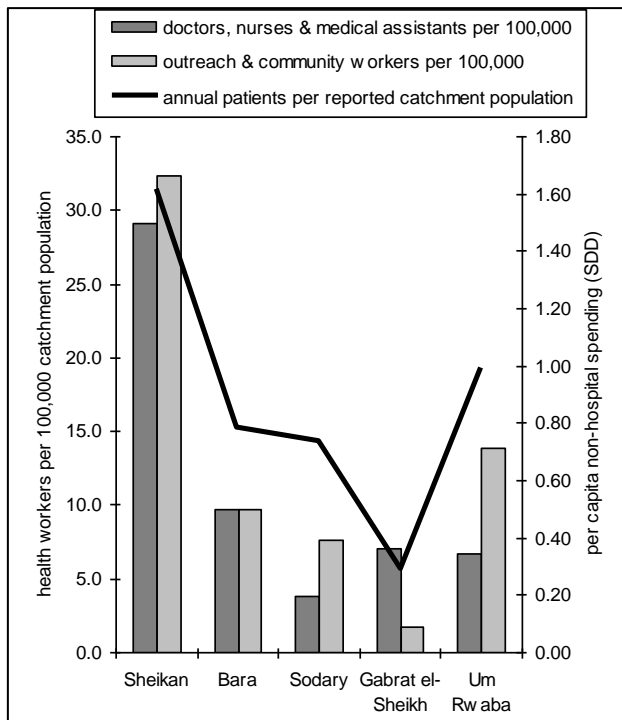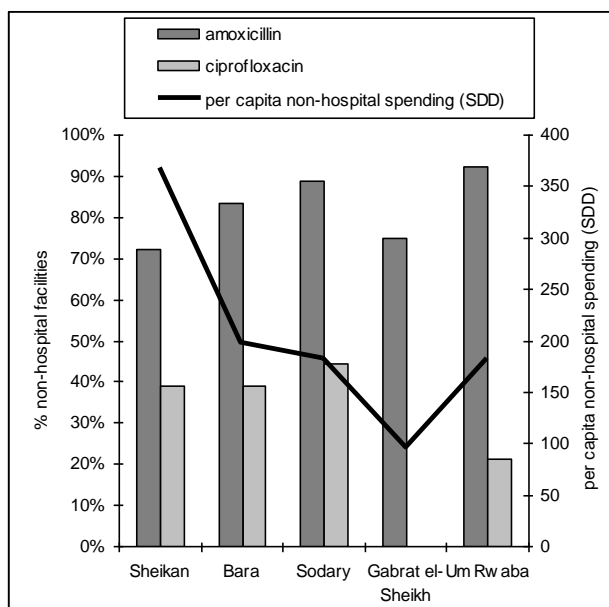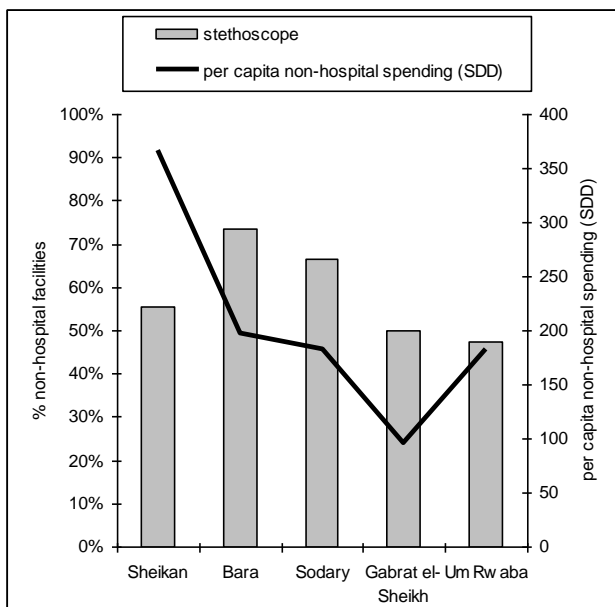

Figure 13. % non-hospital facilities with stethoscope and antibiotics compared to Locality per capita public spending on non-hospital services (n = 87 facilities)

There does not seem to be relationships between user fees and level of spending or service utilization. Figure 14 illustrates reported cost of treatment for an episode of simple malaria

compared to estimated public spending on non-hospital services as well as to service utilization. It would be expected that higher public spending would be accompanied by lower user fees, which in turn would lead to higher utilization, but such patterns are not evident. Facility-level correlations are neither large nor statistically significant. It could be the case that overall trends cannot be discerned as the demand effect of lower fees may be counteracted by the fact that higher fees are charged by facilities with higher-skilled staff which attract greater utilization.

Figure 14. Cost of treatment of episode of simple malaria in non-hospital facilities compared to Locality per capita public spending on non-hospital services and reported non-hospital patients per catchment population (n = 87 facilities)
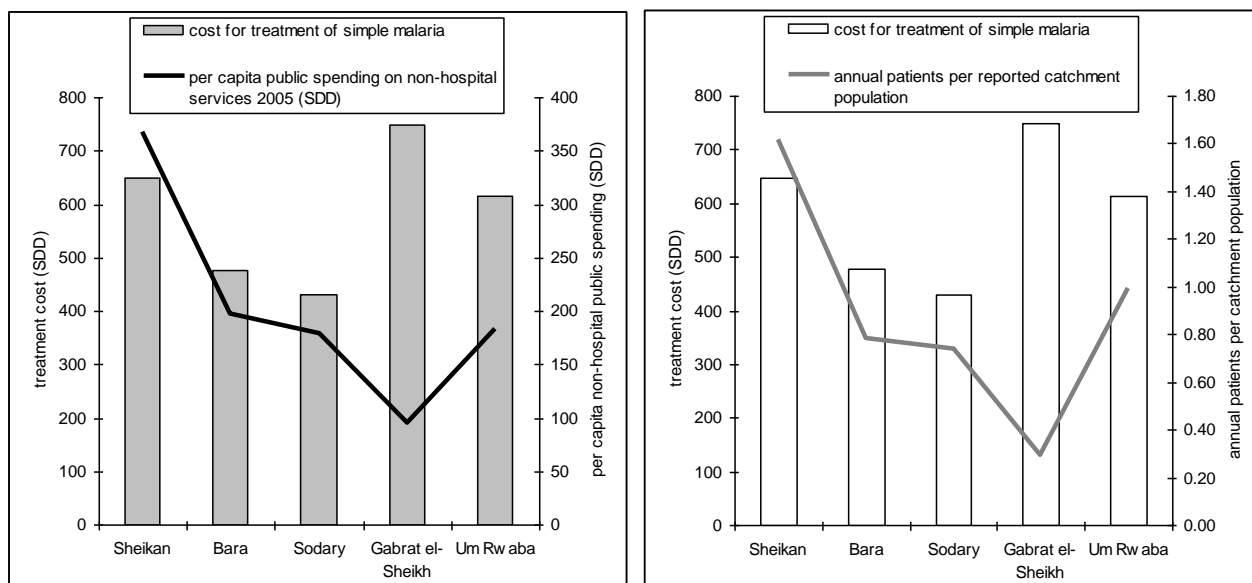
11. Summary and conclusions

This study involved three different types of data collection: collection of information on government financing of health services at the state and locality levels, a representative survey of public sector health facilities, and qualitative focus group discussions with health service users. Information from the state case study of the Public Expenditure Review (PER) is also used. The cross-sectional nature of the study limits the scope for assessing how change in financing levels may have affected health services and utilization in North Kordofan, but analysis of patterns and comparisons between Localities support a number of conclusions.

Health financing

Government spending on health services has increased in absolute terms in line with increased revenues, particularly in the form of Federal transfers. Although health spending as a percentage of total State government expenditures has remained flat at around 10-12%, increased total expenditures linked to higher Federal transfers has mean that the absolute level of health spending has increased in recent years. Hospital services are financed the State government, while a mix of State and Locality resources supports non-hospital basic health services. Locality spending on health services largely takes the form of salaries, mostly financed by transfers from the State.

Total State and Locality government health spending in 2005 is estimated at around SDD 1,500 per capita (USD 6.20). Total public spending on health in North Kordofan in 2005 is estimated at around SDD 2,400 million, or USD 10 million. It is estimated that the State government health spending was around USD 4 per capita. The remaining USD 2.20 was financed by Localities, but most of this came from transfers from the State for health worker salaries.

Most public expenditures on health services are devoted to salaries. It is estimated that at least 60% of public spending on health is allocated to salaries. Excluding spending financed by official user fees, the proportion is 75%. Spending on operations and maintenance is low and capital investment is negligible. Drugs are largely financed by patients, either through the public revolving fund scheme or private sector suppliers.

Most public expenditures on health are devoted to hospital services. It is estimated that approximately 75% of government spending on health is allocated to hospital services. Based on the available data, it is estimated that in 2005 around SDD 380 (USD 1.60) was spent on non-hospital basic health services, which is 25% of total estimated public sector health spending of SDD 1,500 (USD 6.20). [change this to all state spending to be on hospitals].

Overall, most resources are concentrated in Sheikan Locality, which includes the State capital – and in urban areas in general. As most public spending is devoted to salaries, this benefits most the areas with the most staff, ie. Sheikan Locality and urban areas in general. For example, estimated public spending on non-hospital basic services in 2005 was two times higher in Sheikan than in Bara, Sodary and Um Rwaba, and four times higher than in Gabrat el-Sheikh. In addition, the largest hospital in the State is in the capital in Sheikan locality and receives a significant proportion of State government health spending.

Official user fees are significant revenue source for government spending on health, accounting for about a fifth of the total. It is estimated that official user fees were the revenue source for SDD 180 million (USD 800,000) of public spending on non-hospital basic health services and SDD 500 million (USD 1.5 million) for hospital services, totalling around USD 1.30 per capita in 2005. As would be expected, higher-level facilities, particularly hospitals, collect the most revenues in fees. Other payments for health care made by households for which data are not available include unofficial fees for services and purchases of drugs from public or private suppliers.

Health services

In comparison to population, overall health facility numbers are comparable to standards and averages in Northern Sudan, but higher-level services are concentrated in some Localities and in urban areas. Except for hospitals, overall average population-to-facility ratios are better or similar to Federal standards and Northern Sudan averages. Because of the presence of the main hospital in the state capital, Sheikan Locality has among the lowest numbers of non-hospital health facilities in comparison to population. Gabrat el-Sheikh also has low numbers of facilities, and this is similarly compensated to an extent by hospital services. Um Rwaba Locality has higher numbers of facilities in relation to population, mainly due to its network of non-hospital primary health care (PHC) facilities. Hospital services are concentrated in urban areas, particularly the state capital which accounts of half of all hospital beds in the state. Half of health centres are in urban areas, while all lower-level facilities are in rural areas.

Urban areas, served by higher-level facilities, offer a much greater range of health services than in rural areas. Most hospitals and health centres in urban areas offer basic public health services including family planning, antenatal care (ANC), and child health services and immunisation. However, in rural areas, many facilities do not offer family planning and there is an indication that child health services are limited, although ANC and immunisation are offered in most cases. Operating hours are found to be generally sufficient, although focus group discussions emphasized problems in transport and finding health workers for emergencies outside of working hours.

Facility-based delivery care is limited to urban areas, while comprehensive emergency obstetric services are basically only available in two Localities. Delivery services are available in almost all hospitals but in only 13% of rural non-hospital facilities, indicating that institutional delivery is largely inaccessible to women in rural areas. Comprehensive emergency obstetric care is basically limited to hospitals in Sheikan and Um Rwaba Localities, accounting for 94% of reported C-sections.

Higher-skilled health workers are concentrated in urban areas and in two Localities, particularly in hospitals, while most basic facilities in rural areas rely on community health workers. All hospitals and a third of health centres have doctors, half of health centres have medical assistants, and most dispensaries and dressing stations are staffed with either a medical assistant or nurse. However, 75% of PHC Units, the most numerous basic health facilities, are staffed only with community health workers. Almost half of all health cadres are found in Sheikan, mainly in El Obeid hospital. More than a quarter of staff are found in Um Rwaba, leaving around one quarter of staff for the remaining three Localities totalling 37% of the population of the state. However, nurses are evenly distributed between Localities, indicating that they are used to compensate for the lack of doctors and medical assistants in some areas. Generally, the facility survey found that absenteeism is reported to be low. Supervision and in-service training is focused on higher-level services in urban areas, although are not completely absent in rural areas.

Drug availability is low, as on average only 5 of 13 drugs on the checklist were found to be available in non-hospital facilities surveyed, and most drug costs are borne by patients. Drug availability in public sector facilities is lower in urban areas, reflecting greater presence of private sector drug sellers. Whether bought from a private seller or a public sector drug revolving fund scheme, most if not all drug costs are borne by patients and households.

Basic health facilities are very poorly equipped. Only 57% of basic health units had a stethoscope, 56% had a thermometer, 49% had an examination couch, 38% had a sphygmomanometer and 23% had a weighing scale. Only around half of all facilities have electricity, although almost all have a water supply. The facility survey found that cleanliness is generally poor and that privacy appears to be limited.

Patients generally perceive quality to be poor but feel that privacy is respected. Focus group discussions identified poor nursing care, negative attitudes, shortage of staff, overcrowding of wards, long waiting hours, poor hygiene and lack of water, poor laboratory facilities and lack of supplies, as examples of poor quality of services. However, they did not generally express dissatisfaction about privacy.

<u>User fees and affordability</u>

Official user fees represent a significant revenue source for the financing of basic health services. It is estimated that such fees totalled around SD 500 million (USD 2.2 million) in 2005, or USD 1.30 per capita, or about 20% of total public sector expenditures on health services.

In addition, fees for health services retained by health facilities are not included in revenue reports, but certainly represent a significant source of financing for health services, likely covering most non-salary recurrent costs. All surveyed facilities reported charging patients for services, although only 13% used a standard price list. As would be expected, higher fees are charged in higher-level facilities that are staffed by more skilled personnel. Reported cost to patients of treatment for an episode of malaria ranged from SDD 500 (USD 2.20) in PHC units to SDD 870 (USD 3.80) in hospitals.

Fees for services represent a significant barrier to access to care, particularly in rural areas. Health facilities reported that 25% of patients fail to pay for services in rural areas, compared to only 5% in urban areas. Of those who failed to pay in rural areas, only 1% were subsequently supported by a social support mechanism, compared to 62% in urban areas. Focus groups generally indicated the fees for services were higher than ability to pay and that this was an important barrier to access. Although only 6% of health facilities reported that patients arriving without the ability to pay would not receive credit or be exempted, focus groups said that most such patients would either be turned away or be refused prescribed tests and treatments until payment is organized.

Generally, patients in Sheikan Locality are most able to pay, while those in Um Rwaba are less able. The other Localities fall in the middle in terms of fee levels, patients failing to pay, exemptions, and social support.

<u>Service utilization</u>

Overall, health service utilization on the state, measured by outpatient visits per capita, is relatively high compared to other contexts in Sub-Saharan Africa. The estimate of 1.0 outpatient visits per capita per year can be considered relatively high. For example, in Democratic Republic of Congo (DRC), this rate of utilization is a target, as current rates are generally not higher than 0.60. Another point of comparison could be rates of around 2.0 observed in refugee camps where health services supported by international assistance are readily available and free to the user.

However, there are significant differences in utilization between Localities. Annual outpatient visits per capita in Um Rwaba and Sodary were around 1.4, compared to just 0.25 in Gabrat el-Sheikh. Estimated ratios in Bara and Sheikan were around 0.6-0.7. Inpatient admissions were by far highest in Sheikan Locality, reflecting the importance of hospitals there, although admissions in Um Rwaba were also significantly higher than the other Localities.

Reported outpatient visits to public facilities are higher in rural areas, likely reflecting the importance of private sector providers in rural areas. Estimated per capita outpatient visits in rural areas is 1.2, compared to 0.5 in urban areas. Information was not collected from private sector providers, so this rate in urban areas does not reflect actual utilization of all health services, given the likely importance of the private sector in the cities. In addition, this is likely why the estimated outpatient utilization rate for Sheikan Locality is not higher.

Facility-based maternal care is limited. It is estimated that only 3-8% of deliveries take place in health facilities, mainly in Sheikan and Um Rwaba, which reflects poor access as well as perhaps preference for home delivery. The data also allow an estimate that less than 5% of deliveries involved C-section, a proportion lower than would be expected in a population served by a well-functioning health system.

Financing linked to results

In comparing health facilities within Localities, there is a clear association between public spending on non-hospital services and service utilization. Among the 87 non-hospital facilities surveyed, utilization increases by 0.05 patients per capita with each increase in spending of SDD 10.

Public spending reflects the number of health workers, including lower-skilled workers, which in turn is associated with utilization levels. Because health worker salaries dominate the spending estimates, these estimates are by construction highly correlated with health worker numbers in each Locality. It is notable that the numbers of lower-skilled workers (outreach workers, village midwifes, community health workers) track closely with utilization estimates (as well as spending).

Quality indicators, particularly equipment and drug availability, are not associated with spending levels or non-hospital service utilization. A number of factors may be behind this finding, including the concentration of equipment resources in hospitals, negligible public spending on non-salary operations and investments, the use of private drug sellers in urban areas and the policy of cost-recovery for drugs.

There does not seem to be relationships between user fees and level of spending or service utilization. The cost of treatment of a case of simple malaria is not correlated with either spending levels or service utilization. This may be due to counteracting effects: although lower fees may increase demand, higher fees are collected by facilities with higher-level staff which attract greater demand (and are concentrated in urban areas where the population's ability to pay is greater).

Conclusions

Overall, this study sketches a picture of an under-financed but moderately-performing public sector heath system that privileges hospital services in urban areas. Most public financing goes to salaries and higher financing (and therefore greater numbers of health workers) are reflected by higher service utilization. Most public financing is devoted to health worker salaries, with out-of-pocket payments covering most, if not all, non-salary recurrent costs, particularly drugs. Localities with greater numbers of health workers, in particular Sheikan Locality containing the state capital of El Obeid, receive higher levels of public funding and have better results in terms of service utilization. In the state capital and other urban areas, hospitals and health centres provide higher quality services and attract the most patients. Patients in urban areas are also more likely to be able to pay for the services. Rural areas and poorer Localities, on the other hand, have lower levels of staff and receive lower levels of public financing, resulting in significantly lower service quality and utilization.

Total estimated public spending on health services in North Kordofan of USD 6.20 per capita in 2005 is consistent with countries of GDP per capita of around USD 400. Sudan's GDP per capita was estimated at around USD 600 in 2004 and is projected to reach USD 1,000 in 2007. In Northern Kordofan, it is evident that public spending on health has not kept pace with the rapid GDP growth of the country as a whole, despite dramatic increases from very low levels in recent years.

Figure 15. Government health spending compared to GDP per capita (USD 2004) among countries with GDP per capita under USD 2,000
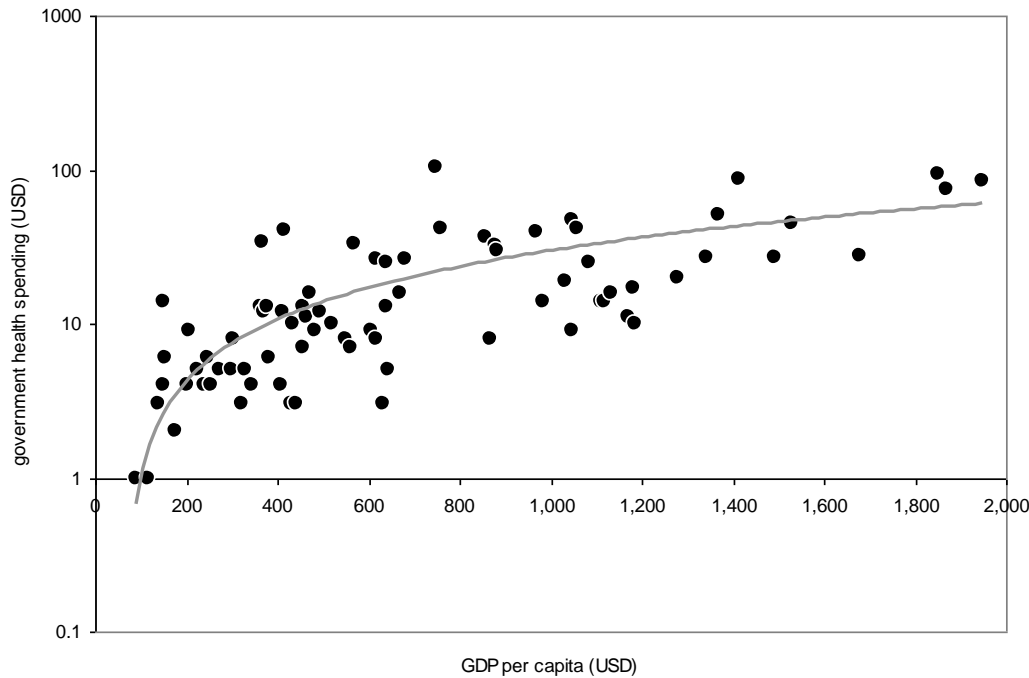
Sources are WHO Statistical Information System and World Bank Development Indicators.

State and Locality spending on health services in North Kordofan is higher than the estimated average for Northern Sudan. Federal Ministry of Health (FMoH) estimates for State and Locality health spending in 2005 are around SDD 34,000 million (USD 135 million), or around SDD 1,200 (USD 4.80) per capita.[6] The estimated spending in North Kordofan of USD 6.20 is higher than the average.

The overall moderate results in terms of reported utilization (out patient visits per capita around 1.0) indicate that this public spending is achieving results but also likely reflects significant unmeasured private out-of-pocket payments for services. Nevertheless, higher utilization rates in public facilities in rural areas, where private out-of-pocket payments are likely lower, is suggestive that government spending on health services indeed has an impact on utilization.

Public spending on health is mostly on staff salaries, but this is shown to be correlated with results in terms of service utilization. Comparisons between the surveyed health facilities within Localities indicate that increased public spending on health, as well as higher levels of staff, are

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[6] This assumes that State and Local health spending in the 10 states of Southern Sudan was negligible and that the population of the 15 states in Northern Sudan was 28 million.

correlated with increased utilization. Without accounting for possible confounding factors such as different socio-economic status levels in the Localities, it is estimated that an increase in annual public spending of SDD 10 is associated with an increase of 0.05 in per capita patient consultations. This suggests that increased public spending, although almost entirely devoted to staff remuneration, has had an impact in improving service utilization.

However, there are significant disparities in utilization that reflect disparities in public spending and health system resources, particularly health workers. First, health staff and other resources are highly concentrated on hospital services in urban areas, particularly in the state capital. Although this has had results in terms of effective service delivery, using hospitals to deliver primary health care is much less efficient than using lower-level facilities. Second, differences between Localities are evident, with Sheikan receiving the most resources and Gabrat el-Sheikh the least.

There is evidence that lower-level facilities and lower-skilled staff are effective in providing services. Although most higher-skilled staff (doctors, medical assistants and nurses) are concentrated in Sheikan Locality, relatively good levels of service utilization are found in Um Rwaba Locality, with high numbers of basic health units staffed by community health workers. At the same time, the higher average utilization of government facilities in rural areas (which are mostly lower-level facilities) compared to urban areas (where government facilities are higher-level health centers and hospitals), reflects not only the role of private providers in urban areas but also the effectiveness of the lower-skilled government providers in rural areas.

Although this study does not capture the situation of parts of the population that may not have access to services, a recent household survey indicates that access in North Kordofan is similar to the average for the northern states. The study did not include a household survey, so did not measure access to services by the entire population. Utilization rates reflect use of services by those who have geographic and financial access. Nevertheless, the 2006 Family Health Survey indicates that effective utilization by the entire population in North Kordofan may be similar to the average in northern Sudan. In North Kordofan, 49% of under-five children with symptoms of pneumonia were treated by a government provider, compared to the average for the 15 northern states of 51%. Similarly, in North Kordofan 66% of under-five children with fever received treatment (from either a public or private provider), compared to the average for the northern states of 72%.[7]

Policy implications

The findings of this study suggest four general policy implications.

First, although increased spending on health worker remuneration has likely had an impact on improving services, financing of non-salary recurrent costs, including drugs, need attention. Currently such non-salary recurrent costs are almost fully financed from out-of-pocket payments by patients, which disadvantages the poor and likely raises significant barriers to access to care. Current policy, with some exceptions, is for the cost of drugs to be borne by patients, and drug revolving funds have been shown to ensure adequate supply in other parts of northern Sudan, particularly Khartoum State. However, this study suggests that this mechanism has not been

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[7] The estimates for North Kordofan are for the recently-formed larger state that includes parts of former West Kordofan.

successful in ensuring drug supplies in North Kordofan. At the same time, official and unofficial user fees are necessary for adequate operations of health facilities (as well as likely supplementing health worker remuneration). Further increases in public spending on health should start to remove some of these burdens from patients.

A number of strategies are possible, which should be implemented in return for user fee reductions. Choices for strategies could include adding and increasing budget lines for operational costs, subsidizing certain treatments and medications (such as for high prevalence diseases such as malaria or pneumonia), subsidizing or exempting from fees certain groups (such as under-five children and pregnant women), strengthening exemption mechanisms for the poor (requiring a system for government to reimburse facilities for the foregone revenue), and using subsidies to expand coverage of the civil service health insurance system to wider groups.

Second, further increases in public spending on health need to involve increased capital investment for the benefit of lower-level health services in rural areas, accompanied by an effective staffing strategy. The preponderance of focus on hospitals has led to under-financed, under-equipped and under-staffed basic health facilities in rural areas. Further increases in public spending on health should include an investment program focused on improving the equipment and infrastructure of the primary health care system in rural areas of the state. Although this study could not evaluate the issue, it is likely the geographic access remains a problem for remote rural populations, so that an investment program should also include measures to expand geographic coverage. At the same time, it is obvious that capital investments will not improve services without an effective strategy for sustaining and improving operations – and this means ensuring adequate staffing in particular.

Third, the indications that lower-skilled health workers can be effective in providing services and raising utilization indicate that a significant part of the staffing strategy for rural areas should be to improve the skills of and support to such personnel, in particular community health workers and village midwives. Re-allocation of higher skilled staff (doctors, nurses, and medical assistants) to underserved areas may also be necessary but the cost and effectiveness balance should be closely considered, particularly as significant financial incentives are likely necessary to relocate such staff. Support to lower-skilled, community-based workers could be part of a strategy to expand coverage of cost-effective high impact interventions that do not need to be delivered by highly-trained personnel. Such a package of interventions would include provision of commodities and knowledge for prevention of high-burden diseases (ie. malaria, malnutrition, diarrhoea), family planning services, diagnosis and treatment of the main childhood diseases, and improvements in the cleanliness of deliveries, identification of obstetric complications for referral and neonatal care. Models based on empirical information from similar contexts in Sub-Saharan Africa indicate improved coverage of a package of high-impact health interventions that can be delivered by lower-skilled health workers would cost under USD 2 per capita per year, and would have a significant impact on child mortality in particular.[8]

Fourth, improvements in existing higher-level services, particularly with the aim of improving quality and access to maternal health care, should also receive investment. Reducing maternal mortality requires improvements in access to comprehensive emergency obstetric care, which

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[8] African Union (2006) "A Strategic Framework for Reaching the Millennium Development Goal on Child Survival in Africa Through Health System Strengthening and Implementation at Scale of Integrated Packages of High-Impact and Low-Cost Health and Nutrition Interventions," Version 9.

means in particular surgical capacity to perform C-sections. This can be done by building on existing higher-level services (hospitals and health centers), improving quality and ensuring adequate equipment, staffing and operational costs in order to improve care for complicated deliveries. This must be accompanied by improvements in referral, starting with adequately trained village midwives who can facilitate the referral of complicated cases. There are several strategies to address the issue of inadequate transport. Investments in ambulances and communications systems are costly and difficult to sustain, so that alternative strategies could be considered in the short-term, such as subsidies to community funds and schemes involving private transporters. Models suggest that substantial improvements in obstetric and other clinical care would cost in the order of USD 3-4 per capita annually.

It is now the moment to start work on a realistic state health system development plan to better inform the use of further increases in federal transfers and other revenues allocated to the health sector, so that they do not continue to be exclusively absorbed by salaries. A strategy with three or four main thrusts could be envisioned, including improving financing of non-salary recurrent costs through subsidies and/or insurance, an investment program focused on lower-level services in rural areas, a program to expand coverage of high-impact interventions that can be delivered by lower-skilled health workers, and improving the quality of existing services including hospital and emergency obstetric services.