

Utilization of Health Services in Sudan

(Draft Report)

August 2006

Executive Summary

The objective of this study is threefold: (a) to identify the pattern of disease among the Sudanese population; (b) to trace the corresponding care-seeking behaviour with respect to both curative and preventive health services; and (c) to identify factors that shape users' preferences with respect to different modes of treatment including choice of care-providers.

Using multi-stage cluster sampling, six states has been chosen to represent five geographical zones which cover the whole country with the exception of conflict zones (Darfur states) and regions still at an early stage of transition to peace (Southern states). A total sample of 600 households (3987 individuals) has been interviewed using a written questionnaire.

Findings have shown that access to medical care is inhibited by the prevailing spatial distribution of health facilities where 35% of the households surveyed have to travel 1 – 12 kilometers to get to the closest health facility. Besides health insurance coverage is found to be still limited as only 33% are covered by health insurance, out of whom 26% are cover by the national health insurance scheme. Direct health care expenses claim about 16% of household income; where 63% of the sample earn a monthly income less than SD 45000 (US \$ 1/day/person).

Disease incidence rates over a recall period of four weeks were found to be 76% for households and 15% for individuals. The major (recurrent) diseases are malaria and respiratory infections, followed by renal and urinary track disorders, diarrhea, ophthalmic diseases, and dermatology and STDs. About 88% of those who reported an illness, opted to seek treatment in a formal health-care facility: 77% reported to public-sector facilities (public hospitals, health centres, dispensaries, and dressing stations), 12% reported to private facilities and (0.2%) reported to NGO-run health units. Resort to alternative medicine seems to be practiced on a limited scale: 2 % of respondents have reportedly opted to consult herbalists and

traditional healers, while one in every 14 patient opted to buy drugs directly from drugstores. Only 16% of the cases reported to health facilities have been referred to higher-level facilities.

Factors that influence health facility preference are proximity to residence (52%), quality of service (22%), health insurance coverage (11%), and cost (6%). For those who opted not to report to a health facility, the major deterrents are "physical accessibility" (22%), followed by cost (20%), and poor quality of the service rendered (18%).

The major prevailing chronic diseases are found to be hypertension, arthritis, diabetes, and asthma; these are followed by cardiac diseases and peptic ulcer. About 69% of those living with chronic diseases pay routine follow-up visits. Quality (29%), cost (24%), and inaccessibility of service (13%) are the major deterrents for those who do not.

The take-up rate for antenatal care is (87%), while it is (93%) for intra-partum care. About (79%) of antenatal care is sought in public-sector facilities, while (18%) is sought in private facilities. The major factor that influence the choice of antenatal care facility is proximity, followed by quality and cost consecutively. In the case of intra-partum care, quality is the major factor followed by proximity to residence. Cost and health insurance coverage have only limited impact. As for vaccination, coverage stands at 89% (95% excluding hepatitis), where public sector facilities provide 93% of the service.

In the light of these findings the study recommends some remedial measures to enhance utilization of health services. To improve access to health care and hence enhance utilization of health services more resources are to be injected to remedy the deficiencies of existing pattern of spatial distribution of facilities. This should be achieved through increasing the share of health in budget allocations as well as through inviting more private (and philanthropic) sector involvement. Health insurance coverage needs also to be expanded. Besides, quality issues need to be addressed through comprehensive measures that involve not only direct material and human investment, but also effective coordination with relevant bodies as well

strengthening the supervisory role of the FMOH and SMOHs to maintain standards in the private and philanthropic sectors.

It is also recommended that the prevailing level of cost-recovery should be revised given the high proportion of people living below the US \$ 1 /day threshold. The direct cost of health care represents a major inhibition on the utilization of health care services. Moreover, rationalization of health-resource use through such measures as activating the referral system has been called for, emphasizing the positive impact of health insurance coverage on the functioning of the referral system.

Table of Contents

	Page
Introduction	6
Demographic & Socio-economic Characteristics of Study Population ...	11
Access to Health Care Services	13
Prevailing Pattern of Disease	15
Health Seeking Behaviour: Recurrent Diseases	17

Health Seeking Behaviour: Chronic Diseases	19
Health Seeking Behaviour: Maternal & Child Care	22
Regional Comparisons	27
Conclusions and Recommendations	51
Selected Bibliography	54

Foreword

In the course of carrying out this study we have been accumulating mass indebtedness to a very long list of individuals and institutions. To start with, thanks are due to the FMOH, Sudan, which commissioned the study, to WHO (EMRO) which provided co- funding, and to SMOHs of Khartoum, River Nile, Red Sea, Blue Nile, and North Kordofan, which provided generous support.

We are especially grateful to the General Directorate of Health Planning & Development, FMOH: to Dr. Mustafa Salih, the DG, Dr. Eiman Abdallah, Reaseach Director, Dr. Sara Mustafa, Planning Director, and Dr. Ghaiath.....;Dr. Abdelgadir Ali Bashier, Research Director, SMOH, Khartoum; Dr. Samia Abdel Rahman, Acting Research Director & Director of PHC, SMOH, River Nile; Dr. Ahmed El-Basier, Director General, Dr. Elsagig Eltijani, Planning Director, Dr. Tarig, and Dr. Abu Obaydah of the SMOH, Gezira;Dr., Director General, SHOH, Dr. Abdallah Ahmed Abdallah,

Planning Director, & Dr. Muiz of SMOH, Red Sea; Dr. Ajab El-Dour, Planning Director & Acting Director General, Dr. Izdihar, and Mr. Yasir of the SMOH, North Kordofan; and Dr. Abdallah Elshaikh, Planning Director, & Dr. Abdallah El-Abwabi, Acting Director General, SMOH, Blue Nile.

Last but not least we would like to thank the six teams of data collection; Gasim and Mohammed Tahir, who entered the data; and, of course, FMOH divers – Abdelmulik, , Fareed, Abdelkarim, & Elhaj – whose skill and dedication turned the field-work into an otherwise tiresome and tedious assignment.

*Mohammed Noah Mohammed
August 2006*

1.0. Introduction

1.1. Background: Utilization of Health Services

Given the scale of resources claimed by the health sector, the question of 'how the health care services provided are utilized' has been gaining growing importance. Drawing from medical, social and behavioural sciences as well as health economics, studies on the utilization of health care have attempted to explain the use of health services by patient's personal factors (feeling well/ill, symptoms, knowledge, beliefs, past experience, feelings of threat, needs, coping factors etc.), social factors (socio-demographic background, family parameters, social support etc.) and factors related to the health care system (availability, accessibility, costs etc.).

Because of the multitude of factors involved, various conceptual models have been developed to operationalize the complex and multi-dimensional issue of health care utilization. These models have proved useful in providing theoretical frameworks for empirical studies on health care utilization.

Developed by Anderson and Laake (1987), the '*Anderson Behavioral Model*' defines three sets of factors that determine physician contacts, namely predisposing factors, enabling factors, and need factors. Predisposing factors, according to his model, include gender, age, education, occupation, ethnicity, and health beliefs. Enabling factors include factors that facilitate or inhibit the use of physician services such as income, place of residence, and community resources. Need variables include perceived threats (subjective) and clinically diagnosed disease.

In *Purola's model* the utilization of medical services is determined (first) by the inflicted disease, objectively diagnosed, together with (second) patient's perception of disease where behavioural reactions originate. Predisposing and enabling factors (third) act as modulators of the person's behavioural reactions (Purola 1971, Purola 1972).

Antonovsky's model emphasized "host characteristics", the characteristics of "health institutions", and the characteristics of the "larger socio-cultural environment". This model views 'health care' as a form of a social institution which can be used to handle diffuse social and psychological needs when that system is available in the first place, when its use is socially encouraged, and when that system is sensitive to people's needs and orientations (Antonovsky 1972).

The "*health belief model*" was originally conceptualized by Becker (Janz & Becker 1984) to explain the health behavior of a population. In this model, motivation, the experienced threat of illness and coping factors, are among the most important variables that modify a person's reactions to manifestations of illness. The model introduced the notion of "cue to action", which refers to situations when different cues, information or recommendations may act as the final stimulus to the act of behavior carried out. (Leavitt 1979).

It goes without saying that all these models have provided useful insights with respect to the utilization of health care process; the '*behaviour model*', however, remains the most popular and widely used among these.

1.2. Rationale and Objectives of the Study:

Empirical studies, based on different theoretical frameworks, have focused on the influence exerted by different factors on utilization of health care. Different factors have been found to have different relative impact in different settings. Thus although sizable literature argues for the relatively high importance of income, for instance, some empirical studies came up with results suggesting that money-cost does not comprise an important barrier to utilization while education and physical access comprise important determinants. These were the findings drawn on empirical work in settings where policies of access based on need rather than income or ability to pay had been promoted.

In Sudan, the relative importance of different 'utilization determinants' has not been thoroughly investigated nor has the existing pattern of utilization of health services been rigorously studied. Available data, drawn mainly from Ministry of Health records, pertain to government health facilities leaving unreported both those using health facilities run by other sectors (private/informal) as well as those who opt for self-treatment.

The current study on 'utilization of health services in Sudan', commissioned by the FMOH and co-funded by WHO, has been carried out to achieve the following objectives:

- To identify the pattern of disease among the Sudanese population.
- To trace the corresponding care-seeking behaviour with respect to both curative and preventive health services.
- To identify factors that shape users' preferences with respect to different modes of treatment including choice of care-providers.

1.3. Methodology:

1.3.1. Sampling Frame:

The utilization survey conducted in this study covered all the country with the exception of conflict zones (Darfur states) and

regions still at an early stage of transition to peace (Southern states). For convenience the sampling frame has been decomposed into five geographical zones: Khartoum, Northern Zone (River Nile and Northern states), Central (Gezira, Blue Nile, Sinnar, and White Nile states), Kordofan (North and South), & Eastern Zone (Gedarif, Kassala, and Red Sea states).

1.3.2. Sampling Technique:

Adopting multi-stage cluster sampling, states to be covered by the survey have been chosen within defined geographical zones. In this stage choice is limited by such factors as the number of states within each defined zone, the degree of symmetry among the population of different states within the same zone, and the size of population at state-level, which defines the likelihood of being chosen when population are more or less symmetrical across states (Table No.1). In the second stage clusters have been chosen within states where quarter/village councils are taken as clusters. In the final stage a total of 20 households have been selected within each chosen cluster using systematic random sampling.

.3.3. Sample Size:

At 95% confidence level and 4% confidence interval the sample size has been determined at 600 households (about 3990 persons) out of a total population of 3,959,425 households (23,756,552 persons). This sample has been obtained by covering 30 clusters, in each one of which 20 households were randomly chosen.

*Table No. (1)
Outcome of the 1st stage of cluster sampling and cluster distribution*

Zones	Member States	Popⁿ Estimates (2005)	%	No. of Clusters*	States surveyed
Khartoum	Khartoum	5411466	23	7	Khartoum
Central Zone	Gezira	3841641		10	Gezira (8) Blue Nile (2)
	White Nile	2083640			
	Sinnar	1371810			
	Blue Nile	714257			
	Total	8011348	34		
Western Zone	N Kordofan	1688809		5	N Kordofan
	S Kordofan	1310906			
	W Kordofan	1146055			
	Total	4145770	17		

Northern Zone	River Nile	1096884		2	River Nile
	Northern	581334			
	Total	1678218	7		
Eastern Zone	Gedarif	1657426		6	Red Sea
	Kassala	2010557			
	Red Sea	841768			
	Total	4509751	19		
Grand Total		23756553	100	30	Khartoum

** within individual states, clusters have been distributed among the urban and rural sectors according to their relative weights.*

1.3.4. Tools of Data Collection:

The major tool of data collection was a survey conducted over the period February – June 2006 using a written questionnaire. The questionnaire used in the survey covered the following data modules:

- Demographic (socio-economic) characteristics of households (number and sex of household members, level of education, urban/rural residence etc).
- Socio-economic status (monthly income, income from sources other than gainful employment, home/car ownership, health insurance coverage).
- Incidence of disease over a recall period of one month (including type and perceived severity of disease).
- Type of response to disease episode (visiting a health facility, consulting traditional healer, using self-prescribed drugs, doing nothing, etc).
- Type of health facility visited (where applicable).
- Reasons behind choice of care-provider/mode of medication (proximity, quality of service, cost).
- Immunization and antenatal care services (source/provision, reasons behind choice).

1.3.5. Data Analysis:

Computer software (SPSS) has been used to work out basic statistics including measures of association in accordance with the stated objectives of the study.

2.0. Demographic & Socio-economic Characteristics of Study Population

2.1. Background indicators:

The sample studied revealed the basic demographic characteristics shown in table No (1) below. About 40.5% live in urban centres, while 59.5% live in rural areas. The gender balance stands at (M 50.6: F 49.4). The average family size is found to be 6.7. Average age for the entire sample is 25 years; while the average age of under-five children, who represent 12% of the sample, is 27 months.

Table No (2)
Background Indicators

Indicator	Number	%
Urban	243 (HH)	40.5
Rural	357(HH)	59.5
Gender		
Males	2017	50.6
Females	1970	49.4
Under-five Children	470	12
Average Family Size	6.65±2.71	
Average Age	25.00±18.22	
Average Age of Under-five Children	27±16.79 (month)	

2.2. Socio-economic Indicators:

2.2.1. Marital Status

Almost one third of the samples surveyed are below marriage-age (32%), while another 30% are singles (the two categories, normally, [interlap](#)). About 35% are married, 1% are divorced, and 2% are widows.

Table No (3)
Marital Status

Status	N	%
Single	1171	29.7
Married	1389	35.2
Divorced	37	0.9
Widow	84	2.1
Not Applicable	1263	32.0

2.2.2. Education

The education profile of the sample revealed a literacy rate of 88%. Of these, 5% attended literacy classes and 'Khalwa', 38% have primary school education, 21% finished secondary school, and 9% are university graduates.

Table No (4)
Education

Education Level	N	%
Illiterate	475	12.1
Literacy Class	61	1.6
Khalwa	130	3.3
Basic/Primary	1497	38.2
Secondary	810	20.7
University & above	366	9.3
Not Applicable (Below School Age)	581	14.8

2.2.3. Occupation:

Slightly more than half of the people surveyed (57.5%) are involved in gainful employment of one form or another. Of these, about 12% are "workers, farmers and artisans"; about 4% are in the business sphere (including retail business); and 7.9% pursue office work (both clerical and professional). The dependency rate is noted to be high (43%) – [Table No. (5)].

Table No (5)
Occupation Profile

Occupation	N	%
Worker	202	5.3
Farmer	174	3.9
Artisan	91	2.4
Trader	81	2.1
Public/Private Official	176	4.6
Businessman/lady	73	1.9
Professional	116	3.1
Others	1299	34.2
Not Applicable	1616	42.5

2.2.4. Income:

Average monthly income stands at SD 24304.11. Choosing a cut-off point¹ of SD 45000, we find that about 63% fall below this threshold, while only 27% falling above it.

¹ The choice of cut-off point is based on the widely used norm of one dollar a day per individual adjusted for average family size.

3.0. Access to Health Care Services

3.1.0. Spatial Distribution of Health Facilities:

3.1.1. Closest Health Facility to Residence

About 75.4% of respondents reside with a hospital or a medical centre in the nearby. If dispensaries and dressing stations (14.6%) are added, then 90% of the surveyed households cited a public-sector health facility, of one form or another, as the one closest to residence. The private sector and the NGO community have limited presence in the health sector so far as they accounted for only 4.4% and 2.3% respectively.

Table No. (6)

Closest Health Facility to Residence

Type of Health Facility	N	%
Health Center	260	45.1
Dispensary/Dressing Station	87	15.1
Public Hospital	190	32.9
Private Hospital/Clinic	26	4.5
NGO Centre	14	2.4

3.1.2. The Distance of Closest Health Facility to Residence:

However, while for 65% of the households surveyed the closest health facility lies within a range of one kilometer, one in every four households have to travel (1 – 5 Kms) to access the nearest health facility. Still, about 10% of the sample have to travel 5-12 kilometers to obtain health care services. Thus about 35% of households covered by this study have to travel 1 – 12 kilometers to access the closest health facility.

Table No. (7)

Distance of Nearest HF to residence:

Distance	%
Less than or Equal to 1 Km	65.1
More than 1 Km & Less than 5Km	25.1
5 – 12 Km	9.8

3.2.0. The Cost of Health Care:

3.2.1. Health Care Bill:

The average monthly cost of medical care for the entire sample is about SD 3676 per household. Taken against income, we find that the health care bill claims about 16% of household income.

3.2.2. Health Insurance Coverage:

As shown in table no. (8) below, the national health insurance scheme has achieved only limited coverage so far (27%). Adding those under private or special health insurance arrangements (army and police force, bank staff, and employees of other organizations), the percentage of all those who enjoy any health insurance will stand at (33.4%). Put differently, about 67% of the households surveyed are uninsured.

Table No. (8)
Health Insurance Coverage

Health Insurance Coverage:	N	%
<i>National Health Insurance Scheme</i>	163	27.2
<i>Private Insurance</i>	37	6.2
<i>Uninsured</i>	400	66.7

4.0. Prevailing Pattern of Disease

4.1. Rates of Disease Incidence: Self-reported illness

About three in every four households surveyed (76%) reported the incidence of disease for at least one of its members over a recall period of four weeks. This amounts to self-reported disease incidence of 15% over the specified recall period.

4.2. Disease Pattern: Most Recurrent Diseases:

Malaria took the lead (34.2%) in the list of most recurrent diseases reported by respondents followed by respiratory infections (32.0%). 'Renal and urinary track disorders', diarrhea, 'ophthalmic diseases', 'dermatology and STDs', dysentery, anemia, typhoid, 'trauma and emergencies', tuberculosis, and hepatitis, fell in the range of (1% - 6%) – [table No. (9)].

Table No. (9)
Most Recurrent Diseases

Disease	N	%
Malaria	206	34.2
Respiratory Infections	193	32.0
Renal & Urinary Track Disorders	34	5.6
Diarrhea	30	5.0
Ophthalmic Diseases	25	4.1
D & STDs	19	3.2
Dysentery	13	2.2
Anemia	13	2.2
Typhoid	11	1.8
Trauma & Emergencies	8	1.3
Tuberculosis	5	0.8
Hepatitis	4	0.7
<i>Others</i>	42	7.0

4.3. Frequency of Occurrence

About 71% of the diseases reported by respondents over the last four weeks are one-time episodes, about 28% had a frequency of 2 – 3 times, while 2% recurred more than thrice.

Table No. (10)

Frequency of occurrence:

Frequency	N	%
Once	384	70.5
Twice	97	17.8
Thrice	53	9.7
More than three times	11	2.0

4.4. Perceived Severity

In about half of these reported episodes, respondents rated the case as 'mild'. In the second half, about 19% were perceived as 'severe', whereas 32% were considered as 'moderate'.

Table No. (11)
Perceived Severity

Level	N	%
Severe	112	49.2
Moderate	196	32.3
Mild	298	18.5

5.0. Health Seeking Behavior

5.1. Response:

In response to disease incidence, (88.4%) reported to a health facility in the formal sector (public, private, or NGO-run). The rest, either did nothing (2.9%), opted to report to herbalists and traditional healers in the informal health sector (1.7%), or obtained drugs directly from pharmacies without consultation (7%).

Of those who reported to formal-sector health facilities, 77% reported to public-sector facilities (public hospitals, health centres, dispensaries, and dressing stations), while 11.6% reported to private facilities and (0.2%) reported to NGO-run facilities.

Table No. (12)
Health Seeking Behaviour

Response	N	%
Reporting to Public Hospital	191	36.4%
Reporting to Health Centre	176	33.5%
Reporting to Private Hospital/Clinic	61	11.6%
Buying Pharmaceuticals	37	7.0%
Reporting to Dispensary/Dressing Station	35	6.7%
Doing Nothing	15	2.9%
Reporting to Herbalist/Traditional Healer	9	1.7%
Reporting to NGO Centre	1	0.2%
	525	100%

5.2. Factors Behind Facility Preference:

A leading factor behind choosing a particular health-care facility is 'proximity to residence' as 52.3% cited this factor as a motive behind health-facility choice. 'Quality of service' ranks second in the list of factors influencing choice of health facility. HI coverage does not seem to influence health facility preference, possibly because of the modest rate of overall coverage achieved so far (33.4% out of which 27.2% are under NHI Scheme). Cost of health care service has a rather insignificant effect on facility choice (6% approximately).

Table No. (13)

Reasons of Facility Preference

Factor	N	%
Proximity to Residence	287	52.3
Health Insurance Coverage	62	11.3
Quality of Service	120	21.9
Cost	32	5.8
Others	48	8.7

5.3. Referral

Only 16.3% of the cases which reported to health facilities upon falling sick have been referred to higher-level facilities. A possible justification is the high proportion of patients (36.4%) who opt to report directly to public hospitals "i.e. the so-called by-passing phenomenon".

Table No. (14)

Referral Rate

Category of Cases	Number (n=504)	Referral Rate (%)
Referred	82	16.3%

5.4. Quality of service: Client Satisfaction

About (74%) of respondents rated the care they received as either 'quite satisfactory' (33%) or 'satisfactory' (41%). However, about (29%) showed varying levels of dissatisfaction with the services they received.

Table No. (15)

Quality of service: Client Satisfaction

	N	%
Quite Satisfactory	171	33.3
Satisfactory	211	41.1
Modest	87	19.9
Poor	45	8.8

5.5. Reasons for not reporting to a health facility:

For those who did not report to a health facility, *physical* accessibility to one is the major reason (22%), followed by the high cost of health care services (20%), and poor quality of the service rendered (18%). Physical (in)accessibility refers to cases where no facility is available altogether, or it is prohibitively far from residence [Table No. 16)].

Table No. (16)
Reasons for Not Reporting to a Health Facility

Reason	N	%
No Health Facility available	24	19
Closest Health Facility too far	4	3
Service too poor	23	18
Service too expensive	26	20
Others	50	39

6.0. Health Seeking Behaviour: Chronic Diseases

6.1. Prevailing Pattern of Chronic Diseases

The most wide-spread chronic diseases, according to our findings, are hypertension, arthritis, diabetes, and asthma. Cardiac disorders (4.3%) and gastric ulcer (1.6%) are of relatively very low incidence. Overall, about (6%) of the population live with chronic diseases.

Table No. (17)
Prevailing Pattern of Chronic Diseases

Disease	N	%
Hypertension	66	26.1
Arthritis	61	24.1
Diabetes	47	18.6
Asthma	26	10.3
Cardiac Diseases	11	4.3
Peptic Ulcer	4	1.6
Others	38	15.0

6.2. Follow-up:

About 69% of those living with chronic diseases pay routine follow-up visits, while 31% do without.

Table No. (18)
Follow-up (Chronic Diseases)

Category	N	%
Follow-up	170 (n=248)	68.5

6.3. Facility Choice:

People with chronic ailments tend mainly, according to this study, to report, for routine check-up, to public hospitals and health centres, which jointly receive almost 66% of the disease load in question. Private hospitals and clinics receive about 27.0%, while NGO-run clinics receive only 1.4%.

Table No. (19)
Facility Choice (Chronic Diseases)

Facility	N	%
Health Center	56	26.5
Dispensary	12	5.7
Public Hospital	83	39.3
Private Hospital/Clinic	57	27.0
NGO Centre	3	1.4

Quality of service is the leading factor behind 'facility choice' with respect to chronic diseases. It outweighed 'proximity to residence', which is the leading factor with respect to recurrent diseases. It is interesting to note that cost considerations are almost negligible when it comes to choosing the right health facility by people with chronic diseases. This tallies well with attaching primary importance, on their part, to 'quality'. People with chronic diseases are, apparently, highly 'quality-sensitive'. The average cost per visit is found to be SD 3991.

Table No. (20)
Reason of Facility Choice

Factor	N	%
Proximity to residence	80	37.7
Health Insurance Coverage	31	14.6
Quality of service	85	40.1
Cost	5	2.4
Others	11	5.2

6.4. Reasons for not following-up (Chronic Diseases):

Given the relative weight attached to quality in choosing among health facilities in the case of chronic diseases [Table No. (21)], it is only natural to have "poor quality" as a major deterrent for follow-up by people with chronic diseases. However, for this group of people living with chronic diseases who opt not to pay routine visits for follow-up, cost considerations are very important (ranking second to quality). The distance to closest facility comes third, indicating that people with chronic diseases are somehow sensitive to how far the closet facility lie from home.

Table No. (21)
Reasons for not following-up (Chronic Diseases):

	N	%
No Health Facility available	1	2.2
Closest Health Facility too far	5	11.1
Service too poor	13	28.9
Service too expensive	11	24.4
Others	15	33.3

6.5. Quality of service: Client Satisfaction

For this group of patients, 71.4% are satisfied with the services they receive, while about one in four (26.7%) classify the service as either 'modest' or 'poor'.

Table No. (22)
Quality of service: Client Satisfaction

Rating	N	%
Quite Satisfactory	73	34.3
Satisfactory	79	37.1
Modest	27	12.7
Poor	34	16.0

7.0. Health Seeking Behaviour: Maternal & Child Care

7.1.0. Prenatal Care:

7.1.1. Antenatal Care

With respect to antenatal care, 87.2% of pregnant women used antenatal care during pregnancy. Of those who delivered over the past three years, 95% received intra-partum care either through a trained midwife (63.4%) at home, or through a medical doctor at a health facility (30.9%).

Table No. (23)
Prenatal Care

Service	No	%	
(1) Antenatal Care	287 (n=367)	87.2%	
(2) Intra-partum Care (Delivery over past 3 years)	Delivery at home under trained MW	189	63.4%
	Delivery at home under untrained MW	14	4.7%
	Delivery at home unattended	3	1.0%
	Delivery at health facility under medical supervision	92	30.9%

7.1.2. Choice of antenatal care facility:

For antenatal care, 40.7% of pregnant women used public hospitals, 31.6% used health centres, and 7.0% used dispensaries and dressing stations. The share of the private sector in providing antenatal care services for pregnant women is 17.5%, while NGO-run facilities account for 3% of antenatal services rendered.

Table No. (24)
Choice of antenatal care facility

Facility	N	%
Health Center	94	31.6%
Dispensary/Dressing Station	21	7.0%
Public Hospital	121	40.7%
Private Hospital/Clinic	52	17.5%
NGO Centre	9	3.0%

7.1.3. Preference for antenatal Care Facility:

Proximity to residence (46.2%) and 'quality of service (38.2) account, together, for about 84% of why a given facility is chosen for follow-up services by pregnant women. Again, health insurance coverage plays only a minor role (because of limited coverage as referred to earlier). Cost considerations, moreover, were not significant in determining 'health facility' choice for pregnant women seeking follow-up services.

Table No. (25)
Factors Behind Facility Choice (antenatal care)

Factor	N	%
Proximity to residence	133	46.2%
Health Insurance Coverage	22	7.6%
Quality of Service	110	38.2%
Cost	6	2.1%
Others	17	5.9

7.1.4. Reasons for not using antenatal care:

About 50% of women who do not utilize follow-up services during pregnancy have no easy access to these services either because there's no qualified facility (rendering prenatal care) in the vicinity (33.8%) or because a qualified facility is located too far from where they reside (15.5%). 'Quality' and 'cost' of prenatal care account for 9.9% and 11.3% respectively.

Table No. (26)
Reasons for not using antenatal care

Reasons	N	%
No health facility available	24	33.8%
Health facility too far	11	15.5%
Service too poor	7	9.9%
Service too expensive	8	11.3%
Others	21	29.6

7.1.5. Quality of antenatal services: Client Satisfaction

About 82% of the interviewed women who utilized prenatal care in the form of follow-up services during pregnancy rated the service as either 'quite satisfactory' (35.5%) or 'satisfactory' (46.1%). For 8.5%, the services is acceptably modest, while 9.9% are dissatisfied with service rendered.

Table No. (27)
Quality of Antenatal Services: Client Satisfaction

Rating	N	%
Quite Satisfactory	100	35.5%
Satisfactory	130	46.1%
Modest	24	8.5%
Poor	28	9.9%

7.1.6. Reason of Facility Choice (Intra-partum Care)

Quality of service (34.3%) and proximity to residence (30.1%) account, together, for about 64% of why pregnant women choose a particular category of health facilities when planning for delivery. Insurance coverage and cost considerations again play only minor roles.

Table No. (28)
Factors Behind Facility Choice (intra-partum care):

Factor	N	%
Proximity to residence	50	30.1%
Health insurance coverage	12	7.2%
Quality of service	57	34.3%
Cost	4	2.4
Others	43	25.9%

7.1.7. Quality of services (Intra-partum): Client Satisfaction

About 78% of the interviewed women who utilized prenatal care in the form of delivery services rated the service as either 'quite satisfactory' (15.0%) or 'satisfactory' (63.2%). For 14.0%, the services is acceptably modest, while 7.7% are dissatisfied with service rendered.

Table No. (29)
Quality of Intra-partum Care:

Client Satisfaction

Rating	N	%
Quite Satisfactory	29	15.0%
Satisfactory	122	63.2%
Modest	27	14.0%
Poor	15	7.7%

7.2.0. Neonatal Care: Vaccination

7.2.1. Vaccination Coverage

With the exception of hepatitis – which is still in an introductory phase – vaccination coverage lie in the range of 90 – 97% (an average of 95%). The global average (hepatitis included) is 89%.

Table No. (30)
Vaccination Coverage

Vaccination	%
BCG	95
Polio	97
DPT	96
Measles	90
Hepatitis	68
Global Average	89
Global Average (Hepatitis Excluded)	95

7.2.2. Choice of Vaccination Facility

About 97% of the vaccination services are rendered through public-sector health facilities (i.e. public hospitals, health centres, dispensaries, and dressing stations). Only 2% is rendered through private-sector facilities, while NGOs contribution is 5%.

Table No. (31)
Vaccination Unit

Facility	%
Health Center	45%
Dispensary	13%
Public Hospital	35%
Private Hospital/Clinic	2%
NGO Centre	5%

7.2.3. Reason of Facility Choice

Proximity to residence and quality of service account, together, for 88.1% of the "facility choice" factors. Cost plays an insignificant role (0.2%) in choosing facility where vaccination services are sought. This is understandable because vaccination is offered (in public-sector facilities) free of charge. Quality considerations, which rank second, reinforce preference of public-sector facilities because health authorities apply strict control measures in administering vaccination.

Table No. (32)
Factors Behind Facility Choice

Factor	N	%
Proximity to residence	308	76.4%
Health insurance coverage	9	2.2%
Quality of service	47	11.7%
Cost	1	0.2%
Others	38	9.4%

7.2.4. Quality of vaccination services rendered: Client Satisfaction

No wonder then, 80.9% of relevant respondents consider the vaccination services they received as either 'quite satisfactory' (39.5%) or 'satisfactory' (41.4%). However, 10% dubbed the vaccination services received as 'poor'.

Table No. (33)
Quality of Vaccination Services: Client Satisfaction

Rating	N	%
Quite Satisfactory	169	39.5%
Satisfactory	177	41.4%
Modest	39	9.1%
Poor	43	10.0%

8.0. Regional Comparison

8.1.0. Socio-economic Characteristics of Study Population:

8.1.1. Marital Status

In Khartoum, about 30% of the population surveyed are singles, 33% are married, and about another 33% are youngsters (below marriage age). Divorced and widows represent 1.5% and 3.1% of the population respectively. Corresponding figures for other regions are shown in Table No. (34) below.

Table No. (34)
Marital Status

Status	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Single	29.6	31.6	22.9	29.5	22.6	29.7
Married	33.0	35.8	37.5	39.8	30.0	35.2
Divorced	1.5	1.0	0.6	0.2	0.7	0.9
Widow	3.1	1.8	0.6	1.8	2.8	2.1
Not Applicable (below age)	32.8	29.8	38.4	28.6	43.9	32.0

Although variations in each category across regions are not generally wide, one can still observe that singles are over-represented in Central Region, while noticeably under-represented in the Western Region; marriage rates are highest in the Eastern Region, followed by the Northern Region, while they are lowest in the West; Khartoum accommodates the highest proportion of divorced and widows; and youngster are over-represented in the Western Region, accounting for the low proportion of singles and married there.

8.1.2. Education

The highest illiteracy rate is found in the Western Region (14.6%), followed by the Central Region (13.1%); while the lowest rate is found in Khartoum and the Northern Region (10.6% each). The highest proportion of those who attended literacy classes is found in the Northern Region (2.5%) followed by the Eastern Region (2.2%); those who attended Khalwa have the highest proportion in the Eastern Region again (8.1%), followed by the Western Region (3.4%); those with primary school qualifications are highest in the Western Region (42.9%) and

lowest in Khartoum (33.8%), while, in contrast, both of those with secondary school and university qualifications are highest in Khartoum (26.8% and 15% respectively) and lowest in Western Region (13.2% and 3.5% respectively). Finally, the highest proportion of children below school age is found the Western Region (20.8%); while the lowest proportion is in Khartoum (12.1%).

Table No. (35)
Education

Education Attainment	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Illiterate	10.6	13.1	10.6	11.8	14.6	12.1
Literacy Program	0.2	1.9	2.5	2.2	1.7	1.6
Khalwa	1.5	2.9	1.2	8.1	3.4	3.3
Basic/Primary	33.8	40.7	36.0	35.8	42.9	38.2
Secondary	26.8	20.6	20.5	17.7	13.2	20.7
University & above	15.0	8.0	16.1	5.8	3.5	9.3
Not Applicable (Below School Age)	12.1	12.7	13.0	18.5	20.8	14.8

8.1.3. Occupation:

With respect to the occupation profile of study population across regions (Table No. [36]), it has been found that workers are more proportionate in Central Region followed by Northern Region; farmers are more proportionate in Western and Central regions, consecutively; artisans are more proportionate in Khartoum followed by Central Region; and traders are more proportionate in the Northern and Western regions, consecutively. The percentage of public/private officials is highest in Khartoum followed by Eastern Region; that of businessmen/ladies is highest in Eastern Region and Khartoum consecutively; and the percentage of professionals is highest in Northern Region followed by Central region. Finally, it is observed that the highest dependency ratio is found in the Western Region, followed by the Eastern Region.

Table No. (36)
Occupation Profile

Occupation	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Worker	3.2	7.5	6.1	5.1	3.5	5.3
Farmer	0.7	5.5	1.7	0.7	9.5	3.9
Artisan	3.3	2.7	2.0	1.7	1.0	2.4
Trader	2.0	1.7	3.7	1.5	3.0	2.1
Public/Private Official	6.2	4.0	3.0	5.8	3.3	4.6
Businessman/lady	3.6	0.4	1.7	4.0	1.0	1.9
Professional	2.9	3.5	4.0	3.3	1.5	3.1
Others	38.3	43.1	39.7	28.1	5.3	34.2
Not Applicable (Dependents)	39.8	7.5	38.0	50.0	71.8	42.5

8.1.4. Income:

Household average monthly income is highest in Khartoum (SD 74500), followed by Central Region (SD 44000). It is lowest, in contrast, in the Eastern Region (SD 28300), followed by the Western Region (SD 30700). The Northern Region stands somewhere half-way between these two extremes, slightly above the national average.

Table No (37)
Household Average Monthly Income

Average Monthly Income	Khtm.	Central	North	East	West	National
SD	74500	44000	35400	28300	30700	23404

8.2.0. Access to Health Care Services:

8.2.1.0. Spatial Distribution of Health Facilities:

8.2.1.1. Closest Health Facility to Residence

Regional disparities are evident with respect to the first dimension of accessibility, namely the physical availability of the service itself. What is of concern here is the *physical availability* of a health care facility *at a convenient distant* from the residence of the prospective beneficiary.

In Khartoum, the dominant type of health facility closest to the largest share of respondents (72%) is 'health centres', followed by 'public hospitals' (10%), NGO-run health facilities (8.6%), and private hospitals and clinics (6.4%) Dispensaries and dressing stations have the least relative weight (2.9%).

In the Central Region, 'health centres' lie closest to 39.4% of respondents, followed by 'public hospitals' (30.8%), 'dispensaries and dressing stations' (28.8%), and 'private hospitals and clinics' (1.0%).

Table No. (38)
Closest Health Facility to Residence

Facility	Khtm.	Central	North	East	West	National
	(%) n=140	(%) n=200	(%) n=40	(%) n=120	(%) n=100	(%) n=600
Health Center	72.1	39.4	30.0	24.6	40.0	45.1
Dispensary/Dressing Station	2.9	28.8	-	5.9	19.0	15.1
Public Hospital	10.0	30.8	42.5	65.3	40.0	32.9
Private Hospital/Clinic	6.4	1.0	27.5	2.5	1.0	4.5
NGO Centre	8.6	-	-	1.7	-	2.4

In the Northern Region, public hospitals (42.5%) are followed by health centres (30.0%), and private hospitals/clinics (27.5%). In the Eastern Region, public hospitals (65.3%) are followed by health centres (24.6%), dispensaries and dressing stations (5.9%), private hospitals/clinics (2.5%), and NGO-run health units (1.7%). Finally, in the Western Region both 'public hospitals' and 'health centres' have got equal weights (40% each), followed by dispensaries and dressing stations (19%), and private clinics (1%).

Thus, public-sector health facilities dominate the sector in all regions with only limited existence of private-sector facilities notably in Khartoum and Northern Region.

8.2.1.2. The Distance of Closest Health Facility to Residence:

As shown in (Table No.39) only 10% (the lowest of all regions)of the households surveyed in the Northern Region have cited the closest health facility to lie within a distance of one kilometer to their residence. Against this, 85% there (the highest in all regions) have the closest facility lying within a distance of (≤ 5 km.s) away. Viewed differently, 90% of respondents in the Northern Region have to travel a distance of (1 – 12) kilometers to get to the closest health facility. The corresponding figures for other regions are: 61.5% for the Eastern Region, 46.0% for the Western Region, 45.6% for the Central Region, and only 25.1% for Khartoum State.

Table No. (39)
Distance of Nearest Health Facility to Residence:

Distance	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
≤ 1 Km	74.9	54.4	10	38.5	54	65.1
$>1 \leq 5$ Km	24.4	29.8	85	46.7	46	25.1
5 – 12 Km	0.7	15.7	5	14.8	-	9.8

8.2.2.0. Cost of Health Care:

8.2.2.1. Health Care Bill:

Households in Khartoum pay the highest monthly cost of medical care (SD 7700), followed by the Western Region (SD 7300), and Central Region (SD 6140) consecutively. The lowest cost is paid by residents of Northern Region (SD 3000), followed by Eastern Region (SD 3100) – Table No. (40).

Table No. (40).
Cost of Medical Care and Household Income

	Khtm.	Central	North	East	West	National
Average Monthly Cost of Medical Care* (SD)	7700	6140	3000	3100	7300	3676
Average Monthly Income (SD)	74500	44000	35400	28300	30700	23404
Cost of Medical Care as % of Income	9.2%	14.0%	8.5%	11.0%	24.0%	16%

Variations in average monthly cost of medical care are, however, meaningful only if variations in income are taken account of. Hence, taking cost of medical care against household monthly income, medical care claims the highest share of monthly income in Western Region (24.0%), followed by Central Region (14.0%) and Eastern Region (11.0%) consecutively. Medical care is least burdensome, by this measure, in Northern Region (8.5%) , followed by Khartoum (9.2%).

It is interesting to note that although households in the Northern Region travel relatively longer distances to access the closest health facility, indicating that more additional cost has to be borne for transport and foregone income, yet medical care is found to be least burdensome (financially) to households there. Obviously, it is not because income levels are relatively high there because, as stated above, the average monthly household income in that region ranks just half-way between the two highest income regions (Khartoum and Central) and the two lowest income regions (Eastern and Western). As will be shown below, health insurance coverage is one factor to consider. Other possible factors may be that people there are less subject to disease, are subject to diseases that cost relatively less to cure, the level of user-fees (on categories of care other than those covered by the health insurance scheme) there is relatively low, or any combination of these. This would become more clear later.

8.2.2.2. Health Insurance Coverage:

The objective of introducing health insurance schemes is to make good quality health care services available to consumers at a reasonable cost on a sustainable basis. Hence health insurance coverage affects, among other things, the cost at which care is made available to consumers.

Table No. (41)
Health Insurance Coverage

Coverage (%)	Khtm.	Central	North	East	West	National
<i>NHI</i>	26.4	27.0	47.5	36.1	10.0	27.2
<i>Private Insurance</i>	7.1	11.5	-	2.5	-	6.2
<i>Insured (total)</i>	33.5	38.5	47.5	38.6	10.0	33.4
<i>Uninsured</i>	66.4	61.5	52.5	61.3	90.0	66.6

As shown in Table No. (41) above, Health insurance coverage is not uniform among regions. Highest covered has been achieved in the Northern Region (47.5%), followed by the Eastern Region (36%), Central Region (27%), and Khartoum (24%). The Western Region achieved the least level of coverage (10%). Adding private/special health insurance coverage, which is relatively significant in Central Region and Khartoum, does not change the previous ranking, however.

One possible explanation, therefore, of why the proportion of household income claimed by medical care in the Northern Region stands as the least among regions, may lie in the fact that health insurance coverage achieved there is the highest in the country. This, however, does not exclude the interplay of other related factors.

8.3.0. Prevailing Pattern of Disease

8.3.1. Rates of Disease Incidence:

Rates of self-reported illness over a recall period of four weeks vary across regions as depicted in Table No. (42) below.

Table No. (42)
Self-reported illness

Level	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Households	95.6	77.7	59.1	50.7	67.0	76.0
Individuals	14.4	13.1	8.0	7.4	11.1	15.0

Khartoum has the highest rate of disease incidence whether expressed as the percentage of households reporting the disease of one or more of their members over the past four weeks (95.6%), or as the percentage of individuals reporting their illness over the past four weeks (14.4%). The lowest rate of disease incidence is reported in the Eastern Region (50.7% on household level, and 7.4% on individual level).

8.3.2. Disease Pattern: Most Recurrent Diseases:

The prevailing pattern of disease across regions is shown in Table No. (43) below.

Table No. (43)
Most Recurrent Diseases

Disease	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Malaria	17.4	55.7	38.5	17.0	47.2	34.2
Diarrhea	1.3	5.4	3.8	4.3	2.9	5.0
Respiratory Infections	35.6	22.7	30.8	42.6	30.0	32.0
Dysentery	2.0	0.5		2.1	2.9	2.2
Typhoid	2.0	1.1		4.3	4.3	1.8
Hepatitis	-	1.1		-	-	0.7
Tuberculosis	-	0		8.5	-	0.8
Anemia	4.7	1.6		-	-	2.2
Ophthalmic Diseases	5.4	1.6		8.5	-	4.1
D & STDs	4.0	2.7	7.7	-	2.9	3.2
Renal & Urinary Track Disorders	14.1	2.7	3.8	4.3	2.9	5.6
Trauma & Emergencies	1.3	1.1	7.7	-	1.4	1.3
Others	12.1	3.8	7.7	8.5	5.7	7.0

In Khartoum, respiratory infections come first, followed by malaria and renal and urinary track disorders. Malaria is the leading disease in all

other regions with the exception of Eastern Region. Following malaria, respiratory infections and diarrhea come consecutively in the Central Region; respiratory infections, dermatology and STDs, and trauma and emergencies follow malaria consecutively in the Northern Region; respiratory infections, typhoid, dysentery, dermatology and STDs, and renal & urinary track disorders follow malaria consecutively in the Western Region. As for the Eastern Region, respiratory infections are followed by malaria, tuberculosis, ophthalmic diseases, diarrhea, and renal and urinary track disorders.

Apparently, malaria and respiratory infections are uniformly the leading diseases across regions.

8.3.3. Frequency of Occurrence

Central Region (17.5%) and Western Region (13.8%) have the highest levels of diseases recurring three times and more. Northern Region has the highest proportion of diseases recurring twice (34.6); while single occurrence is highest in the Eastern Region (89.7%), followed by Khartoum (81.9%), and Western Region (75.9%).

Table No. (44)
Frequency of Occurrence:

Frequency	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Once	81.9	56.3	53.8	89.7	75.9	70.5
Twice	12.8	26.2	34.6	10.3	10.3	17.8
Thrice	4	15.3	11.5	-	12.1	9.7
More than three times	1.3	2.2	-	-	1.7	2.0

8.3.5. Perceived Severity

With respect to perceived severity of reported disease, slight variations are found across regions which conform, more or less, to the national pattern. Slight deviations can be discerned in Central Region (where severe cases are relatively low, and moderate cases relatively high), the Northern Region and the Eastern Region (where, in both of them, severe cases are relatively high while moderate cases are relatively low).

Table No. (45)

Perceived Severity						
Level	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Severe	51.3	40.4	53.8	52.2	47.8	49.2
Modest	30.7	41.0	26.9	26.1	31.3	32.3
Mild	18.0	18.6	19.2	21.7	20.9	18.5

8.4.0. Health Seeking Behaviour

8.4.1. Response:

Response to reported illness by respondents varied across regions. The Northern Region has shown the highest (92%) proportion of seeking "medical treatment" i.e. reporting to a formal health care facility (public, private, or NGO-run); whereas the Eastern Region showed the least proportion (84.5%).

Table No. (46)

Response	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Reporting to Health Centre	40.9	36.2	36.0	15.6	25.0	33.5%
Reporting to Dispensary/Dressing Station	3.2	12.4	-	6.7	18.0	6.7%
Reporting to Public Hospital	21.4	36.8	36.0	60.0	39.0	36.4%
Reporting to Private Hospital/Clinic	20.1	4.9	20.0	2.2	4.0	11.6%
Reporting to NGO Centre	0	-	-	-	1.0	0.2%
Reporting to Herbalist/Traditional Healer	0.6	1.1	4.0	4.4	3.0	1.7%
Buying Drugs Directly from Pharmacy	8.4	2.7	4.0	6.7	6.0	7.0%
Doing Nothing	5.2	5.9	0.0	4.4	3.0	2.9%

Resorting to alternative treatments (reporting to herbalist and traditional healers, and obtaining drugs directly from pharmacies) has been highest in the Eastern Region (11.1%), followed by Khartoum and Western Region (9% each), and Northern Region (8%). The least proportion of those resorting to this option is found in Central Region (4%). It is again the Central Region where the highest proportion of leaving illness untreated (doing nothing) is exhibited, followed by Khartoum, Eastern Region, and Western Region. In the Northern Region, this option got the least proportion (virtually nil).

Back to the response of 'seeking medical treatment through reporting to a formal health facility', the highest proportion, under this category, reported to health centres (40.4%) in Khartoum, followed by 'reporting to public hospitals (21.4%), and reporting to private hospitals/clinics (20.1%). In the Central Region, the highest proportion reported, almost equally, to health centres (36.2%) and public hospitals (36.8%), followed by reporting to dispensaries and dressing stations (12.4%). In the

Northern Region the same pattern follows with the sole exception that health centres and public hospitals, which equally shared the highest proportion under this category, are followed this time by private hospital/clinics. In the Eastern Region 60% opt to report to public hospitals, against 15.6% for health stations, and 6.2% for dispensaries and dressing stations. Finally, the Western Region followed the same pattern – with different weights – where reporting to public hospitals got 39.0%, followed again by 'reporting to health centres' (25%) and reporting to dispensaries and dressing stations (18%).

Interestingly, reporting to private health facilities is almost equally highest (20.1% against 20.0% respectively) in Khartoum and Northern Region. Given the observation that the Northern Region has the highest level of health insurance coverage, together with the lowest share of family (financial) resources claimed by medical treatment, a plausible explanation could be that either the level of private medical fees is competitively low, the quality of public-sector health services is excessively poor, or a combination of the two. Further investigation is needed to shed more light on this finding.

8.4.2. Factors Behind Facility Preference(Where Applicable):

For those who opted to report to a health facility upon falling sick, different factors underlie their choice among different types of facilities. Variations are noted in the relative weights attached to these factors among regions as shown by Table No (47) below.

Table No. (47)
Factors Behind Facility Preference

Factor	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Proximity to residence	57.6	53.3	54.2	58.3	44.3	52.3
Health insurance coverage	3.8	21.9	4.2	9.8	2.9	11.3
Quality of service	29.5	10.7	20.8	24.4	34.3	21.9
Cost	3.8	5.9	4.2	-	7.1	5.8
Others	5.3	8.3	16.7	7.3	11.4	8.7

With the sole exception of Central Region, where 'proximity to residence' is followed by 'health insurance coverage', proximity of

residence, which is the leading factor behind facility choice in all regions uniformly – is followed by 'quality of service' in all remaining regions.

Cost considerations are most important in the Western Region (7.1%), followed by Central Region (5.9%), Northern Region (4.2%), and finally Khartoum (3.8%).

Note that health insurance coverage and cost have the least influence on facility choice in Northern Region (4.2% each).

8.4.3. Referral

The referral rate is highest in Western Region (27.9%), followed by the Eastern Region (19.5%), Central Region (14.7%), Khartoum (11.6%), and Northern Region (7%). Thus, while Western and Eastern regions, stand above the national average, Central Region, Khartoum, and Northern Region lag variably behind

Table No. (48)
Referral Rate

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Referral	11.6%	14.7	7.1	19.5	27.9	16.3%

8.4.4. Quality of Service: Client Satisfaction

High levels of satisfaction with care provided are expressed by respondents in Khartoum (96.8%) and Northern Region (96.1%), followed by Western (70.8%) and Central (68.4%) regions. Rating the services provided as 'modest' or 'poor' is proportionately high in the Eastern Region (64.1%) followed by Central (31.5%) and Western (29.2%) regions [Table No. (49)].

Table No. (49)
Quality of service: Client Satisfaction

Rating	Khtm.	Central	North	East	West	National
---------------	--------------	----------------	--------------	-------------	-------------	-----------------

	%	%	%	%	%	%
Quite Satisfactory	54.3	26.8	42.3	12.8	32.3	33.3
Satisfactory	42.5	41.6	53.8	23.1	38.5	41.1
Modest	2.4	15.4	-	46.2	24.6	19.9
Poor	0.8	16.1	3.8	17.9	4.6	8.8

8.4.5. Reasons for not reporting to Health Facilities:

High service cost as hindrance to utilization of health care is highest in Central Region (32%), followed by Khartoum (26%). In Western Region the physical availability of a health facility at a reasonable distance [(1)+(2) in Table No. (50)] comes first (45%), followed by cost (13%). In Eastern and Northern regions both factors have the same weight (29% for Eastern, and 25% for Northern Region). In Western Region, poor quality of services is the primary factor (32%), where quality considerations are also shared in Central (16%) and Eastern (14%) regions. It is not a problem, however, in Khartoum and Northern Region.

Table No. (50)
Obstacles to Utilization of Health Services

Obstacle	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
(1) No health facility available	7.9	-	25.0	14.3	45.2	19
(2) Closest health facility too far		10.5	-	14.3	-	3
(3) Service too poor		15.8	-	14.3	32.3	18
(4) Service too expensive	26.3	31.6	25.0	28.6	12.9	20
(5) Others	65.8	42.1	50.0	28.6	9.7	39
(1)+(2)	7.9	10.5	25.0	28.6	45.2	22
(1)+(2)+(4)	34.2	42.1	50	57.2	58.1	42

This falls in line with reported deficiency of health facilities as compared to established standards (Table No. [51]).

Table No. (51)

Standards for Population that Should be Covered by Different Types of Health Facilities and the Actual Number of Available Facilities *

Type of Facility	Standard per Population	Number of Facilities Needed (Standard)	Number of Facilities Available	% of Available to Needed
Rural Hospitals	100000 - 250000	336	236	70%
Health Centres	20000 - 50000	1682	964	57%
Basic Health Units**	5000	6730	5142	76%
Average				68%

*Adapted from: FMOH, GOS: Sudan Child Health Policy: Situation Analysis

** Up-graded dispensaries dressing station, & PHCU to meet specific (BHU) standards

8.5.0. Chronic Diseases:

8.5.1. Prevailing Pattern of Chronic Diseases

In Khartoum chronic diseases are led by hypertension, followed by diabetes, arthritis, and cardiac diseases (Table No. [52]); while in Central Region arthritis and hypertension share the first rank, followed by diabetes and asthma. In Northern Region hypertension is most frequent followed by arthritis, while diabetes and asthma rank third. In the Eastern Region hypertension is followed by asthma, arthritis, and peptic ulcer (the three of them rank second). Finally, in the Western Region arthritis is followed by asthma, peptic ulcer and diabetes.

Compared to national rates, hypertension and diabetes are abnormally high in Khartoum; cardiac diseases are high in Northern Region and Khartoum, again; arthritis is abnormally high in Western Region; asthma is high in Eastern, Western, and Northern regions; and peptic ulcer is high in Western and Eastern regions.

Table No. (52)
Chronic Diseases

Disease	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Hypertension	35.2	26.2	30.4	30.0	6.3	26.1
Diabetes	31.0	16.7	13.0	5.0	9.4	18.6
Cardiac Diseases	7.0	2.4	8.7	5.0	-	4.3
Arthritis	11.3	26.2	17.4	20.0	43.8	24.1
Asthma	4.2	10.7	13.0	20.0	15.6	10.3
Peptic Ulcer	-	0	-	20.0	12.5	1.6
Others	11.3	17.9	17.4		12.5	15.0

8.5.2. Chronic Diseases: Follow-up

The highest rate of reporting for regular follow-up in case of chronic diseases is found in the Northern Region (82.6%), followed by Khartoum (76.1%), Eastern Region (70.0%), Central Region (64.6%), and Western Region(59.4%) [Table No.(53) below].

Table No. (53)

Chronic Diseases: Follow-up

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Follow-up	76.1	64.6	82.6	70.0	59.4	68.5

8.5.3. Chronic Diseases: Health Facility Preference:

In Khartoum the facility most chosen for follow-up is private hospital/clinics (36.1%), followed by health centres (29.5%), and public hospital (26.2%); while in Central Region public hospitals are most chosen (37.3%), followed by health centres (28.0%), private hospitals/clinics (24%), and dispensaries and dressing stations (9.3%) – Table No. (53).

In the Northern Region, public hospital are most chosen (68.4%), followed by private hospitals/clinics (21.1%), and health centres (10.5%). In Eastern and Western regions public hospital are most chosen, followed by health centres and private health units. Thus, with the exception of Northern Region, this is the prevailing pattern of facility choice with respect to follow-up visits for chronic diseases. In the Northern Region private health units are the second choice following public hospitals as mentioned above.

Thus public-sector facilities are most chosen for follow-up by respondents living with chronic diseases, excluding Northern Region of course. Within the category of public-sector facilities, and with the sole exception of Khartoum, public hospitals are most preferred. In Khartoum, however, health centres are the facility of choice for follow-up.

Table No. (54)

Chronic Diseases: Facility Preference

Facility	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Health Center	29.5	28.0	10.5	20.0	28.0	26.5
Dispensary/Dressing Station	4.9	9.3	-	6.7	4.0	5.7
Public Hospital	26.2	37.3	68.4	60.0	48.0	39.3
Private Hospital/Clinic	36.1	24.0	21.1	13.3	20.0	27.0
NGO Centre	3.3	1.3	-	-	-	1.4

8.5.4. Factors Governing Facility Choice:

In choosing among facilities for follow-up, quality considerations are of utmost importance in three regions, namely Khartoum, Eastern Region and Western Region, where 'proximity to residence' uniformly follows. For the remaining two regions (Central and Northern) the ranking is reversed i.e. 'proximity to residence' is followed by 'quality of service' Table No. (55).

'Health insurance coverage' ranks third in all regions except the Eastern Region, where the 'cost of service' ranks third, relegating 'health insurance coverage' to fourth rank Table No. (55)

Table No. (55)
Chronic Diseases: Factors Governing Facility Choice

Factor	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Proximity to residence	39.0	44.4	42.1	26.7	33.0	37.7
Health insurance coverage	11.9	20.8	10.5	6.7	11.1	14.6
Quality of service	44.1	34.7	26.3	46.7	48.1	40.1
Cost	1.7	0	-	20.0	-	2.4
Others	3.4	0	21.1	-	7.4	5.2

8.5.5. Reasons for not following-up (Chronic Diseases):

For those who do not follow-up, cost is the prime factor in all regions except the Northern and the Western (Table No. [56]).

In Central region, cost and quality of service are equally ranked as prime factors. In Northern Region, poor quality of the service available is the number one factor, followed equally by 'facility too far' and 'cost', while in the Western Region, quality is the prime deterrent, followed by physical accessibility (facility too far).

Table No. (56)
Chronic Diseases: Reasons for not following-up

Reason	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
No health facility available	-	4.5	-	-	-	2.2
Health facility too far	20	13.6	25.0	-	10.0	11.1
Service too poor	-	31.8	50.0	25.0	40.0	28.9
Service too expensive	30	31.8	25.0	50.0	-	24.4
Others	50	18.2	-	25.0	50.0	33.3

8.5.7. Quality of Service: Client Satisfaction

Follow-up services are most rated (Table No. [57]) as satisfactory in Khartoum (91%), followed by Northern Region (84%), Western (70%), and Central Region (62%) – Table No. (). Dissatisfaction with the services rendered is most expressed in the Eastern Region (64%), Central Region (37.7%), and the Western Region (30.0%).

Table No. (57)

Rating	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Quite Satisfactory	50.8	31.2	15.8	14.3	33.3	34.3
Satisfactory	39.7	31.2	68.4	21.4	36.7	37.1
Modest	3.2	15.6	5.3	28.6	13.3	12.7
Poor	6.3	22.1	10.5	35.7	16.7	16.0

8.6.0. Health Seeking Behaviour: Maternal & Child Care

8.6.1.0. Maternity Care:

8.6.1.1. Antenatal Care

Take-up of antenatal care is highest in Khartoum (94%), followed by Northern Region (88.0%), Western Region (86.4%), Central Region (72.3%), and Eastern Region (61.1%) - Table No. (58).

Table No. (58)
Antenatal Care

Service		Khtm.	Central	North	East	West	National
		%	%	%	%	%	%
(1) Antenatal Care		94.0	72.3	88	61.1	86.4	87.2%
(2) Intra-partum Care (Delivery within past 3 years)	Delivery at home under trained MW	37.1	68.8	55.6	65.4	84.3	63.4%
	Delivery at home under untrained MW	3.2	9.2	-	1.9	2.0	4.7%
	Delivery at home unattended	-	2.8	-	-	-	1.0%
	Delivery at health facility under medical supervision	59.7	19.3	44.4	32.7	13.7	30.9%

8.6.1.2. Choice of antenatal care facility:

For antenatal care, private hospital/clinics are most preferred in Khartoum (32.2%), followed by health centres (29.0%) and public hospitals (29.0% also), NGO centers (6.5%), and dispensaries and dressing stations (3.2%). In both Central Region and Eastern Region, public hospitals are the first choice, followed by health centres, and private hospitals/clinics respectively [Table No. (59)]. In the Northern Region, however, health centres are the first choice (50%), followed by public hospital (45.5%), and private hospitals/clinics (4.5%); while in Western Region, public hospitals (49%) are followed by health centres (31.4%), 'dispensaries and dressing stations' (15.7%), and private hospitals/clinics (3.9%).

Table No. (59)
Choice of antenatal care facility:

Facility	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Health Center	29.0	32.0	50.0	29.4	31.4	31.6%
Dispensary/Dressing Station	3.2	8.2	-	5.9	15.7	7.0%
Public Hospital	29.0	41.8	45.5	38.2	49.0	40.7%
Private Hospital/Clinic	32.3	16.4	4.5	20.6	3.9	17.5%
NGO Centre	6.5	1.6	-	5.9	-	3.0%

Thus, in three regions (Central, Eastern, and Western), public hospitals are most chosen for antenatal care, followed by health centres [Table No. (59)]. In Northern Region health centres come first, followed by public hospitals. In Khartoum, however, private hospitals/clinics are most preferred, followed by public hospitals, and health centres consecutively.

8.6.1.3. Preference of Antenatal Care Facilities:

With the exception of Khartoum [Table No. (60)], 'proximity to residence' is the primary factor in choosing among antenatal care facilities, followed, uniformly, by 'quality'. In Khartoum, however, quality considerations come first, only to be followed by 'proximity to residence'.

Health insurance coverage ranked third in Central Region, Northern Region, Khartoum, and Western Region; whereas cost consideration ranked fourth in Central Region, Eastern Region, and Khartoum. Apparently, cost does not count, so far as the preference of antenatal care facility is concerned, in Northern and Western regions.

Table No. (60)
Reason of Facility Choice (antenatal care):

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Proximity to residence	35.5	45.3	40.9	65.6	58.0	46.2%
HI coverage	4.8	13.7	9.1	-	2.0	7.6%
Quality of service	56.5	29.1	36.4	31.3	36.0	38.2%
Cost	1.6	3.4	-	3.1	-	2.1%
Others	1.6	8.5	13.6	-	4.0	5.9

8.6.1.4. Reasons for not using antenatal care:

For those who opt to go without antenatal care, inaccessibility of qualified facilities (either not available altogether or else too distant) is the primary factor in Eastern Region (57%), Khartoum (50%), Central Region (44%), and Western Region (25%). In the Northern Region the major deterrent, however, is the poor quality of available service. Cost considerations ranked second in Northern region, Khartoum, and Western Region; while poor quality of service ranked second in Khartoum (of equal weight as cost), Central Region, and Western Region (again of equal weight as accessibility) – Table No. (61).

Table No. (61)
Reasons for not using antenatal care:

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
No HF available	-	25.0	-	42.9	25.0	33.8%
HF too far	50.0	19.4	-	14.3	-	15.5%
Service too poor	25.0	13.9	66.7	-	12.5	9.9%
Service too expensive	25.0	2.8	33.3	21.4	25.0	11.3%
Others	-	38.9	-	21.4	37.5	29.6

8.6.1.5. Quality of antenatal services: Client Satisfaction

The proportion of those who are satisfied with antenatal care is highest in Northern Region (100%), followed by Khartoum (98%), Western Region (80%), Central Region (74%), and Eastern Region (59%) – Table No. (62). Those who dubbed the services as 'poor' are highest in Eastern Region (26%), followed by Central Region (14%), Western Region (10%), and Khartoum (2%).

Table No. (62)
Quality of antenatal services: Client Satisfaction

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Quite Satisfactory	57.1	36.2	18.2	25.9	18.0	35.5%
Satisfactory	41.3	37.9	81.8	33.3	62.0	46.1%
Modest	-	12.1	-	14.8	10.0	8.5%
Poor	1.6	13.8	-	25.9	10.0	9.9%

8.6.1.6. Intra-partal Care:

With the exception of Khartoum State, deliveries [Table No. (58)] take place mostly 'at home', either assisted by trained MWs (proportionately higher in Western Region, Central Region, and Eastern Region respectively), assisted by untrained MWs (highest in central Region), or unattended (reported in Central Region only). In Khartoum, (59.7%) of the deliveries take place at a health facility under medical supervision [Table No. (58)]. The corresponding figures for other regions are (44.4%) for the Northern Region, (32.7%) for the Eastern Region, (13.9%) for the Central Region, and (13.7%) for the Western Region.

8.6.1.7. Reason of Facility Choice (intra-partal care):

Choice of facility for intra-partal care is governed mainly by proximity to residence in Central, Eastern, and Western Region; whereas in Khartoum and Northern Region, quality considerations come first [Table No. (63)].

Table No. (63)
Reason of Facility Choice (intra-partal care):

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Proximity to residence	8.1	52.4	12.5	84.0	57.1	30.1%
Health insurance coverage	5.4	14.3	12.5	8.0	14.3	7.2%
Quality of service	81.1	21.4	37.5	-	28.6	34.3%
Cost	5.4	2.4	-	4.0	-	2.4
Others	-	9.5	37.5	4.0	-	25.9%

Health insurance coverage is relatively more important for Central and Western regions (14% each), followed by Northern Region (13%), Eastern Region (8%), and Khartoum (5%); while cost ranked third in Khartoum and Eastern Region, and fourth in Central Region. Cost does not seem to exert any influence on facility choice in Northern and Western Regions, however.

8.6.1.8. Quality of services rendered (intra-partal care): Client Satisfaction

The proportion of those who are satisfied with intra-partal care is highest in Khartoum (94.8%), followed by Northern Region (83.4%), Central Region (83.0%), Western Region (62.5%), and Eastern Region (61.3%).

The services rendered are considered to be poor, however, by (15.0%) in Western Region, (12.9%) in Eastern Region, (5.6%) in Northern Region, (2.6%) IN Khartoum, and (2.1%) in Central Region.

Table No. (64)
Quality of services rendered (Delivery)

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Quite Satisfactory	17.9	12.8	5.6	-	7.5	15.0%
Satisfactory	76.9	70.2	77.8	61.3	55.0	63.2%
Modest	2.6	14.9	11.1	25.8	22.5	14.0%
Poor	2.6	2.1	5.6	12.9	15.0	7.7%

8.6.2.0. Neonatal Care:

8.6.2.1. Vaccination Coverage

For the five antigens included in the immunization schedule (BCG, poliomyelitis, DPT, measles, and hepatitis), the highest coverage is achieved in Central Region (95%), followed by Khartoum (86%), Northern Region (80%), Western Region (76%), and Eastern Region (73%). If hepatitis, which has been introduced only recently, is excluded, then global coverage is again highest in Central Region (97%), followed by Western Region and Khartoum (92% each), Eastern Region (90%), and Northern Region (88%) - Table No. (65).

Table No. (65)
Vaccination Coverage

Vaccination	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
BCG	99	95	87	96	91	95
Polio	99	98	94	93	95	97
DPT	95	98	88	94	95	96
Measles	73	96	82	78	86	90
Hepatitis	65	90	50	3	11	68
Global Average	86	95	80	73	76	89
Global Average (Excluding Hepatitis)	92	97	88	90	92	95

8.6.2.2. Choice of Vaccination Facility

Health facilities where vaccination is sought – taking into account the fact that choice in this case is relatively restricted to varying degrees – involve, in the main, public-sector facilities (i.e. health centres, *public* hospitals, dispensaries, and dressing stations). This is more or less the case in all regions [Table No. (66)]. Private hospitals/clinics and NGO-run facilities played some role in some regions. Thus in Khartoum, e.g., 8% report to private hospitals/clinics for vaccination; the corresponding figures for other regions are (6.8%), (5.9%), and (2.2%), for Eastern, Northern, and Central regions respectively. NGO-run facilities have the highest weight in Central Region (23.4%), followed by Khartoum (11.0%), and Eastern Region (2.3%).

Table No. (66)
Vaccination Unit

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Health Center	59	37.2	70.6	36.4	36.4	45%
Dispensary/Dressing Station	6	25.5	-	2.3	18.2	13%
Public Hospital	13	11.7	23.5	52.3	45.5	35%
Private Hospital/Clinic	8	2.2	5.9	6.8	-	2%
NGO Centre	11	23.4	-	2.3	-	5%

8.6.2.3. Factors Influencing Facility Choice:

Generally speaking, 'proximity to residence' and 'quality' respectively are uniformly the most important factors behind choosing facilities for vaccination purposes [Table No. (67)].

Table No. (67)
Factors Behind Facility Choice

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Proximity to residence	86.5	77.4	64.7	85.0	66.1	76.4%
HI coverage	-	4.1	5.9	2.5	-	2.2%
Quality of service	9.4	11.0	17.6	7.5	16.1	11.7%
Cost	-	-	-	-	-	0.2%
Others	4.1	7.5	11.8	5.0	17.9	9.4%

8.6.2.4. Quality of vaccination services rendered: Client Satisfaction

Positive rating of vaccination services ('quite satisfactory' or 'satisfactory') is highest in Northern Region (100%), followed by Khartoum (90.6%), Western Region (80.7%), Central Region (75.3%), and Eastern Region (65.9%) – Table No. (68). The service is described as 'poor' by (22.0%) in the Eastern Region, (14.3%) in the Central Region, and (8.8%) in the Western Region.

Table No. (68)
Quality of vaccination services rendered: Client Satisfaction

	Khtm.	Central	North	East	West	National
	%	%	%	%	%	%
Quite Satisfactory	42.7	44.8	29.4	24.4	36.8	39.5%
Satisfactory	47.9	30.5	70.6	41.5	43.9	41.4%
Modest	4.9	10.4	-	12.2	10.5	9.1%
Poor	-	14.3	-	22.0	8.8	10.0%

9.0. Conclusions and Recommendations

9.1. Main Conclusions:

- Access to medical care is inhibited by, among other things, the prevailing spatial distribution of health facilities where 35% of the households surveyed have to travel 1 – 12 kilometers to get to the closest health facility in the surrounding. This, at best, adds additional travel expenses coupled with, among other things, foregone income.
- Health insurance coverage is still limited; only 33% are covered by health insurance (26% under the national health insurance scheme).
- Health care expenses claim about 16% of household income, where 63% earn a monthly income less than SD 45000.
- Over a recall period of four weeks, 76% of households reported the sickness of one or more of their members (15% of total).
- The major (recurrent) diseases are malaria and respiratory infections, followed by renal and urinary track disorders, diarrhea, ophthalmic diseases, and dermatology and STDs.
- About 88% of those who reported an illness, opted to seek treatment in a formal health-care facility; 77% reported to public-sector facilities (public hospitals, health centres, dispensaries, and dressing stations), while 11.6% reported to private facilities and (0.2%) reported to NGO-run facilities.

- Resort to alternative medicine seems to be practiced on a limited scale. Only 1.7% of respondents have reportedly opted to consult herbalists and traditional healers. Besides, the phenomenon of buying drugs directly from drugstores, while might be growing, has not yet reached alarming proportions as one in every 14 patient has reportedly chosen to follow that course of action.
- Factors that influence health facility preference are proximity to residence (52%), quality of service (22%), health insurance coverage (11%), and cost (6%).
- For those who opted not to report to a health facility, the major deterrents are "physical accessibility" (22%), followed by cost (20%), and poor quality of the service rendered (18%).
- Only 16% of the cases reported to health facilities have been referred to higher-level facilities.
- The major prevailing chronic diseases are found to be hypertension, arthritis, diabetes, and asthma. These are followed by cardiac diseases and peptic ulcer.
- About 69% of those living with chronic diseases pay routine follow-up visits. Quality (29%), cost (24%), inaccessibility of service (13%) are the major deterrents for those who do not.
- The take-up rate for antenatal care is (87%), while it is (93%) for intra-partum care. About (79%) of antenatal care is sought in public-sector facilities, while (18%) is sought in private facilities. The major factor that influence the choice of antenatal care facility is proximity, followed by quality and cost. In the case of intra-partum care, quality is the major factor followed by proximity to residence. Cost and health insurance coverage have only limited impact.
- Vaccination coverage stands at 89% (95% excluding hepatitis). Public sector facilities provide 93% of the service.

- Overall, it is apparent that despite the announced policy of encouraging private-sector (and civil society) involvement, the public-sector remains by far the major provider of health care services as the contribution of the private (and philanthropic) sector is still limited in scope (and selective with respect to service categories addressed).

9.2. Recommendations:

- Access to health care services still needs to be enhanced if utilization levels are to be improved. This would call for:
 - Additional (*public*) investment interventions to increase the number of facilities, at all levels of service, and to correct existing inequities among regions.
 - Setting appropriate incentives to attract more private (and philanthropic) sector involvement, given the limited contribution made by these sectors so far, to help filling any possible resource gap in the health sector.
 - Expanding the coverage of health insurance, and possibly improving on its impact upon utilization by minimizing (or abolishing) existing restrictions (on the types of services covered, e.g.).
 - Addressing quality issues through comprehensive measures that involve not only direct material (premises, equipment, etc) and human (capacity building) investment, but also effective coordination (in such areas as medical education) with relevant bodies as well strengthening the supervisory role of the FMOH and SMOHs to maintain quality standards in the private and philanthropic sectors.
- Given the high proportion of people living below the US \$ 1 /day threshold (about SD 45000 for an average family) it seems pertinent to think about revising the prevailing level of cost-recovery, at least until reasonable success is achieved in expanding the coverage of health insurance.. The direct cost of

health care represents a major inhibition on the utilization of health care services.

- To rationalize the use of health resources, the referral system should be activated. Revival of the referral system will enhance the efficiency of resource use in the health sector, which would, in turn, have a positive impact on the utilization of health care services.
- In the same vein, it has been established that the introduction of national health insurance scheme has significantly improved the functioning of the referral system. Hence the expansion of health insurance coverage will concomitantly contribute to achieving this objective. Appropriate supportive measures, however, may need to be instituted to maximize revival.
- All measures recommended to enhance utilization of health services are better be seen, simultaneously, as measures to curb such adverse phenomena as the use of self-prescribed drugs. These phenomenon will be contained through cost reduction (directly, by revising user-fees level, or indirectly through expanding health insurance coverage) and quality improvements (injecting new resources in the health system, improving the efficiency of using existing resources, inviting more private-sector and civil society involvement, together with properly maintaining performance standards in the health facilities run by these non-governmental sectors).

Selected Bibliography

- 1- A/Bagi, Muneef (1996), The Impact of Liberalisation Policies on Health, Some Evidence from Sudan. Seminar paper No. 100, DSRC, University of Khartoum.
- 2- Abusaleh Shariff: "A Status Report on Macroeconomics and Health Sector in Sudan". Commission of Macroeconomics and Health (CMH). WHO. March 2004, Khartoum, Sudan.
- 3- Acton, J. P. 1975. "Non-monetary Factors in the Demand for Medical Services: Some Empirical Evidence." *Journal of Political Economy*, 87:3, pp. 595-614 .
- 4- Aday, L.A., and Anderson, R. (1974): A Framework for the Study of Access to Medical Care. *Health Services Research* 9:208–20.
- 5- Akin, J., C. Griffin, D. K. Guilkey, and B. M. Popkin. 1986. "The Demand for Primary Health Care Services in the Bicol Region of the Philippines." *Economic Development and Cultural Change*, 34:4, pp. 755-82 .
- 6- Akin, J., D. Guilkey, and H. Denton. 1995. "Quality of Services and Demand for Health Care in Nigeria: A Multinomial Probit Estimation." *Social Sciences and Medicine*, 40:11, pp. 1527-37.
- 7- Akin, J., S, C. Griffin, D. K. Guilkey, and B. M. Popkin. 1984. *The Demand for Primary Health Care in Developing Countries*. Totowa, N.J.: Littlefield, Adams.
- 8- Alexander S. Preker, April Harding: "The Economics of Public and Private Roles in Health Care: Insights from Institutional Economics and Organizational Theory". World Bank.
- 9- Andersen, R. (1968). A Behavioral Model of Families Use of Health Services. Research Series No. 25. Center for Health

- Administration Studies, University of Chicago, Chicago, IL, USA. 111 pp.
- 10-Andersen, R.; Newman, J.F. (1973). Societal and Individual Determinants of Medical Care Utilization in the United States. *Millbank Memorial Fund Quarterly Health and Society*, 51, 95–124.
 - 11-Andersen, R; Aday, L.A. 1978. Access to Medical Care in the US: Realised and Potential. *Medical Care*, 16(7), 533–546.
 - 12-Andersen, R.M.; McCutcheon, A.; Aday, L.A.; Chiu, G.Y.; Bell, R. 1983. Exploring Dimensions of Access to Medical Care. *Health Services Research*, 18(1), 49–74.
 - 13-Andersen, R. 1995. Revisiting the Behavioral Model and Access to Medical Care: Does It Matter? *Journal of Health and Social Behavior*, 36, 1-10.
 - 14-Bailey W et al. (1994): The Effect of User Fees on the Utilization of Family Planning Services. A Clinical Study. *West Indian Medical Journal*, 1994, 43: 43–45.
 - 15-Becker, G. 1965. "A Theory of the Allocation of Time." *Economic Journal*, 75, pp. 493-517 .
 - 16-Becker, M.H.; Haefner, D.P.; Kasl, S.V.; Kirscht, J.P.; Maiman, L.A.; Rosenstock, I.M. 1977. Selected psychosocial models and correlates of individual health-related behaviors. *Medical Care*, 15(5), S23-S46
 - 17-Bloom, G, & Lucas H (2000): "Health & Poverty in Sub-Saharan Africa". IDS Working Paper No. 103. Institute of Development Studies.
 - 18-Bolduc, D., G. Lacroix, and C. Muller. 1996. "The Choice of Medical Providers in Rural Benin: A Comparison of Discrete Choice Models." *Journal of Health Economics*, 15, pp. 477-98.
 - 19-Cabral, Z. 1999. "A Study of Access to Basic Education and Health in Mozambique." Oxfam, Maputo.
 - 20-Castro Leal, F., J. Dayton, L. Demery, and K. Mehra. 2000. "Public Spending on Health Care in Africa: Do the Poor Benefit?" *Bulletin of the World Health Organization*, 78:1, pp. 66-74.
 - 21-Centre for Health Information: "Diabetes Medical Utilization Study". Newfoundland and Labrador, 1995/96 - 1999/00.
 - 22-Chatterji S, Ustun B, Sadana R, Salomon J, Mathers C, Murray C. (2000): The Conceptual Basis for Measuring and Reporting on

- Health. Geneva, World Health Organization. (Evidence and Information for Policy Discussion paper No. 45).
- 23-Cherkin, D.C., Grothaus, L., and Wagner, E.H. (1989): The Effect of Office Visit Co-payments on Utilization in Health Maintenance Organizations. *Medical Care* 27:1036–45.
- 24-Christopher J.L. Murray and David B. Evans (ed.s) (2000): "Health Systems Performance Assessment: Debates, Methods and Empiricism". World Health Organization, Geneva.
- 25-Christopher JL Murray and Julio Frenk: "A WHO Framework for Health System Performance Assessment". Evidence and Information for Policy, World Health Organization.
- 26-Christopher JL Murray, Jeremy Lauer, Ajay Tandon, Julio Frenk: "Overall Health System Achievement for 191 Countries". EIP/GPE, World Health Organization, Discussion Paper Series: No. 28.
- 27-Christopher JL Murray, Joshua A Salomon, Colin Mathers: "A Critical Examination of Summary Measures of Population Health". (n.d.).
- 28-Craig William Perry, Harvey S. Rosen (2001): "Insurance and the Utilization of Medical Services among the Self-Employed" NBER Working Paper No. 8490, National Bureau of Economic Research.
- 29-Cromwell J. - Mitchell J. (1986), "Physician-induced Demand for Surgery", *Journal of Health Economics*, vol. 5, pp. 293-313.
- 30-Culyer, A. J. 1989. "The Normative Economics of Health Care Finance and Provision." *Oxford Review of Economic Policy*, 5:1, pp. 34-58.
- 31-Cummings, K.M.; Becker, M.H.; Maile, M.C. 1980. Bringing the Models Together: An Empirical Approach to Combining Variables Used to Explain Health Actions. *Journal of Behavioral Medicine*, 3, 123-145.
- 32-Daniele Fabbri, Chiara Monfardini (2002): Public VS. Private Health Care Services Demand in Italy. Department of Economics - University of Bologna. December 2002. Piazza Scaravilli, 2-40126 Bologna, Italy.
- 33-David B Evans, Tessa Tan-Torres Edejer, Jeremy Lauer, Julio Frenk, and Christopher J L Murray (2001): "Measuring Quality: From the System to the Provider". *International Journal for Quality in Health Care*, 2001; Vol. 13, No. 6; pp. 439-446.

- 34-Decaillet, F., Mullen, P. D., Guen, M., (2003): "Sudan Health Status Report – Draft Version 1," World Bank.2003.
- 35-Dow, W. H. 1996. "Unconditional Demand for Health Care in Côte d'Ivoire; Does Selection on Health Status Matter." Vol. Living Standards Measurement Study Working Paper. World Bank: Washington, D.C.
- 36-Dowd, Bryan, et al (1991): "Health Plan Choice and the Utilization of Health Care Service".The Review of Economics and Statistics, Volume 73, Issue No. 1, February 1991, pp. 85-93.
- 37-Duan N. - Manning W.G. - Morris C.N. - Newhouse J.P. (1983), "A Comparison of Alternative Models for the Demand for Medical Care", Journal of Business and Economic Statistics, vol. 2, pp. 115-126.
- 38-Dunlop, D., and M. Martins, eds. 1995. An international assessment of health care financing: Lessons for the developing countries. International Development Institute, Washington, D. C.: World Bank.
- 39-Ensor, T. Witter, S. (2001). Health Economics in Low Income Countries: Adapting to the Reality of Unofficial Economy. Health Policy. 57: 1-13.
- 40-Evans D, Tandon A, Murray CJL, Lauer J. (2000): The Comparative Efficiency of National Health Systems in Producing Health: An Analysis of 191 countries. Geneva, World Health Organization. (Evidence and Information for Policy Discussion Paper No. 29).
- 41-Kronenfeld, J.J. 1980. Sources of ambulatory care and utilization models. Health Services Research, 1980(15), 3-20.
- 42-Federal Ministry of Health, Central Bureau of Statistics (Republic of Sudan), & UNICEF (2000): "Multiple Indicator Cluster Survey, Sudan - Final Report"..
- 43-Federal Ministry of Health, Republic of Sudan (2004): "Health Gaps in Sudan". Federal Ministry of Health, Sudan, the Secretariat of the NCMH. Khartoum, June 2004.
- 44- Federal Ministry of Health (FMOH), Republic of Sudan (n.d): Sudan Child Health Policy: Situation Analysis.
- 45-Gakidou E. E., Frenk J, Murray C. J. L. (2000): Measuring Preferences on Health System Performance Assessment. Geneva, World Health Organization, (Evidence and Information for Policy Discussion Paper No. 20).

- 46-Grossman M. (1982), "The Demand for Health After a Decade", *Journal of Health Economics*, vol. 1, pp.1-3.
- 47-Grossman, M. (1972): On the concept of health capital and the demand for health. *Journal of Political Economy* 1972; 80: 223-255.
- 48-Grossman, M. 1972. "On the Concept of Health Capital and the Demand for Health." *Journal of Political Economy*, 80:2, pp. 223-55.
- 49-Grossman, M. 1972. "The Demand for Health: A Theoretical and Empirical Investigation." Vol. NBER Occasional Paper. Columbia University Press: New York.
- 50-Haddad, S. and P. Fournier. 1995. "Quality, Cost and Utilization of Health Services in Developing Countries: A Longitudinal Study in Zaire." *Social Science and Medicine*, 40:6, pp. 743-53 .
- 51-Heller, P. S. 1982. "A Model of the Demand for Medical and Health Services in Peninsular Malaysia." *Social Science and Medicine*, 16, pp. 267-84.
- 52-Hurley, J. (2000). "An Overview of the Normative Economics of the Health Sector," in *Handbook of Health Economics*. Culyer and Newhouse (ed.s): Elsevier Science B. V.
- 53-Hutchinson, P. (1999). "Health Care in Uganda: Selected Issues." World Bank Discussion Paper :404 Washington D.C .
- 54-Ilse Frederick (1998): "Health in Rural Tanzania: Determinants of Health Status, Health Care Demand and Health Care Choice". Centre for Economic Studies, Katholieke Universiteit Leuven. January 1998.
- 55-Irma T. Elo (1992): "Utilization of Maternal Health Care Services in Peru: The Role of Women's Education". Population Studies Center, University of Pennsylvania. *Health Transition Review*, Vol 2, No. 1, 1992.
- 56-Jack, W. (1999). *Principles of Health Economics for Developing Countries*. Washington, DC: World Bank.
- 57-James Guevara, Paula Lozano, Thomas Wickizer, Loren Mell, and Harlan Gephart, (2000): "Utilization and Cost of Health Care Services for Children with Attention-Deficit/Hyperactivity Disorder" *Pediatrics* Vol. 108 No. 1 July 2001, pp. 71-78.
- 58-Jimenez, E. (1989). "Social Sector Pricing Policy Revisited: A Survey of Some Recent Controversies," in *Proceedings of the World Bank Annual Conference on Development Economics*

1989. Fischer and de-Tray eds. Washington, D.C.: World Bank, pp. 109-38.
- 59-Juraci A. César, Marcelo A. Cavaletti, Gustavo S. de Lima, and Ricardo S. Houthausen (1998): "Can the Community Health Workers Reduce the Utilization of Health Services for Children Under Five Years?" Research Paper No. 152. Takemi Program in International Health. Harvard School of Public Health.
- 60-K. Navaneetham A. Dharmalingam (2000): "Utilization of maternal health care services in South India" Trivendrum Working Papers No 307, Centre for Development Studies. India.
- 61-Krieger, J.W., Connell, F.A., and LoGerfo, J.P. (1992): Medicaid Prenatal Care: A Comparison of Use and Outcomes in Fee-for-Service and Managed Care. *American Journal of Public Health* (1992) 82:185–90.
- 62-Kronenfeld, J.J. (1980). Sources of ambulatory care and utilization models. *Health Services Research*, 1980(15), 3-20.
- 63-Lavy, V. and J.-M. Germain. (1994). "Quality and Cost in Health Care Choice in Developing Countries." Living Standards Measurement Study Working Paper 105. World Bank.
- 64-Len M. Nichols (1999): "Linking State-Level Health Expenditure and Utilization Data to Identify Sources of Variation in Health Service Prices, Utilization, and Expenditures". Final Report. Department of Health and Human Services. February 15, 1999.
- 65-Lindelow M (2003): "The Utilization of Curative Health Care in Mozambique: Does Income Matter?" The World Bank, Centre for Study of African Economies, Oxford University. Third draft, December 2003.
- 66-Litvack, J. and C. Bodart. (1993). "User Fees plus Quality Equals Improved Access to Health Care : Results of a Field Experiment in Cameroon." *Social Science and Medicine*, 37:3, pp. 369-83.
- 67-Magnus Lindelow: "Understanding Spatial Variation in the Utilization of Health Services: Does Quality Matter?" The Centre for the Study of African Economies (CSAE). Working Paper No. 212. <http://www.bepress.com/csae/paper212>
- 68-Makinen, M., H. Waters, and M. Rauch. (1999). "Conventional Wisdom and Empirical Data on Inequalities in Morbidity, Use of Services and Health Expenditures." *Partnership for Health Reform*.

- 69-Makinen, M., H. Waters, M. Rauch, N. Almagambetova, R. Bitran, L. Gilson, D. McIntyre, S. Pannarunothai, A. L. Prieto, G. Ubilla, and S. Ram. (2000). "Inequalities in Health Care Use and Expenditures: Empirical Data from Eight Developing Countries and Countries in Transition." *Bulletin of the World Health Organization*, 78:1, pp. 55-65.
- 70-Manning, W. G., J. P. Newhouse, N. Daan, E. Keeler, B. Benjamin, A. Leibowitz, M. S. Marquis, and J. Zwanziger. (1987). "Health Insurance and the Demand for Health Care: Evidence from a Randomized Experiment." *American Economic Review*, 77:3, pp. 251-77.
- 71-Margret Kelaher, Sheila Paul, Helen Lambert, Waqar Ahmad, Steve Fenton, & George Davey Smith (2003): "Ethnicity, health and health services utilization in a British study". *Critical Public Health*, Vol. 13, No. 3, 231–249, September 2003.
- 72-Mills, A. Broomberg, J. (1998). *Poverty and Health: Who Lives, Who Dies, Who Cares?* "Macroeconomics, Health and Development Series, Number 28. World Health Organization, Geneva.
- 73-Minnesota Department of Human Services (2003): "Disparities and Barriers to Utilization among Minnesota Health Care Program Enrollees". Final Report, December (2003). Performance Measurement & Quality Improvement.
- 74-Moore, M. (1996). *Public Sector Reform: Downsizing, Restructuring, Improving Performance*. WHO; Division of Analysis, Research and Assessment. World Health Organization, Geneva.
- 75-Murray CJL, Frenk J, Tandon A, Lauer J. (2000): *Overall Health System Achievement for 191 Countries*. Geneva, World Health Organization, (Evidence and Information for Policy Discussion Paper No. 28).
- 76-Murray CJL, Salomon J, Mathers C. (1991): *A Critical Examination of Summary Measures of Population Health*. World Health Organization, (Evidence and Information for Policy Discussion Paper No. 2).
- 77-Mwabu, G. (1986). "Health Care Decisions at Household Level: Results of Health Survey in Kenya." *Social Science and Medicine*, 22:3, pp. 313-9.

- 78-Mwabu, G. M. (1989). "Non-monetary Factors in the Household Choice of Medical Facilities." *Economic Development and Cultural Change*, 37:2, pp. 383-92.
- 79-Mwabu, G., M. Ainsworth, and A. Nyamete. (1993). "Quality of Medical Care and Choice of Medical Treatment in Kenya: An Empirical Analysis." *Journal of Human Resources*, 28:4, pp. 838-62.
- 80- Nazmul Chaudhury, Jeffrey Hammer, Edmundo Murrugarra (2003): "The Effects of a Fee-Waiver Program on Health Care Utilization among the Poor: Evidence from Armenia". Policy Research Working Paper 2952. World Bank, Development Research Group. January 2003.
- 81-Noralou P Roos, Evelyn Shapiro, Ruth Bond, Charlyn Black, Greg Finlayson, Christine Newburn-Cook, Leonard MacWilliam, Carmen Steinbach, Marina Yogendran, Randy Walld (2001): "Changes in Health and Health Care Use of Manitobans: 1985-1998". Manitoba Centre for Health Policy and Evaluation, Department of Community Health Sciences, Faculty of Medicine, University of Manitoba. May 2001.
- 82-Nordyke, R. J. Peabody, J. W. (2002): Market Reforms and Public Incentives: Finding a Balance in the Republic of Macedonia. *Social Science and Medicine*. 54: 939-953. 2002.
- 83- Partha Deby, and Pravin K. Trivedi (2002): "Gatekeeping, Self-Selection and Utilization of Curative and Preventive Health Care Services". December 2002.
- 84-Peter Berman, A. K. Nandakumar, Winnie Yip, Winnie Yip (1998): "Health Care Utilization and Expenditures in the Arab Republic of Egypt". Technical Report No. 25, Partnerships for Health Reform (PHR), January 1998.
- 85-Raul Mendoza Sassi: "Factors Associated with Health Services Utilization: A Population-based Study Assessing the Characteristics of People that Visit Doctors in Southern Brazil". (n.d).
- 86-Republic of Sudan, Federal Ministry of Health: "25-Year Strategic Plan for Health Sector". Draft 2.
- 87-Research Triangle Institute. (1992): Evaluation of the Cost Effectiveness and Utilization of Health Services by Medicaid Recipients Enrolled in Health Maintenance Organizations. Final

- Report to the Bureau of Medical Assistance, Managed Health Care Section. Columbus, OH: Department of Human Services.
- 88-Ritu Sadana, Colin D Mathers, Alan D Lopez, Christopher JL Murray, and Kim Iburg: "Comparative Analysis of More Than 50 Household Surveys on Health Status". World Health Organization, GPE Discussion Paper Series: No.15.
- 89-Ron D Hays, Karen L Spritzer, Dan McCaffrey, Paul D Cleary, Rebecca Collins, Cathy Sherbourne, Albert W Wu, Sam Bozzette, Martin Shapiro, William Cunningham, Ferd Egan, Steve Crystal, John Fleishman: "The HIV Cost and Utilization Study (HCSUS) Measures of Health-Related Quality of Life". RAND.
- 90-Shwabe, Christopher, (1994), Financing Health Services in the Sudan, Population & Human Development in the Sudan, edited by Omer S. and W. J. House, UNFPA, ILO, Iwoa University Press
- 91-Sitzia, J. & Wood, N. (1997) "Patient Satisfaction: A Review of Issues and Concepts", Social Science and Medicine, Vol 45, No. 12, pp. 1829-1843.
- 92-Stella M. Yu, Zhihuan J. Huang, and Gopal K. Singh (2004): "Health Status and Health Services Utilization Among US Chinese, Asian Indian, Filipino, and Other Asian/Pacific Islander Children". Pediatrics Vol. 113 No. 1 January 2004, pp. 101-107.
- 93-Stoddart G.L. - Barer M.L. (1981), "Analyses of the Demand and Utilization through Episodes of Medical Care", in Health, Economics and Health Economics, ed. by, van der Gaag J. - Perelman M., Amsterdam, North-Holland.
- 94-Sylvester Ndeso-Atanga (2000): " Health Care Quality and the Choice of Care Providers: Cameroon II". UCIAS Edited Volume 5. 2003. Africa's Changing Markets for Health and Veterinary Services: The New Institutional Issues. University of California International and Area Studies Digital Collection. <http://repositories.cdlib.org/uciaspubs/editedvolumes/5/5>.
- 95-Szilagyi, P G (1998): "Managed Care for Children: Effect on Access to Care and Utilization of Health Services" The Future of Children Children & Managed Health Care Vol. 8 • No. 2 – Summer/Fall 1998.
- 96-Tefera Belachew (2001): "Client Satisfaction, Primary Health Care & Utilization of services in Sidama district, Southern Ethiopia, 2000". M Phil Thesis, University of Oslo.

- 97-Temkin-Greener, H., and Winchell, M. (1991): Medicaid Beneficiaries under Managed Care: Provider Choice and Satisfaction. *Health Services Research* (1991) 26:509–29.
- 98-Tipping G, Dung T V, Tam N T, Segal M (1994): "Quality of Public Health Services and Household Health Care Decisions in Rural Communes of Vietnam". Research Paper 27. Institute of Development Studies.
- 99-Tweed, A (2003): "Health Care Utilization among Women Who Have Undergone Breast Implant Surgery" British Columbia Centre of Excellence for Women's Health, Vancouver, BC, Canada.
- 100- Van Doorslaer E. - Koolman X. - Puffer F. (2002), "Equity in the Use of Physician Visits in OECD Countries: Has Equal Treatment for Equal Need been Achieved?", in *Measuring Up: Improving Health Systems Performance in OECD Countries*, OECD, Paris, France.
- 101- Wagstaff A. (1986), "The Demand for Health - Some New Empirical Evidence", *Journal of Health Economics*, vol. 5, pp. 195-233.
- 102- Walter Kipp, Jimmy Kamugisha, Phil Jacobs, Gilbert Burnham, & Tom Rubaale (2001): "User fees, health staff incentives and service utilization in Kabarole District, Uganda". *Bulletin of the World Health Organization*, 2001, 79 (11).
- 103- WHO (2000): "Background Paper for the Technical Consultation on Effective Coverage of Health Systems". Rio de Janeiro, Brazil. –August 2001.
- 104- WHO (2001): "Report on WHO Meeting of Experts on the Measurement of Efficiency of Health Systems". New Orleans, USA, 08 January 2001.
- 105- WHO (2003): "The world Health Report 2003 – Shaping the Future". World Health Organization, Geneva, 2003.
- 106- WHO. (2001). "Macroeconomics and Health: Investing in Health for Economic Development. Report of the Commission on Macroeconomics and Health." World Health Organization: Geneva.
- 107- Wolfe, B. L. And J. R. Behrman. (1984): "Determinants of Women's Health Status and Health-care Utilization in a Developing country." *Review of Economics and Statistics*, 56, pp. 696-703.

- 108- Wolinsky, F. (1978). Assessing the Effects of Predisposing, Enabling and Illness-Morbidity Characteristics on Health Service Utilization. *Journal of Health and Social Behaviour*, 1978(19), 384.
- 109- Wolinsky, F.D.; Coe, R.M.; Miller, D.K.; Prendergast, J.M.; Creel, M.J.; Chavez, M.N. (1983). Health Services Utilization Among the Non-institutionalized Elderly. *Journal of Health and Social Behavior*, 1983(24), 325.
- 110- World Bank. (1993). *World Development Report, 1993: Investing in Health*. Oxford; New York; Toronto and Melbourne: Oxford University Press for the World Bank.