Can community financing contribute to a better health in Sudan?

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**CAN COMMUNITY FINANCING CONTRIBUTE
TO A BETTER HEALTH IN SUDAN?**

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**CAN COMMUNITY FINANCING CONTRIBUTE
TO A BETTER HEALTH IN SUDAN?**

DISSERTATION

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Chinese Poem

Go to the people

Live among them

Learn from them

Love them

Start with what they know

Build on what they have

But of the best leaders

When their task is accomplished

Their work is done

The people all remark

We have done it ourselves

Lao Tzu, Tao Te Ching

To the people of my homeland

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CHAPTER 1

General introduction

1.1. The study theme and Scope

An instable political system, scarce economic resources, low economic growth, constraints on the public sector and low organizational capacity of the health care system explain why the design of an adequate health financing system in developing countries is a complicated task [1]. Health finance systems in developing countries are characterized by inefficient and multiple sources of finance, lack of information and lack of coordination. The health financing system has to assure that an adequate and sustainable flow of funds is allocated in the most effective way and that recipients have incentives to achieve better health [2]. Poor health financing systems affect the health of the people aggressively, as witnessed by poor health indicators and the exclusion of the vast majority of the poor from health services [3]. This is aggravated the expansion of poverty [4].

Health financing via general taxation or via social health insurance are generally recognized to be powerful methods to achieve universal coverage with adequate financial protection for all citizens against health care cost [2 and 3]. The impediments to universal financial protection are recognized by most countries. A user fee policy was established in many developing countries usually as a response to severe constraints on government finance. However, most studies alert decision makers to the negative effects of user fees on the demand for care, especially that of the poorest households [4]. Searching for other appropriate mechanisms of health finance can contribute to the better health of the people is a priority in developing countries.

Sudan is no exemption. Since the independence in 1956 Sudan has experienced six different political regimens with different contradicting ideologies ranging from different approaches of democratic elected governments to military coups [5]. The chronic economic shortages are seen in the poor infrastructure of the country and the deficient public services especially for health and education. The health organization is severely affected and therefore it couldn't offer sustainable and adequate health services. This is seen in the high out-of-pocket payments which cover more than 70% of health expenditures [6]. The bad situation (political, economical and organizational) in Sudan is aggravated by the internal conflicts and natural disasters that displaced four million people.

The government failed to finance the health care system via general taxes so, it established the user fee policy nation-wide in 1992. The negative impact of the user fee policy affected the poor and reduced the utilization of health services. In 1994 the government launched the social health insurance for both the formal and the informal sectors to overcome the complications of the user fee policies and to ensure adequate coverage of health services for all citizens. The social health insurance couldn't cover the majority of the people in the informal sector (85.5%). This left the informal sector exposed to the for-profit private sector and the user fee policies of the public health sector. The high out-of-pocket payments of the health expenditure in Sudan (70%) are indicative for the severe deterioration in health finance mechanisms and the exclusion of the poor. The government is cornered by these tight situations (political, economical and organizational) and looking for solutions regarding the financing of the health care system to achieve better health for people.

Community financing is one of the innovative methods that can provide the means for developing countries to deal with chronic problems in health financing systems. Nowadays international community representatives at the World Bank and the WHO frequently rely on com-

munity financing to achieve sustainability of health services, to spread equity among the population and to improve the quality of services [7]. This is perhaps why there has been an increasing interest in financing based at the community level, where it is thought to be easier to identify the contributing population and to collect contributions. The involvement of the community in health financing was in fact spurred, among others, by the declaration of Alma Ata in 1978, urging maximum community participation in the organization of primary health care (PHC).

Community financing for health is referred to as a mechanism whereby households in a community (the population in a village, district or other geographical area, or a social-economic or ethnic population group) finance or co-finance the current and /or capital costs associated with a given set of health services. Thereby they also have some involvement in the management of the community financing scheme and organization of health services [1 and 8]. The diversity in community financing schemes structures and purposes (small and large scales) offers the opportunity for different countries to adopt the convenient schemes regarding their circumstances. The success that was observed in large scales community financing schemes in China, Indonesia, Thailand, Bangladesh and Western Africa encourages other nations to use community financing schemes [3].

Community financing is still widely untested. Some researchers have tried to design frameworks to evaluate, clarify and classify different community financing schemes [8, 9, and 10]. There is no consensus on one framework to evaluate community financing. The structure of a framework is influenced by many factors regarding the country situation (political, economical and organizational), culture and purpose (communities' needs assessment) [2].

Although Sudan has much potential for community financing schemes to achieve its benefits, has some deficient experiences. The question addressed here is to what extent community financing can contribute to a better health of Sudan. The study presented in this thesis attempts to fill this research gap.

Better health in broad terms requires knowledge (formal and informal education); sufficient and sustainable resources for the health provision; and effective responses to health problems. Enabling an environment for health will be essential to achieve better health [7].

Better health can be achieved by reforming health care systems in order to use available human and financial resources more productively. Correcting the many sources of waste and inefficiency must take top priority. Good management of pharmaceuticals is crucial in the reform process. Cost-effective packages of basic health services delivered through networks of local health centres and rural hospitals should be the base of the pyramid of health services. Using all mechanisms that can make an important contribution to health equity, good quality and sustainability of health services are important for the reform. Community involvement, participation and empowerment are essential key factors in the success of health reforms in developing countries. The removal of all types of barriers (financial, geographical, cultural...etc.) that prevent the poor from the health services must take place [7].

This study is a case study of evidence based findings, composed of primary and secondary data. The study aims at weighting the advantages, disadvantages, opportunities and threats of community financing features, characteristics, and performance, supported by empirical findings from the international and national experiences. These findings are classified and analyzed into strengths, weaknesses, opportunities and threats (SWOT) framework to weight their feasibility, relevance and compatibility for Sudan in establishing community financing schemes that can contribute to its better health.

Although there are many solitary studies in one or two approaches of community financing, this study is the first study in Sudan that investigates community financing and covers most aspects of community financing. It is the first study that puts together the different types of health finance approaches in Sudan, and analyses their strengths and weaknesses. It also introduces the Zakat philosophy in health the significant role that Zakat can play in covering the poor against catastrophic health expenditure. Because Sudan is under researched country and little is known about it we took the opportunity to review many important issues related to health policies and financing. These are the free of charge polices, cost recovery policies, the user fee policy, poor protection measurements and treatment abroad. There are not enough data about traditional healers in Sudan to show their magnitude and contribution to health expenditure, so we ignore traditional healers in this study.

1.2. Context

Sudan covers a wide area of 2.5 million sq. km. Arable land constitutes 12.5% of the total land. The country is bordered by nine neighbors and affected by cross-borders problems of refugees, borders disputes and transmission of diseases [11]. Sudan is rich in water resources (34 milliard cubic meter per year) [12]. This together with the vast land makes Sudan a candidate for a role in food security for the entire population in the region. In addition the variety of the country's climate has rendered multiple variations in agricultural products [13].

The population size was estimated to be 33.6 million in 2003 with an annual growth rate of 2.6%. While 30% of the population lives in urban areas, the majority (70%) is settled in the rural ones. The population is composed of 49.7% females, more than 45% are children under 15 years and 3.9% are elderly [11]. This demographic structure resembles the demographic pyramid of developing countries. While the wide base of the pyramid of the younger ages reflects the high fertility and growth rates, the peak of the pyramid composed of the elderly is indicative of the low life expectancy of the population [11].

The literacy rate of the population over the age of 15 years is 50.6% for males and 48.2% for females. The percentage of children of primary school age attending primary schools is 49.7% for males and 46.9% for females. The gross secondary school enrolment ratio is 24% for males and 19% for females, which indicates a substantial drop out of pupils [11].

Sudan is composed of more than 600 tribes, the Arab and the Nubian in the North and the Nilotic and the Nilo-Hamitic in the South [13]. The Arabic language is the official language of the country spoken by 52% of the people. The native languages and the English language are widely spoken in Sudan [13]. Although most of the people in the North are Muslims, the South consists of Animists, Christians and Muslims. This diversity in cultures has its impact on the whole of Sudanese life [3 and 8]. The federal system emerged as a way to share wealth and power within the country.

Since the independence in 1956 Sudan was governed by six established governments and three transitional governments. The alternating pattern between democratic elected governments and military regimens led the country into an instable political situation [13]. This has affected the development of the country and has resulted in the expansion of poverty all over the country, has deepened the disparity between states and has pushed the country in internal conflicts.

Despite the annual growth rate of 5-6% in 2003, Sudan is still classified as a poor country. The per capita GNP is 282 US\$ in 2001, the unemployed rate is 17% and the dependency ra-

tio in 2001 was 83% [11]. The massive brain drain during the last three decades has severely affected the human resources of the country. The natural disasters of floods and droughts combined with the long standing war of the South left more than 4 million Sudanese displaced [11].

1.3. The health care system in Sudan

1.3.1. Evolution of the health care system

Sudan's health care system is one of the oldest in Africa [14]. The geography and ecology of Sudan are important factors in shaping the health care system [11]. The health care system was developed against a background of traditional medicine. Bayoumi A, (1979) stated that "Sudan has a unique background of traditional medical heritage that is of considerable historical interest. Spreading as it does over a wide spectrum of Muslims Arab, Ancient Egyptian and indigenous African beliefs, Sudanese traditional medicine and natural and traditional therapies. Sudanese traditional medicine affords a revealing glimpse of the influence to which the inhabitants of the country have been subjected" [13].

Western medicine started early in Sudan, and was brought by the Turko-Egyptian occupation army in 1821. The Anglo-Egyptian condominium in 1898 established a comprehensive organized health care service run by senior doctors from England and junior doctors from Syria and Greece. The new national government in 1956 inherited a western-oriented, urban-based health care system with an emphasis on curative services. All services were free of charge for all outpatients and inpatient admitted to class-C general wards. In the early 1960s the government started a compulsory health insurance system for all civil workers, premiums being automatically deducted from salaries [13]. Unfortunately the system collapsed and free of charge health care services dominated health care services [13]. Since the independence the health care system has undergone considerable expansion in its infrastructure [11]. Table 1.1 shows the rapid expansion in health services and the continuous increase in health demands.

Table 1.1. Development of health care facilities in the Sudan 1979-1993

Year	Hospitals	Hospital beds	Health centres	Dispensaries	Dressing station	PHC units
1979	156	17004	212	870	1828	989
1981	160	17300	206	790	1417	1580
1983	171	17774	251	856	1396	2183
1985	190	18594	288	977	1291	2725
1987	200	18816	330	1145	1205	3080
1989	205	19200	399	1224	1259	3200
1991	216	20135	426	1271	1285	3155
1993	228	21024	477	1346	1388	3013
1997	247	22656	693	-	-	-
2000	309	23076	915	1475	1236	2558
Cumulative % change	+46%	+23.6%	+125%	+55%	-24%	+205%

Source: adapted from FMOH

In 1994 the government adopted a decentralization policy to the whole country through a federal system. This divided the country into 26 states, 100 provinces and 600 localities and reformed it again in 2002 into 26 states and 134 localities without provinces [6]. Decentralization was introduced as a system of governance compatible with the needs of the multi-ethnic and multi cultural society of Sudan, and as manner to share power and wealth (often by cross-

subsidies). The federal system was composed of three folds: federal, state and local. While the federal level is responsible for policy making, planning, supervision and coordination the state government is empowered to implement plans and for the executive work. Local governments at the bottom of the system resemble the community contribution to governance (representatives of people's committees) [5]. Decentralization is one of the important micro-reforms in health systems by sharing responsibilities and strengthening the available local resources. Decentralization may affect some vertical programmes of PHC, still important for the bottom-up approaches of planning [14].

Although the World Bank ceased its operation in Sudan in 1990 the government of Sudan adopted a comprehensive macro economic reform and liberalization policy following the prescription of the World Bank Structural Adjustment Programme [6]. The major complications of this policy are the expansion of poverty and the cutbacks on the budgets of health care and education. User fees were established which aggravated the situation for the poor [4]. The bright side of these policies, in the mid 1990s the inflation rate came down and the annual growth of economy has been around 5-6% [11]. Recently the oil's revenues have boosted GNP and are estimated to contribute to over 80% of exports and 40% of public revenues. The signing of peace agreement in 2005 will hopefully render internal stability and external support in terms of expertise and finance.

1.3.2. The health care delivery system

The Federal Ministry of Health (FMOH) is responsible for the national health policy, strategic plans, and monitoring and evaluation of the health care system. The 26 State Ministries of Health (SMOH) are mainly responsible for policy implementation, detailed health programming and project formulation. The implementation of the health planning is undertaken through the district health system, which is based on the primary health care (PHC) concepts [6].

Health services are provided through different partners including, in addition to FMOH, armed forces, police security, universities, the private sector (both for profit and not for profit), civil society organizations and traditional healers. However, those partners are performing in isolation due to ill defined managerial systems for coordination and guidance. The main problems with the organizational structures in government health services at different levels are the rigidity of the organizational structure and poor coordination between departments. The organizational pattern of the health delivery system could be described as a three level-systems (primary health care, secondary health care and tertiary health care). The absence of a proper referral system affects the whole system. It has to be emphasized that the health services are not uniform and variations do exist especially in the worse-off states and locality as well as urban and rural areas [11].

1.3.3. The health Status

Appendix A shows the poor health status of Sudan. There is improvement in some health indicators but Sudan is still far a way from the millennium development goals (MDG). The low indicators of coverage with PHC are alarming and are explained by the numerous PHC units that are shut-down all over the country [11]. Communicable diseases dominate the morbidity and the mortality statistics of the country (led by malaria, which accounted for 35,000 deaths on 2004) [6]. The health expenditure indicators show the chronic shortages in the health care

budget and indicate how far Sudan is from any reasonable health expenditure standard. The human and material resources reflect the disparities between the urban and the rural areas, the effect of the brain drain on the manpower of the country resulting in low access of health services. Table 1.2 shows that one of the governmental responses to the brain drain is to increase the number of medical schools.

Table 1.2. The increase in number of medical schools 1990-2001

Faculty	Number before educational reform	Number after educational reform	Private faculties	Percent increase
Medicine	3	24	5	700%
Pharmacy	1	8	5	700%
Dentistry	1	8	5	700%
Laboratories	1	7	6	600%
Public health	1	5	0	400%
x-ray	1	4	2	300%
Nursing	1	7	2	500%
Optics	1	1	0	0%

1.3.4. The Quarter of the Century Health Strategic Plan 2003-2027.

In 1992 Sudan adopted the Comprehensive National Strategy (CNS) for ten years (1992-2002). The CNS recognized the health and well being of citizens as the cornerstone of social and economic development. Health and education are viewed not merely as service sectors, but as development objectives in themselves. The universal provision of primary health care is seen as an important means for social justice, equity and solidarity [15].

The CNS has faced many obstacles and constraints. An evaluation was done and lessons were drawn. This together with the new emergent problems provided the background for the new strategic plan (The Quarter of the Century Health Strategic Plan 2003- 2027) [16]. From the report of the Health Gaps in Sudan, 2004 [11] the main problems that face the health care sector are summarized as follows: Lack of clear vision and guidance; fragmented and weak infrastructure; absence of health maps and referral systems; lack of coordination at different levels; poor integration between curative and preventive services; a very poor system of accountability; an immature system of monitoring and evaluation. In addition to the above mentioned problems the report views new problems that faces the health care system as follows: International free-trade and increased economic competition; increased revenues in oil production increases demand for services; the new concepts of health e.g. health system development, sector wide approaches; Millennium Development Goals (poverty reduction); changes in diseases patterns (non communicable diseases); the peace agreement and the era of progressive rehabilitation ...etc; the Abuja Declaration (the commitment of the government towards the health expenditure); federalism and the burden of revitalizing 26 states, building capacity and achieving equity and equality in terms of resource allocation and amongst the health sector; progressive advances in medical technology; establishing mechanisms of effective coordination and effective monitoring and evaluation specially after the peace agreement; ensure woman's involvement in the rebuilding and sustaining the health system.

The experience with the last strategic plan and the problems and the new challenges that face the health sector led to a new strategic plan (2003-2027). This plan has as its objectives [11 and 16]: health for all; to achieve a universal PHC coverage by expanding services in all parts of the country and to all segments of the population considering the value and the culture of

the people; addressing the most urgent and important health problems; high community participation; high governmental commitment; intersectoral collaboration and support by the increase in the rate of development. The health system as a PHC oriented system includes services on health promotion, preventive, curative and rehabilitation services and focuses on: a decrease in morbidity, mortality and disability especially among vulnerable groups (women and children), the poor, people in conflict zones and people in remote rural areas; support for the notion of the health promotion; establishing and supporting health development at all levels; advocacy and confirmation of the principles of the health care system such as equity, efficiency, modernization, compatibility of innovations and environment, people satisfaction, quality and standardization, evidence based decisions approaches, accountability, transparency and compliance to laws, legislations and regulations; development of human resources for the management and delivery of health services focusing on training, upgrading, leadership skills and forecasting measures; ensure high commitment of the government towards the health care system especially the environmental health programme, preventive health services, health promotion and setting quality standardization policies; adopting health economics approaches to achieve equity and equality and to ensure community participation in financing the health system by encouraging community solidarity, enhancing the health insurance bodies to extend their coverage and to make sure that no one is denied health services because of economical, social or ethnic causes; encouraging the private sector to have a considerable role in the provision of health services of high coordination especially the public services; to build partnerships with all different agencies concerned with peoples' health (national and international NGOs) and funding agencies to ensure adequate flow of finance; high coordination and cooperation with the countries of the region in terms of common shared health problems, research, and legislations; to ensure the availability of safe water and to reduce the deterioration of the ecological system and pollution.

1.4. Central research questions

The political instability, economical constraints and the weak capacity of health organization led to the failure of health finance system in Sudan and prevented it from achieving its goals. The negative impact of the user fee policies aggravated by the expansion of poverty affected the health of the people especially the poor. The limited coverage of the social insurance system left the majority of the population (85.5%) uncovered and vulnerable and prone to out-of-pocket charges of user fee policies and for-profit private sector. The high social capital and solidarity in Sudan and the high willingness of the people to pay for health services explain the remarkable share of the Sudanese community involved in building health facilities all over the country. Based on this the need and feasibility of community financing approaches are often debated. This study aims to answer the following central question: *Can community financing contribute to a better health in Sudan?*

The answer of this question requires an analysis of the situation in Sudan and of the different mechanisms of health care financing. Further, to investigate the community financing approaches their advantages and disadvantages need to be analyzed. Furthermore, the willingness and the ability of the people to pay - the backbone of this approach - should be examined. Thus, to gain more insight in the feasibility of the community financing and to answer the central question, the following research questions are posed:

1. What is community financing? How it works and why should it be used as a health finance approach?
2. What is the relation between poverty and health in Sudan? And what are the poor protection measures adopted to alleviate poverty?
3. What is the impact of free of charge public health services on cost recovery policies?
4. What are the characteristics, patterns and determinants of different sources of health care financing in Sudan?
5. Are the people of Sudan willing to pay for public health services if these services are of good quality?
6. Are the people of Sudan able to pay for public health services if these services are of good quality? And what is the relation between willingness and ability to pay?

1.5. The analytical framework

Some researchers have tried to carve out frameworks to evaluate, clarify and classify different community financing schemes analyze different community financing experiences in both retrospective and prospective manners [1, 8, 9 and 10]. There is no consensus on one framework to do the job but a convenient framework for specific problem will be influenced by many factors regarding the country situation, culture, values and circumstances [9].

To answer the question ‘can community financing contribute to a better health of Sudan’ we need to check the potentials and limitations of the community financing approach by exploring its strengths and weaknesses. Also we need to explore the conditions that make this a success. The threats that can lead to the failure of community financing should be highlighted.

The strengths, weaknesses, opportunities and threats (SWOT) framework will be used to classify the findings throughout the thesis. Then, these findings will be weighted against the criteria that make community financing successful in achieving better health for the Sudanese people.

1.6. The methodological framework

The study uses both primary and secondary data. The secondary data are mainly document reviews of the Federal Ministry of Health, Basic Development Needs (BDN), Child Friendly Community Initiative (CFCI), Zakat Chamber and studies of Bamako Initiative (BI) and informal sector in Sudan. The secondary data are used in building the policy chapters of the study (community financing, poverty and health in Sudan, and financing health care system in Sudan).

Regarding the primary data the study applies quantitative research methods of the contingent valuation method. The contingent valuation method is used to investigate the willingness and ability of the respondents to pay for public health services if these services are of good quality. The method is applied for four aspects of services. These are specialist services, advance lab and x-ray unit, availability of drugs especially for children and reduced waiting time. Logistic regression models are used for statistical analysis to determine the attributes of respondents regarding the four aspects of services.

1.6.1. Data collection process

The data obtained in the survey were collected through interviews based on a adapted questionnaire in Arabic language. The questionnaire was tested in a pilot study; correction and

modification were added and retested again. The survey was conducted during the period of March and April 2001 in the Sudan. A team composed of a supervisor, coordinator, three assistants, a statistician, 40 data collectors (students and graduates from Elahfad University for Women), two data entry workers, a secretary and a driver conducted the survey after three weeks training for the data collectors. The team centered in middle Khartoum, joining the Ajaweed Society research department, which is an NGO, concerned about counseling and has a bilateral collaboration with the Khartoum Centre for Psychiatry and Counseling.

The samples were selected by a multi-stage sampling procedure. First, a selection of the three towns of the capital Khartoum, (Khartoum, Omdurman and Bahary) was made and each of these towns was divided into centre, peripheral and rural. Random selection of some localities of the centre, peripheral, and rural was done. And a random selection of the neighborhoods, and finally a random selection of the houses were that included in the survey. As planned a 460 households were contacted and none of them rejected to respond. For the purpose of similarity and to increase the internal consistency of the sample we drop 10 questionnaires. So we can argue that the overall respondents' rate is 100% which suggests a high evidence of reliability.

The survey targets the heads of households (HH), or who representing them (the nearest relation). The survey collected data on the respondents' age, gender, tribe, religion, origin of H.H., members of household, education, occupation, place of work, number of sons and age of elder son/daughter and youngest son/daughter. Some of these data update information about the Sudanese population, some confirm available information and are used in cross tabulation with other findings to examine the evidences within the community strata. More details about the variables will be found in the relevant chapters.

1.7. Outline of the study

This study includes eight chapters. Each chapter represents a separate paper that can be read independently. This comes at a cost of unavoidable repetition of some paragraphs in multiple chapters.

The second chapter is about what is community financing? It also reviews the international and Sudanese experiences with community financing, its successes and failures. The third chapter reviews the relation between poverty and health in Sudan and reviews protection measures for the poor related to health services. In addition it provides insight in the Zakat Chamber and its role in alleviating poverty in Sudan. The fourth chapter reviews the different sources of health care finance in Sudan.

The next three chapters present and discuss the results of the survey. Chapter five presents the results and discusses the attributes of the respondents who receive free of charge public health services and the effects on cost recovery policies in Khartoum State.

The sixth chapter presents the result of the contingent valuation method. The chapter analyses the willingness of the people of Khartoum State to pay for public health services if these services are of good quality.

The seventh chapter presents the results of the contingent valuation method and analysis the ability of the people of the Khartoum State to pay for public health services. The chapter also shows the relation between willingness and ability to pay.

The last chapter of the study, chapter eight presents the SWOT findings and the weight of these findings in answering the central question. The chapter concludes with general recommendations.

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CHAPTER 2

**Community financing - what, why and how:
The Sudan experience**

2.1. Introduction

Because of the organic relationship that exists between health and human development, the history of community health reflects man's renaissance and decline. Community health promotion is constantly evolving. Community health practice today is not isolated from the past. Historically people used to practice different ways of treatment, protection and care [1].

Community financing (CF) is an ambiguous term that has been used loosely over the years to describe some level of community involvement in financing health care. Labeling any scheme that involves the community as a CF scheme has confused health policy leaders about which types of CF are viable and how CF can contribute to a better health of people. It has also impaired researches in investigating the key common characteristics of CF that explain success and failure of a CF so that countries around the world can have a generalized concept of CF [2].

Community is defined by the Oxford dictionary as a quality of (a) 'joint or common ownership, tenure or liability'; (b) "common character"; (c) "life in association with others"; (d) "social fellowship"; (e) "common or equal rights or rank"; (f) "people organized into common political, municipal or social unity" [3]. Thus community can be a village or any geographical area, a social-economic population group or ethnic population. Community financing for health is referred to as a mechanism whereby households in a community finance or co-finance the current and the capital costs of health services, and have control and involvement in the management of these community financing schemes [3].

Community financing is one of the innovative methods that can provide the means for developing countries to deal with chronic problems in health financing systems. Nowadays international community representatives at the World Bank and the WHO frequently rely on community financing to achieve sustainability of health services, to spread equity among the population and to improve the quality of services [4].

This paper will be structured as follows: Section 2 reviews the evolution of the definition of community financing and its characteristics. Section 3 presents the justifications for community financing. Section 3 shows how community financing arrangements operate. Section 4 reviews some international experiences in community financing. Section 5 presents the community financing experiences in Sudan. Then the paper concludes.

2.1. What is community financing?

2.1.1. A matter of definition

A definition may be used in two ways: to clarify the meaning of vague or ambiguous terms or as a method of development for the whole essay [5]. In community financing the definition has both purposes, but in different notions. The definition of community financing has evolved and is continuously evolving from era to era following the reforms, challenges and innovations in health care financing.

Community financing is a term that has been widely used for financial activities involving the community in its operation. It ranges from people paying (user fees) for public services, to hospital voluntary community insurance, to community finance and help in management of PHC centres, to the Bamako Initiative, to a drug revolving fund, to community based insur-

ance schemes, income generating programmes, villagers assisted in building clinics and community-based development initiatives [6].

Many countries have experienced methods of community financing since early last century. In 1925 Cameroon established a service fee programme in Hospital EPC d'Enongal, which covered 95% of recurrent cost. Other countries like Ghana, Niger, Senegal, Bangladesh, China, India, Indonesia, Iran, Philippines, Ecuador, Guatemala and Mexico experienced some sort of community financing method, which varied in type and purpose. In most of these experiences the methods were limited and catered to local problems. In 1959 China made a breakthrough and adopted a national community financing programme known as Cooperative Medical Services (CMS) [7].

Early in the 1980s, community financing defined as contributions by beneficiary individuals and groups for public sector services, was one option in certain settings, if it fitted into other health care financing arrangements. This definition was formulated after the implementation of the PHC policies and reflected the community involvement. It reflects the steps in encouraging the community to participate in health care services. This can be clearly seen in what Stinson (1982) wrote, "community financing is, at best, only a partial solution to the problem of health care finance, and it may be ultimately more difficult and less productive than reallocation of government spending from the current emphasis on fixed facilities in urban areas. It is particularly iniquitous if politically favored areas receive free services while more impoverished areas pay. Curative services, though politically essential, have little lasting effect on health status, and expensive educational efforts may be required to convince communities to pay for prevention. The challenge is to find a balance between government and community finance – to use the former for professionally perceived priorities and the latter for locally felt needs".

Due to the Bamako Initiative and its implementations there seems not one definition to what community financing is. There are many understandings of this term. Barbra McPake (1993) considered the term community financing to mean a system comprising consumer payment (either as a user fee, some form of pre-payment mechanism, or other charges) for health services at the community level, the proceeds from which are retained within the health sector and managed at the local level [8].

In some countries community financing is put forward primarily as a method to provide additional resources to the health sector. In addition it's sometimes argued that community financing is a form of community participation which ensures that community is not just a passive recipient of services [8].

Atim (1996) who saw community financing as a promoting approach which emphasizes primary health care and community empowerment in the development of health services distinguished between two types of community financing:

(a) The simple model of community financing organized by a health care provider and in which democratic participation by the insured is very low or non-existent. We call this the non-participatory model. It's essentially the cost recovery approach to health insurance in Africa [9].

(b) The more complex model in which the community takes charge of managing, at least the first level of health care (health centre) through participatory structures: we refer to these as the participatory model.

In practice there are many differences in understanding and implementing the concept of community financing among different countries. The adequacy of current resources available

to health services may be an important criterion to determine whether the Initiative is aimed primarily at strengthening existing facilities or at expanding coverage to underserved population. In Guinea, Uganda and Burundi, the Initiative's activities are located at the existing health facilities while in Kenya the Initiative is located at the 'community level' (below the lowest level of the existing health facilities). In Nigeria, the Initiative operates at both levels, presumably in the hope of tackling both problems [8].

The Bamako initiative projects use community financing mechanisms within the user charges policies. Many studies show that user charges are an impediment and prevent the poor from using health services [10]. Health financing specialists have tried to overcome such shortages in Bamako Initiative and have launched different initiatives such as community-based financing schemes, community-based insurance, mutual health organization, mutual insurance schemes etc. Hsiao (2001) stated "community financing can be broadly defined as any scheme that has three features: community control, voluntary and prepayment for health care by community members" [2]. This definition would exclude financing schemes such as the Bamako Initiative, mandatory social insurance and general taxation. Many definitions emerged during this era of community-based financing schemes [11 and 12]. Melitta Jakab et al, (2001) have adopted a broad definition of community financing as including many different health financing arrangements. This definition effectively distinguished community based health insurance from other resource mobilization mechanisms e.g. (out-of-pocket, social insurance, general taxation, etc.) [3]. This definition reflects the main features of community financing as follows:

- The community (geographic, religious, professionals, ethnic, etc.) is actively engaged in managing, mobilizing and pooling resources.
- The subscribers have a low income.
- The schemes are based on voluntary engagement of the community
- The structure of resource mobilization and benefits reflects social capital principles
- The schemes are not for profit

2.2.1. Community financing characteristics

Community financing is risk pooling to a small portion of the population; while it does not represent a significant source of revenue for the sector, it has been pursued in many countries as way of both raising revenues and of promoting self-reliance and community responsibility [2, 13, 14]; it depends on the willingness of people to pay and the population concerned resides in rural and suburban area who are socially excluded (informal sector and the poor). Community financing can be limited to a local area or can be nationwide implemented. It may have elements of either fee-for-service or co-payments where community risk-sharing schemes are involved. It includes a variety of sources of finance, management and services. Community financing projects differ according to local needs and conditions, with varying emphasis being given to different aspects of community involvement, strengthening of district management and financing. The key feature that distinguishes community financing from other forms of direct payment is that it involves the community in managing the health services. Community financing can be health centre based, implying that either the head of a health centre or health committees are leaders in the organization of a scheme. Other organizations may also be the leaders in a community financing system: village development associations, cooperatives, parents' association etc. Community financing may apply to rural as

well as urban areas and the method of community financing can be built upon existing social organization. Community financing has to involve a decentralized form of decision making. This encourages the active involvement and participation of people in running the scheme (the people should be trained on management and finance management skills). It also motivates self-reliance and a substantial community cooperation and coordination (provision of PHC financing and integration with other programmes) [13 and 2]. It is a supplement not an alternative for other sources of financing. If adopted, the community financing approach should not however, be seen as a once and for all solution, unless this adoption has been a nationwide policy. So, community financing does not mean that government taxation, national health insurance or foreign aid should be neglected in the search for more health resources [3 and 4].

2.2.2. Strengths and weaknesses of community financing schemes

Table 2.1 shows the strengths and weaknesses of the community financing schemes. The strengths of this approach are observed in the active involvement of the community and the potential for capacity building of these communities. This approach has the capacity of risk pooling and risk spreading over time and makes it easy to sort out the poor. It also mobilizes resources for health provision. It can be a development tool by increasing self-reliance and the organizational ability for medical care and other problems of education, safe water, sanitation and income generating schemes.

The weaknesses of these schemes are its difficulty to be adopted nation wide. So, it is a supplement not an alternative for health care financing. Skills of financial management are required for proper implementation. This approach requires a high willingness and ability to pay. Trust and transparency are essential for the adoption or it will collapse under rumors' hammering. It may also be diversion for governments lacking the political will to generate new resources or to reallocate existing resources.

Table 2.1. The strengths and weaknesses of the community financing approach

Strengths	Weaknesses
Risk pooling [14].	A supplement not an alternative [7].
Risk spreading over time.	Requires management skills.
Community involvement and active participation.	Requires financial management know-how.
Low cost of operation [14].	It requires high willingness of the community [4].
Mobilize and empower the community.	It requires high trust and transparency.
Easy to determine the poor and help them in a decent way.	It requires seed money and financial support [15].
Can achieve sustainability.	It places the burden of health care financing on the persons least able to support it, the rural and urban poor.
Untapped resource [7]	Health care is a public good and should be nationally financed.
Uses readily available non-monetary resources, such as labor.	It is largely untested [7].
Increases community self-reliance and organizational ability for both health and other problems [7].	

Jakab and others, (2001) [3] reviewed the advantages and disadvantages of community-based health financing schemes under for aspects: (a) technical design characteristics, (b) management characteristics, (c) organizational characteristics, and (d) institutional characteristics. These strengths and weaknesses presented by Preker, (2004) are found in boxes 2.1 and 2.2 and combined with other findings from other authors [16].

Box 2.1. Strengths of community-financing schemes

Technical design characteristics

Revenue collection mechanisms

- Shift away from point-of-service payment to increase prepayment and risk sharing
- Flat-rate premium which facilitate revenue collection, reduces the scope for manipulation, and contributes to low transaction costs
- Contribution payment that accommodates the income-generating patterns of households employed in agriculture and the informal sector (irregular, often non-cash)
- Modest degree of household-level affiliation
- Pro-poor orientation even at low-income levels through exemptions of premiums and subsidies, despite flat-rate contribution rate
- Some buffering against external shocks through accumulation of reserves and links to formal financing schemes

Arrangements for pooling revenues and sharing risks

- Some transfers from rich to poor, healthy to sick, and gainfully employed to inactive through pooling of revenues and sharing of risk within community groups.

Purchasing and resource allocation

- Most community schemes make a collective decision about who is covered through the scheme, based on affiliation and direct family kinship (for whom to buy).
- Many community schemes define the benefit package to be covered in advance (what to buy, in what to exclude).
- Some community schemes engage in collective negotiations about price and payment mechanisms.

Management

- Most community schemes are established and managed by community leaders. Community involvement in management allows social controls over the behaviour of members and providers that mitigates moral hazard, adverse selection, and supplier induced demand.
- Many schemes seek external assistance in strengthening management capacity.
- The management culture tends to be consensual (high degree of democratic participation).
- Most schemes have good access to local utilization and behaviour patterns.

Organizational structure

- Most community schemes are distributed organizational configurations that reach deep into the rural and informal sectors.
- Incentive regimes include: (a) extensive decision rights, (b) strong internal accountability arrangements to membership or parent community organization, (c) ability to accumulate limited reserves if successful but unsuccessful schemes often ask government for bailouts, (d) mainly factor-market exposure since few overlapping schemes compete with each other in the product market, and (e) some limited coverage of indigent populations through community or subsidies.
- Vertical integration may lead to increased efficiency and quality of services. Schemes that have a durable partnership arrangement or contractual arrangement with providers are able to negotiate preferential rates for their members. This in turn increases the attractiveness of the scheme to the population and contributes to sustainable membership levels.
- Better organized schemes use horizontal referral networks and vertical links to formal sector.

Institutional environment

- Stewardship function is almost always controlled by local community, not central government or national health insurance system, which is apt to make the schemes responsive to local contexts.
- Ownership and governance arrangements (management boards or committees) are almost always directly linked to parent community schemes; freestanding health insurance schemes are rare.
- There is little competition in the product market.
Competition is limited in factor markets and through consumer choice.

Source: Bennett, Creese, and Monasch (1998); Carrin, Desmet, and Basaza (2001)

Box2.2. Weaknesses of community-financing schemes

Technical design characteristics

Revenue collection mechanisms

- Without subsidies, resource mobilization is limited when everyone in the pool is poor.
- Many of the poorest do not join since they cannot afford premiums.
- Pro-poor orientation is undermined by regressive flat-rate contributions and by a lack of subsidies or premium exemption, which create a financial barrier for the poor.
- Community-based voluntary prepayment schemes are also prone to adverse selection.
- Few schemes have reinsurance or other mechanisms to buffer against large external shocks.

Revenues-pooling and risks-sharing arrangements

- The scope for transfers within very small pools is limited (often fewer than 1,000 members per scheme).

Purchasing and resource allocation

- Without subsidies, the poorest are often left out (for whom to buy).
- The benefit package is often very restricted (what to buy, in what form, and what to exclude).
- Providers can often exert monopoly power during price and payment negotiations

Management

- Community leaders are as vulnerable to adverse incentives and corruption as national bureaucrats.
- Even with external assistance, absorptive capacity in management training is limited.
- Extensive community consultation is time consuming and can lead to conflicting advice.
- Most schemes do not use modern information management systems.

Organizational structure

- Even widely distributed organizational configurations may have difficulty reaching deep into the rural and informal sectors.
- There are often conflicting incentives, especially among decision rights, soft budget constraints at time of deficits (bailouts by governments and external sources of funding such as nongovernmental organizations), limited competitive pressures in the product markets, and lack of financing to cover the poorest population groups.
- The less-organized schemes are often cut off from formal sector networks

Box 2.2. continued

Institutional environment

- Government stewardship and oversight function are often very weak, leading to a poor regulatory environment and lack of remedies in case of fraud and abuse.
- Ownership and governance arrangements are often driven by non-health and financial protection objectives.
- Choice in strategic purchasing is limited by small number of providers in rural areas..
- True consumer choice is often limited by lack of a full insurance and product market, leading to (a) adverse selection (signing on only the better-off, working age, and healthy), (b) moral hazard (members making unnecessary claims because they have insurance coverage), (c) free rider effect (households waiting until they think they will be sick before joining), and (d) information asymmetry (for example, concealing pre-existing conditions).

Source: Bennett, Creese, and Monasch (1998); Carrin, Desmet, and Basaza (2001)

2.3. Why community financing?

To find out why community financing we elaborate on the critical situations (political, economical an health organization), the negative impacts of free health care and the willingness of people to pay for services.

2.3.1. Critical situations

Despite a dramatic improvement in the health status of their populations over the last three decades, life expectancy in developing countries continues to be low. In sub-Saharan Africa, half of all deaths occur under age 5; in the industrialized countries, half occur after age 74 [4]. Social and economic factors as human behaviour, poverty and the prevalence of disease help to explain the poor health picture in low income countries, limited access to services – in some African countries over half the population live more than 10 kilometers from the nearest primary care centre and the performance of the health systems themselves - are key determinants.

In most developing countries, government's funding allocated to health care services is not sufficient to allow these services to provide appropriate health care accessible to all [17]. In particular, the 1980's witnessed the development of severe problems in financing health services in sub-Saharan Africa. In many countries, government health budgets declined in real terms in response to severe macro-economic problems. At the same time, demands on health services increased due to high population growth rates, successful social mobilization and the AIDS pandemic. In some countries, the implication of these crisis for the health services infrastructure have been all too clear with health workers failing to receive salaries, drug supplies being absent for substantial periods, and long lists of equipment and vehicles awaiting repair [8].

The tremendous burden of debt repayment and the impact of falling export commodity prices during the 1970s and 1980s undermined the capacity of developing countries to finance basic public services, including primary health care. In 1990, total health spending in the developing countries came to only US\$ 170 billion, compared to almost US\$ 1,500 billion in the industrialized countries. Furthermore, most developing countries devote more than 80 per cent of their national health budget to health infrastructure, equipment and health staff salaries, leaving less than 20 per cent for other expenses [18].

The problem of insufficient government health expenditure is aggravated by policies that foster misallocation of spending, waste of resources and poor management. Throughout the last decade, UNICEF has drawn attention to the fact that major gains in health could be made by the widespread use of a limited number of specific, low-cost health interventions. The World Bank also addressed this issue in its 1993 World Developing Report. According to recent Bank estimates, the annual cost (recurrent and capital) of a basic package of essential health services in a prototype district in Africa consisting of 15 health centres and a referral hospital serving an average population of 150,000 is US\$ 6.70 per capita [18].

In terms of institutional arrangements of public health systems, problems also arise from both verticalization and the fragmentation of health programmes. The failure to integrate activities into comprehensive national policies results in: the waste of resources through duplication, overlapping, lack of consistency in standards and procedures, and inconsistent or disjointed policy recommendations. Furthermore, mechanisms to coordinate various health-related interventions are often missing, and institutional arrangements conducive to an intersectoral approach are seldom in place, meaning that health ministries are frequently left to manage activities that might be better left to other institutions.

The political instability, bad governance and corruption are the primary lesion for all the above mentioned constraints.

2.3.2. The negative impact of free health care

There is now virtually no country in Western Europe, which gives completely free health care at time of use whether under a national health service or a health insurance system. Charges are generally levied on drugs, spectacles and dentistry. Many countries have complex systems to exempt particular categories in the population. Charges are used more extensively in health insurance systems where doctors are paid on a fee-for- service basis and hospitals per day of care. Thus there are charges per consultation or per day of care in hospital. But it should be recalled that these charges operate in Europe against the background of well-developed systems of cash benefits to sick workers provided either by employers or under statutory schemes [15].

The principle of free health care is retained in a number of developing countries of Asia and Africa. This is defended on the grounds that the philosophy of cash benefits in sickness is underdeveloped. The regularly employed are a minority of the economically active people, many people are desperately poor, exemptions for poor people are hard to administer fairly and it is deemed desirable for people to present themselves to the health care system without any barriers. This because of the prevalence of dangerous infectious diseases which can spread to others [19].

Many governments in developing countries espouse free health care for all as a basic human right. Because most of these countries can provide services only in limited areas, however, a free service policy may deny health care to major parts of the population. "Free" services, in any case, are often not free in practice: patients may lose potentially productive working time while waiting in line or they may have to buy scarce drugs on the black market. In some countries, government doctors refer wealthier patients to their own off-duty private clinics as a way to increase income.

There are many negative impacts of free health care, as Geest (1992) mentioned "The dark side of this free health care found itself in a deplorable condition due to inefficiency, mismanagement and lack of funds medicines as well as medical personnel were often lacking in the rural health centres. The paradoxical result of this state of affairs was that free services turned out to be extra expensive for the population. People were frequently forced to buy their medicines in the commercial circuit and to travel long distances to find a nurse or a physician. Even primary health care designed to make essentials directly available to the population, threatened to collapse under the weight of the financial and managerial crisis" [20].

The free services in countries with meager resources taught people to steal themselves. One common phenomenon was expressed by a health post (centre) staff member as follows: "In the past, people used to drop into the health post whenever they were passing by, to pick up medicines for future use. This custom died out completely when charges were introduced, and now no one will pay for medicines until they are actually sick." [21]. Also malpractice among sub-populations like students had gone up and the proportion of school- aged patients fell sharply. Before, they used to go to clinic during the school break and demand drugs for which they had no immediate need. The registration fee appears to have put a stop to this practice. One health post staff says "essential services have never been denied to patients unable to pay, but no one normally asks for free services, and so the quota of 10% of the drugs available has never been fully used" [21]. On the other hand fee for service act as safe guards and gave opportunities to those who truly need these services: the proportion of females over 15 years

of age using the health post clinic increased, which is a positive trend as this is one of the targeted user group [21].

2.3.3. People's willingness to pay

The evidence suggests that most people do find an amount of money to pay for health services. This can probably be attributed to extensive community support mechanisms [8].

Money is not a new phenomenon in Africa and paying for goods and services does not need to conflict with existing traditions of reciprocity in the field of health care. Money is an artifact, which is culturally incorporated in a creative manner to satisfy a specific need. Cultural objections to paying for health care, therefore, are unlikely to exist [20].

Amaah (1989) write in the Lancet that: “ the reality in much of Africa is that attempts at the provision of free health care have resulted in adequate on non -existent services, especially for the poor and most vulnerable. In the African traditional system, every community and family understood the need to compensate the providers of health and other services in some form. The poor have almost always been taken care of in that system, usually more fully than under modern arrangements. The idea of free health services has undermined traditional African practice, and has confounded the debate about fairness and community responsibility” [22].

In the Central African Republic, household surveys revealed that people at every income level pay more than they already spend for medicines to treat priority diseases (e.g., malaria, sexually transmitted diseases [STDs], and intestinal ailments). They would also pay gladly for quality improvements at health facilities (e.g., better maintenance). Mothers said they would help to pay for immunizations if their contribution assured availability of vaccines. [23]

As we will show in this thesis, in Sudan, household surveys show people are willing to pay public health services if these services are of good quality. But the extent of their willingness varies with income. [24]

African households are most willing to pay for drugs that treat common adult and childhood ailments and for care that saves them and their infants and children from dying. Once they see the benefit of health care, they are likely to be willing to pay. Often they visit several health providers for the same illness episode to accomplish these objectives.

2.3.4. People's ability to pay for health services

What people can afford to pay for health care depends on many different factors. They include:

- Total family income and family size
- The specific fee for each type of health service
- How many family members get sick in a year
- How much they must also pay for education, water, and other services
- Their spending for other basic needs in relation to total household income [11 and 23].

African households spend substantial amounts of money for health services and medicines, regardless of government free-sharing policies. Many different factors affect the “affordability” of these expenditures. Some households find them harder to pay than others and a few may not be able to pay even a modest cost recovery fee. Health ministries need to build into their cost recovery policies mechanisms for evaluating and accommodating variations in abil-

ity to pay and factors affecting the affordability of health care in relation to other household needs.

Most households in Africa spend between 2% and 5% of their income out-of-pocket for health services and medicines. The poorest households often spend 5% or more even in the absence of user fees for public health care. To meet health care expenditures people often have to borrow. Evidence from Tanzania in the early 1990s, when government health services were officially free, shows that 60% of respondents in a large household survey said that they had to borrow (36%) or make special sales (14%) to pay for health care in the previous year, or said they were completely unable to pay for health care (10%). The rural population, who were on average poorer and faced higher transport costs, reported the greatest difficulties in paying for health care [22].

As we will show in this thesis, willingness to pay doesn't mean ability to pay for the same group of people. Our survey's results show a high willingness to pay, but they also indicate a modest ability to pay for the same group [25].

2.4. How does community financing operate?

As we noticed in the previous paragraphs regarding the evolution of the community financing, the notion of community empowerment includes both financing, participating, organizing, planning, managing, and evaluation of the financing of the health care system.

In general, community-based financing methods differ in type, structure, finance and management. The notion of community financing is frequently interpreted as a practical tool to serve the strategies of health financing and as a way to contribute to the protection of socially excluded population. A successful community-based financing scheme requires: (a) feasibility assessment, (b) community study, (c) enabling environment, (d) terms of references and job description, (e) services offered and personnel engaged and (f) organizational structure [3, 11 and 26].

2.4.1. Feasibility assessment

Before establishing any scheme a feasibility study should be done including data collection and management by the community supported by a technical team (NGOs) [24 and 26]; a need assessment through a demand analysis by the community supported by technical team [26, 27 and 28]; designing the scheme which includes level of health care services; potential risks to scheme operations; membership classification; payment mechanisms ; and operational issues [27]; identifying volumes and costs; developing a flexible business oriented plan.

2.4.2. Community study

The study of communities in community financing schemes is the corner stone of these attempts. This is because the success of these schemes is contingent upon the high willingness and ability of the people to pay, the high confidence and trust of the people, the existence of real needs with clear priorities and the existence of solidarity, social capital and community bonds. No doubt any study of communities regarding their management capabilities prior to any implementation of community financing schemes will have a positive impact on setting training programmes [26 and 27].

2.4.3. Enabling Factors

For community financing schemes to be implemented in a successful way many factors should be taken into account. The main factors are: a strong political commitment, advocacy and support via sharing one vision, understanding and consensus to achieve the objectives. The development of universally accessible essential health services is the ultimate goal [29]; substantial government financial support for primary health care, preserving and, wherever possible, increasing the proportion of the national budget dedicated to basic health services; measures to ensure that the poorest people benefit from health care services, through fee exemptions or subsidies, for which criteria should be established in consultation with the community [20]; an appropriate organization framework and managerial process through an intersectional perspective in planning and operating systems of health care, including provisions for safe drinking water, sanitation and health education [20 and 29]; an equitable distribution of health resources by redirecting public spending to more cost-effective health services [30]. For many countries of limited means, the effort to obtain “value for money” in health will require a serious reorganization of health services and reallocation of resources. The reform calls for countries to define, on the basis of cost-effectiveness, a minimum package of essential health services to be made universally accessible. In the 1993 World Development Report, the World Bank argues that using a minimum package of services chosen on the basis of high cost-effectiveness would reduce the total burden of illness in developing countries by at least 25%. Community involvement should occur at all levels by decentralizing management of community resources, with funds collected at local facilities remaining under community control. This requires appropriate training in managerial skills and financial management skills of accounts and book keeping [13]. Community financing of health services, usually in the form of payment for consultation, treatment or drugs, which remains consistent throughout the different levels of the health care system should be promoted. Forms of community-based health insurance to protect the poor and socially excluded population and capacity building at all levels should be promoted as well. Decentralization necessitates major changes in institutional roles and responsibilities at all levels. The functions performed at the central (or health ministry), regional and district levels under decentralization should be clear and specific. Experience gained so far strongly suggests that for decentralization to be successful, the objectives sought must be specifically defined, functions at each level must be clearly delineated, mechanisms for communication and coordination among the various levels must exist and sufficient training to enable personnel at each level to assume their decentralized responsibilities must be offered [7, 13 and 30]. Unfortunately, basic medical curricula are often inadequate and fail to provide health professionals with skills needed to work with communities. In addition to courses in administration and financial management, training of both health professionals and health committee members should include topics such as interpersonal communication techniques, community organization, community dynamics and participatory monitoring and programming [20, 29 and 30]. Donor funding from international and bilateral agencies and non-governmental organizations (NGOs) is critical to ensure support while financial bases are built-up (for investment in facilities and equipment) and to cover some costs, such as human resources development, social mobilization and the initial supply of pharmaceuticals for the start-up of the community revolving drug funds. Partnerships with NGOs can be vital in providing technical backstopping for the process, particularly at the community level [4, 13, 14, 15 and 16].

2.4.4. Terms of reference and job description

Key players and diverse stakeholders involved should be staffed and organized in clearly-identified roles and the hierarchy of the scheme depends on its type, nature and the different partners engaged. The simple example includes local community members, supervisory committee, community-based financing scheme managers, health services providers and community leaders.

2.4.5. Services offered and personnel involved

Primarily community-based schemes offer PHC services of immunization, family planning, pre-natal care, child care. This may be extended to inpatient facilities. Three factors should be considered in selecting services.

- Existing supply and perceived quality health services;
- Affordability for the members;
- The sustainability of these services.

Services offered are determined by the available resources or built on the priority needs. Many different packages should be made available in order to increase options of choosing the best one [26].

2.4.6. Organization structure

There is not one ideal structure that fits to different types of community-based financing. The organizational structure of a scheme depends primarily on the type and size of the scheme, members, providers, partners and the agreement to govern the scheme. The fundamental role of a structure is to determine levels of powers and management to encourage the flow of work and delegation. In community-based financing schemes the organizational structure should ease the whole operation of the collection of dues, offering services and reimbursement of providers in a compatible pattern to the community needs, knowledge and capabilities [2, 3, and 26].

2.4.7. How to start?

The successful start of any community financing scheme requires seven steps: (a) a comprehensive study of the situation and a needs assessment. The involvement of the community in these studies will be of great value in increasing community awareness and training the community to assess their needs scientifically (b) Adequate willingness and ability to pay of the community is vital in any implementation (c) Design the compatible type of community financing scheme adapted to the culture and circumstances (comprehensive detailed plans, programmes, terms of reference, job description, etc.) (d) Build a partnership with civil society organizations, donors and government at local and national levels (e) Training the community prior to implementation to enhance their capabilities in management and financial management (f) Ensure sustainability of community financing requirements for appropriate adoption (g) a continuous process of monitoring and evaluation that enable a community financing scheme to compare its activities and results with its objectives, and take actions to correct weaknesses [13, 26 and 27].

2.5. Evidence from international experiences

Community financing is an ambiguous term that has confused health planners and policy makers about which types of CF are viable and how CF can be used to improve the health of the people. It has also impaired researches in investigating the key common characteristics of CF that explain success and failure of a CF so that countries around the world can have a generalized concept of CF to assess, evaluate and draw lessons [2].

Studies have used different models and different frameworks to clarify and classify different types of CF schemes to gain insight into the characteristics that make CF a success or a failure. This section presents some international experiences of CF [2 and 3].

Stinson, (1982) has reviewed and described 200 CF schemes of the era after the Alma Ata declaration in 1978 [7]. The study mainly concerns resource mobilization, with particular emphases on community participation. It describes ways users of public sector health services have helped defray one-time and recurrent costs and how these contributions fit into the overall picture of primary care financing. It recounts where and how CF methods have been attempted, what costs they pay and what kinds of extra communal assistance they needed. He also reviewed contributions including labour, cash and other resources that support primary health care. Stinson has categorized different CF schemes into: service fees; drug sales; personal prepayment; production-based prepayment; income generating schemes; community or individual labour; donations and ad hoc assessments; and festival, raffles and similar activities. Stinson made comparisons and a meta-analysis of different community and non community schemes and of national and international sources of finance.

Stinson concluded that “Finally, we need to consider where community financing is going and how observers can contribute to its evaluation. The rhetoric of Alma Ata and the widespread belief in self-reliance demand an increased community role; and the imperative of “Health for All” calls for the exploration of every financing option. There must be balance in the exploration, however. It must be realized that community financing is, at best, only a partial solution, that it may be more difficult and less effective than reallocation of current resources, and that governments have to encourage and facilitate-not-impose-it. Researchers must generate case studies and report not only on the income raised but also on the community processes involved in raising funds and subsequent effect on the scope and accessibility of services. The time has come to move from rhetoric to reality and from small demonstration projects to routine national programs” [7].

Pierre-E. Mandl and others (1988) [31] conducted a study in community financing experiences for local health services in Africa. This study was sponsored by the UNICEF and came one year after the adoption of the Bamako Initiative. The study consists of three case studies of three African countries: Benin, Ghana and Zaire. Operational issues selected are: protecting the poorest; essential drugs and delivery to the periphery; appropriate administrative structures; and payment schemes. The study concludes: “What the case studies of various countries have shown to have in common, though the technical modalities of applications differs (not only by country, but even within each country), are:

1. A political will to plan and implement these objectives, which affect several ministries;
2. The recognition by these governments of the desirability of establishing an essential drugs policy if one is not already in existence;
3. Community involvement through decentralization to the district and local level;
4. Government commitments to the retention of revenues at the local level;

5. User fees fixed in relation to the costs of consultation/treatment and also to the ability of the user to pay, sometimes in conjunction with a broader PHC approach that integrates income-generating activities and other developmental components;
6. Allowance for the very poor in the community through exemption or subsidies;
7. In most cases, continued government support for certain types of costs, such as salaries of health personnel and teaching, has been necessary;
8. A particular emphasis attached to training, monitoring and supervision, with external funding for the duration for the start-up phase nation-wide;
9. Focus on a range of PHC/MCH activities and not on drugs alone;
10. Drugs in regular supply to the periphery and community revolving funds have actually strengthened and sustained PHC/MCH” [31].

Barbara McPake and others (1993) [8] conducted an evaluation study of Bamako Initiative experiences in five African countries. The Bamako Initiative aimed to mobilize resources in order to increase the quality of health services using community financing and participation. The evaluation provides a policy review based on published literature and other documents. The five countries selected for the case studies are Burundi, Guinea, Kenya, Nigeria and Uganda. The study has three hypotheses:

1. The Bamako Initiative will improve the quality and appropriateness of health care provided to the majority of the population;
2. The main mechanism for this improvement will be community involvement in the management and financing of local services;
3. The Bamako Initiative will reduce households’ health expenditures by encouraging a switch to cheaper and more appropriate health service use.

The methodology of the study consists of national and sub-national level interviews and document review, interviews and records at health facility level, patient exit polls at health facilities, focus group discussions with community members and a small household survey. Regarding the three hypotheses the authors used a typology of: (1) quality of health services; (2) community participation and community management; (3) affordability; (4) pricing structure and payment mechanisms.

The study concludes “It appears that it is possible in most contexts to raise amounts of revenue capable of covering significant components of recurrent costs through community financing and to improve the relative affordability of health services for the communities affected (.....) In all countries, however, problems of absolute affordability remained. Marginalised groups remain without access to health services for a variety of reasons (.....) Nevertheless, it is too early to conclude firmly on this point and there is a clear need to continue to consider ways of improving their access, and to monitor their situation (.....).

Community Health Committees were to varying degrees representative. In no case they allocated an equal role to women and in some cases performed the function only of a one way channel of information from the health facilities to the communities (.....).

Finally, it is clear that problems in the area of quality are widespread in all the services which are included in the initiative (.....)

The evaluation team’s overall conclusion on the activities they have studied is that much looks promising. The development of primary health care according to the ‘features’, ‘aims’ and ‘strategic elements’ which have been used here to define the minimum criteria of the Bamako Initiative alongside the eight guiding principles appears to us an appropriate course of action for the future” [8].

William C. Hsiao (2001) [2] presented a paper entitled “Unmet Health Needs of Two Million: Is Community Financing a solution?” The paper has two purposes: The first is to develop a conceptual framework for community financing and to use this framework to classify different types of community financing schemes; to clarify the ambiguity and variations of community financing schemes so as to gain some insight into the characteristics that make community financing a success or failure. To do this the paper offers two criteria: (1) what potential does community financing have to cover a significant percentage of the target population and mobilize resources; (2) the community financing schemes should be classified and examined by their outcomes that matter to society. The second purpose of the paper is to use the conceptual framework to explain several community financing schemes in Asia and reasons for their success and failure.

Using the first criteria Hsiao classified community financing schemes into five types: (1) direct subsidy to the individual, (e.g. Tai Health Card and Tanzanian Community Health Fund); (2) cooperative Health Care, (e.g. Cooperative Medical Services (CMS) of China); (3) community-based third party insurance, (e.g. Rand Experiment in Sichuan Province and Dana Sehat of Indonesia); (4) provider sponsored insurance, (e.g. Dhaka Community Hospital, Gonoshasthya and Bwamanda); (5) producer or consumer cooperative, (e.g. Grameen health insurance of Bangladesh).

For the first criteria Hsiao concludes: “Rural households and urban poor households are willing to prepay apportion of their health services (.....) The poor and near-poor need simple and direct government or donor subsidy to make the economic gains very visible to motivate them to prepay. The subsidy could be as half of the prepayment amount to be paid by the people. Poverty households need almost full subsidy; the revealed preference seems to show that people prefer to have both primary care and insurance and are willing to make a trade-off (.....) In most communities, a community financing must have its members’ trust and confidence. This means the community must have reasonable control over the community financing and the services delivered at the village level; CMS and many Dena Sehat plans have demonstrated that they can produce measurable economic gains and improvements in service quality; Government or an established nongovernmental organization (NGO) must initiate the scheme and conducting training (.....)”.

Regarding the second criterion Hsiao presents these conclusions: “For low income countries, community financing schemes have only modest ability to increase the total amount of funds for health care (.....) Properly structured community financing schemes can significantly improve efficiency, reduce the cost of health care, improve quality and health outcomes, and pool risks (.....) Community financing schemes could also improve risk pooling and reduce health-induced impoverishment; Community financing schemes can be grouped by their basic purposes: (a) Mobilize additional funds for government facilities and improve access- prepaid user fees (e.g., Community Health Funds in Tanzania, Health Card in Thailand); (b) Mobilize funds from rural population and urban poor and improve access, efficiency, and quality of care with modest risk pooling-cooperative health care (e.g., CMS, Dena Sehat, Grameen Kalyan, Bobye, Abota); (c) Assure more stable funding for providers-provider sponsored insurance (e.g., Dhaka Hospital, Nkoranza, Bwamanda) (....).

Melitta Jakab and Chitra Krishnan (2001) [3] reviewed 45 papers discussing community-based health financing. They concluded that many financing specialists tried to carve out a typology for community financing schemes [3], the high diversity in objectives, management, design and adoption made it difficult to find one standard design of community financing. Ja-

Jakab et al, (2001) presented four well-identifiable types (modalities) of schemes. The first type (the Bamako Initiative Model) relies on user fee payment but the community is actively involved in designing these fees and managing the collection, pooling, etc. (community cost-sharing). The second type resembles the prepayment notion of the mutual health organization especially in West Africa countries. The community collects payments in advance of treatment (prepayment) and then manages these resources in paying for providers. The third type is modified from the second type and named community provider-based health insurance. In this modality the provider, serving a particular community, collects the prepayment. In the fourth type the community becomes a mediator (agent) on behalf of a formal (government) or social insurance to reach the rural population through contractual agreement.

Jakab and Krishnan, (2001) went through an extensive course of assessment regarding the four modalities of community-based financing schemes using three indicators of performance:

- Effectiveness in mobilizing resources and sustainable health care financing mechanisms.
- The role in sharing risks across population groups, inclusion of the poor and participation of the rich.
- Effectiveness in providing financial protection to the members.

Jakab and others, (2001) review a summary of findings of the performance indicators regarding the four modalities, presented in box 2.3 [3].

Box 2.3. Summary of findings of performance of community-based health financing arrangements

Summary findings for resource mobilization capacity

- Community financing arrangements contribute significantly to the resources available for local health care systems, be it primary care, drugs, or hospital care.
- It appears that the involvement of the community in various forms—allows tapping into more household resources than would be otherwise available for health care.
- At the same time, there is a large variation in the share of community financing in the total resources of local health systems.
- There continues to be a need for more rigorous evaluation of the resource generation capacity of community-based schemes.

Summary findings for social inclusion

- Community-based health financing is effective in reaching a large number of low-income populations who would otherwise have no financial protection against the cost of illness.
- The poorest and socially excluded groups are not automatically included in community-based health financing initiatives.
- High income groups are frequently under-represented relative to the entire population, undermining redistribution from rich to poor.

Summary findings for financial protection

- Generally, community-based health financing schemes (modality 2-4) are reported to reduce the out-of-pocket spending of their members while increasing their utilization of health care services.

Source: Jakab and Krishnan (2001) [3].

Dyna Arhin-Tenkorang (2001) [32] wrote a report about the experiences of community health financing in the Africa region. She presented a conceptualization of how performance in the areas of risk protection and resource mobilization is determined by the interaction of design features, including institutional and technical factors. High population schemes for the informal sector in Africa, are assessed. These schemes are: The Carte d'Assurance Malade

(CAM) programme of Burundi (provider insurance model, by government); Community Health Fund (CHF), Tanzania (mutual-provider partnership model); Abota Village Insurance Scheme, Guinea Bissau (mutual benefit society model); Nkoranza Community Financing Health Insurance Scheme, Ghana (provider insurance model, by hospital); Dangme West Health Insurance Scheme (Dangme Hewami Nami Kpee, Ghana mutual-provider partnership model).

Arhin concluded: “(.....) Nevertheless, the performance of the schemes studied suggests that insurance mechanisms in some situations, have, or may eventually have, a significant membership rate among the population and therefore are capable of increasing access to health care and, to a limited extent, mobilizing resources.

Constraints that have hindered attempts to design appropriate community insurance schemes include the policy environment, inadequate administrative infrastructures, and a shortage of trained staff to manage schemes (.....) Data on WTP will be a critical part of such information since WTP will determine demand and the relationship between revenue and expenditure, hence social and financial performance. Affordability of premiums and appropriateness of payment schedules of existing rural health schemes suggest that WTP is substantial for such schemes (.....)

Recognizing that the low income of households in the informal sector will result in WTP insufficient to fund all the health care costs for scheme members, central government support of these schemes in the form of fiscal transfers and budget allocations will be required (.....) In the absence of established best practices in the design of schemes, donor-funding procedures and regulations need to be flexible to assist experimentation by communities, local governments, and local nongovernmental organizations (.....)”.

Melitta Jakab and others (2001) [33] in an attempt to fill the gap in empirical findings regarding the community financing schemes presented a study using household surveys. The study analyzes household data from four countries (India, Rwanda, Senegal and Thailand) with a common methodology. The study addresses two principal questions: Are the surveyed community financing schemes in these four countries inclusive of the poor? Are the community financing schemes in the four countries effective in providing financial protection from impoverishing effects of illness? The household surveys represent non-standardized, relatively small scale data collection efforts with a sample size of 346 to 1,200 households. Logistic regression was used to estimate the determinants of enrolling in the community financing schemes. A two-part model was used to assess the determinants of financial protection. The findings suggest that community financing can be inclusive of the poorest even in the most economically deprived context. Nevertheless, this outcome is not automatically attributable to the involvement of the community; rather it depends on key design and implementation characteristics of the schemes. Financial protection reduces financial barriers to health care as demonstrated by higher utilization and simultaneously lower out-of-pocket expenditure for scheme members after controlling for a range of socioeconomic variables.

The study concluded: “(.....) First, successful inclusion of the poorest is not an automatic outcome of community structures. Community involvement can be exclusionary as well as inclusionary. This suggest that certain community characteristics as well as scheme design and implementation features are important determinants to achieve pro-poor targeting outcomes. These determinants and the direct causality are not well explored with regard to health financing, and further investigation is warranted.

In particular, the role of external financial support (such as government subsidies, donor funding, reinsurance) in encouraging social inclusion needs further exploration. So, too, does the role of participation, by providing the poor with a voice.

Second, community financing reduces financial barriers to health care, as demonstrated by higher utilization but lower out-of-pocket expenditure of scheme members relative to non-members. This suggests that prepayment and risk sharing-even on small scale-lower financial barriers to health care”.

Guy Carrin, (2003) in a discussion paper entitled “Community Based Health Insurance Schemes in developing countries: facts, problems and perspectives” carved out a framework to investigate community financing schemes with health insurance features. Carrin uses the intermediate goals of the health system as outcomes of the health system: equity in utilization; sustainability and fairness. To examine the health system performance Carrin investigated the health financing sub-systems as the main components of the health finance system. These health finance sub-functions are: revenue collection; pooling; and purchasing.

The paper also draws attention to the government stewardship function in the health system in terms of its overall responsibility towards its population. For empirical findings Carrin made use of two extensive reviews have done by the WHO and the International Labour Organization (ILO). The WHO study was conducted in 1998 including 82 non-profit health insurance schemes for people outside the formal sector in developing countries. The ILO study is about the role of community-based health insurance in the extension of social protection. A total of 258 community-based health insurance schemes were reviewed.

Carrin gives concludes: “A key finding from the present review is that achievements so far are generally modest, certainly with reference to enrolment. On the other hand, one should realize that many schemes are relatively young, and need more time to develop. It was also shown, especially through a number of well-performing schemes, how community-based health insurance can contribute significantly to financial protection and to access (.....).

Most likely, however, community-based health insurance will at best perform a complementary role. They are also not to work in an isolated way. Government has the task to define their place within the context of a national health financing policy. The latter policy should steer these community-based health insurance in such a way that they contribute to reaching the goal of universal financial protection” [4].

2.6. Sudan experience in Community Financing

Nafir is a Sudanese term synonymous to community financing in its broad definition. It is used to indicate community mobilization, solidarity and commitment to help each other (especially during crises), to help the needy and to cooperate in establishing social service facilities. Bekele et al, (1986) claimed that “the willingness of the Sudanese to pay for social services like education and health encouraged Sudan’s commitment to primary health care and dates back to 1976, two years before the Alma Ata campaign was launched” [34]. Table 2.2 clearly shows the high contribution of the community to health capital investments mainly the PHC infra structure. This unique contribution is reflected in the high willingness of the community to participate and to get involved in these activities.

Table 2.2. Comparison between the government and the Nafir health projects

Type of project	No. of government health projects	No. of Nafir health projects	Total
Hospitals	36	20	56
Wards	17	41	58
Health centres	2	64	66
Dispensaries	0	190	190
Dressing stations	0	537	537
Nursing schools	0	10	10
Blood banks	2	17	19
Theatre complex	9	16	25
x-ray units	5	7	12
Increase in bed capacity	2360	1660	4020

Source: Ministry of Health, PHC programme document

There are no recent studies to determine the contribution of community financing in Sudan to equity, sustainability and quality of services. In the rest of this section we will review the four evaluations of what is known as community financing in Sudan. An evaluation study in 1996 by Dr. Mohammed Elfatih to assess the Bamako Initiative showed that poor implementation and poor supervision led to the failure of the projects at ER Rahad area-Western Sudan [35]. The evaluation study done by the Khartoum State Ministry of Health evaluated the performance of the health insurance in the informal sector in 2001. Two community development projects were held by UNICEF and WHO and although they are not yet completed some mid-term evaluation studies give some clues about their performance. UNICEF launched the Child Friendly Community Initiative (CFCI) in 2000 as a development scheme targeting remote areas, focusing on children and women health, education and livelihood. The initiative was adopted in 356 villages and showed promising results on community building capacity and empowerment (management and controlling finance), a high coverage of immunization and a remarkable reduction in school drop out. The WHO fostered the Basic Development Needs (BDN) scheme which builds on community organization principles and which was led by the Federal Ministry of Health (FMOH). More than eighteen projects in nine states were implemented concentrating on income generating schemes as the core of change of mobilizing and organizing communities.

2.6.1. The Bamako Initiative (BI)

Sudan with other African countries endorsed the BI in 1988 to rehabilitate, sustain and expand PHC services in rural areas through active community mobilization and participation in funding and management of these services. In October 1988 a conceptual framework was developed by the Ministry of Health, UNICEF and WHO to implement health programmes nation-wide within the context of the BI. In 1990 a comprehensive base line survey in Greater Kordofan resulted in a selection of three areas in Kordofan to implement health programmes based on BI guidelines. In 1992 ER Rahad Health Area was selected as a pilot. An evaluation study was conducted by Dr. Mohammed Elfatih in 1996 to draw lessons and give insight information about the performance of this project [35]. The evaluation came out with the following: the Revolving Drug Fund (RDF) seemed to be the only functioning activity. The full potential of the BI seemed to be reduced to a RDF in the mind of community as well as in the practice of the Health Area Management Team and the health workers. Community leaders, health committees or women groups did not seem to be involved in any aspect of the programme management. Drug pricing, determination of lines of revenue expenditure and control

of expenditure were all the sole responsibility of the Health Area Management Team. Cost of services seemed to be the only barrier to prevent the poor from utilization of health services. No geographical, cultural or religious barriers seemed to exist. Users have to pay for all aspects of health services including drugs. There was no written policy guideline regarding what categories to be exempted from payment, how to identify them or from where to compensate. Exemptions seemed to be rarely if at all practiced and even then they depended on health workers personal initiative in most cases.

The poor implementation of BI resulted in a big loss of opportunity to start the community based schemes in a robust form. This had a negative impact on later schemes in terms of lack of information and experience.

2.6.2. Sudan's experience in the informal sector

One of the health insurance objectives in Sudan is to cover both the formal and informal sector. The coverage of the formal sector was gradually expanded due to the consistency and the organization of the formal sector. The informal sector includes the majority of the population (85.5%), mostly the poor are still uncovered. The only attempt to cover the informal sector was initiated by the Khartoum State Ministry of Health in 1997. An evaluation study in 2001 was conducted by Khartoum State Ministry of Health to evaluate this attempt and to give information about health insurance in the informal sector [36]. The study came with the following results: Health insurance in the informal sector seemed to be vulnerable due to deficient planning, organizational structure and regulations. Also the programme is not fully separated from the programme for the formal sector and not even known in the media. The majority of the subscribers complained about the administrative complications in terms of premium collections, card issuing and renewal, and reimbursement. Also the subscribers complained about the lack of specialist services, dental services and emergency care services. Expenditures significantly exceeds revenues. Annual revenues constitute about 23% of total expenditure. Premiums were set without any actuarial study so the difference between revenues and expenditure is large. The projection of subscribers revealed that the increase in the number of families during the coming years is linear. However such increase would be easily affected by adverse selection.

The study didn't show participation of the community in management or in the different activities. Although the study didn't reflect on the problem of the poor, the programme showed that 66% of the study population monthly income was insufficient to meet their needs.

2.6.3. Basic Development Needs (BDN)

The BDN initiative was adopted by the FMOH as a strategy for poverty reduction, rather than just an income generating scheme in which health is used as a core determinant for development. The BDN initiative is primarily a community-based development programme and was implemented under the name of the basic minimum needs later modified to BDN in line with the global movement towards development [37]. This concept was innovated and launched by the WHO – Eastern Mediterranean Regional Office (EMRO). The WHO has provided appreciable technical and financial support to the programme [38]. The main concept of the initiative is to improve quality of life of the people through the development of needs of individuals, communities and the society as general.

The BDN objectives are summarized as follows: To work towards the satisfaction of human minimum needs such as income generation, food, health services, safe water, shelter, education and safe environment. The improvement of intersectoral collaboration to get all partners together is important for sustainability. The promotion of community involvement to ensure active participation of the community is essential in community empowerment. The upgrading of the managerial capacity of the governmental official and public so as to integrate the work in an adequate way is important for the whole approach. The identification and promotion of appropriate technologies is important to facilitate the work. Initiation of income generating activities and social services projects to improve the livelihood of the community. Improvement of health and other social indicators is a priority. And to create a self-reliance spirit of self dependence that is supported by skills and knowledge [39].

2.6.3.1. The social contract

BDN is a collaborative endeavor of community, Government, WHO and other stakeholders. All partners are required to perform specific roles for achieving the programme targets. At the time of introducing the BDN programme in the area, all the development partners and the stakeholders will sign a social contract that will be a pledge and moral obligation to play their roles as specified in the contract [27].

2.6.3.2. Achievements and constraints

The achievements of the BDN schemes can be summarized as follows: a strong political commitment at the national level and in the Ministry of Health; the presence of certain organizational structures at the national, state, local council and community level along with their training and orientation on the BDN approach; the integration of BDN within the PHC setup for maximum availability and utilization of technical and financial resources; the demand from public representative and communities to the initiation and expansion of the coverage of BDN programme in Sudan; the implementation of 18 BDN projects in 6 states with active involvement of local communities and as considerable impact on socio-economic development (see appendix A); achieving an agreement with the Sudanese Saving And Social Development Bank for financial management and the financing of BDN projects in BDN areas; an agreement with the World Food Programme (WFP) was also signed; the cooperation with Shendi University; the cooperation with UNFPA income generating activities in Shendi and Um Badda; the BDN generic material was adapted to the condition of Sudan and translated to Arabic for better and comprehensive understanding [39].

The constraints these schemes face are: absence of supporting intersectoral coordination committees at federal and state levels; improper selection of certain model areas due to political and public demand; inadequate composition and training of technical support teams (TST) and village development committee (VDC) due to frequent transfer of members and migration; delayed impact due to implementation of groups of villages rather than selection of individual villages and clearly identified beneficiaries; irregular supervision and monitoring due to lack of transport; delayed reimbursement of loans; inadequate partnership with other UN agencies and organizations engaged in community development activities; inadequate community mobilization to sustain social support and agreed cost-sharing led to repeated revision of plans and default of loan repayments; lack of funding for BDN projects [39].

2.6.4. The Child Friendly Community Initiative (CFCI)

The CFCI is an integrated, cross sectional intersectoral and community based approach to achieve sustainable improvement in the lives of rural children and women. The CFCI is a collaboration between UNICEF, the Ministry of International cooperation, the National Fund for State Support, pertinent line ministries (including ministries of finance, ministry of health, ministry of education and ministry engineering and urban utilities), the states governments and local communities [28].

The CFCI was initiated in 2002, and is planned to complete its tasks in 2006. Originally it is a continuation of the Child Friendly Villages Initiative (CFVI) that was launched by UNICEF and the government of Sudan in 1993. The two initiatives endorse the same strategy of organizing villages to take responsibility for planning and executing local development activities to improve the well-being of children and their mothers. The CFCI has the advantage over the CFVI in its scientific approach of selecting vulnerable communities to join, and to ensure that all activities will actually be carried out by UNICEF's sectoral units to eliminate redundancies. So the CFCI could be described as an approach rather than a project per se. Its main functions are coordination, capacity building and community mobilization. It also aims at organizing communities to identify high-priority problems that affect children and women and then to build community members' capacity to plan, implement and monitor a local development initiative that will address these problems [28 and 41].

The selection of participating communities was based on a series of sample surveys. On the basis of multiple indicators Sudan's 16 northern states were ranked on critical factors such as infant, child and maternal mortality rates, the percentage of children of primary school age not enrolled in school, percentage of girls not enrolled in school, literacy rates, immunization coverage, malnutrition rates, access to safe drinking water and sanitary waste disposal, diarrhea incidence rates, HIV/AIDS knowledge and access to key public services such as primary health care and trained birth attendance, and wealth index analysis. States were classified into three categories on the basis of the findings: highly vulnerable, medium vulnerable and less vulnerable. The nine most highly vulnerable states were selected for inclusion in the programme. In addition, CFCI selected the three areas of southern Sudan that are now accessible, on the understanding that decades of conflict have rendered the entire south highly vulnerable. The twelve focus states identified by CFCI are in appendix B [41].

Although the CFCI is primarily collaboration between UNICEF and the state-level Ministries, planning and oversight are provided to CFCI at the national level by UNICEF, the Ministry of International Cooperation and the National Fund for States Support.¹ They are involved in coordination, budgeting, surveys of states localities and communities, overall monitoring, supervisory visits and reviewing quarterly and annual reports.

At the UNICEF level the Integrated Community-based Development Programme Officer, together with CFCI Assistant Project Officer, perform core functions such as: coordination of the input of UNICEF's sectoral units into CFCI's programme and activities.

At the level of the state, CFCI activities are the responsibility of the Ministry of Finance (particularly the Department of Planning), the CFCI Coordination Unit and the Director Generals

¹ The Ministry of International Cooperation is a governmental designed counterpart for all United Nations development organizations and activities. The National Fund for State Support is the distributor of federal fund to Sudan 26 states for development process and to address and resolve regional disparities in distribution. Thus includes the disbursement of funds to CFCI.

of the state line ministries. The Minister of Finance chairs a State CFCI Steering Committee, whose members include the director generals of the Ministry of Health, the Ministry of Education, the Ministry of Engineering and Urban Utilities, and the Ministry of Social and Cultural Affairs [28].

At the community level, the Community Development Committee (CDC) is selected in a general meeting of the community. The community is asked to choose four men, four women, a male youth and a female youth, to serve in the committee. In some communities, posts such as the CDC Chairman, Secretary and Treasurer are also chosen by the entire community. In others, these officers are assigned by the CDC members themselves. The CDC members are prepared for their role as the primary implementers of CFCI at the community level.

The CFCI's ability to carry out planned activities depends upon the capacity and willingness of all partners to meet their financial obligations in terms of their agreed contribution to CFCI. In this respect, the leverage of resources can be seen as a proxy for political commitment to development in the rural, most vulnerable areas of Sudan. At the state and community levels, many of these contributions are made in kind (salaries, labour) rather than cash. Appendix C shows the different CFCI partners' contributions in 2003-2004. During 2003 the shortfalls for all partners are obvious except for the community (96%) which reflects the high commitment. The figures for 2004 (up until June), however, show a significant improvement. UNICEF's core funding was low compared to its planned contribution, which was contingent upon contributions from outside donors which were not forthcoming. The contribution made by localities to the CFCI is the lowest. The improvement in the federal contribution reflects the growing concerns and commitment [28 and 41].

2.6.4.1. Achievements and constraints

The achievements of the CFCI schemes can be summarized as follows: The 437 CFCI Coordination Units' staff acquired skills to facilitate community training and mobilization; the community was able to develop annual work plans in 277 CFCI communities out of 354 communities (78%); the Community Development Communities in 277 CFCI (78%) conducted Community general meetings and submitted regular monthly reports; the Community Development Communities in 277 CFCI became capable in managing basic social services (example: drug revolving fund, water tariff, regular schooling, community centres ...etc); promotion of women and child participation: 327 Community Development Communities out of 354 (92%) have representation of women and children; 60% of them have active women and children participation; increased access to immunization by 25-30% of the 118 CFCI communities; fifty-five (55%) of under five children in 98 CFCI communities have access to integrated "Minimum Care" packages of essential health and nutrition interventions; in 110 village midwives were trained and equipped with midwifery kits to provide safe and clean delivery assistance to more than 440,000 women of child bearing age in 110 Child Friendly Communities; the thirty-five (35) CFCI communities previously with no school were able to have the first intake of 752 pupils; the enrolment in basic education increased by 15-20% and drop out reduced by 3-5% in 245 CFCI communities as a result of improved school environment; an additional of more than 250,000 women and children in 245 CFCI communities have access to improved water supply facilities as a result of provision of 62 new and rehabilitation of 282 bore well hand pumps [28 and 41].

The constraints that face the CFCI schemes are: the armed conflict and its impact on CFCI communities: stable villages have had to absorb and provide for the needs of internal displaced people who have taken refuge in their communities but have no land or other resource of financial support; some CFCI communities have themselves been displaced (in Darfur region 13 trained villages of CFCI have been attacked and eradicated); normal economic activity is disrupted in war zones; in war-affected states, public services, supplies, materials and resources have been diverted from their normal distribution paths to displaced people camps, particularly in Darfur region; the war environment prevented the people to make investments in infrastructure or other improvements that might have to be abandoned at any time; some of these states' most qualified staff members, therefore, including some who were seconded to CFCI Coordination Units, are either moving to international organizations; the travel and seasonal access problems, half of the states were virtually cut off during the rain season and this limits the field activity period by approximately half a year; the funding and resource limitations are constraints to the project implementation both in terms of shortfalls in the expected contribution to CFCI itself and in terms of the inability of resource-poor line Ministries to meet the requests of the communities [28 and 41].

2.7. Conclusion

There is no consensus on what community financing is. Different definitions exist in different eras but, we can say these definitions in general indicate that any active role of the community in financing and managing health services can be considered as community financing [3, 8 and 15]. The evolution of the definitions reflects the different eras of health finance reform and the spirit dominating that era.

Community financing schemes have emerged in developing countries because of political instability, economic shortages and the weak capacity of health organization [4 and 16]. The impact of the above mentioned causes are explicit in the expansion of poverty and the chronic failure to finance the health care system. In addition the high willingness of the people encourages and advocates the adoption of community financing attempts [15 and 31].

The successful implementation of community financing schemes requires a feasibility study; community study; and robust partnership with NGOs and the government to ensure training and technical support [26 and 31].

Reviewing the international experiences in community financing shows a diversity in community financing schemes regarding their purpose, set up and operation [2, 3 and 31]. Different researches have tried to design frameworks to help clarifying, classifying and evaluating community financing schemes [2].

Some evidence from international experiences regarding resource mobilization, financial protection and social inclusion suggest careful adoption of any community financing schemes [31].

Although Sudan has the potential of a high willingness to pay, social capital and resource mobilization, it is still lagging behind in community financing experiences. The poor adoption of some community financing initiatives has a negative impact on the coverage of the informal sector under any community financing approach.

The BDN and CFCI initiatives for comprehensive integrated sustainable community development were launched to reduce poverty by improving the livelihood of the people, health, education, building capacity of the community and local authority and to ensure child rights.

The importance of these initiatives is to address the vulnerable rural communities in the most remote states of the country. The early positive results of the pilot studies strengthened the partnership of the WHO, UNICEF, the government and the community for more coordination and collaboration [27 and 28].

The coordination and collaboration between the BDN and the CFCI will enrich this experience of community financing with the most innovative methods and practices. For instance the BDN social contract for moral commitment as a pledge is very encouraging. The criteria of selection adopted by the CFCI are very important to the BDN experience. The experience of income generating schemes of the BDN can be used by the CFCI for the school students in poultry farms to increase their income and be a source for nutrition. The UNICEF coordination intersectoral units offered the CFCI the sustainable technical assistance. This is a cost-effectiveness approach to minimize the cost of the expertise.

Finally it seems the adoption of a successful community financing scheme depends on political, economical, institutional and cultural conditions. The promising results that have been gained from some experiences should not be taken as an invitation for a nation-wide adoption of community financing schemes without proper scientific evaluation. No doubt the success of community financing is contingent upon the appropriate implementation and good performance with respect to resource mobilization, social inclusion and financial protection [32]. Many researchers emphasize the role of the government to support community financing schemes because they are a complementary not an alternative for financing the health care system [4].

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CHAPTER 3

**Poverty and health in Sudan:
The protection of the poor**

3.1. Introduction

Poverty is a multidimensional phenomenon defined by the UNDP Human Development Report in 1998 as “The lack of what is necessary for material well being, but also means the denial of opportunities and choices most basic to human development, to lead a long, healthy and creative life, to enjoy dignity, self-esteem, the respect of others, and things that people value in life” [1]

In the 21st century the number of people living in absolute poverty continues to rise with grim health consequences [1]. Presently, about 1.3 billion people live in absolute poverty, with an income of less than US\$ 1 per day. In 2000 the united nation signed a declaration about the millennium development goals (MDG) to reduce poverty [2].

The Human Poverty index in 2003 ranked Sudan number 52 out of 94 developing countries. It is clear that poverty as estimated by human deprivation is prevalent all over the country and is remarkably high in rural areas [1]. Human deprivation varies in nature and impact. Poverty can be attributed to natural disasters or socio-economic factors. These factors may be local, regional or global. Generally these factors can be categorized as following: natural disasters; misuse of environmental resources; inappropriate national policies; and armed conflicts [1].

The World Bank has noted that, “the body is poor people’s main asset, but one with no insurance” [3]. Poverty and health are intrinsically linked and are mutually reinforcing and deprivation in one area produces negative effects on the other. Ill health is both a cause and a consequence of poverty [3]. Those living in absolute poverty are five times more likely to die before reaching the age of five, and two and half times more likely to die between the ages of 15 and 59, than those in higher income groups. The lifetime risk of dying in pregnancy in parts of Sub-Saharan Africa, where almost 50% of the population lives in absolute poverty, is one in 12, compared to one in 4000 in Europe [4].

After the oil crises in 1973 most developing countries couldn’t afford to finance health services. This situation was aggravated by the World Bank prescription in 1978 to cut back on budgets that affect health and education.

In 1992 Sudan ceased all health services free of charge and adopted its own macro economic reforms under the name of economical liberalization [5]. The user fee policy was established all over the country. The government adopted many measurements to protect the poor against the user fee policies. This includes direct and indirect targeting methods, in addition to the social insurance in 1994. The majority of the population (85%) is still uncovered and vulnerable to the public user fee policy and the high prices of the for-profit private sector [6].

This paper aims at a general review of the problem of poverty in Sudan and its relation with health. It also aims at reviewing the different measurements of protecting the poor and the role of the Zakat in protecting the poor. The paper also presents the two community financing experiences in Sudan that are expected to assist in solving the poor problem.

The paper is organized as follows: Section two overviews poverty in Sudan. Section three presents different measurements of poor protection. Section four reviews the role of the Zakat in the health of Sudan. Section five presents the community financing experiences of the Basic Development Needs (BDN) and the Child Friendly Community Initiative (CFCI). The paper then concludes and gives recommendations.

3.2. Poverty in Sudan

Poverty is a multi dimensional phenomenon that affects all aspects of life. Absolute poverty is classified as a disease by the WHO's international classification of diseases [3]. No recent and accurate estimation of poverty in Sudan is available. The last national representative household income and expenditure survey was held in 1978. New recent surveys though not poverty specific in focus or design give some clues about poverty estimation in Sudan [7]. It is clear that poverty as estimated by human deprivation is prevalent all over the country and remarkably high in rural areas. It could be claimed that poverty in Sudan may perhaps be in range of 50-60% in line with most of the countries in the region [6]. Most of the poor are rural residents, though urban poverty is also growing. The disparities and inequalities are wide between urban and rural areas, between different states, between displaced and residents and between men and women [7].

The factors that cause and influence the poverty problem in Sudan can be summarized as follow. The sustained urban bias of the development strategies adopted since the independence (1956); since the independence a clear pro urban bias in policies which manifested itself in the provision of adequate social and economic infrastructure, which was not matched by similar facilities in rural areas. The effect of these urban biases was hampered by government marketing policies for some of the major export crops mostly grown in the rural traditional sector. Internal conflicts and natural disasters played a role. Weak economic and unequal distribution of resources, unemployment and under employment, poor occupational conditions, chronic debilitating diseases or disabilities, extended families, low education and literacy and lack of technical skills, limited credit source, and gender deprivation aggravated the poverty problem in Sudan [3].

Poverty and health are intrinsically linked and are mutually reinforcing and deprivation in one area produces negative effects on the other. Ill health is both a cause and a consequence of poverty. It is evident that ill health brings disastrous consequences for individuals and their families by reducing household savings, reducing productivity and thus lead to a diminished quality of life and creates poverty [3]. Studies from different countries found that the catastrophic expenditure on health services is the major cause of poverty [8]

Over 189 member states assembled at the United Nations in 2000 signed a declaration about the 'millennium development goals'. A list of 8 Goals, 18 Targets and 48 Indicators focusing on targeted and time bound reduction in poverty, by half, reduction of U-5 mortality by two thirds, reduction of MMR by three quarters, reversing the spread of diseases, specially HIV/AIDS and malaria by the year 2015 [2]. To achieve universal primary education, reduction of gender disparity and environmental protections are the other mandates. The centrality of the health focus is highlighted through three specific goals, eight targets and eighteen indicators [9]. The current situation of Sudan regarding the achievement of the MDGs is poor taken by the main indicators. Table 3.1 shows the big gap between the current situation and the MDGs target 2015.

Health care system reform policy and international support both financial and technical are the corner stone to achieve the MDGs. The reform policy should focus on approaches and strategies to improve the health system performance in its efficiency, effectiveness, quality, equity and sustainability [2]. The reform in health organization should be linked to other reforms of macroeconomic policies including poverty reduction. Sudan has many opportunities

that can help in achieving the MDGs. These are the peace agreement; the contribution of oil to the budget; and the capacity building of different public institutions.

Table 3.1. The gap between the current situation in health indicators and the MDGs target 2015

Indicator	Current situation	MDG target 2015
U-5 Mortality Rate	104	45
Urban	101	39
Rural	105	48
Infant Mortality Rate	68	25
Urban	67	24
Rural	68	26
Maternal Mortality Ratio	509	134
Urban	496	130
Rural	514	135

Adapted from Interim Poverty Reduction Strategy paper [7].

3.3. Poor protection measurements

In the health care system many approaches have been used to protect the poor from the negative impact of the user fee policy. These mechanisms vary from country to country according to diversity and situations but the most common known are the direct targeting (individual) and the indirect targeting (characteristic) [10].

The direct targeting or individual targeting identifies poor individuals according to their income and provide services to them at a reduced fee or free of charge. This mechanism has two limits; one is related to the uncovered poor people who for some reasons drop out. This is measured by the 'exclusion error'. Second, the leakage done by the well-off ineligible persons is measured by the 'inclusion error'. In developing countries means testing occurs at the point of services delivery and rarely before the need for health care. Wage or tax records are often unavailable or not existent, though the methods used to determine who is unable to pay fees result in informal means testing that relies on income proxies. The means testing is done by the care-giving staff member or a social worker who has been given primary responsibility, with or without training for interviewing the patients and making an informed assessment regarding their ability to pay [10].

The indirect or characteristic targeting mechanism focuses on the programme rather than on the income of individuals and subsidizes programmes for both rich and poor (e.g. MCH programme). This approach has two mechanisms. One is exemption and the second is to subsidize fees for services (waivers). There are many types of exemption: exemption for patients or demographic groups (children under five, elderly, and civil servant), exemption by illness (TB, AIDS, leprosy, cancer, etc), exemption by type of services (emergency services), exemption by level of care (PHC) and exemption by geography (Dar-Fur Region). Subsidized fee for services is widely used by governments hence they intentionally set fees at a very low level (5%) [11].

3.3.1. The role of the government in protecting the poor

During the era of free of charge public health services 1978-1992 a symbolic user fees was introduced in response to initiatives predominating that era and pushing towards reasonable user fee policies. This could be seen as an indirect-targeting exemption mechanism for subsidized services. Peoples' pharmacies started in Sudan in 1976 to fill the gap in drug shortages

especially for the poor. After the Bamako Initiative in 1987, which was embarked upon specifically because of the poor implementation of the PHC and the chronic shortages of drugs, the number of people's pharmacies remarkably increased [12]. People's pharmacies have three main purposes: to make high quality cheap drugs available to the poor by following the policies of lowest prices of tenders, big packages and generic drugs. The second purpose is to be present in remote areas to ease access for the poor in contrast to the private pharmacies usually found at the centre of the big cities. To keep the pharmaceutical work-force within the public sector by creating additional jobs and incentives, as we know that 95% of the pharmacists work in the private sector. After the economical liberalization policies the role of the people's pharmacies is not clear and many changes have happened to their structure, objectives and patterns of work [12].

In 1992, after the macro economic reform which came two years after the UN agencies ceased their operations in Sudan, the government established user fee policies all over the country. The government in a joint step to protect the poor from the negative impact of the economic liberalization policies adopted two mechanisms of poor protection, the direct targeting and the characteristic targeting approach using the exemption of subsidized services. Due to the federal system the experience differed from state to state and from facility to facility and no evaluation was done, although some evidence showed the implementation to be asymmetrical and the coverage to be low [5].

The structure and operation experience of the direct targeting mechanism in Sudan is unique. This is because Sudan has established a parallel system of payment instead of a system of exemption or reduced fees. The Zakat Chamber (see next section) installed in each health facility under the name of Solidarity Treatment an office staffed by social workers to interview patients and to determine who will receive subsidies and who will receive care free of charge. By a well defined system the Zakat acts as a third party and pays back all the imbursement to the facility. So the health workers are not involved in determining who has to pay. This may create a moral hazard and may lead to unnecessary investigations. The main resistance to the system was by the medical staff who rejects the whole idea of user fees and use it as a political issue against the military government of Sudan. Though the interviews used to be done at the point of service many complained about the delay for urgent cases and consequently many modifications were done to facilitate the procedure.

In 1994, the increasingly growing opposition to user fee policies together with the devastating effects of poverty pushed the government to search for alternatives to alleviate the poverty impact. The risk pooling mechanism of health insurance was chosen as a tool to finance health services. The government intention was to cover both formal and informal sectors, but the coverage in the informal sector is far less than anticipated. The social health insurance achieved 14.5% coverage in 2005 [5].

In 1996 under the pressure of poverty caused by the increase in the petroleum prices which affected all sectors, the government switched from the direct targeting approach to indirect one. The government started to use the exemption mechanism by offering free of charge public health services at emergency departments. The government also used the exemption for patients of renal dialysis, immune suppressants drugs of renal transplantation, chemotherapy and radiotherapy for cancer and hemophilic patients. In 2001 a rapid assessment was done to evaluate the free of charge system at the emergency departments. The results show the huge loss of medical supplies (50%) especially for intravenous fluids [13] as a misuse by the health workers and the over use of the emergency department as an out patient facility. The latter

was done by the poor to enjoy free of charge services for unaffordable health demands. The informal payments emerged again with free of charge health care after it has died out with the user fee policy. In 2000 the president of Sudan promised to render free of charge services at class C inpatient wards as part of the poor protection policy but this has not yet been adopted. In 2003 the FMOH started a new policy of triage at emergency departments to differentiate between genuine cases of emergency and out of patient cases. This policy has the advantage of preserving all the resources for emergent cases but on the other hand it shuts the door for the poor who misuse the system simply because they can't afford other alternatives. In 2004 the government expenditures on free of charge health services amounted to 1,919,055,611 SDD (6.8% of the whole health expenditure) an increase by 74% compared to the previous year [14].

In 2002-2003 the FMOH had gone into a reform process to increase its capacity building by adding new directorates namely: State Affairs; Health Promotion Directorate; Human Resources and Training; Health Policy and Planning Directorate; Health Economics Directorate; Quality Council and Directorate; Information Technology (IT) and Computer; Monitoring and Evaluation and Policy Intelligence Unit [5]. In 2003 the FMOH launched the Quarter of the Century Strategic Plan 2003-2027 and started the first 5-years plan [14]. In the same year the government announced the Local Governance Act which gives more administrative and executive authority to the locality that supports the health area system. This Act gives the localities responsibilities for service provision and development including monitoring and supervision and in addition to planning and managing PHC services, environmental health and malaria control. To strengthen the new role of the localities many sources of finance were approved including assets tax, agro-pastoral production taxes (40% should be transferred to the state level), the locality share on the VAT collected at the state level, a share of the state and federal investment within the locality boundaries, loans and grants approved by the state and other sources [5].

Most of the measures for protecting the poor are simply reactions to different political and economical circumstances and are not built on evidence-based approaches or research findings. Recently the government gathered many opportunities to work out a comprehensive plan to defeat poverty. The poverty alleviation programme launched in 2003 focusing on the disparities between states enhanced the capacity of the government to mobilize most of the resources to bridge these gaps. This is considered as the first line of defense against poverty in Sudan. As an urgent measurement in 2003 the government applied a geographic exemption mechanism by offering Dar-Fur region free of charge public health services. The crash programme to alleviate poverty includes rehabilitation and re-equipping of 200 rural hospitals in 15 states in the North of Sudan. The financial support to the states through the National Fund for State Support in 2004 increased from 4,100,654,884 SDD to 8,543,247,303 SDD (increase of 108%). In addition the government spent 13 million US\$ for phase one of the National Scheme for attracting patients that seek treatment abroad. Further, the government started to implement phase two by allocating 15 million US\$ to sort out the tenders. The government started to implement the Islamic Bank for Development programme which included building 15 new health centres in 9 states, support for malaria and TB eradication programmes, 15 ambulatory vehicles and upgrade the reference lab for AIDS and TB in Khartoum [4].

The chronic shortage of medical personnel at states due to the massive brain drain to the Gulf countries and internally to Khartoum deeply aggravated and severely deteriorated health services. People who are well-of used to go to Khartoum for health care but this will be a disas-

trous attempt for the poor. So, the government started a restrictive policy to overcome this problem by increasing the salaries for medical staff. Moreover considerable financial incentives were given by the states' governments for those who willing to work in these states. Further the president directed the ministry of labour to create new jobs only for the states. Table 3.2 shows the increase in number of transfer medical doctors to states.

Table 3.2. The increase number of transfer medical doctors to states

Reference year	2001	2002	2003	2004
Number of transfer doctors	151	743	894	1908

Source: Khalid Elnour,2005 [14]

In January 2005 The Comprehensive Peace Agreement was signed followed by the approval of The Interim Constitution in June 2005. This announced the right of all citizens to enjoy free of charge of the basic health services (PHC). This type of exemption by level of services is very important in protecting the poor and supports the other approaches in narrowing the gap of disparities.

3.4. The Zakat

3.4.1. Definition and role

The word Zakat has two meanings. The first relates to purification. That is purification by means of Zakat from sins and bad qualities such as greed and the inculcation of good qualities such as generosity. The second meaning relates to growth and increase. That is, giving of Zakat results in growth and increase in wealth. Both meanings are referred to in the following verse of the Quran "*Take sadagah (alms) from their property by means of which may purify them*" [15].²

In the legal terminology of the Sharia'a (Islamic Law), Zakat means the obligation of every Muslim to pay 2.5% of the value of specified assets to the recipient entitled there for the sake of Allah. The payment has the effect of depriving the Zakat payer of any indirect benefit in the sense that it can not be made to his ascendants or descendants or spouse. The payment at the same time results in an unconditional transfer to the recipient entitled there to, which is denoted as Tamleek (ownership) [15].

Zakat is the third pillar of the Islam religion, so it is worship. Zakat mainly aims to fulfill the Islamic objectives of attaining economic and financial equity among the Islamic community. Based on need and time factors, Islam has made a fundamental distinction between two types of needy groups: the "poor" and "destitute" people. This distinction is a matter of degree. The former is defined as any person who, using his own resources cannot maintain himself at a sufficient level for a period of one year. The latter refers to those who are not able to secure the same aforementioned level for one day. Poverty in Islam is a matter of inability to satisfy these needs in a sustainable process for a long period of time, almost a year. Thus, sustainability in meeting basic needs for human survival is a key element and a point of departure to distinguish the poor from the non-poor [16].

² Sura 9: verse 103.

3.4. 2. Zakat payer and Zakat recipients

The Zakat payer must be a Muslim, must be an adult, must be sane and must be free and financially able [17]. The Zakat payer must be the complete owner of the property. The property must have the potential of growth. One year must elapse over property as the prophet Mohammed (peace be upon him) said “*There is no obligation to pay Zakat on property until a year has elapsed over it*”. The property must be equivalent to Nissab (Minimum quantity of wealth on which Zakat is payable) i.e. 612,36 grams of silver or 87.48 grams of gold. The agreed amount of Zakat payable is two and a half percent of;

- The value of gold and silver if equal to Nissab in weight;
- Trading stock, or its market value at the time of obligation of payment of Zakat, if the stock is equal to Nissab;
- Cash on hand if equal to Nissab.

In view of the fact that opinions may differ as to recipients of Zakat, the Quran has fixed eight categories of recipients as follows: “*Zakat is only the right of the poor, the needy, those employed to collect it, those whose hearts are made to be attracted to Islam, for freeing the slaves, for the debts of debtors, for the cause of Allah and for the traveler – this order has been prescribed by Allah. And Allah is most knowing and wise*” These eight categories known as Zakat avenues.³

3.4.3. Evolution of Zakat Chamber in Sudan

The experience of Zakat before 1980 is that it was collected and distributed directly by the Zakat payers to their relatives and through many institutions such as hospitals, on causes of Allah, Quran schools ...etc. After 1980, the Zakat Fund was established with the objective of organizing Zakat according to formalities. However the process still depends on the willingness of the people to pay it. Although Zakat is a religious principle based upon Sharia (Islamic law) and personal responsibility, government intervention may be needed to redistribute it to the poor. In 1984 the Zakat Fund developed into the Zakat chamber with a specific law arranging its operations. The law has formalized Zakat in the sense that it seems to be imposed by the law. During this period the Zakat and taxation were combined in one institution. In 1990 the independent Zakat chamber was established when the government issued the Zakat Law with the aim of improving the performance of the chamber [18]. To do so, the Zakat Chamber, with its Head Quarters in Khartoum, established about 108 Zakat Chamber sub-offices throughout 19 states manned by 3335 working staff. In addition there are several Zakat local committees and Zakat coordination councils in each locality [19].

3.4. 4. Collection and Disbursement of Zakat

The two main objectives of the Zakat chamber are the collection and disbursement of Zakat. The collection of Zakat involves assessment of properties subject to Zakat. However, this process requires a fair and well qualified person to do the assessment perfectly. The assessment always has to be in terms of money for the purpose of determining the Nissab. Since 1995 the Nissab has been determined by an advisory committee of the Zakat Chamber [18]. Table 3.3 shows that the actual Zakat collected has always been larger than the planned sum,

³ Sura 8: Verse 60.

and the effective performance in collecting Zakat has been shown in the systematic increase of Zakat. The table also shows the willingness of the public to pay Zakat as an Islamic principle stated as one of the Islamic pillars [19].

Table 3.3. Pattern of Zakat collection 2001-2004 US\$

Reference year	Money in US\$ million	Increase %
2001	51.5	+ 13%
2002	60.3	+ 17.3%
2003	73.8	+ 12.6%
2004	96.3	+ 25.7%

Source: The patterns of the Zakat Chamber during 2001-2004

The Zakat chamber has to distribute Zakat to the entitled groups (Zakat avenues) stated in Quran in terms of money and productive projects. The objective of providing productive projects is to promote work habits as needed by the Islamic ideology and hence gradually reduce the recipients and increase payers of Zakat. In 2005 the percentage distribution of the Zakat Avenues was as follows: The poor and needy 63%, the collectors 14.5%, debtors 6%, whose hearts are to be reconciled and captives 6%, on the cause of Allah 3% and the way farers 0.5%. The rest 7% is for administration cost [19].

The finance provided to the productive projects is the part devoted to the poor and destitute. The share is about 63% of the total sum of Zakat. The other 37% is for the remaining avenues [19]. Because of the limited know how of the poor most of the productive projects are simple and primitive e.g. skin water containers, animal drawn carriers, fishing boats, kiosks, spegatti's machines ... etc. New sophisticated projects as Trecko sewing, poultry ...etc, are spread under the control of the Chamber, however.

The expansion of poverty and the huge population living below the absolute poverty line enhanced the Zakat chamber to set formula and criteria to determine the poor and the needy through social studies of individuals and communities. At the top of the list of prioritization were the orphans, then the elderly and disabled, untreatable chronic diseases, the crippled who couldn't work, widows, divorced, separated women without jobs, poor students, temporarily unemployed and prisoners' families. These categories receive 60% of the allocated disbursement for the poor and needy. The rest 40% is allocated to small income generating schemes, production units, rehabilitation of defected means of production, creating opportunities of work in small manufactures as group-production scheme.

As two approaches have been used to determine the poor, it is a difficult and culturally sensitive procedure. Firstly the Zakat Chamber used the community (the Zakat committee at community level) to identify the poor and needy. Then the Zakat switched to socio-economic studies to overcome the biases in the first approach. The combination of the two approaches has given good results [19].

3.4.5. Contribution of the Zakat to health sector

The flexibility of the Zakat Chamber in addressing different issues regarding the poor and the needy helped to support the health sector in different aspects. For instance the Zakat Chamber paid social insurance premiums for more than 50,000 poor families, insured all the students in Quranic schools together with poor students enrolled in the basic primary school. In 2005 The Zakat paid for 58 renal transplantation patients (3,000US\$/patient) and 1214 renal dialysis patients. Table 3.4 shows the number of the poor who benefited from the Zakat chamber in

direct payment of treatment. A limited number of people about 0.04% in 2004 out of the population benefit from the scheme. The Zakat chamber changed this pattern due to the mis-uses of the system to support the hospitals and to coordinate with these hospitals for the poor treatment [19].

Table 3.4. Disbursement of Zakat on treatment of the poor 2001-2004 (billion SDD*)

Reference year	Money allocated (billion SDD)	Number of Beneficiaries
2001	1.2	167,707
2002	3.6	201,716
2003	1.7	105,276
2004	1.6	131,681
Total	8.1	606,380

Source: The pattern of the Zakat Chamber during 2001-2004

*SDD is a Sudanese Dinnar (One US\$ equal to 235 Sudanese Dinnar)

3.4.6. The Zakat from health finance perspective:

The Zakat from a health finance perspective is characterized by the following: the cross-subsidy approach of taking from the well-off people and give to the poor and needy; the taxation feature that a constant fixed percentage 2.5% is taken from the eligible wealth; the high willingness of the payers because the Zakat is of a religious voluntarily nature; the Zakat is a community-based payment, organized by the community. Even though the government has intervened to increase its efficiency, the community committees play a significant role in Zakat collection; it is an official running system fostered by the government without influencing its objectives or policies; the Zakat has full autonomy and an independent identity, run by an independent organization of high transparency; the Zakat is earmarked to the eight categories mentioned by Quran (the Zakat avenues); the diversity in sources of collection helps the Zakat to skip total failure that affects single source systems; the Zakat is a fair and progressive approach; it has the capacity of risk pooling and risk spreading over time; it has a flexible funding tool, contributes to development as well as direct payment to services for the poor and needy; it has a high potential of raising funds (in 1995 the collection reached 4.5 million US\$, in 2004 the collection reached 96.1 million US\$); and the Zakat has reasonable administrative cost (7%).

3.4.7. The Zakat disbursement on health:

The Zakat disbursement on health is not compatible with the Zakat role and objectives. Most of the disbursement went to the tertiary care hospitals located in Khartoum State, the capital (see appendix A). These hospitals and medical centres are selling their services according to the user fee policy. This may be due to the cultural background of the hospital (the people are oriented towards curative medicine). It also could be due to the demand on these hospitals. The obvious thing is the severe lack of coordination between the Zakat Chamber and the FMOH on setting the policy agenda, prioritizing interventions and the consensus needed to address problems. Table 3.4 shows that in 4 years the Zakat supported the health sector by 8.1 billion SDD equivalent to 32 million US\$ and the beneficiaries include 666,000 persons. If the same amount of money is divided over the 4 years and used for the coverage of poor fami-

lies under the social insurance it will cover 166,666 poor household per year (equal to 999,999 persons/ year) which is more cost effective.⁴

The Zakat Chamber can play a significant role in financing the health care sector by increasing the coverage of the poor and needy under the health insurance. The Zakat also can protect the poor against catastrophic expenditures. By doing this the Zakat can achieve the most prominent objective regarding its disbursement. This will help poor families to spend on other needs of housing, cloths ...etc. The Zakat Chamber can play a role in the development process especially in remote and devastated areas because of its flexibility and the wide range of subsidies which include health, education, income generating, group production schemes and women development. The Zakat can be paid to non Muslims so it contributes to the national integration and bridges the gap of disparity between different classes in the society.

3.5. Conclusion and recommendations

Poverty as estimated by human deprivation is prevalent all over Sudan and remarkably high in rural areas [1]. Poverty and health are intrinsically linked and are mutually reinforcing and deprivation in one area produces negative effects on the other. Ill health is both a cause and a consequence of poverty [3].

In 1992 and after the adoption of use fee policy all over the country the government used both the direct and the indirect targeting measures of poor protection mechanisms. In 1996 the government offered free of charge public health services as an important indirect targeting approach. Many exemptions mechanisms including list of drugs, geographical region and services attempted to protect the poor. No socio-economic study was held to identify the poor, no comprehensive plan was prepared to address this chronic devastating problem and no proper robust coordination between the different concerns bodies was arranged. The recent FMOH plan of poverty alleviation focusing on revitalization of the states' health services in a sense fills the gap of disparities, whilst the low coverage is still evidence of the bad situation [1, 5, and 14].

Although the Zakat Chamber has a promising potential and the ability to make a difference in the poor status, it lacks coordination. More than 32 million US\$ is spent on health services. This amount of money has been spent mainly in tertiary health care i.e. equipping hospitals and specialized centres. Only 50,000 poor families were covered under the health insurance (costing 2.4 million US\$) [19] and in contrast if the money was used for covering poor families more than 666,666 poor household will enjoy health insurance coverage for one year that means 4,000,000 poor inhabitants have access to health services.

The FMOH should have a much clearer link with the Zakat Chamber. A policy should be formulated governing how the Zakat can support the health services to the benefit of the poor while taking in account the nature and flexibility of Zakat. An alarming need is the low coverage of the poor under the social health insurance and the Zakat can play a major role in this problem. The BDN and CFCI initiatives are in need to coordinate with the Zakat Chamber to ensure more sustainable resources and good experiences in income generating schemes and community empowerment.

⁴ The household composed of 6 members in average.

Health, as a core determinant of development and poverty reduction, is important to get all health partners together including the Zakat. The community financing schemes with the Zakat support can achieve development goals.

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CHAPTER 4

**Financing the health care system in Sudan:
Patterns, characteristics and determinants**

4.1. Introduction

Sudan, although considered as a country rich on natural resources, is classified as an underdeveloped country. In 2003 the Human Development Index for Sudan was 0.503, ranking it at number 138 out of 175 countries. The Human Poverty Index in 2003 is 32.7%, ranking Sudan 52 among 94 developing countries [1].

Sudan like many developing countries utilizes multiple sources of revenues to finance health services. In the absence of a National Health Policy the health finance system became fragmented. There is not one ideal health finance system that can solve the problems of stability and sustainability in health care provision. Adopting a certain system depends on many factors including the country situation, culture, the health organization and clear objectives [2].

The health financing system is not merely a fund raising tool. A financing system also has to assure that an adequate sustainable flow of funds is allocated in the most effective way and that recipients have incentives to achieve better health, equity and solidarity [3]. The role of the health finance system is substantial in developing countries. It has a significant impact on the structure of health care delivery and organization by determining who will have access to basic health care, what services are offered and their quality. The absence of capital markets, the expansion of poverty amongst people, the chronic shortage in the health budget as well as other indicators of low development (e.g. education) make it very difficult to carve out a health finance policy to serve the basic needs of a society demanding integral health services.

In January 2005, the Sudanese leaders signed a peace agreement that ended Africa's longest-running conflict, with a death of two million people and fifty years of disparage and frustrations [4]. June 2005 witnessed the approval of the interim constitution and the comprehensive plan to rebuild the country. The international community allocated US\$ 4.7 billions for the revitalization programme supported by UN peace-forces and expertise. The coming six years until the general election will be both a big opportunity and a challenge for the government, the people of Sudan and the peace-keepers. Although six years is probably not sufficient to recover a country such as Sudan it is important as it provides a vital opportunity for take off. The Sudan Health Quarter-Century Strategic Plan 2003-2027 [5], The Millennium Development Goals (MDG) [6] and the Interim Poverty Reduction Strategy Paper (IPRSP) 2004-2006 [7] provide the foundations and the spirit of the post conflict adjustment reforms. The World Bank reports 'Sudan stabilization and reconstruction' [8], 'Sudan health status' [9], the Joint Assessment Mission, Sudan (JAM) [10] and the reform efforts of the Federal Ministry of Health (FMOH) are preparatory work in this area.

Sudan is passing a critical and determinant era in its history and it needs the maximum efforts to make it a success. The development of the country in the post conflict era requires comprehensive, integral and sustainable efforts to maintain these adjustments.

Health is an integral part of development. All sectors of society have an effect on health. Health services are no longer considered merely as a complex of solely medical measures but as a 'subsystem' of an overall socioeconomic system. In the final analysis human health and well-being are the ultimate goals of development [11]. The role of the health sector during this era is crucial, substantial and indicative in the process, measurements and outcomes.

This overview will add to the previous analysis by focusing on the financing of the health care system in Sudan. This paper aims at exploring and discussing the health finance system in Sudan by reviewing data and highlighting the most well known sources of health finance.

Regarding the health care finance sources in Sudan this paper will discuss the trends, determinants and efficiency of these resources. One of the objectives of this paper is to bring together the pieces of the fragmented puzzle.

The paper will be presented as follows: the second section presents an overview of the health care expenditures by reviewing the different approaches of health finance mechanisms in terms of their definition, characteristics and determinants. The paper concludes by giving some recommendations.

4.2. Health care expenditures

Historically the government of Sudan was the sole provider of health care services [12]. The era of free of charge health services started in 1956 as the country became independent and ended in 1992 with the economic liberalization policies. During this era many attempts were made to encourage people to pay a symbolic contribution for public health services. The community participation of the primary health care proposal (PHC) in 1978, the community financing of the Bamako initiative 1987 and the World Bank user fee policies in 1987 contributed to that. It is worth mentioning that the Sudanese society is highly oriented towards social solidarity practices. During the adoption of the PHC policy the Sudanese community throughout the country fostered the building of hospitals especially in rural areas, health centres, PHC units, people's pharmacies and dispensaries even more than the government [13].

This section reviews the different types of health care financing in Sudan and discusses each one in terms of its definition, main features, strengths and weaknesses. Strengths and weaknesses will be presented in one box to get a glimpse of their potentials and limitations. This will be by highlighting important health finance indicators like risk pooling and coverage, risk spreading, community involvement, operation cost and administration and fair financing (progressive or regressive).

The country had different sources and patterns of health care financing that has led some researches to use different classifications in presenting the data.⁵ This section presents the health care expenditures in four main categories: the tax-based system, the selective health insurance, the direct payment system and the donor system. The tax-based system includes government taxes. The government tax based funding includes the general tax and the earmarked tax approach. The selective insurance includes the social insurance and the private insurance. Direct-payments include user payments, the informal approach and the saving-based approach. The user-payment includes user fees and direct-of-pocket payments. While the former includes the user fees for public health services, the latter includes payments for treatment abroad, for profit private sector treatment, community financing and not for profit private sector treatment (NGOs). Although the NGOs and traditional healers have an important role in health expenditure in Sudan, no information is available to shed a light on that. The fourth category is the donors approach.

⁵ Some researches classified health finance sources as: mechanisms for raising resources for the sector; mechanisms for organizing clusters of funds as resources flow from sources to providers of care; mechanisms for resource allocation that influences which providers receive the relative share of available funds.

The tax-based funding

The tax-based funding of the health care sector has long been used to finance certain components of health care services. It is known as one of the most important sources of health care financing. The government tax based funding includes the general tax and the earmarked tax. The general tax revenues include the financing by deficit spending, inflation and sponsored lotteries [2]. The government tax-based funds usually decline due to political instability, economic recession, economic restructuring and a poor tax collection system. In Sudan the government is using the general tax and the earmarked tax as tax-based approaches to finance the health care system.

The government tax system characteristics and patterns

Although the tax rates in Sudan are set by the Ministry of Finance and the National Economy and the Tax Chamber, the latter has come to be known as the main body for tax collection. The compliance rate is high (more than 90%) for the overall tax plan but it is low in personal tax like in other developing countries [12]. Table 4.1 shows the high collection of import and export taxes and the low taxes on personal and business incomes. This is a typical picture in developing countries while it is inverted in the developed ones. The table also shows the increase in the VAT which suggests that there is room for a significant increase in revenues in the future.⁶ Still the main challenge for the tax chamber is how to improve the tax collection system to sustain, and increase the personal and business taxes collection [2, 3, and 12].

Table 4.1. Tax revenue breakdown

Type of tax	1998		2003	
	SDD* in Billion	Tax as % of GNP**	SDD in Billion	Tax as % of GNP
Personal income and business	31.1	24.6%	53.5	19.9%
VAT	10.11	8%	60.3	22.4%
Import and export	85.3	68.4%	155.3	57.7%

Source: adapted from Mustafa et al, 2005[12]

* Sudanese Dinnar (one SDD amount to 0.4 US\$)

** Gross National Product

With respect to the federal system reforms both the central and the states have a tax collection authority. This is a system with clear lines of demarcation and well defined borders to prevent overlapping and double taxes. This is mentioned in the 1998 constitution of Sudan. The states utilize the taxes collected locally and receive additional revenues from the central government based on a predefined formula. Table 4.2 shows the states tax and non tax revenues and the prominent transfers of the central government to the states.

Table 4.2. State tax and non tax revenues and the federal transfers

Source of revenue	% of total revenues %
State tax revenue	34.5%
State non-tax revenue	26.7%
Federal transfers	39.9%

Adapted from Mustafa et al, 2005[12]

⁶ VAT is the value against transaction.

No doubt the tax revenues comprise a considerable part of fund raising and are the main source of government revenues. In the last years the oil share is increasing exponentially, and has reached more than 60% of government revenues, which offers hope for public services stability and sustainability. Table 4.3 shows the increase in tax and non-tax revenues in Sudan. This indicates an improvement in the government performance in tax collection and recruitment of new sources of revenues to improve public services.

Table 4.3. Tax-Based Financing

Year	Tax SDD/Billion	% of GNP	Non-Tax SDD/Billion	% of GNP
1998	126.4	80.1%	30.4	19.9%
2000	157.6	48.2%	169.0	51.8%
2003	268.5	44.5%	335.0	55.5%

Adapted from Mustafa et al, 2005[12]

4.2.1.1. General tax revenues

Two approaches exist beside the general taxes: the targeting tax funds and the civil servants and other government employee's funds. The targeted tax funds included (A) vertical programmes (e.g. immunization, control of HIV/AIDS, TB, etc), (B) support for government owned facilities of hospitals and specialized medical centres, (C) programmes for a class of services (e.g. offering free of charge at the c-wards in hospitals), (D) population groups by age or income (e.g. the poor and the under five years old children), (E) regions or selected communities and national health insurance for the whole population i.e. essential package to achieve equity, may be supported by wage tax and co-payment or may not. The second general tax approach is the civil servants and the government other employees approach, which differ from the social insurance in that the government used to pay the whole premium (as a fringe) to the health insurance or directly to the provider [2].

4.2.1.1.1. Characteristics and patterns

The perception of health services as a consumption-sector made it prone to deductions in any of the macroeconomic reforms which were inherited from the World Bank old prescription. This attitude to push the expenditure on health care at the bottom of the country's priority list continues. The general tax revenues allocated for the health care sector are characterized by a lack of government commitment. Although Sudan had endorsed in 2001 the Abuja declaration and pledged to set a target of allocation of at least 15% of his annual budget to the improvement of the health sector [14], expenditure at best did not exceed 0.47% of GDP and a per capita expenditure of US\$ 3.3 in 2005. Table 4.4, shows that the low commitment of the government to health care services is reflected in the low percentages of GDP spent on health care through the last four fiscal years and the partial execution of the approved budgets (except the 2004 budget, which is still beyond commitment). The per capita spending is below what has been mentioned by the World Bank as the minimum acceptable amount of 6 US\$. The table also shows the relative progress in the growth rate in the health care budget which indicates a promising shift in government attitude towards health care financing. Although the government in 2004 exceeded the estimated budget, the per capita expenditure is still below the targeted one which underlines the weak capacity of the Ministry of Health in estimating the health budget. Table 6 also shows the progressive increase in wages and salaries. This is due to the increase in the share of staff salaries especially for doctors (increased from 95 US\$

to > 200US\$ as basic salary). This is an important step taken by the government to curb the brain drain and to provide some stability to the health work force. It also serves as a base together with some incentives that will help the government to mobilize health workers to move from the capital to the states and from the big towns to the rural areas. This improvement is expected to increase steadily due to increased oil revenues as well as donors contribution after the peace agreement [12].

Table 4.4. The government health budget (by chapter) actual expenditure, actual GDP, Growth rate and Per capita

The budget chapters	2001				2002				2003				2004			
	Actual GDP%	%Actual expenditure	Growth rate	Per capita	Actual GDP%	%Actual expenditure	Growth rate	Per capita	Actual GDP%	%Actual expenditure	Growth rate	Per capita	Actual GDP%	%Actual expenditure	Growth rate	Per capita
Total health expenditure	0.028	84%	29%	1.15 US\$	0.23	51%	-6%	1.04 US\$	0.26	66%	29%	1.28 US\$	0.47	>100%	33%	2.1 US\$
Chapter one (wages & salary)	0.08	94%			0.09	97%			0.09	100%			0.14	>100%		
Health insurance (government share)	0.02	70%			0.02	62%			0.02	62%			0.04	NA		
Chapter two (running cost)	0.06	83%			0.06	82%			0.08	114%			0.08	>100%		
Health social subsidies	0.05	81%			0.06	63%			0.06	95%			0.08	>100%		
Development	0.07	80%			0.00	3%			0.00	3%			0.12	>100%		

Source: adapted from Health Gaps in Sudan [1]

As has been mentioned before the health care culture of Sudan is highly dominated by curative medicine and biomedicine activities. Government expenditures are hospital oriented and biased towards curative medicine. Table 4.5, shows that the public health expenditures are skewed towards the curative services (82%) which are concentrated at the urban big towns that constitute less than 30% of the population.

Table 4.5. Health expenditure by category 2002 and 2004

Category by		2002	2004
Type of service	Curative	77%	82%
	PHC/MCH*	23%	18%
	Staff	16%	36%
Item	Drugs and supplies	69%	42%
	others	15%	22%

Adapted from Mustafa et al, 2005[12]

* Maternity and child health

This bias towards curative medicine may be due to hospitals that have found their place in the official budgetary process and cycle and continue to be there [12]; a notion that is held by the communities, elites and politician about health care which simply means hospital based services; failure of the responsible authority, mainly the Ministry of Health, to convince the budget holders specially the Ministry of Finance to have a comprehensive health care budget which envisages a holistic view of health and not only hospital budgets [12]; the communicable diseases domination which stained the services by its panic and the need for quick interventions (this explains why the emergency departments are still within and part of the hospitals); the doctors' high discretion, domination and leadership in the community; the PHC receives donations from the different NGOs and the community (especially in building health centres and other facilities).

Box 4.1 shows the determinants of the general tax revenues approach. The strengths of this approach appears in its capacity to cover the whole population and to achieve equity with low cost of operation. In addition it is a flexible approach in targeting certain regions or groups and shows the commitment of the government towards its people. The obvious weaknesses of this approach especially in developing countries is that the contribution is not earmarked for health, but goes into a general pot. This approach is not stable and affected by political priorities and does not involve the community.

Box 4.1. The strengths and weaknesses of the general tax revenues approach

Strengths	Weaknesses
<ul style="list-style-type: none"> • The whole population is included in the risk pool. • Increased access especially for the poor. • It reduces the operational cost. • Minimize the disparities and inequalities. • Flexibility to target certain regions or groups. • Risk spreading over time. • Shows the government responsibility and commitment. 	<ul style="list-style-type: none"> • The contribution is not earmarked for health, but goes into a general pot. • The allocation of finance according to political priorities. • Instable due to the economical situation and tax system collection. • The biased allocation of finance to different health programme of the tertiary care. • No user involvement.

4.2.1.2. The earmarked tax (payroll tax)

Earmarked tax can be a payroll tax or taxes on specific goods and services or both. They are levied as a proportion of pre-tax income of employees and specific goods or services and go directly to the Ministry of Health. They can operate at a large scale and through existing tax collection mechanisms [2]. Some researchers suggest that it might be practical to tax certain goods that had adverse health effects e.g. alcohol, tobacco, cars, etc. Some Caribbean countries had this under the ‘Sin Tax’ [2].

Sudan since the mid of the 1990s introduced an earmarked tax policy to rehabilitate the Military Medical Services under the name of wound-tax, which had been launched as a response to the increase in casualties in the civil war of the South and the poor military medical services. It is a combination of payroll tax and tax of specific businesses and amounted to 1% from any transaction, often including telephone bills. Although it seems this percentage is too small to make any remarkable changes, it did achieve a considerable revitalization and rehabilitation to the military medical services in terms of new buildings, sophisticated equipments, renewing and renovated old buildings and increased coverage [12]. Although this rehabilitation is tertiary health care oriented, it still was beneficial to the health care sector as a whole. After the peace agreement was signed this tax may cease or be resumed under a different name. The FMOH could carve out such earmarked tax policy with the government for specific problems e.g. free of charge health services for children under five years old or to increase the coverage of the poor under the health insurance.

Box 4.2 shows the strengths and the weaknesses of the earmarked tax revenues approach. The main strengths of this approach are: its capacity to solve specific problems of health; it is simple to implement with low cost; it is also considered as a risk pooling mechanism in a sense of paying for certain groups to join the insurance schemes. The weaknesses of this approach seen in its narrow base of revenues, its regressiveness and the users are not involved.

Box 4.2. The strengths and weaknesses of the earmarked tax revenues approach

Strengths	Weaknesses
<ul style="list-style-type: none">• Specific coverage targets• Efficiency – simple to implement• Risk pooling (relatively)• Low cost of operation• Increase of coverage (relatively)	<ul style="list-style-type: none">• Politically unpopular• Regressive, falling proportionally on low income families.• Narrow base of revenues• Depends on the structure of the labour markets [60].• The community is not involved.

4.2.2. Selective health insurance

Selective insurance schemes include social insurance and private voluntary insurance. They differ from the universal insurance in that (a) eligibility is limited to those who have contributed to the scheme and (b) there is usually a specified package of benefits.

4.2.2.1. Social health Insurance

Social insurance is a governmental tax-based approach to health care finance. This type of insurance differs from the private insurance in that (a) it is compulsory (b) insurance premiums and benefits are described in social laws established through legislations so they can be

more easily revised than those of the private insurance, which are defined in legal contracts. Although the social insurance is based on payroll contributions it, differs from earmarked tax in that it operates as a separate structure for collecting and spending funds whilst an earmarked tax goes directly into the specified institute e.g. Ministry of Health [3].

Social insurance is characterized by the fact that it is not a right of all citizens, is often compulsory and often only covers those who are eligible and have met the minimum contribution requirements (e.g. certain professionals). It has a specified benefits packages usually related to the contribution base; most commonly a payroll-based contribution could be a flat rate; the insurance and benefits are described in social contracts (laws) established through legislations; the benefits are usually related to the contribution base; contributions paid for by social insurance are earmarked for the programme and separated from the general tax; it maintains its own solvency, is managed by autonomous funds and thus has greater transparency; cross-subsidy of premiums are common especially during the early establishment of the scheme. It could be a part of wider social security system including pensions, sick pay, etc. Although people pay a premium in exchange for the right to specified benefits they do not perceive it as welfare from the government [3].

The People Assembly introduced the social health insurance in Sudan in 1994 after the approval of the National Insurance Corporation Act. The social insurance system was launched to alleviate the negative impact of the cost recovery policies and user fees that were adopted after the economical liberalization policies in 1992. The main objectives of the scheme are:

- To establish and manage a national health insurance scheme that provides medical services for the insured; thus contributes to health development. To contribute in shouldering the burden of providing curative care with public health facilities and to reduce the financial burden on the government providing care to those who are insured.
- To utilize the social insurance revenues to improve the quality of care.
- To promote and improve the quality of curative medical services in the country in order to bridge the gaps and catch up on the technological advancements worldwide and reduce seeking treatment abroad.
- To attract and retain health professionals by providing them with a suitable work environment and financial incentives in order to lead a decent life.

Social insurance as a source of finance

The social insurance has different sources of finance: the premium paid by the employees which amount to 10% of the employee salary (4% is paid by the employee and 6% is paid by the employer); financial resources provided by the government for the insurance corporation (cross subsidy); fees paid to the corporation by some firms; revenues generated through investments by the corporation funds; charity and donations and other forms of contribution that support the objectives of the insurance plan [12].

All formal sector employees and their dependents (wife, siblings, and parents) are entitled to insurance. Insurance is compulsory. The premiums for the formal sector are mentioned above. Those who are not in the formal sector and are willing to join have to pay a total of 12,000 SDD annually (47 US\$/year/family) sum lump or paid by monthly installments [15].

The benefit package includes all medical consultation, admissions, diagnostics procedures and therapeutics (including surgical operations). Dental services are included with the exception

of denture and plastic surgery. The insured has to pay 25% of drugs' prices as a co-payment to minimize consumer moral hazard. Each level of health professional has a defined list of drugs prescription allowed and only generic drugs are reimbursed. The contribution of the social insurance reached about 0.23 US\$ per capita and 13.5% of the public health expenditure. In 2005 the scheme covered 14.5% of the population. The government pays for poor families through the Zakat chamber which in 2005 reached up to 50 thousands families and is supported by cheap drugs from peoples pharmacies owned by the Zakat Chamber. The administration cost peaked to 13%. The majority of the informal sector (85.5%) is still uncovered by any policy and vulnerable to the user fee and private for profit services.

Box 4.3 shows the determinants of the social insurance revenues approach. The strengths of this approach is shown by its powerful mechanisms of risk pooling and risk spreading over time. It is politically popular for satisfying the demand of the formal sector. The involvement of the community accounts to its strengths. The main weaknesses of this approach in developing countries are its failure to cover the informal sector, the high cost of operation and it is limited and regressive distribution effects.

Box 4.3. The strengths and weaknesses of the social insurance revenues approach

Strengths	Weaknesses
<ul style="list-style-type: none"> • Risk pooling. • Risk spreading • High coverage • Autonomous management guarantees the achievement of its objectives. • Community involvement. • Increases the finance allocated to health. • Flexibility through a social contract • Politically popular due to the satisfaction of the civil servants sector who have very low salaries in developing countries. 	<ul style="list-style-type: none"> • Less progressive than taxation i.e. levies fixed proportion of pre-tax income. • Limited i.e. no universal access. • If coverage is low a risk of developing a two tiered systems with high subsidized services for the elite and lesser service for the rest [3]. • Difficult to implement in the informal sector. • Reinforces high cost, hospital-based doctor-oriented curative health care. • Not easy to operate, cost increase with number of firms.

Social insurance in Sudan is a government-operated plan, which mainly relies on direct provision of services by purchasing services from public and private facilities instead of direct ownership of operating hospitals clinics and health centres. This programme was adopted in a clear defined policy aiming at increasing revenues for the health care sector in general and in particular to the public one. In the beginning the role of the National Health Insurance Incorporation as a federal body was to determine premiums, describe guidelines, offer financial support for establishments, increase revenues for the scheme, training, research monitoring and evaluation. All the executive work was left to the States as part of new role under the decentralization reforms. Between 1994 and 2002 the National Insurance Corporation had full autonomy under the Minister of Health. This made the establishment throughout the country coherent, smooth and brought together the consensus needed to advocate and support the endeavor.

In 2002 the government in an unexpected rearrangement moved the National Insurance Corporation to be seated under the Ministry of Social Affairs as a part of the social insurance net that included pensions, disabled, homeless and the poor. The government claimed that it

wanted to facilitate the coordination between these different bodies of similar interest and concern, regardless of the specific features that govern the nature of the Insurance Corporation. As a result a remarkable lack of institutional consensus started to develop affecting the loyalty to the National Health Plan. An unhealthy environment shaded over the bilateral relation between the officials in FMOH and The Insurance Corporation. It became a conflict of group interests within the same political party. In 2004 the Insurance Corporation approved an act from the National Assembly without involving the FMOH. This act centralized the whole work on Insurance Corporation. It took over the executive work at the state level and started to own new facilities regardless of the ones in the states available ones. The Insurance Corporation claimed that this step had been taken because of the poor implementation of the insurance system in the states; the increase in the demand of the people; and the weak accountability system (the states protected these by their own laws). This happened as a result of a lack of communication, coordination and cooperation with the FMOH. The State of Khartoum rejected the new policies and refused to obey any instructions and claimed at the Constitutional Court. Without reaching any solution the Khartoum State transformed her social insurance into a quazi-public company (Shawamikh Insurance Company) and escaped the trap. This step by the Insurance Corporation pushed the health care sector to great losses, resulting in duplication of efforts, the need for new personnel for the new facilities, and missed chances to upgrade the old facilities. The Insurance Corporation by establishing its own health care facilities without a link to FMOH will end up in a double tiered system. This will push the Insurance Corporation to become a political chip and the decision of payments to providers to be affected by politics. The political patronage can become rampant in personnel hiring and firing [3]. The inequity, inequality and inefficiency will be deep and permanent. Moreover, medical care becomes bureaucratized and this leads to a decline in the quality of services, less efficiency and inflated costs. Yet patients have no choice but to seek care from the social insurance hospitals and clinics unless they can afford user fees or they pay full charges and go to private sector facilities. A parallel system of quality control and accreditation will emerge as ectopic foci.

4.2.2.2. Voluntary Private Insurance

Private insurance is offered by nonprofit or for profit insurance companies or plans. In low income countries, often private hospitals sponsor and organize health insurance plans and offer hospital insurance to the population who live in their service areas. Consumers voluntarily choose insurance package that best fit their preferences. Private insurance are offered on individual or group basis (community based insurance) [3].

Recently Sudan adopted a private insurance offered by Shiekan and Shawamikh companies. Skiekan is an insurance company working in property and general assets. In 2003 Skiekan started to provide health insurance targeting private firms and made contracts with a wide spectrum of doctors, labs and pharmacies in a private manner [12]. Skiekan also offered different choices of service packages to the three towns that comprise the capital. No evaluation or study has been done to give insight in this experience. Shawamikh is a quazi-public company, which started in 2005 and inherited the Khartoum State social insurance subscribers and assets and extended it to the private sector. Shawamikh today has over one million beneficiaries and constitutes a substantial breakthrough within both the public and the private sector even outside the State. Shawamikh has started to run her own private hospitals to fulfill its

package obligations and to invest in the private health care market in Sudan. The president of Sudan has frozen the constitutional conflict between Insurance Corporation and Shawamikh Company (compromise solution) and gave the green light for both to continue as they are which is considered a victory for the Shawamikh. However, this is not a court decision that needs to be followed by other States if they want to pull out from the Insurance Corporation. Some well-off Sudanese and heads of big international companies located in Sudan have joined international health insurance companies especially from England. Insufficient information is available about its magnitude, how much they pay and what the benefit package is.

4.2.3. Direct payment as a form of health care financing

This type of health care financing includes user payments, saving-based payments and informal payments. This approach of payment is intended to achieve that: Individuals have direct incentives to look after their own health; use services in a rational way because they bear the cost of ill health; an increased awareness of individuals about prices will reduce the inflation of health care costs. On the negative side there will be problems of equity and access for the poor and disadvantaged groups. None of the direct payments systems pool risks to any large extent, though some do spread risks over time; None guarantees universal access and all tend to be regressive (high burden of financing on the poor). It creates a market with multiple private purchasers (good free market provides choice, bad as provider exploits consumer). Usually the informal payments are associated with the free of charge public health service policies. This habit died out in Sudan with the adoption of the user fee policy and appeared again with the new policies of free of charge care at emergency departments. Saving-based payments of spreading risk over time recently started to grow in Sudan with the share-care policies of the informal-abroad treatment (see abroad treatment sector).

4.2.3.1. User payments

The user payment type of finance includes user fees and direct-out-of-pocket payments. Patients often pay directly out-of-pocket when they obtain health services (both public and private). In contrast to informal payments (under the counter), these are officially sanctioned [3]. The amount of fee to be paid is based on different principles. The amount can be direct-of-pocket full charges as in the private sector that have to be paid for each visit, a co-payment (flat rate) or a co-insurance. User fees are a relatively new term that is used specifically for the amount that patients have to pay for services offered by public facilities [2].

4.2.3.1.1. User fees

User fees are direct-out-of-pocket payments made by patients for public health services and characterized by: (1) the amounts paid and how they are used (officially adopted); (2) policies can be set for how much is paid ...etc; (3) fees can be structured in different ways (fee for services, flat rates and as in prepaid schemes where cards are bought to entitled users for a number of visits and drugs); (4) user fees could be related to income in order to make charges progressive i.e. the rich pay more; (5) fees can be set at an uniform rate but with some exemption measures; (6) partial solutions to support other efforts of finance. Box 4.4 shows the strengths and weaknesses of the user fee revenues approach. The strengths of this approach are the improvement of allocative efficiency and fostering greater responsibility of users. It

supports the availability of services and fills the gap of shortages in consumers' goods. The obvious weaknesses of this approach is that it affects equity, if the poor can not afford to pay and affects the household budget for other pressing needs as housing, food and etc. There is no risk pooling or risk spreading and it does not encourage active user participation.

Box 4.4. The strengths and weaknesses of the user fee revenues approach

Strengths	Weaknesses
<ul style="list-style-type: none"> • Supports the availability of services. • Improves allocative efficiency. • Fosters greater responsibility of users. • Improvement of quality of services. • Limits excessive demand. • Creates incentives for health personnel. • Fills the gap in shortages of consumers' goods • If it is used to improve the quality of services within the facility it decreases private sector prices. • The black market of drugs disappears. 	<ul style="list-style-type: none"> • Affects equity – the poor can not afford to pay (transportation, waiting time and treatment). • Affects the household budget for other pressing needs as housing, food, etc. • Does not spread risks over time. • Does not pool risks among patients. • Does not generate adequate source of funds. • Does not encourage active user participation. • Encourages the uncontrolled private sector to flare up. • Adverse effects on case-mix (drop in treatment of serious diseases). • High costs of administration.

The user fee policy was officially introduced in Sudan in the early 1990s and nation wide adopted in 1992 after the economic liberalization reforms. It was implemented to compensate for the cutback on government spending [12]. The implementation varies between states and within each state, with respect to fee settings, exemptions and administrative policies. After a long history of free of charge public health services user fee policies faced many obstacles and resistance [16]. Different structures were used and the most common one is a fee for service (a flat rate for each service not for the whole package of treatment). At the first contact level of services, the PHC, a combination of free of charge and a flat rate for investigation is used. At the health centre and rural hospital you have to pay a fee for service even for consultation by a GP. For the tertiary health facility the same was done. In 1996 the government rendered to provide free of charge services at the emergency departments followed by a promise from the president to offer free of charge care at the 3rd class-wards in favour of the poor [16]. However, this is not yet adopted. In 2004 because of the misuse and the huge losses of medical supplies, especially intravenous fluids, the FHOH held a pilot initiative of a triage system at the three big hospitals in the capital aiming at filtering emergency services from non emergency cases. A budget of 11.6 million US\$ was allocated in 2005 for free emergency services which included surgical operations. An exemption list of certain drugs was approved including immune suppressants, drugs for renal implantation, renal failure dialysis, chemotherapy, radiotherapy and treatment of haemophilia. This list of drugs amount to 13.6 million US\$ which was estimated to be 22% of the total expenditure of the FMOH. A part of this big portion of FMOH was allocated to the exempted list of drugs. It has since then become known that who enjoyed these subsidies are the better off urban populations [12].

Revenues of the user fee policy have been used in various ways. Nowadays a cross-subsidy policy is used to distribute the revenues collected from rural hospital and health centres. All the revenues of rural hospitals and health centres are pooled at the service department at the state level in a special bank account and redistributed to facilities with additional support from

the state to achieve equity and equality among these facilities. The federal and state hospitals retain all the revenues in the facilities to be used according to a pre-approved policy. These revenues are estimated to be 60-70% of the running cost. Salaries and wages are paid by the ministry of health.

The federal hospitals had semi autonomy in administration which encouraged them to invest on the private market by establishing special wings within the public hospital and diagnostic centres serving outside the government hospitals. Khartoum State hospital together with these special wings started to invest in separate private polyclinics to increase revenues and to satisfy the social insurance beneficiaries.

The revenues of the user fee policy are estimated by Mustafa et al, 2005 to be 20-30 million US\$ which is just below 1 US\$ per capita annually and around 30% of federal public health expenditure [12].

4.2.3.1.2. For-profit private sector

For the use of private health facilities direct-out-of-pocket payments have to be made by patients. Fees are usually structured according to the intervention or treatment and have to be paid at each visit. Although it shares most characteristics of user fees it differs from it in that it recoups all the cost of the services with a margin of profit.

During the 1990s the for-profit private sector expanded tremendously, particularly after the economical liberalization in 1992 [16]. The rapid growth and development of the for-profit sector was encouraged by the closed-eyes policy of the government (the paradox of availability and affordability in poor countries) intending to make good quality of services available to ease the implementation of the new user fee policies and to minimize the massive brain drain of medical personnel. Amazingly this tremendous growth of the private sector is not coordinated with the Ministry of Health. Until now there is no clear or direct relation or coordination arrangement between public and private sectors in terms of setting policies or to make information available. The for-profit private sector is mainly established in urban and well-off rural areas and is comprised of 172 hospitals, 1220 pharmacies, 799 private laboratories, 288 dental clinics and 1558 doctors' clinics (GPs and specialists). Doctors' clinics are known for a long time in Sudan and are used for consultation. They are usually grouped together in a complex with a lab and a pharmacy. Most of those doctors are public sector employees practicing in these private practices at night and sometimes during the day. Due to the low wages this habit became an incentive to keep doctors within the country regardless to its destructive effect on the whole system especially the referral policies i.e. bypassing the system by admitting patients from clinics to tertiary facilities without following the ordinary procedure of referring.

The out-of-pocket private sector and abroad treatment is estimated to be very high in a range of 2.5-3.5% of the GDP which amounted to 15-20 US\$ per capita annually. Therefore the out-of-pocket costs will sum up to a round 70-80% of the total health expenditure. Table 4.6 shows the health expenditure of Sudan and the contribution of the out-of-pocket payments compared to other sources of finance. It suggests a considerable contribution of the out-of-pocket payments to health expenditure in Sudan.

Table 4.6. Health expenditure in Sudan

Source of health finance	Year	% of GDP	Per Capita	Central public health expenditure	Government budget
Public health expenditures	2004	0.4% - 0.9%	2.1 US\$	-	1.9%
Public health expenditures	2005	0.56%	3.3% US\$	-	2.1%
User fee	2004	1%	Just below one US\$	30%	-
Out -of-pocket payments for private and treatment abroad	2004	2.5% - 3.5%	15 - 20 US\$	70%-80%	-
Health insurance	2004	0.1%	0.23 US\$	13.5%	-
Donors	2004	0.6%	3.5 US\$	18%	-
Total	-	4% - 5%	22 - 27 US\$	-	-

Source: adapted from Mustafa et al, 2005 [12] and Health Gap in Sudan, 2004 [1]

Although this sector is vital and plays a significant role in health services delivery in Sudan especially in response to the demands of people who seek treatment abroad and to take the load of the expensive tertiary costs, it is still outside the government health policy and there is no information available about its magnitude, efficiency, capabilities, potentials and how it contributes to the health of the people.

Box 4.5 analyses the for-profit private sector approach. The strengths of this approach are: the high quality of services; it minimizes the brain drain; it is an alternative to the treatment abroad; and it can update medical technology. Its weaknesses are its negligence of basic services (PHC) and it is not accessible by the poor. It also does not pool risks or spread risk over time and there is no community involvement.

Box 4.5. The strengths and weaknesses of the for profit private sector approach

Strengths	Weaknesses
<ul style="list-style-type: none"> • Availability of high quality curative services. • Minimizes external medical personnel brain drain. • Minimizes the cost of treatment abroad. • Updates sophisticated technology and advanced medical equipment. • Encourages the development of private insurance to increase the choices of benefit packages. • Provides additional income to medical and paramedical professionals. 	<ul style="list-style-type: none"> • No contribution to PHC • Internal brain drain affects public facilities especially in rural areas. • Not accessible by the poor. • Does not pool risks. • Does not spread risks over time. • High administration cost. • No community involvement.

The for-profit private sector is facing many problems that can be summarized as follows [17]:

- Economies of the scale such as a limited number of beds (15-45 beds).
- High running costs.
- High competition of public commercial facilities which monopolize the private market of the social insurance.
- Lack of adequate, compatible financing packages (high short term interest rates of 15-20%/year).
- The external brain drain of medical cadre, especially the paramedical, affected both the public and the private sector and pushed the latter to import expatriates at high prices e.g. Philippines.

- The medical equipment market is not well developed i.e. there is a lack of trained technicians and availability of spare parts which make the investment in expensive equipment a major risk [17].
- The isolation from the government health policy kept the private sector accused of being greedy and exploiting people. This often prevented enjoying any facilitation e.g. reduce custom tax on equipments and bank facilities for investments.

4.2.3.1.3. Treatment abroad

Treatment abroad is a direct out-of-pocket payment rendered by patients to health facilities outside Sudan. In the past it was subsidized by the government as part of its policy but nowadays there is no approved policy by FMOH or any related official body.

The treatment abroad approach started before 1956 when the British army used to transfer its soldiers abroad. The Sudanese Embassy in Athens observed an increase of Greek medical personnel who dominated the health services in Sudan and together with their families transferred for treatment during the mid of the 20th century [17]. This suggested malpractice as we know this number remarkably increased during the summer holidays and cost 20,000 US\$ per patient. Few Sudanese benefited from this opportunity of treatment. Therefore a national body to regulate the treatment outside the country was established [17].

The national body was established in 1963 and was named the Medical Commission. The Medical Commission beside its role in sorting out patient seeking treatment abroad has other objectives such as age identification and estimation as most of the population have no birth certificate; medical check up for the employment programme and estimation of occupational injuries for compensation. The Medical Commission spread all over the county and was approved in an act in 1973. This act detailed its role, describing its job, responsibility and authority. Regarding the treatment abroad policy the Medical Commission continued to determine who deserved to go abroad through medical committees, determined where he shall go in coordination with correspondent embassies and how much he should be subsidized. Before 1990 the Medical Commission had a very restricted regulation to prevent system misuse since the government paid almost all expenses for the patient eligible for transfer abroad. Senior political leaders and business men benefit most from this support. The United Kingdom and Egypt were the favorite countries and no diseases were excluded. Early in the 1990s the government adopted a partial subsidy policy by reimbursing at the official rate of the US\$ which is far less than its actual black market rate. After the mid of 1990s the government officially ceased to give any kind of support and subsidies. Although the role of the Medical Commission has diminished and it concentrated on other objectives, it still has a role in sorting out patients seeking treatment abroad on self-funding to facilitate visa procedures together with a small flat rate of 1000-1500 US\$ as an informal policy for lucky people. In recent years an informal share-care system for public and private firms are providing treatment abroad for their employees contingent upon the Medical Commission sorting out the criteria and approving a certificate. Nazar (2005) defined share-care organization as follows: “share-care is an agreed amount or percentage of money deducted monthly from union members’ salaries and kept in a special bank account to be allocated specifically to abroad treatment for the member or his family” [17]. This share-care policy is a sort of saving-based risk spreading over time approach adopted by trade unions and different associations without coordination neither with government nor with each other. The informal share-care system differs from the social insur-

ance by that: it is not compulsory and the employer doesn't pay any contribution. Many of the public firms adopted this care share system e.g. General Customs Chamber, Omdurman National Bank, Sudanese Expatriates Affairs, Council of Ministries Cabinet, National Pension Fund, Sea Ports Corporation, Duty Corporation, Federal Ministry of Finance and Kenana Sugar Company. Another informal-formal system concerning some high officials, security institutes, top militant personnel and very important persons used to go directly for treatment abroad without the Medical Commissioner sorting out the procedure. Liaison companies were constructed to ease this procedure through arrangements with hospitals abroad and institutions mainly in Jordan. The five liaison offices in Sudan were licensed as service offices and made use of the absence of a clear policy (yes or no) for treatment abroad together with the well established medical tourism policy that was adopted by the Jordanian government. Some of these liaisons offer a deferred payment facility to attract costumers as a quick services responding to the emergent situation of patients especially for cardiac problems.

When the government recognized the emergence of the informal share-care system, they increased the number of patients seeking treatment abroad and the huge amount of money spent on this and they named a committee to address this phenomenon. This task force committee was headed by a senior official and started under the name of the National Scheme for Attracting Patients Who Seeking Abroad Treatment. The committee conducted a study to explore this area to find out the magnitude, patterns, causes and how the government can attract the treatment abroad seeker in a practical permanent way. The committee came out with recommendations in two phases. In phase one 13 million US\$ should be spend on: equipping the Ministry of Health facilities with advanced technology i.e. MRI and CT Scanners; modernizing and equipping the National Reference Centres (trauma, neurosurgery, heart centre and renal transplantation centres); and upgrading and equipping of the main federal hospital. In phase two the committee recommended new reference centres for the main problems (diseases) and causes for treatment abroad: neurosurgery, orthopedics, urology and othalmology; the equipping federal hospitals (phase two) and furbishing and upgrading the states first hospitals by adding I.C.U., endoscope services and advance diagnostic departments. Although cardiac problems were on the top of the list of treatment abroad causes, the available cardiac centre in the country is taken as sufficient. Phase two is not yet finished and is suffering from lack of finance. Table 4.9 shows the diseases that influence treatment abroad and the patients receiving their treatment through the Medical Commission for 2000-2004.

Table 4.9. Classification of patients and their destinations for abroad treatment through the Medical Commission 2000-20004

Country	cardiovascular	Ophthalmic	Orthopedic	Neurosurgery	Oncology	Renal	Medicine conditions	Others	Total
Jordan	584	553	449	201	226	210	236	160	2619
Egypt	101	739	189	85	107	147	144	178	1690
K.S.A.*	89	102	97	22	41	77	40	29	497
UK	47	49	57	39	27	15	59	26	319
Others	40	92	104	11	28	40	38	0	0
Total	861	1535	896	358	492	489	517	393	5125

Source: Nazar 2005

* Kingdom of Saudi Arabia

In the past England and Egypt were the favorite countries for treatment abroad but during the last ten years Jordan took most of the cake followed by Egypt and Saudi Arabia. The Jorda-

nian government adopted a medical tourism policy that was taken over by some countries including India, Singapore, Thailand and Malaysia.

Medical tourism is defined by a financial specialist as “a provision of cost effective, private medical care for patients needing surgical and other forms of specialized treatment with collaboration with tourism industry. This process is being facilitated by a corporation involved in medical care as well as the tourism industry, both private and public” [17]. The medical tourist countries offer cheaper advance services in a luxurious way under direct supervision of the state and protection of clients’ rights. Jordan earned in one year more than 600 million US\$ from about 126 000 patients coming from the Middle East only. The role of the liaisons’ offices is substantial for the success of this endeavor. They coordinate between the hospital abroad and the patients inside Sudan regarding costs, visa issuing, transport of patients and recipient at the host country, apartment, car rental and mobile telephones for the co-patient. They charge the patient for all of the above mentioned facilities and will get a percentage from the hospital they refer patients to.

Table 4.7 also shows that the main disease causes that people seek treatment abroad for are ophthalmic, orthopedic, cardiovascular, medical condition, renal and oncology. The number of patients who go abroad through the Medical Commission in four years totaled 5125 persons and are estimated to be paid an annual average of 50 million US\$. These few people spent a huge amount of money which explains the high out-of-pocket costs regarding the total health expenditure (see table 4.6). This has pushed the government to find out how can it keep this amount of money down and how it can better contribute to the country’s development. Nazar, 2005 [17] summarized the main causes why people go abroad for treatment as follows:

- Wrong diagnosis (lack of advance lab and x-ray equipments).
- Deficient quality of nursing, historical shortages and poor quality.
- Low costs abroad in comparison with the internal private sector.
- Medical tourism offers an attractive package, high transparency, high quality of services, low prices and adequate arrangements.
- Cultural believes of foreign doctors.
- Malpractices witnessed at home in the absence of accountability.
- Social reasons, family pressure, return favour to parents or someone who is close.

Seventy percent of the cases were found to be genuine cases that needed treatment somehow, more than 20 % went under social pressure irrespective of the outcome and less than 10% was abuse of services or support (moral hazard). Self finance for abroad treatment amounts to 50% of abroad funds, family support 30%, informal-government support 16% and formal government support is 4% of total costs [17].

4.2.3.1.4. Community Financing

Community financing is a term that has been widely used to financial activities involving community in its operation. It ranges from people paying (user fees) for public services, to hospital voluntary community insurance, to community finance and help in management of PHC centres, to the Bamako Initiative, to drug revolving funds, to community based insurance schemes, income generating programmes, villagers assisting in building a clinic and community development programmes. William Hsiao defined community financing in a narrow way as: “A sustainable community fund where community members prepay a significant

portion of the costs for providing primary care services and essential drugs and reimbursing some of inpatient hospital charges (risk pooling)” [2]. Community financing supports capital spending (buildings) of the different PHC facilities and their maintenance and plays a significant role for the health services [13]. The two community financing experiences in Sudan, the CFCI and the BDN show the high willingness and seriousness of the communities in taking care of themselves [18 and 19]. For more details of community financing and Sudan experience see chapter 2.

4.2.4. Donors Funding

Donor funding is one of the methods of raising supplementary funds for health care. Donor funding is not linked to individuals or groups of users but is linked to specific programmes and attached to an agreed lists of health care sector reform. Donor funding varies in sources and patterns where the money is supposed to be given (owned) (as is the case with the WHO and UNICEF) or to be lent often with low interest rate and long duration (as the case of the World Bank).

The donor funding characteristics

The main features of the donor funding are:

- The recipient has relatively little control over the amount of funding and how it can be used.
- Donor funding can grow and shrink according to changes in the funding and the policies of donor agencies.
- Conditions are placed on the use of funds by donors, which host governments have to comply with if they wish to receive the money.
- It is a supplement not an alternative to governments’ health care finance.
- Funds are uncertain and unpredictable, it is very difficult to plan on donor funding.
- Donor funding is unsustainable in the long run and very hard to plan for a long period of time.
- Donor funding is unstable and affected by many factors (political, economical, international and regional).

Box 4.7 shows the determinants of the donor funding revenues approach. The main strengths of this approach are: the additional resources from outside; by using these supplements in the basic health services it can be considered as risk pooling and risk spreading over time; it covers specific areas of reform neglected by other sources of finance; it has the capability to conduct studies and to offer expertise; and it plays an important role in internal conflicts (as a safety net). The weaknesses of this approach are seen in its instability as it is affected by international politics. The approach is also limited by area and services following the donor concerns. This approach has high costs of operation and pays high wages which causes internal brain drain from public facilities to donors’ agencies.

Box 4.7. The strengths and weaknesses of the donors' revenues approach

Strengths	Weaknesses
<ul style="list-style-type: none"> • An additional supplement. • Risk pooling (PHC). • Risk spreading (PHC). • Can be targeted to specific areas of reforms (training, capacity building). • Have the capability to offer expertise and mutual experiences. • Capability in conducting research and draw lessons. • Safety net in internal conflicts. 	<ul style="list-style-type: none"> • Limited by area and services. • Short term additional funding. • High cost of operation (administration cost). • Rarely involves users. • Lack of ownership of ideas (the activities produced may not be the high priority of recipient) [3]. • Tight restrictions on how aid is used may affect the cost effectiveness of the projects. • Donors' satisfaction requires quick success leads to less concentration on running services. • Donors' high wages causes internal brain drain from public services to donors' agencies.

In Sudan the UN system accounted for 70% of the multilateral assistance with the UNICEF, World Food Programme (WFP), United Nations Development Programme (UNDP), International Fund for Agricultural Development (IFAD), and International Development Assistance (IDA) being the major partners. Care and Oxfam (UK) accounted for 80% of NGOs assistance [13]. The World Bank and the IMF ceased operations in the country in the early 1990s. The largest number of projects is within the health and nutrition sector with 23 NGOs operating 73 projects concentrated on the South-Eastern part of the country [13]. The donor funding for health amounted to 20 million US\$ (0.6 US\$ per capita) for the population of Northern Sudan and 55 Million US\$ for the Southern part of the Sudan (6.8 US\$ per capita). Generally the donor funds are used to control communicable diseases (vaccine preventable diseases, malaria, leprosy, TB, HIV/AIDS, G worm and river blindness) and for nutrition and PHC [1]. Table 4.8 shows the donor funding for 2002-2003 where UNICEF is on the top of the list providing high contributions mainly for immunization activities and equipments. The WHO is the second highest contributor. The WHO has substantially increased the money allocated for Sudan in 2003 in comparison to 2002. Table 4.9 shows that the coordination between WHO and FMOH appears to have improved as the gap between the suggested and the allocated amount of money has become smaller. It also shows the increase in the money released in relation to what was allocated which was not the habit at least for the year before [1]. This may be because of the peace process in Sudan and the satisfaction of the international community about Sudan's compliance with the peace calls. The remarkable performance of the FMOH during the last four years drives the trust between these agencies and the government and results in the allocation of more funds.

Table 4.8. UN organization support to health in Sudan 2002-2003 (US\$)

Organization	2002	2003
WHO	2,096,881	7,712,341
UNICEF	3,209,750	7,980,484
GAVI*	1,605,531	1,147,544
Total	6,912,162	16,840,369

FMOH, department of planning

* Global Alliance for Vaccines and Immunization

Table 4.9. WHO funding pattern in 2003 (x1000 US\$)

Organization	Allocated	Suggested	Released
WHO	4585	4806	4946
FMOH, department of planning			

4.3. Conclusion and recommendations

The health care finance system in Sudan is based on multiple sources of funding. These sources included general tax, earmarked tax, social insurance, private insurance, private sector for profit, user fees, treatment abroad, community financing, private sector not for profit, donors funding and traditional healers [12].

Despite the previous role of the government as the sole provider of health services her spending on health care has been very low. Per capita health expenditures have remained between US\$ 1 and US\$ 2.1 in 2004. Although the total per capita health expenditure reached 3.3 US\$ in 2005, it is still is far lower than the Sub-Saharan Africa average health expenditure of US\$ 6.7 per capita [1].

The expenditure trend for the last few years showed a sluggish improvement in the release of the budget allocated. Most of the recurrent budget is spent on wages and salaries making that very little money is available for running expenses. The allocation of resources to the health sector is highly skewed in favor of big urban towns and hospital oriented curative health care [12].

The social health insurance does not exceed 14.5% of coverage earmarked to the formal sector. The majority 85.5% of the informal sector has been left behind and is subject to the user fee policies and the private sector for profit services. The social insurance has undergone drastic changes and conflicts with the FMOH though it has started to build a parallel health care system in favor of his beneficiaries. This affected the efficiency of the programme and prevented the allocation of resources from the States Ministries' health facilities [3].

The private sector for profit grew tremendously. The expansion of this sector without any co-ordination with FMOH is often not included in the government health policy. This sector can play a role in tertiary health care services and attract the abroad treatment seekers [17].

User fee policies are a big share of health finance in Sudan and amount to more than 70% of public health expenditure. The user fee policy has a negative impact on the utilization of health services by the poor especially for the more vulnerable groups. The government started to render free of charge public health services at emergency departments for the poor [1 and 12].

Treatment abroad increased in the absence of policy and structure of the system. The demand for treatment abroad increased exponentially due to poor health care services in Sudan and the attraction of the medical tourism packages of some countries in particular Jordan [17]. The last estimation of the amount of money spent abroad for treatment was more than 50 million US\$/year. The government started a national programme to attract the people to stay at home for treatment and allocated 28 million US\$ and began to revitalize the FMOH and States Ministries of Health facilities [17 and 20].

The community financing supports the capital spending (buildings) of the different PHC facilities and their maintenance and plays a significant role in the health services [13]. The two community financing experiences in Sudan, the CFCI and the BDN show the high willingness and seriousness of the communities in taking care of themselves [18 and 19].

Early in 1990s the World Bank and the IMF ceased their operation in Sudan. The UN system accounted for 70% of the multilateral assistance, with UNICEF, WFP, UNDP, IFAD, and IDA being the major partners. Care and Oxfam (UK) accounted for 80% of NGOs assistance. Generally the donor funds are used in controlling communicable diseases and on nutrition and PHC. In the last couple of years the donor funds increased in both the allocated and the released amount of money [1 and 13].

There is no one ideal health finance system that solves all problems in a magic way. Each of the above mentioned approaches has its strengths and weaknesses. The appropriate approach depends on many factors regarding the objectives and the political, economical and cultural situations. Health care financing policy is a means to an end and this depends on what outcomes are to be achieved. A reform in the health care finance system is a reform of the whole health sector and social services [2].

The health care finance system in Sudan has serious shortages in information regarding different sources of finance. Information about different NGOs regarding their number, expenditure on health, pattern of expenditure, role and outcomes is not available. Information about military health services, police security health services, university hospitals and clinics, civil society health facilities and traditional healers regarding the amount they spend on health, patterns of spending, coverage and utilization is also not available. In addition it becomes more important to know more about household income and expenditures on different aspects of life in particular health. The National Health Account has given priority to explore these different sources of finance, to confirm available data, to identify the interrelation between different agencies contributing to health expenditure and to establish a health finance information system [1 and 12].

The health finance system suffers from severe lack of coordination. This is apparent in the absence of a National Health Policy; the conflict between the FMOH and the Health Insurance Corporation; the private sector for profit and the FMOH are on different islands; the Zakat pattern in health expenditure has no coordination with FMOH; the informal abroad treatment has no links with the FMOH or any authorized body; information about other institution providing health services i.e. NGOs, military, police, universities hospitals, civil society and traditional healers is not available.

The inefficiency of the health care finance system is apparent in that the budget estimation is below the real needs (although the government released more than the estimated amount it is still below the per capita for the Sub-Saharan countries); the health budget is hospital oriented tertiary curative services; a big portion of the health budget is allocated for wages and salaries; The double tiered system that was created by the Insurance Corporation will lead to inefficient use of resources. Tertiary health care is provided by the government and the private health sector for profit without coordination. The government started to increase revenues by investment in the private market and that will affect the private sector.

The health care finance system couldn't achieve equity in health care provision. That can be seen in the low coverage of the social insurance (14.5%); the high expenditure of the out-of-pocket payments that amount to 70% of the health expenditure; more than 60% of the population is under the absolute line of poverty; the poor infra structure of transportation, safe water, sanitation, communication, electricity and etc. especially in rural areas; and the burden of the infectious diseases increases the demand of the poor.

The failure of the health finance system to achieve good quality health services is confirmed by the absence of treatment protocols, accreditation policies and accountability systems. It is

also observed in the bad quality of services of both public and private health sectors that pushed numerous patients to seek treatment abroad (more than 60% of treatment abroad is due to wrong diagnosis) [17].

The health finance system shows an unsustainable pattern, especially the government budget for health (except the 2004 health budget all other budgets show that the released budget is lower than the allocated one (see table 4.4)). The health sector is vulnerable to budget cut-backs in any macro economic reform and due to 1992 economic reforms the user fee policy was adopted nation wide. There is no community financing scheme to fill the gap between the informal sector and the basic health services like the PHC that depend on donor funds.

Many other factors contribute and aggravate the bad situation of the health finance system. These include: the political instability; the chronic economic shortages; the expanded poverty; the poor health indicators; the massive brain drain; the internal conflicts, damage to infrastructure and displaced people; natural disasters of drought and flood; and the low capacity of the health care organization.

Nowadays Sudan has many opportunities that can help reform, upgrading and strengthening of the health finance system. These can be summarized as follows: the peace agreement that offers stability, additional resources, international community support and free of charge PHC for all people; the oil revenues that significantly increased the budget and will help to improve public services; considerable qualified number of public health professionals that graduated from Holland and Malaysia who are leading the work in the federal and states ministries of health; the Zakat Chamber with its sound philosophy of taking from the rich and giving to the poor in an unconditioned flexible way; the multilateral organizations increased their support and advocacy; the BDN and the CFCI initiatives as community-based sustainable development programmes; the well established drug organization in Sudan; the coverage achieved by the social insurance for the formal sector (14.5%); the improvement of some health indicators after longstanding deterioration e.g. malaria; the actual support of the government in revitalizing the States' services in both manpower and material; and the FMOH reform and building capacities to organize the efforts needed.

The health finance literature provides criteria to help identifying an appropriate method of health finance [2 and 3]. Some health finance specialists suggested to evaluate each approach against seven main criteria including risk spreading, risk pooling, universal access, fair financing, adequate and reliable funds, ease of operation and user involvements [3]. Others tend to be focused on the ability of a method to achieve six key objectives: capacity to generate revenues, equity, risk pooling, efficiency, quality and sustainability [2].

The reform of Sudan's health care finance system should start by establishing the National Health Policy to get all health partners together. The National Health Policy will achieve the consensus needed to address the health problems with a clear vision of priorities. The National health policy will be a reference document between politicians and health providers. The National Health Policy will coordinate, integrate and share roles between the different partners.

The FMOH can adopt the National Health Accounts to fill the information gap. An urgent need is to put the pieces of the puzzle together and to have an overall look at all partners, their role, contribution and different links. Without that it will just lead to temporal and limited solutions and unsustainable outcomes.

Although there is a body responsible for coordination between different partners in health in Sudan named the Council of Health, ranked under the Minister of Health, this does not fulfill

this role. Ministers of health in developing countries in general and Sudan in particular are nominated as a result of political compromises. This capacity of coordination should be given to the undersecretary. The FMOH should establish an annual conference for all different partners in health care to promote communication and coordination by means of mutual exchange of information and experiences as a preparatory work for the National Health Policy.

The social health insurance should come back to the domain of the ministry of health. And it should stop establishing new health care systems by creating new facilities. The social health insurance should continue to purchase from the existing public facilities to ensure sustainable revenues that are used to improve the quality of services. The social insurance is expected to focus on the informal sector problem. Regarding the coverage of the poor the social insurance should coordinate with the Zakat Chamber to solve this problem. It is also expected to be responsible to hold the household surveys and different socio-economic studies together with the Zakat Chamber.

FMOH should have a strong relation with the private sector to get it involved in the National Health Policy. This sector can be directed to play a very important role in the availability of tertiary health care under supervision of FMOH and SMOH by setting treatment protocols, accreditation procedures and accountability systems while the Ministry of Health can make use of the money allocated for tertiary services. This sector also can be directed with certain policies to be an alternative for the treatment abroad.

Finally, without good intensions and the will to get all the health providers on the same boat it will be very difficult or may be impossible to achieve the strategic goals of the health provision in a country such as Sudan.

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CHAPTER 5

Do free-of-charge public health services impede the cost-recovery policies?

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5.1. Introduction

Both before and during the colonial rule, people in Sub-Saharan countries paid most of the costs of health services themselves.⁷ Sudan like other developing countries has problems due to inappropriate allocation of available resources, an inefficient public service delivery system, a heavily constrained private sector and poorly developed health insurance schemes [1]. The policy tool chosen to reduce the effects of these problems is often the expansion of the cost recovery policies in the public sector. The cost recovery policies are expected to support the sustainability of the health financing system by increasing the revenues into the public system [2, 3 and 4]. They are expected to help targeting public sector subsidies for the poor [5]. They also allow the government to reallocate tax-financed expenditures from curative services to public health activities that have a broader beneficiary base [3]. It is also expected to reduce the private sector's price disadvantage relative to the government sector and to encourage the expansion of the health insurance schemes especially for the informal sector [6]. The political risks of imposing new fees by establishing a cost recovery system or enforcing the existing one are extremely high. They are possibly higher than raising taxes, because they are tied to a valued social service. In Sudan, the issue of the cost recovery policies at public health facilities is politically charged. However, there is very little information on the effects of user fees [2]. There is no knowledge about what people are paying for health services or might be willing to pay for public health services. In the absence of such information, speculation, and ideology tend to monopolize the political debate and make it far too general to be of much use in setting policy [2 and 6].

This paper aims at discussing and providing a broad study of the effects of free of charge public health services on the cost recovery policies in Khartoum State of Sudan. For the free of charge public health services the attention is focused on investigating the characteristics of the people who are more likely to receive free of charge public health services. Also the paper investigates whether there are any impediments for the cost recovery on health care use. A logistic regression model (LRM) is used for this purpose.

First, the paper presents a brief description of the system of free of charge health services. Next, the survey methodology, the selection of models and the approach of the statistical analysis are described. After that, the results' interpretation and the discussion are presented. The paper concludes by recommendations for the health policies in Khartoum of Sudan.

5.2. Free of charge health services in Sudan

In 1996, two years after the declaration of the national health insurance policy and before it could harvest its benefits, the government decided to provide free of charge health services at the emergency departments. This step was taken under the pressure of poverty expansion and the political situations after the increase in the prices for petroleum. Furthermore, to favour the poor, the president of Sudan decided in 2000 to offer free of charge public health services at the third class inpatients' wards [7].⁸ This was a response to the medical professionals' requests during the Medical Oath celebration. These two steps were taken without any prepara-

⁷ For the little literature available about Sudan and the similarity of conditions in Sub-Saharan Africa, the authors support the paper background from other developing countries' experiences.

⁸ The free of charge for the inpatient wards is not yet adopted.

tion and were not supported by results from scientific studies or technical opinions. It was entirely based on the assumption that beneficiaries of the free of charge public health services will be the poor. The health financing planners were claiming that the real beneficiaries of the free of charge public health services are not the poor [2, 8, 3, 4 and 9]. They also claimed that any free of charge public health services will impede the cost recovery policies and will lead to huge losses of medical supplies.

The exploitation of free of charge public health services by high-income earners is well known and is considered by some as one of the main disadvantages of the free of charge policies. Heller et al, 1982 [10] argued that "these mechanisms favour the less sick (who can wait longer) and higher income clients (who have the contacts)". Free service provision does not imply free access or consumption and one should consider time and transport cost that discriminate against the poor and rural residents [2, 8, 4, 5 and 9]. Ofosu-Amaah, 1989 [11] also writes that "the reality in much of Africa is that attempts at the provision of free health care have resulted in inadequate or non-existent services, especially for the poor and most vulnerable" [11].

On the other hand the drainage of the available medical supplies is seen as one of the great disadvantages of the free of charge policy. A rapid assessment study conducted in the three big hospitals of the capital to evaluate the free of charge public health services at the emergency departments shows that more than 50% of medical materials especially the intravenous fluids (IV) are lost [12]. The huge loss of resources can be aggravated by the ill-defined referral system in Sudan and the misuse of emergency facilities. This type of problems is expressed by a health post staff member in Nepal as follows: "In the past, people used to drop into the health post whenever they were passing by, to pick up medicines for future use. After the introduction of charges, this custom has completely died out and no one demands medicines until he/she is really sick" [13]. The misuse and drainage of medical supplies is observed to be practiced by the health workers as well. Due to their low salaries and high inflation rates in the country they sold the free of charge medical supplies [14].

5.3. Methodology

5.3.1. Survey data

This study is conducted five years after the implementation of a policy of free of charge public health services at the emergency departments and before the adoption of the new policy of free of charge health care at the inpatient wards.

Data were collected through interviews based on an adapted questionnaire in Arabic language.⁹ The questionnaire was tested in a pilot study. After correction and modification the questionnaire was retested again. The survey was conducted during the period of March and April 2001 in Sudan. A team composed of a supervisor, coordinator, three assistants, a statistician, 40 data collectors, two data entry workers, a secretary and a driver conducted the sur-

⁹ By adapted questionnaire we mean we use different questionnaires from different developing countries' experiences to construct this questionnaire in English and then translated into Arabic language and not a direct translation of a specific questionnaire.

vey after a three weeks training for the data collectors and after some pretests.¹⁰ The team was centered in middle Khartoum, and joined the Ajaweed Society research department.¹¹

The samples are selected by a multi-stage sampling procedure. First, a simple random selection of three provinces of Khartoum was made.¹² Each of these provinces was divided into centre, peripheral and rural. Random selection of some localities of the centre, peripheral, and rural was done. Then a random selection of the neighborhoods and finally a random selection of the households were included in the survey. The total number of households contacted was 460. None of them declined to respond. For the purpose of similarity and to increase the internal consistency of the sample we dropped 10 questionnaires to ensure that each province has 150 questionnaires. So the overall respondents' rate is 100%, which suggests high reliability.

The survey targets the heads of households (HH) or someone who is representing them (the nearest relation). The survey collected data on the respondents' socio-economic status and on their use of health services. The socio-economic data include age, gender, tribe, religion, origin of HH, number of members in the household, education, occupation, and place of work. Concerning the respondents' wealth the variables in the survey are divided into two categories. One is related to income e.g. monthly income, occupation and the presence of other income. The second is related to expenditures. In developing countries the reliability of using monthly income as an indicator for estimation of the wealth is doubtful. Some researchers use monthly expenditure instead of monthly income for reliability reasons [15]. The paradox between income and expenditure in the lower income countries pushed references to ask questions on durable consumption goods such as a refrigerator, a car, other income and a house in property. This paper adopts this approach as well.

To have an impression about their health status, respondents are asked to indicate the number of sickness episodes and visits to health facilities during the last three month for him and for any member of his family.¹³ Access to the nearest pharmacy is determined by asking the respondents 'how far is the nearest pharmacy from your residence?' They can choose between minutes, hours, on foot and by a car. Actually this question is taken from surveys in other developing countries that have investigated access to health services [16]. To examine payments for health care respondents are asked whether they have paid any amount of money for health during the last three month, and whether they have bought drugs for themselves or for any of their household members during the last three months.

5.3.2. Steps in the regression analysis

5.3.2.1. Cultural biases in the sample

Because of transportation and security constraints, the survey was conducted during daylight and thus most of the respondents were women (62.9%). Even if the Sudanese woman is the actual HH she always introduces her husband as the HH. So, the gender variable is culturally biased. Also the variable family size has a measurement error due to a cultural bias, because

¹⁰ The data collectors are students and graduates from Elahfad University for Women, Sudan.

¹¹ Ajaweed Society is an NGO concerned about counseling. It has a bilateral collaboration with the Khartoum Centre for Psychiatry and Counseling

¹² The three provinces of Khartoum State are Khartoum, Omdurman and Bahary.

¹³ At first the duration of measurement is suggested to be three weeks, and in the pretest phase we have the impression of exaggerations so, we change it to three month and we receive the same answers.

many of the Sudanese families believe in green-eyed and are not willing to give the true number of the family size. After the evaluation of the pretest some modifications were done to the question on family size, in order to improve the response quality. For the problem of the ratio of cases to variables a process of merging categories was done for the variables age, family size, education, occupation and the disease type [17].

5.3.2.2. Selection of models

5.3.2.2.1. Model building strategy

To avoid irrelevant variables bias, some variables are eliminated as a first step in the model-building strategy e.g. tribe, religion and etc. The selection of variables in the model is done by a univariable selection analysis of each variable using cross tabulation, chi square, t-test, correlation and the Ordinary Least Square (OLS). Table 5.1 presents the results of the OLS models as the last step of the univariable selection analysis. After completion of the univariable analysis, a selection for a multivariable model was done. Any variable with test significance < .05 is a candidate for the multivariable model. Following the fit of the multivariable model, the importance of each variable included in the model is verified by a Wald statistic and a comparison of each estimated coefficient from the model containing only that variable [18]. Table 5.1 shows that only the variables 'family size (7-10)', 'occupation (merchants)', 'other income', 'always or sometimes have dependents', 'own a house', 'sometimes pay tuition fees', 'got sick twice in the last 3 months', 'always pay for treatment' and 'always pay for drugs during the last 3 months' are eligible to enter the LRM. The unexpected significance of 'always pay for treatment' and 'always pay for drugs during the last 3 months' is evidence of the existence of under-the-counter payments for health care services.

A model with only the significant variables of the OLS estimations proves to be a poor model without variables like 'merchant' and 'have other income'. Appendix A exhibits this model. To have a model with more explanatory power, the direct and the stepwise procedures were used. Compared to the OLS results of table 5.1, the full model of the direct procedure method shows that some significant variables are added, like 'merchant', 'other income', 'disease type', and 'bought drugs during the last 3 months'. The full model fits better than the OLS model. Appendix B presents the full model.

In the stepwise procedure method a backward logistic regression was done and the last step showed that the variable 'merchant' in the category of occupation, 'own a house' and 'pay for treatment during the last 3 months' are candidates for the final model. A series of additions and removals together with interactions and combination of variables resulted in eight partial models. The models of the stepwise procedure have the advantage over the OLS results model that some of the important variables are retained in the analysis.

5.3.2.2.2. The goodness of fit

Appendix C shows the goodness of fit of the attributes for the different models and the criterion of selection between the full model of the direct procedure and the partial models of the stepwise procedure. For all models the percentage predicted correctly is more than 85% and in the highest one, the partial model-7, 87.9% is correctly predicted. The omnibus test and the significance of the chi-square distribution show the improvement of the explanatory power models. The McFadden's R^2 for all models ranges between 0.2 and 0.4. This is considered satisfactory [18]. The Hosmer and Lemeshow tests for all models show a distribution of 8 degree of freedom for the different chi-squares of the different steps with significance not less

than 0.05. This indicates that the models are an adequate fit to the data. The likelihood ratios (LR) for the all partial models except the partial model-7 show that the chi-square is less than the critical value. This indicates that the full model is an improvement over them. The partial model-7 includes the important variables for the research. Moreover the chi-square of the LR is greater than the critical value. The model includes two interaction variables: 'other income*have a car' and 'family size (6-10)*sometimes pay for treatment during the last three months'. The first interaction variable helps differentiating between the rich and the poor regarding the variable 'other income' and the second one is important for the significance of the model. Based on this and the other goodness of fit criteria this makes the partial model-7 the preferred model. The dependent variable in the model is 'receive free of charge public health services' and the independent variable are the socio-demographic variables in table 2.

5.3.2.3. The method of analysis

Because of the dichotomous nature of the dependent variable a logistic regression model is used for the statistical analysis. The dependent variable measures whether the respondent receives free of charge public health services. This variable is equal to 1 if the respondent receives free of charge public health services and is 0 otherwise. However since the linear probability model (LPM) is heteroscedastic and may predict probabilities beyond the (0, 1) range [19], the LRM is used to determine the factors, which influences the dependent variable. Appendix D shows the method for the statistical analysis.

Table 5.1. OLS estimate on the separate effects of individual HH characteristics on free of charge HS

Variables	B	S.E.	Wald	Sig.	95.0 C.I. for exp (B)	
					Lower	Upper
Family size (1-6)	-.457	.421	1.182	.277	.277	1.444
Family size (7-10)	-.893	.448	3.966	.046	.170	.986
Education (secondary)	-.407	.340	1.429	.232	.342	1.297
Education (university)	.045	.341	.017	.895	.536	2.043
Occupation (employee)	-.241	.378	.406	.524	.374	1.650
Occupation (labours)	-.437	.453	.930	.335	.266	1.569
Occupation (merchant)	-.987	.416	5.631	.018	.165	.842
Occupation (jobless)	.018	.711	.001	.980	.253	4.102
Monthly income (100000-150000)	.239	.431	.308	.579	.546	2.958
Monthly income (150000-300000)	-.124	.433	.083	.774	.378	2.062
Monthly income (300000-500000)	.292	.446	.429	.513	.558	3.212
Monthly income (>500000)	-.144	.518	.078	.780	.313	2.389
Other income (yes)	.583	.275	4.488	.034	1.04	3.072
Have a car (yes)	.059	.302	.038	.845	0.58	1.916
Have dependents (yes always)	1.088	.346	9.871	.002	1.506	5.853
Have dependents (yes sometimes)	1.670	.403	17.138	.000	2.410	11.720
House ownership (owned)	-.763	.362	4.442	.035	.229	.948
House ownership (others)	.679	.412	2.709	.100	.879	4.424
Pay tuition fees (yes always)	.871	.453	3.701	.054	.984	5.797
Pay tuition fees (yes sometimes)	1.564	.571	7.491	.006	1.559	14.635
Episodes of sickness last 3 months (once)	.577	.697	.085	.408	.454	6.987
Episodes of sickness last 3 months (twice)	1.369	.658	4.333	.037	1.083	14.262
Episodes of sickness last 3 months (>twice)	.686	.644	1.133	.287	.562	7.012
Disease type (obs&pediatrics)	-.434	.746	.339	.560	.150	2.794
Disease type (internal medicine)	-.856	.570	2.253	.133	.139	1.299
Disease type (others)	-.186	.564	.109	.741	.275	2.508
No. of visits last 3 months (once)	.470	.554	.719	.396	.540	4.741
No. of visits last 3 months (twice)	.825	.559	2.176	.140	.763	6.826
No. of visits last 3 months (>twice)	.214	.532	.162	.687	.437	3.512
Pay for treatment last 3 months (yes always)	-1.473	.365	16.280	.000	.112	.469
Pay for treatment last 3 months (yes sometimes)	.044	.376	.014	.906	.501	2.183
Bought drugs last 3 months (yes always)	-1.032	.381	7.352	.007	.169	.751
Bought drugs last 3 months (yes sometimes)	-.693	.445	2.426	.119	.209	1.196

5.4. Results

5.4.1. General characteristics of the respondents

The description of the socio-demographic variables in the sample is presented in table 5.2. The frequencies in table 2 show that almost 80% of the respondents are in their high productive middle age. The family size scales indicate that the Sudanese society is composed of extended families. This also explains the high dependency rate of the country (93.5%) [20].

Primary education in table 5.2 is composed of illiterate, Khalwa and primary school education.¹⁴ Secondary education refers to secondary and high-secondary schools. University education refers to graduates and postgraduates. The relatively high percentage of university education is only for Khartoum and big cities. In whole of the Sudan, the literacy rate is 40% for males and 15% for females [21].

The relatively high percentage of merchants and the free work category (34.4%) indicate the migration to the business sector. In table 5.2, it appears that 86% of the respondents have a monthly income between less than 100,000 and 500,000 Sudanese Pounds (Ls) [one US\$ equals 2670 Ls]. These wages cover a small proportion of family expenses (about one quarter) [22]. Other income and ownership of a car also give an indication of the socio-economic status of the family. The earning of other income in particular is an example for the family's way to cope with the income-expenditure gap. Questions about car ownership and house ownership are asked to differentiate between different classes of socio-economic status, assuming that people who have a car and own a house are the rich. The high percentage (70.4%) of house ownership indicates that house ownership is not a strong indicator of wealth. The payment for dependents (for 55.6% of respondents) and of tuition fees (78.9% of respondents) indicate additional expenditure for some families. Family size is also an indicator of the families' expenses.

The high percentages of people who paid for treatment in the last three months (86.2%) and bought drugs during the last three months (90%) show the high demand for health services. The response to questions on the number of episodes of sickness during the last three months (88.1%), visit frequency to health services units for treatment during the last three months (86.4%) and the incidence of internal medicine diseases (49.8%) confirm this high demand for health services. The percentage of internal medicine diseases shows that Sudan still suffers from the old communicable diseases like malaria and that non-communicable diseases like diabetes and high blood pressure are on the increase.¹⁵

¹⁴ Khalwa means pre-school education, teaching Quran, Arabic language, and mathematics.

¹⁵ Results from the same survey show that malaria is on the top of the morbidity list followed by diabetes and hypertension.

Table 5.2. Description of the dependent variable and the socio-demographic variables in the sample

The dependent and the Socio-demographic variables	Value range	Frequency%	N
The dependent variable - receive free of charge (RFOCH)	1= yes 0= no	13.8 86.2	450
Age	1= 31-40 yrs 2= 41-50 yrs	79.1 20.9	450
Family size	1= 1-6 2= 7-10 3= 11 – 15	50.0 40.9 9.1	450
HH education	1= primary 2= secondary 3= university	27.1 42.7 30.2	450
HH occupation	1= employee 2= labours 3= merchant 4= jobless 5= military and police	30.2 16.3 34.4 3.3 15.8	450
Monthly Income HH	1= <100000 2= 100000-150000 3= 150000-300000 4= 300000-500000 5= >500000	19.3 21.5 27.4 17.8 14.0	409
Other income source	1= yes 2= no	37.8 62.2	450
Have a car	1= yes 2= no	28.0 72.0	450
Dependants	1= yes always 2= yes sometimes 3= none	41.6 14.0 44.4	450
House ownership	1= owned 2= others 3= rent	70.4 13.8 15.8	450
HH pay school fees & pay for others	1= yes always 2= yes sometimes 3= not pay	70.6 8.3 21.1	436
Episodes of sickness last 3 months	1= once 2= twice 3= >2 4= none	21.2 22.0 44.9 11.9	304
Disease type	1= surgery & ortho. 2= obs. & pediatrics 3= medicine 4= others	7.2 8.1 49.8 34.9	307

The dependent and the Socio-demographic variables	Value range	Frequency%	N
Visit Frequencies to health services unit last 3 months	1= once	25.1	362
	2= twice	18.8	
	3= >2	42.5	
	4= none	13.5	
Pay for treatment last 3 months	1= yes always	66.2	450
	2= yes sometimes	20.0	
	3= not paid	13.8	
Bought drugs last 3 months	1= yes always	69.8	450
	2= yes sometimes	20.2	
	3= not paid	10.0	

5.4.2. Logistic regression estimation

As mentioned before, the selected model provides the best fit for the data. The percentage correctly predicted is 87.9%. The chi-square for the whole model is 85.11, which is significant at 0.000 levels. McFadden's R^2 is 0.291, which is satisfactory. The LR shows that the selected model is an improvement over the full model given that the chi-square is lower than the critical value (Appendix C). The Hosmer and Lemeshow test's chi-square is 4.11 and it is distributed with 8 degree of freedom with significance of 0.847.

Table 5.3 shows the LRM results for the selected model. The variables 'merchants', 'other income', 'always have dependents', 'sometimes have dependents', 'own a house', and 'two visits to health service unit during the last 3 months', are statistically significant. The table also shows that two interactions terms are relevant, i.e. 'other income*have a car' and 'family size*sometimes pay for treatment last 3 months'. The results also indicate that although a variable like 'HH pay for tuition fees' is not significant, this variable is important for the significance of the model.

The odds ratio for the HH who has other income is almost 2.88. This suggests that those who have other income are almost three times more likely to receive free of charge public health services, than those who have no other income. The relatively small confidence intervals indicate that the sample mean must be close to the true mean. Both the intervals are larger than one, which indicates that the relation between has other income and receiving free of charge public health services found in this sample is true for the whole population [23]. The odds ratios for HH who have either always or sometimes dependents are 2.85 and 5.67, respectively. This suggests that those who have always or sometimes dependents are 3 to 5 times more likely to receive free of charge public health services, than those who have no dependents. The odds ratio for the HH who visited health service unit twice on average during the last 3 months is 4.67. This indicates that those who visited a health services unit twice on average during the last 3 months are almost five times more likely to receive free of charge public health services than those who did not. Both confidence intervals are more than one and this indicates that the relation between two visits to a health services last 3 months and receiving free of charge public health services is true for the whole population. Although the upper limit of the confidence intervals is a little bit high (18.62) but the Odds (exp (B)) is relatively small (4.67) so the sample mean must be close to the true mean and a good representation of the population.

Although the results show that the variables 'merchants', 'other income*have a car', 'own a house' and 'family size*sometimes pay for treatment last 3 months' are statistically significant, their odds ratios are still less than one. This indicates that the respondent who is a merchant, has a car with other income, owns a house and has a family of 6 to 10 members and sometimes pays for treatment during the last three months is less likely to receive free of charge public health services.

Table 5.3. Logistic regression results [dependent variable = received free of charge public health services]

Variables	B	Standard Error	Significance	Exp(B)	95.0 C.I. for exp (B)	
					Lower	Upper
Employee	-0.545	0.504	0.279	0.580	.216	1.556
Laborer	-0.901	0.621	0.147	0.406	.120	1.372
Merchant	-1.639	0.600	0.006	0.194	.060	.629
Jobless	0.676	0.882	0.444	1.966	.349	11.048
Other income	1.059	0.434	0.015	2.884	1.231	6.756
Have a car	0.771	0.541	0.154	2.163	.749	6.246
Other income * have a car	-2.421	1.034	0.019	0.089	.012	.675
Always have dependents	1.048	0.469	0.026	2.853	1.137	7.161
Sometimes have dependents	1.736	0.553	0.002	5.677	1.919	16.791
Owned a house	-1.377	0.493	0.005	0.252	.096	.663
Others	-0.004	0.541	0.995	0.996	.345	2.877
Always pay tuition fees	0.442	0.535	0.409	1.555	.545	4.437
Sometimes pay tuition fees	-0.040	0.732	0.956	0.961	.229	4.030
One visit to health services unit last 3 months	1.237	0.680	0.069	3.446	.909	13.065
Two visits to health services unit last 3 months	1.542	0.705	0.029	4.673	1.173	18.620
More than two visits to health services unit last 3 months	0.741	0.676	0.274	2.097	.557	7.897
Family size (1-6)	0.992	1.190	0.404	2.697	.262	27.763
Family size (7-10)	-0.449	1.290	0.728	0.638	.051	7.998
Always pay for treatment last 3 months	-1.371	1.347	0.309	0.254	.018	3.557
Sometimes pay for treatment last 3 months	2.159	1.401	0.123	8.660	.556	134.86
Family size (1-6)*Always pay for treatment last 3 months	-0.819	1.535	0.594	0.441	.022	8.934
Family size (1-6)*Sometimes pay for treatment last 3 months	-3.376	1.620	0.037	0.034	.001	.817
Family size (7-10)*Always pay for treatment last 3 months	0.186	1.633	0.909	1.204	.049	29.544
Family size (7-10)*Sometimes pay for treatment last 3 months	-1.337	1.643	0.416	0.263	.010	6.578
Constant	-2.249	1.374	0.102	0.106		

The percent correct prediction is 87.9%, the chi-square for the whole model is 85.111 distributed with 24 df, significant at 0.000 and the McFadden's R^2 is 0.2912.

5.5. Discussion

The aim of this paper is to investigate the characteristics of people who receive free of charge public health services and to analyze if there are any impediments to the cost recovery policies on health care use. The empirical results show that a respondent who has other income, who always or sometimes has dependents and visits a health service unit twice on average during the last 3 months is more likely to receive free of charge public health services. The results also show that the respondent who is a merchant, has a car with other income, own a house and has a family of 6 to 10 members and sometimes pays for treatment during the last three months is less likely to receive free of charge public health services. The 95% confidence intervals for all significant independent variables (both more and less than one) show the true relation between these variables and the dependent variable 'receiving free of charge public health services' for the whole population.

Overall 13.8% of the public health services is used free of charge. Together with the positive logistic regression results this indicates that both the rich and the poor benefit from the free of charge health services. The negative odds ratios of the logistic regression findings show that the merchant who owns a house, has other income and has a car is less likely to receive free of charge public health services. This indicates that there is no direct impediment to the cost recovery policies or exploitation by the well-off people.

Other income is generally considered in studies in developing countries as a coping approach or an adjustment method that people pursue to engineer possible available alternatives to balance the income-expenditure gap and handle possible difficult situations [22]. In developing countries strategies of other income approaches include: the group solidarity strategies which include increasing the number of income earners (e.g. work of women and children) and external support mechanisms (e.g. transfers and remittance of migrants); income diversification strategies (e.g. involvement in secondary activities beside their main occupations i.e. medical doctors can work in the public and private sectors at the same time) and new form of assets utilization (e.g. turning private car into taxi) [22]. As has been mentioned before to differentiate between poor and rich people regarding the variable 'other income' an interaction between this variable and the variable 'have a car' was done. This happens under the assumption that 'have a car' pinpoints to the rich. The results show that the 'other income' variable alone has a positive odds ratio, which indicates that both the poor and the rich enjoy the free of charge public health services. The interaction between 'other income' and 'have a car' shows a negative odds ratio which specifically indicates that the rich people are less likely to receive free of charge public health services.

The frequency of visits to health services units during the last 3 months expresses the demand for care of the household during the past 3 months. The debate over the price and income elasticity of the demand for medical care underlies in part government efforts to continue and establish the cost recovery policies. A number of health demand studies have shown that acute medical care is relatively insensitive to its cash price [24]. Recently, one study found that fees may adversely affect utilization by low income groups [10]. Further, research has demonstrated that if we account for all types of medical care compensation, cash outlays for private medicine (including traditional healers, drugs, etc.) tend to represent a large proportion of total health expenditures by the poor in the developing countries. This insensitivity to price suggests that the government can continue to establish cost recovery policies in favour of the poor [12].

The variable 'have dependents' is one of the strongest indicators for the extra expenditure of the HH's budget in developing countries. This puts a burden on the HH. The high dependency indicator in Sudan (93.5%) is due to poor economic status, which forces the government not to fulfill the basic human rights of housing, health care, education and opportunities of work. The extended families structure of the society together with the well-established kinship institution aggravates this problem. The vast majority of the population lives below the absolute poverty line. Women and children account for 45% of the population [25]. The responsibility towards fathers, mothers, brothers and sisters weighs heavily on to the HHs. The high dependency rate continues to have a negative impact on the households' budget. More study is needed to explore this area and to find scientific guidelines for effective solutions.

Although the poor are the people who benefit from the free of charge policy, still many points should be considered. The absence of the referral system raises the question whether all these people enjoying the free of charge services are emergency cases? And how can we make the rich people pay for their emergency needs? Also how can we stop the big losses of the medical supplies?

5.6. Conclusion and policy implications

It can be concluded that the category that is most likely to receive free of charge public health services are the respondents who have other income and dependents. Given their high demand for health services and given that this group of people is likely to be the targeted population for free of charge health services, the cost recovery policies in Sudan are not likely to be threatened by the exploitation of the well-off people. So, the government can continue to offer free of charge public health services at emergency departments with effective measures to stop any misuse.

No doubt one of the top urgent priorities facing the health planners in Sudan is to establish the health referral system. To do so the government needs to improve the quality of services at the health centers by keeping the revenues within these institutions. The retention of the payment revenue at the local level, as a supplement to public health care financing, can facilitate and improve the quality of services at the local level and keep the system viable [2, 8, 5 and 26].

Free of charge public health services in Sudan is a political decision taken without technical studies and support. There is a need for a better understanding of the packages of policies that meet the multiple objectives that politicians and the community pursue. If the government insists on executing the new policy of free of charge at public health services for the third wards' classes, this may need careful and scientific handling.

The success of cost recovery policies is contingent upon existing political, economic and managerial conditions. So, there is a need for assessing the cost recovery policies in terms of the political and economic circumstances under which the implementation occurs, the effect of cost recovery policies on equity and quality, the efficiency of operational performance, and the generation and maintenance of political and popular support [13].

The government needs to assess the limits of cost recovery policies under different geographical, socio-economic and service delivery settings; research is needed on service costs to facilitate rate settings. The involvement of the community in the management process will enhance that cost recovery policies are an effective community financing tool to enable the community to foster these policies [5 and 25].

In developing countries it seems to be very difficult to establish a full cost recovery policy. On the other hand it is also difficult to provide total free of charge public health services. So, if user fees are a deterrent to utilization by the poor, improving access by different approaches like subsidies, waivers, and sliding fee system are potential corrective measures. However, one should consider the administrative feasibility of these systems. Or, in other words, can these systems be effectively implemented [13]?

Finally, without a proper management, it will be very difficult to implement the cost recovery policies for poor protection measures, payment collection, and revenue allocation plans effectively.

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CHAPTER 6

**Household health-seeking behaviour in Khartoum, Sudan:
The willingness to pay for public health services if these
services are of good quality**

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6.1. Introduction

Despite its recent classification as a middle-income oil importer Sudan's economy is underdeveloped. Since the late 1970s Sudan has been experiencing an economic crisis [1]. In addition, there have been significant cutbacks in external funding and donations. The World Bank and the International Monetary Fund have ceased their operations in the country [2]. The poor economic conditions in Sudan have eroded the resources needed for the government to provide minimally acceptable healthcare services. As in other Sub-Saharan countries, the long-standing free of charge health services to the entire population has had negative impacts on the whole system [3]. In addition, the slow development of financial institutions and formal wage sector employment has limited the potential for health insurance to grow and has delayed the start-up of the private health sector [3].

In its quest to establish a sustainable solution for the financing of health services the government initiated the Health Insurance Act, which was approved by the National Assembly in 1995 [4]. According to the act, insurance is compulsory for all residents in the republic of Sudan. The contribution is income-related and amounts to 10% of the salary for the formal sector (4% paid by the employee and 6% paid by the employer). Health services are provided through the public sector freely for the insured except for 25% of the drug expenses. Although the vast majority of the population (more than 80%) is not employed in the formal sector no clear plans have been devised for insurance for the informal sector [5]. The informal sector is composed of the self-employed, non-employed, the poor, etc. This sector is facing many questions concerning people's income, affordability, willingness to pay, collection of contributions and provision of health services. It will be very difficult to establish a health insurance scheme without answering these questions.

In 1992 Sudan started a new policy of Economic Liberalization. This encouraged and extended cost-recovery policies for the health sector, which imposed user charges for publicly provided healthcare services. In response to the Economic Liberalization policies the private sector expanded tremendously. A free market for health services including NGOs appeared but without private health insurance which is not yet established. One of the main factors that encouraged the private provision of health services was the perceived deterioration of the quality of services provided by the public health facilities. In addition, the introduction of charges for the publicly provided health services made the ratio of quality/cost more favourable for the private services, as the higher user charges in the private sector are compensated by its high quality [6]. In the years 1996 and 2000 the government decided to provide free of charge health services at emergency departments and inpatient wards. These steps were taken under the pressure of expanded poverty and the political situation. The expansion of poverty has led to deficient health services and an uninsured informal sector. Protests took place against the negative impacts of the Economic Liberalization's new policies i.e. the rapid growth of the private sector that favours the rich. This opened the debate again about these cost recovery policies and their usefulness for the Sudan. An answer to the question "Are people willing to pay for public health services if these services are of good quality?" will provide guidelines to help health planners in establishing an adequate health financing system in Sudan.

This paper aims at providing and discussing a broad study on the willingness to pay (WTP) for improving the quality of public health services in Khartoum in Sudan. The WTP is made

operational by the contingent valuation method. The WTP for public health services is conditional on the improvement of the quality of health services in terms of: (a) specialist services, (b) advanced laboratory and X-ray unit analysis, (c) availability of drugs and consumables especially for children and (d) decreased waiting time. The paper uses a logistic regression model (LRM) to examine the WTP in relation to the demographic and socio-economic characteristics of respondents. Further the paper aims to explore the differences in WTP between the respondents who already pay for the health services (group 1) and those who do not (group 2).

The paper is organized as follows: Section 2 presents a short description of the cost-recovery policies in Sudan. The statistical methodology is presented in section 3. Section 4 contains the interpretations of the results and the discussion. Section 5 concludes with policy suggestions for the healthcare system in Khartoum in Sudan.

6.2. Cost-recovery policies in Sudan

During the 1980s and early 1990s Sudan responded to a number of international health initiatives to strengthen its health system: The World Bank 1987 Agenda for Change, which advocated user fees and considered the health services as a private good; the Bamako Initiative with its community financing tool;¹⁶ the Harare Declaration on decentralization; and the World Development Report in 1993 with its focus on the minimum essential services package [7]. In 1992 Sudan launched new Economic Liberalization policies, which are influencing the expansion of the cost-recovery policies in public facilities and encouraging private sector growth.

Community participation in the design of the cost-recovery schemes is the main mechanism for achieving financial compatibility. In addition it helps to ensure benefit packages that are socially and culturally acceptable to the community [8]. User charges may be one way to improve the sustainability of financing public health services in Sudan. It has been used in other countries with more or less success [9, 10]. Moreover, one study shows that people are willing to pay the higher prices of the private sector in return for good quality health services [11]. Sudan, like other developing countries, cannot allocate enough money for financing its health services but neither can the majority of the population afford to fill this gap [12]. User charges have a negative effect on equity. Fees tend to impose a barrier on the poor to use services. Some studies show the role of the nature of payment mechanisms on equity i.e. systems that employ a pure user charge are more likely to influence inequality than those with exemptions or risk sharing schemes [12]. No studies of the negative impacts of the user charge policies on equity have been held in Sudan but, as has been mentioned before, the debate on these issues was recently opened again in the Sudan.

According to Curries, cost-recovery policies are the foundation for health insurance schemes and the transition towards privatisation [13]. Cost-recovery policies are expected to support the sustainability of the health financing system. They also allow the government to reallocate expenditures from curative services to public health activities that have a broader beneficiary base. Moreover, they are expected to reduce the private sector's price disadvantage relative to

¹⁶ The Bamako initiative has been endorsed by some African countries to improve the utilization of primary health care facilities through a better availability of drugs based on user fees and managed by communities, including identification of beneficiaries of exemption schemes.

the government sector, and encourage the expansion of the health insurance schemes for the formal and the informal sectors [14]. They are also expected to stop the widespread misuse of and drain on medical supplies by citizens and health workers [15].

6.3. Methodology

6.3.1. Survey data

The data obtained in the survey were collected through interviews based on an adapted questionnaire in Arabic. The questionnaire was pre-tested and retested after correction and modifications. The survey was conducted in 2001 in Sudan by a trained team following the pre-tests.¹⁷ The team was based in middle Khartoum, joining the Ajaweed Society research department.¹⁸

The survey was held in Khartoum, the capital of Sudan, and covered urban, suburban and rural areas. The samples were selected by a multi-stage sampling procedure, i.e. first, a selection of the three towns of the capital Khartoum (Khartoum, Omdurman and Bahary) was made. Second, each of these towns was divided into central, peripheral and rural areas. We made a random selection of localities in the central, peripheral, and rural areas, then a random selection of neighbourhoods and finally a random selection of households for the purposes of the survey. As planned, 460 households were contacted and none of them refused to respond. For the purpose of similarity and to increase the internal consistency of the sample, 10 questionnaires were dropped. This meant that the overall respondents' rate is 100%, which suggests high evidence of reliability. The survey targets the heads of households (HH), or their nearest relation. The survey includes questions on the respondents' age, gender, tribe, origin of HH, family size, education, occupation, and place of work. The respondents were asked a set of questions on their socio-economic position that included income and expenditure. With regard to income, the respondents were asked about their monthly income and any other income. Some studies use monthly income to categorize households as poor, rich or others [16]. We classified the respondents' monthly income in an ordinal manner, as shown in Table 6.1. The currency used in this paper is the Sudanese Pound (Ls).¹⁹ Monthly income in developing countries is not considered as a sufficient indicator for the household's economic status.

Table 6.1. Classification of the respondents' monthly income

HH monthly income	Classification
< 100000Ls	Very low income
100000Ls – 150000Ls	Low income
150000Ls - 300000Ls	Moderate income
300000Ls – 500000Ls	High income
>500000Ls	Very high income

To collect additional information on their wealth, the respondents were asked whether they owned one of the following durable goods: a refrigerator, a car or a house. To examine their health condition the respondents were asked to determine the number of sickness episodes,

¹⁷ The team consisted of a supervisor, a coordinator, three assistants, a statistician, 40 data collectors (students and graduates from Elahfad University for Women), two data entry workers, a secretary and a driver.

¹⁸ Ajaweed Society is a NGO involved in counseling. It has a bilateral collaboration with the Khartoum Centre for Psychiatry and Counseling.

¹⁹ One US\$ currently is equivalent to 2670 Ls.

visits to health facilities and the number of prescriptions during the last three months. To examine the accessibility of health services the respondents were asked how far the nearest pharmacy is from their residence. They could choose between walking distance and driving distance. In addition, a question on the choice of one pharmacy is included. The respondents were asked a set of questions regarding their payments for the health services during the last three months. These were: whether they had paid any amount of money for health services, and whether they had bought drugs for themselves or any members of their household.

6.3.2. The contingent valuation method

The contingent valuation method is frequently applied in developed countries, but not in developing ones [17]. The validity and reliability of these methods are not yet well established, so the results should be interpreted with some caution [18]. The healthcare systems in developed countries offer a good environment for conducting these studies and results are used to increase the efficiency of healthcare delivery. In developing countries the high illiteracy rate and poor institutions do not contribute to a good environment for conducting such studies. As far as we know no similar studies have been held in Sudan. The transition towards privatisation, economic liberalization and towards building institutional facilities encouraged us to use these methods to analyse people's willingness and ability to pay (ATP) for these transformations in healthcare provision. Uncertainty about household income, the Sudanese dislike of bargaining over prices, the well known prices of the private sector and its relation with quality together with the bias of the starting price of the bidding game method made us decide to use the take-it-or-leave-it method. The prices presented in Appendix A for the two groups were constructed from the current costs of the public health services. Prices varied around the estimated cost of the improved quality facilities and are close to the private sector's prices. In developed countries, willingness to pay corresponds closely to the ability to pay, which is not the case in developing countries. Instead of asking the respondents to give a yes or no answer, we offered them four options. The aim of this was to get some insight into the differences between willingness to pay and the ability to pay. For example, the response 'I would go into debt' is a strong indicator of willingness to pay but a weak indicator of ability to pay. Table 6.2 shows these differences. We also aimed to overcome possible strategic behaviour biases, e.g. the response 'if I have enough money' is used to overcome the risk of respondents making a pledge they cannot keep.

Because of the dichotomous nature of the responses the model chi-square was used as a reliability test. The most common test of reliability is the amount of variance explained by the variable. A level of significance less than 0.05 indicates that the likelihood of the observed responses -given the estimated equation- is significantly greater than their likelihood given an equation without independent variables. Results reported in Appendix B suggest that the contingent valuation method is reliable [19].

Table 6.2. Differences between WTP and ATP related to the answers in the take-it-or-leave-it method

Answers	WTP	ATP
I would not hesitate	+++	+++
I would go into debt	++	-
If I have enough money	+	--
I would not pay	---	---
+ = High - = low		

For the purpose of this paper - which investigates only the respondents' WTP - we considered the upper three options as WTP. For the analysis of ATP see Habbani et al 2003 [20]. To examine their willingness to pay for public health services, the respondents were divided into two groups according to their answers to the question 'do you receive free of charge public health services?' (More information about the group who is entitled to free of charge public health services can be found in Habbani et al [21]) The respondents who answered no were classified into group 1. Because they already pay for public health services, they were asked a set of questions to investigate their willingness to pay an extra amount of money if these services were of good quality. The respondents who receive free of charge public health services were classified into group 2. They were asked a set of questions to investigate their willingness to pay for public health services if these services were of good quality (Appendix A shows the contingent valuation scenario). Four aspects of health services were selected to represent good quality: (a) specialist services, (b) laboratory and X-ray unit analysis, (c) availability of drugs, especially for children and (d) decreasing waiting time. The possible answers to investigate their willingness to pay for good quality were, (1) I would not hesitate, (2) I would go into debt, (3) I would pay if I have enough money and (4) I would not pay. These options were designed to encourage the respondents' intentions rather than beliefs or attitudes. Intentions are better predictors of behaviour than attitudes [18]. To explain what determines the WTP for improved quality of health services, we constructed a regression model in which the dependent variable is based on the 4 answers as follows. For each aspect of quality considered, and for the binary nature of the dependent variable we merged the first 3 answers (1), (2) and (3). We interpreted these as signifying that the respondent is willing to pay for this aspect of quality and the dependent variable takes a value = 1. If, instead, the respondent answers (4), then we interpreted this as signifying that he/she is not willing to pay the proposed amount and the dependent variable takes the value = 0 (Figure 6.1 shows the construction of the dependent variables for the two groups).

Figure 6.1. The dependent variables construction

6.3.3. Steps in the regression analysis

6.3.3.1. Model selection

The data used in this paper were taken from a multi-purpose household survey. To avoid irrelevant variables bias, some variables were eliminated as a first step in the model-building strategy. Due to transportation and security constraints the survey was conducted during daylight and thus most of the respondents were females (62.9%). To solve the problem of the ratio of cases to variables a process of merging categories was done for the variables age, family size, education, occupation and the type of the disease [22].

A necessary step in the model building strategy is the selection of variables to fit the model. A univariable selection analysis of each variable, i.e. Chi square, t-test, correlation and the Ordinary Least Square (OLS), was done. Appendices C and D present the results of the OLS models for Group 1 and Group 2 respectively, as the last step of the univariable selection analysis. After completion of the univariable analysis, a selection for the multivariable analysis was carried out. Any variable with a level of statistical significance $< .05$ was a candidate for the multivariable model and considered important for the paper. Following the fit of the multivariable model, the importance of each variable included in the model was verified by a Wald statistics examination [23].

Models with only the significant variables of the OLS estimations proved to be poor models for the two groups. The direct and the stepwise procedures were used instead. Compared to the OLS results, the full models of the direct procedure method for both groups show that some variables were eliminated and that the models do not fit better than the OLS models. In the stepwise procedure method a backward logistic regression was done and a series of addi-

tions and removals together with interactions and combination of variables resulted in eight models that have the advantage over the OLS and the full models.

6.3.3.2. Statistical method

Because of the dichotomous nature of the dependent variables a LRM was used for the statistical analysis to estimate the factors (independent variables) that influence the dependent variable willingness to pay. Appendix E presents the statistical analysis method.

6.4. Results

6.4.1. Descriptive results of the survey

The description of the socio-demographic variables in the sample can be found in table 6.3. The frequencies in table 3 show that more than 80% of the respondents in group 1 are willing to pay extra money for public health services if these services are of good quality. In group 2, more than 75% is willing to pay for public health services if these services are of good quality. Table 6.3 also shows that almost 80% of the respondents are in highly productive middle age (31-40 years). It also shows the family size scales i.e. that Sudanese society is composed of extended families. This explains the high dependency rate (93.5%) [24]. Primary education in table 3 refers to illiterate, pre-school Khalwa (Quraanic School), and primary school education. Secondary education refers to secondary and high secondary schools. University education refers to graduates and post-graduates. The relatively high percentage of university education is only found in Khartoum and big cities, as is clear if we consider that in the whole of Sudan the literacy rate is 40% for males and 15% for females [25].

Migration to the business sector due to the Economic Liberalization policies explains the high percentage of the merchant category (34.4%).²⁰ In table 6.3, 86% of the respondents have a monthly income between 100,000 Ls and 500,000 Ls. These wages cover a small proportion of family expenses and are equal to one quarter of the family's expenditure [26]. Monthly income is an inadequate indicator for socio-economic status in developing countries. The variables referring to other income and to car ownership are also indications of the socio-economic status of the family. The variable referring to other income in particular is an example of how families bridge the income-expenditure gap. Questions on car and house ownership were asked to differentiate between different classes of socio-economic status, assuming that people who have a car and own a house are rich. The high percentage (70.4%) of house ownership indicates that the majority of the respondents have their own house. The variables 'have dependents' (55.6%) and 'pay tuition fees' (78.9%) together with the variable 'family size' show the burden of additional expenditure on the household's budget.

The high percentage of people who had paid for treatment during the last three months (86.2%) and who had bought drugs during the last three months (90%) show the considerable demand for and utilization of health care services. The response to questions on the number of episodes of sickness during the last three months (88.1%), frequency of visits to health service units for treatment during the last three months (86.4%), and the internal medicine diseases (49.8%) confirm this.

²⁰ Merchant refers to a trader, shop owner and businessman.

Table 6.3. Description of the dependent and the socio-demographic independent variables in the sample

Table 6.1: Description of the dependent and the socio-demographic independent variables in the sample							
The dependent and the Socio-demographic variables	Value range	Frequencies	N	Min	Max	Mean	Std. Deviation
Group 1 – dependent variables							
Seen by a specialist	1= yes	86.9	388	0	1	.87	.338
	0= no	13.1					
Lab and X-ray analysis	1= yes	85.8	388	0	1	.86	.349
	0= no	14.2					
Drugs availability	1= yes	88.1	387	0	1	.88	.324
	0= no	11.9					
Reduce waiting time	1= yes	81.7	388	0	1	.82	.387
	0= no	18.3					
Group 2 – dependent variables							
Seen by a specialist	1= yes	75.8	62	0	1	.76	.432
	0= no	24.2					
Lab and X-ray analysis	1= yes	77.0	61	0	1	.77	.424
	0= no	23.0					
Drugs availability	1= yes	80.6	62	0	1	.81	.398
	0= no	19.4					
Reduce waiting time	1= yes	75.8	62	0	1	.76	.432
	0= no	24.2					
Age	1= 31-40 yrs	79.1	450	1	2	1.21	.407
	2= 41-50 yrs	20.9					
Family size	1= 1-6	50.0	450	1	3	1.59	.652
	2= 7-10	40.9					
	3= 11 – 15	9.1					
HH education	1=primary	27.1	450	1	3	2.03	.757
	2= secondary	42.7					
	3= university	30.2					
HH occupation	1=employee	30.2	450	1	7	3.49	2.217
	2=labour	16.3					
	3=merchant	34.4					
	4=jobless	3.3					
	5=military and police	15.8					
Monthly Income HH			409	1	5	2.86	1.307
1= <100000	1= very low income	19.3					
	2= 100000-150000	21.5					
	3=150000-300000	27.4					
	4=300000-500000	17.8					
	5=>500000	14.0					
	4= high income						
	5= very high income						
Other income source	1= yes	37.8	450	1	2	1.62	.485
	2= no	62.2					
Have a car	1= yes	28.0	450	1	2	1.72	.449
	2= no	72.0					
Dependents	1= yes always	41.6	450	1	3	2.03	.928

The dependent and the Socio-demographic variables	Value range	Frequencies	N	Min	Max	Mean	Std. Deviation
	2= yes sometimes	14.0					
	3=none	44.4					
House ownership	1= owned	70.4	450	1	3	1.43	.723
	2=others	13.8					
	3= rent	15.8					
HH pay school fees & pay for others	1= yes always	70.6	436	1	4	1.58	.917
	2= yes sometimes	8.3					
	3=not pay	21.1					
Episodes of sickness during the last 3 months	1=once	21.2	304	1	3	2.27	.824
	2=twice	22.0					
	3=>2	44.9					
	4= none	11.9					
Disease type	1= surgery & or-tho.	7.2	307	1	4	2.66	1.033
		8.1					
	2= obs. & paediatrics	49.8					
		34.9					
	3= medicine						
	4=others						
Visit Frequencies to HSU during the last 3 months	1= once	25.1	362	1	4	2.44	1.012
	2=twice	18.8					
	3= >2	42.5					
	4= none	13.5					
Pay for treatment during the last 3 months	1=yes always	66.2	450	1	3	1.48	.725
	2=yes sometimes	20.0					
	3=not paid	13.8					
Bought drugs during the last 3 months	1=yes always	69.8	450	1	3	1.40	.664
	2=yes sometimes	20.2					
	3=not paid	10.0					

6.4.2. Logistic regression estimation

The goodness of fit assessment for the eight models is presented in Appendix E. The models provide a good fit for the data; the percentage of correct predictions is between 78% and 88%, the chi squares are significant and the McFadden R^2 are satisfactory.

Table 6.4 shows the LRM results for the dependent variables in group 1. For the first dependent variable for group 1, 'specialist services', the variables 'moderate income', 'high income', 'very high income', 'always paid for treatment during the last 3 months' and 'sometimes paid for treatment during the last 3 months' are statistically significant. While the variables 'occupation' and 'bought drugs during the last 3 months' are not significant, they are still important for the significance of other variables in the model. These results show that the odds ratio for the significant factors are more than one and this indicates that the respondents with these significant characteristics are more likely to be willing to pay for the public health services if these services were introduced by a specialist.

For the second dependent variable for group 1, 'advanced lab and X-ray analysis', the variables 'low income', 'moderate income', 'high income', 'very high income', 'always paid for

treatment during the last 3 months', 'sometimes paid for treatment during the last 3 months', 'sometimes bought drugs during the last 3 months' and 'own a house' are statistically significant. While the variable 'occupation' is not significant, it is still important for the significance of other variables in the model. These results show that the odds ratios for the significant factors mentioned above are 4, 4, 10, 8, 5, 6, 4, and 4 respectively (see column six in table 6.3). This suggests that the respondents with these significant factors are more likely to be willing to pay for public health services assuming that the attribute of good quality in these services is an advanced lab and X-ray analysis.

For the third dependent variable for group 1, 'availability of drugs especially for children', only five factors significantly influence the probability of the household to be willing to pay for public health services. These factors are: 'moderate income', 'high income', 'very high income', 'always paid for treatment during the last 3 months', 'sometimes bought drugs during the last 3 months' and 'own a house'. These results show that the odds ratios for the significant factors are 3, 3, 3, 4, 7 and 3, respectively (see column six in table 6.3). This suggests that those with such significant variables are more likely to be willing to pay for public health services if drugs are available, especially for children.

For the fourth dependent variable for group 1, 'decreased waiting time', the variables 'merchant', 'high income', and 'always paid for treatment during the last 3 months' are statistically significant. While the variables 'frequency of visits to health services unit during the last 3 months' is not significant, it is still important for the significance of other variables in the model. These results show that the odds ratio for the HH who is a merchant is almost 4.195. This suggests that those who are merchants are over four times more likely to be willing to pay for public health services if the waiting time for these services decreases. The odds ratio for the HH who has a high income is almost 10.980. This suggests that those who have a high income are almost eleven times more likely to be willing to pay for public health services if the waiting time for these services decreases. The odds ratio for the HH who always paid for treatment during the last 3 months is almost 3.302. This suggests that those who always paid for treatment during the last 3 months are almost three times more likely to be willing to pay for public health services if the waiting time for these services decrease.

Table 6.5 shows the LRM results of the dependent variables for group 2. The first dependent variable for group 2, 'specialist services', has only two factors that significantly influence the probability of the household WTP: 'family size (1-6)' and 'HH education (university)'. While the variable 'have dependents' is not significant it is still important for the significance of other variables in the model. These results show that the odds ratios of the significant factors are 6.963 and 7.099 respectively. This suggests that the respondents of the significant factors mentioned would be more likely to be willing to pay for public health services if these services were introduced by a specialist.

For the second dependent variable for group 2, 'advanced lab and x-ray analysis', only the variable 'family size (7-10)' is statistically significant. While the variables 'HH education' and 'have dependents' are not significant they are still important for the significance of other variables in the model. These results show that the odds ratio for the HH who have a family size of (7-10) members is almost 8.526. This suggests that those with a family size of 7 to 10 members are almost nine times more likely to be willing to pay for public health services if these services include advanced lab and X-ray analysis.

In the regression with 'availability of drugs especially for children' as the dependent variable, the variables 'HH education (secondary)' and 'HH education (university)' are statistically sig-

nificant. While the variable 'HH family size' is not significant, it is still important for the significance of other variables in the model. These results show that among group 2 the odds ratios of the significant factors are 6.250 and 12.170 respectively. This suggests that the respondents with such factors are more likely to be willing to pay for public health services if drugs are available, especially for children.

In the forth equation for group 2, 'decreased waiting time', only the variables 'family size (1-6)', 'family size (7-10)' and 'episodes of sickness during the last 3 months' are statistically significant. While the variable 'HH education' is not significant, it is still important for the significance of the model. The positive odds ratios of the 'family size' (1-6) and 'family size' (7-10) indicate that respondents with these significant variables are more likely to be willing to pay for public health services if the waiting time for these services decreases. The negative odds ratio for the variable 'episodes of sickness during the last 3 months' indicates that the respondent with this variable is less likely to be willing to pay for public health services if the waiting time for these services decreases.

Table 6.4. Logistic regression results for group 1 dependent variables

Group 1 dependent Variables	Independent Variables	B	Standard Error	Significance	Exp(B)
Specialist services	Employee	-.078	.528	.882	.925
	Labour	-.034	.559	.952	.967
	Merchant	.633	.576	.271	1.884
	Jobless	-1.571	.931	.091	.208
	Low income HH (100000-150000)	.751	.487	.123	2.120
	Moderate income HH (150000-300000)	.945	.461	.041	2.572
	High income HH (300000- 500000)	2.040	.696	.003	7.690
	Very high income HH (>500000)	1.592	.654	.015	4.913
	Always paid for treatment during the last 3 months	1.128	.566	.046	3.089
	Sometimes paid for treatment during the last 3 months	1.882	.759	.013	6.569
	Always bought drugs during the last 3 months	.123	.644	.848	1.131
	Sometimes bought drugs during the last 3 months	1.305	.748	.081	3.687
	Constant	-.321	.700	.647	.726
Lab and X-Ray analysis	Employee	.014	.535	.980	1.014
	Labour	.190	.576	.741	1.209
	Merchant	.430	.572	.452	1.538
	Jobless	-1.445	.964	.134	.236
	Low income HH (100000-150000)	1.408	.509	.006	4.086
	Moderate income HH (150000-300000)	1.367	.470	.004	3.924
	High income HH (300000- 500000)	2.311	.652	.000	10.081
	Very high income HH (>500000)	2.076	.664	.002	7.970
	Always paid for treatment during the last 3 months	1.680	.565	.003	5.364

Group 1 dependent Variables	Independent Variables	B	Standard Error	Significance	Exp(B)
Drugs availability	Sometimes paid for treatment during the last 3 months	1.764	.678	.009	5.836
	Always bought drugs during the last 3 months	-.176	.635	.782	.839
	Sometimes bought drugs during the last 3 months	1.454	.730	.046	4.280
	Own a house	1.345	.472	.004	3.838
	Others	1.145	.631	.070	3.143
	Constant	-2.084	.806	.010	.124
	Low income HH (100000-150000)	.780	.515	.130	2.182
	Moderate income HH (150000-300000)	1.144	.516	.027	3.139
	High income HH (300000- 500000)	1.188	.578	.040	3.281
	Very high income HH (>500000)	1.218	.610	.046	3.379
	Always paid for treatment during the last 3 months	1.285	.550	.020	3.613
	Sometimes paid for treatment during the last 3 months	.221	.591	.708	1.248
	Always bought drugs during the last 3 months	.600	.578	.299	1.822
	Sometimes bought drugs during the last 3 months	1.969	.698	.005	7.165
	Own a house	.966	.490	.048	2.628
	Others	.686	.631	.277	1.986
	Constant	-1.175	.648	.070	.309
Decrease waiting time	Employee	.972	.531	.067	2.643
	Labour	.751	.553	.174	2.120
	Merchant	1.434	.545	.009	4.195
	Jobless	-.288	.933	.758	.750
	Low income HH (100000-150000)	.537	.502	.284	1.712
	Moderate income HH (150000-300000)	.791	.479	.098	2.206
	High income HH (300000- 500000)	-.022	.522	.966	.978
	Very high income HH (>500000)	2.396	1.098	.029	10.980
	Always paid for treatment during the last 3 months	1.194	.543	.028	3.302
	Sometimes paid for treatment during the last 3 months	1.261	.659	.056	3.528
	One visit to HSU unit during the last 3 months	-.723	.581	.213	.486
	Two visits to HSU unit during the last 3 months	-.245	.634	.699	.782
	More than two visits to HSU unit during the last 3 months	-.054	.578	.925	.947
	Constant	-.555	.801	.488	.574

Table 6.5. Logistic regression results for group 2 dependent variables

Group 2 de- pendent Vari- ables	Independent Variables	B	Standard Error	Significance	Exp(B)
Specialist services	Family size (1-6)	1.941	.942	.039	6.963
	Family size (7-10)	1.778	.955	.063	5.920
	HH education (Secondary)	1.087	.804	.177	2.964
	HH education (University)	1.960	.960	.041	7.099
	Always have dependents	-.549	.994	.581	.578
	Sometimes have dependents	-1.064	1.075	.322	.345
	Constant	-.654	1.148	.569	.520
Lab and X-Ray analysis	Family size (1-6)	1.831	.945	.053	6.241
	Family size (7-10)	2.143	1.007	.033	8.526
	HH education (Secondary)	1.250	.902	.166	3.491
	HH education (University)	1.263	.891	.156	3.537
	Always have dependents	-1.503	1.247	.228	.222
	Sometimes have dependents	-1.326	1.363	.331	.265
	Constant	.131	1.315	.921	1.140
Drugs availability	Family size (1-6)	1.806	.999	.071	6.087
	Family size (7-10)	1.185	.973	.223	3.271
	HH education (Secondary)	1.833	.912	.045	6.250
	HH education (University)	2.499	1.157	.031	12.170
	Constant	-.901	.789	.254	.406
Decrease waiting time	Family size (1-6)	2.596	1.207	.031	13.412
	Family size (7-10)	2.362	1.203	.049	10.616
	HH education (Secondary)	.523	1.022	.609	1.688
	HH education (University)	1.799	1.213	.138	6.044
	One attack of sickness during the last 3 months	-.328	1.526	.830	.720
	Two attacks of sickness during the last 3 months	-2.546	1.038	.014	.078
	Constant	-.395	1.004	.694	.674

6.5. Discussion

The overall percentages of people willing to pay for good quality of public health services in group 1 and group 2 are more than 80% and 75%, respectively. This indicates a high percentage of WTP for public health services with good quality and supports the claims of health planners. These empirical findings confirm the importance of the quality of health services in motivating the demand for public health services. It appears that with improved services, a floor for reasonable fees could be set [14]. This supports the continuity of the cost recovery policies because virtually the majority of the households are willing to pay these reasonable fees.

Our results show that the willingness to pay for each aspect of the quality of public health services (dependent variables) depends on the respondents' characteristics. Table 6.6 provides these main influencing characteristics for quality aspects for the two groups of respondents.

For group 1, socio-economic factors are important determinants of WTP. The LRM analysis shows that the main socio-economic variables ('income', 'merchant', 'house ownership') and expenditure on health (i.e. 'always and sometimes paid for treatment during the last 3 months' and 'always and sometimes bought drugs during the last 3 months') have a significant impact on WTP behaviour. The higher a respondent's income, the greater his/her willingness to pay, and the more eager he/she is to pay for good quality public health services.

'House ownership' and 'merchant' variables are powerful indicators for the relatively high socio-economic status of a respondent in developing countries like Sudan. Although monthly income is an imperfect indicator of socio-economic status in developing countries, it can still be accepted in the presence of powerful indicators like 'merchant'.

Generally there are no prominent differences between the four aspects of quality of health with regard to the influence of socio-demographic characteristics of group 1. Nevertheless the preference for high quality of 'lab and X-ray unit analysis' and 'availability of drugs especially for children' is expressed by respondents who have a high demand for health care and who own a house i.e. most probably older residents. This is a notable point that should help planners and designers of community participation programmes to consider the requirements of older residents, their families and their community leaders when arranging the quality they prefer. It also emphasizes that these two quality aspects of services should be considered when setting charges. Besides this, the significant effect of a low income on the demand for lab and X-ray analysis is surprising and should be considered in planning. Decreased waiting time as an aspect of quality of health care seems to be favoured by the rich population. Unless the government directs revenues to be used in the same facility it will never be able to achieve a decrease in waiting time. This is because incentives will encourage the facility to make personnel available. Not only that, the facility could then overcome the chronic problem of electricity shortages that paralyse the lab and the X-ray investigation and make the waiting time even longer. If revenues are retained within the facility, managers will be able to avoid the chronic shortages of consumables by using the private market to fill the supply gap with e.g. lab reagents, X-ray films, catheters and disposable syringes.

Table 6.6. The main characteristics influencing quality aspects for group 1 and group 2

Group 1	
<u>WTP for:</u>	<u>Main determinants</u>
Specialist Services	Monthly income (either moderate, high or very high) Use of health services (who always or sometimes paid for treatment during the last 3 months)
Advanced lab and X-ray analysis	Monthly income (either low, moderate, high or very high) Respondent's wealth (house ownership) Use of health services (always or sometimes paid for treatment during the last 3 months) Drugs consumption (sometimes bought drugs during the last 3 months)
Availability of drugs specially for children	Monthly income (either moderate, high or very high) Respondent's wealth (house ownership) Use of health services (always paid for treatment during the last 3 months) Drugs consumption (sometimes bought drugs during the last 3 months)
Decreased waiting time	Occupation (merchant) Monthly income (very high) Use of health services (always paid for treatment during the last 3 months)
Group 2	
<u>WTP for:</u>	<u>Main determinants</u>
Specialist Services	Family size (1-6 members) Education (university education)
Advanced lab and X-ray analysis	Family size (7-10 members)
Availability of drugs specially for children	Education (either secondary or university education)
Decreased waiting time	Family size (either 1-6 or 7-10 members) Episodes of sickness (two attacks of sickness during the last 3 months)

The high percentage of people favouring 'availability of drugs' compared to the other three aspects of quality of health services confirms that people consider the availability of drugs as the most important aspect on which to judge the quality of health services [14, 15 and 16]. The appreciation for public health services that adopt cost recovery policies seems to increase if quality, as measured by the availability of drugs, also increases [27]. This may be because drugs are better defined than the other quality improvements [19]. The existence of infectious diseases in developing countries has made the role of drugs in relieving the situation obvious. The establishment of an active market of pharmaceuticals in Sudan means that information is now available on drug prices and on how much of the household budget is actually spent on drugs [19].

For group 2 the variables 'family size' and 'high education' have a significant impact on respondents' WTP behaviour. Respondents from bigger families tend to be more willing to pay for good quality public health services. This may be due to the nature of infections and the anticipation by big families that they will have to spend a lot of money if they delay appropriate and quick treatment.

The results show that a more highly educated respondent is more WTP for good quality public health services [28]. The reason for this may be related to the close relationship between high levels of income and education. Higher education also implies that people have more information and are more able to evaluate and judge [12].

Both groups are willing to pay for good quality public health services. However, some differences between them appear when we look at the respondents' characteristics that influence their WTP. If we compare the two groups on their WTP for good quality public health services, we see that group 1 respondents who are used to paying for health services are more willing to pay than group 2 respondents who would be willing to pay for the first time. The high WTP by group 1 in comparison to group 2 can be seen as an indication of the satisfaction of group 1 respondents with the existing public health services. Further it indicates their belief in the assumption that if they pay an extra amount of money it will encourage improvement in the quality of the health services. Furthermore this reflects the trust and the belief of group 1 respondents in cost recovery policies. The lower WTP of group 2 may be due to hesitation and uncertainty about these new experiences. It may also be due to the amount of money that is mentioned in the contingent valuation scenario (Appendix – A). However the long history of receiving free of charge public health services is expected to be a psychological barrier and may prevent them from accepting the idea of paying for health services. The results of the LRM are consistent with the expectations for both groups. While group 1 respondents varied in their WTP due to economic factors, the group 2 respondents varied in their WTP through (high) education and (big) family size.

One of the unexpected results is the insignificant effect in the LRM of being employed. At the time of the research the adoption of the health insurance scheme had not been completed. During the pre-test phase we recognized a bias related to the answers of the insured-employee H.H. Although they are insured employees they were not willing to admit this when answering the questionnaire. Because of this bias we have excluded any reference to the respondent being insured.

6.6. Policy suggestions and Conclusions

The majority (i.e. more than 75%) of the respondents are willing to pay for public health services. These results have been obtained on the assumption that public health services are of good quality. It appears that with improved services, some reasonable floor fees could be set. This supports and encourages the continuity of cost recovery policies because the majority of the households are willing to pay a reasonable fee. Our conclusions and the policy suggestions' validity is confirmed by the situational analysis of Sudan presented in The National Strategic Plan of Sudan – The First Quarter of the Century (2003 – 2027) [29].

Charges would be appropriate if the money collected is used to improve the quality of services. Thus special attention should be paid to the policies of circulating fee revenues within the facility and of using them to improve the quality of services [30]. Policymakers in Sudan should focus on those quality improvements that might ultimately reduce the financial burden

on the poor. This may include improving the quality of the lab, X-ray analysis and availability of drugs [18].

The continuity of cost recovery policies will prepare the ground for the establishment of community-based health insurance and will help the government to contribute to the effectiveness and sustainability of the informal sector [31]. No doubt many more studies are needed to explore other areas important for this establishment.

Regarding the private sector these results are encouraging for the tremendous growth of this sector for two reasons. First, the high percentage of WTP for the quality of health services favours the private sector. Second, the stabilization of the health financing policy will encourage the private sector to continue growing. The coordination with the public sector should be consistent with these attempts. These results also prepare the ground for co-operation between the public and the private sectors and invite the launch of private-public initiatives .

More studies on WTP approaches are needed to complete the scene and to deal with the uncovered areas. For example a survey to detect the individual WTP together with the household's WTP will allow for more generalization of the findings [17]. Moreover, some researchers have criticized the World Bank generalization of WTP results as ability to pay and argued that 'it tells little about ability'. So, we have to consider WTP results as heralds and potentials for ability to pay, to be confirmed by additional studies [10].

The fact that there is no golden rule in contingent valuation means that other contingent valuation methods are important to support the findings of the take-it-or-leave-it procedure and to overcome its biases. The combination of more than one contingent valuation method in one study will encourage the findings and provide more reliable results.

Finally, these results are expected to encourage the government to be more cautious about decisions in health financing. No doubt the government should pay more attention to such studies.

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CHAPTER 7

**The user fee policy in Khartoum State in Sudan:
The ability to pay for public health services in relation to
willingness to pay**

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7.1. Introduction

Historically, the government of Sudan, as in other developing countries, provided health care free of charge. At the same time it has witnessed a non-stop deterioration of health services [1].²¹ In 1976, before joining the Health for All campaigns, Sudan started a user fee policy i.e. a policy of symbolic payments [2]. The Primary Health Care (PHC) policies of 1978 encouraged user fee policies in the context of community participation. Although the user fee policy was initiated as an emergency measure to bridge the gap in health expenditure, it has come to stay and to be accepted [3].

In 1996 and 2000, under the pressure of poverty and political constraints, the government stepped back from its user fee policies by offering free of charge public health services at emergency departments. This was extended to third-class inpatient services as well. The government took these two steps without any scientific study. Although the government claims that these two steps favoured the poor, health planners considered them to be a political response. Currently, the government policy on user fees remains unclear, and politicians have been putting forward conflicting views on the matter. Politicians insist that an inability to afford to pay user charges is behind the increasing resistance to user fee policies. On the other hand health planners claim that people are able to pay for public health services if these services are of good quality. They point to studies from other developing countries, with similar circumstances, showing that people are able to pay the high prices of the traditional healers and the higher price for good quality in the private sector [4].

The purpose of this paper is to present and discuss a broad study on the ATP for improved quality of public health services in Khartoum State in Sudan. A contingent valuation method was used to elicit the ATP. The ATP for public health services focuses on four aspects of quality related to health services. These quality aspects are: (a) quality of the specialist services, (b) availability of advanced laboratory and X-ray unit analysis, (c) availability of drugs and consumables especially for children and (d) decreased waiting time. A logistic regression model (LRM) was used to estimate the ATP in relation to respondents' demographic and socio-economic characteristics. An additional objective of the paper was to explore whether there are any differences in ATP between respondents who already pay for the health services and those who do not yet pay. The paper also investigates the relationship between ATP and willingness to pay (WTP). The results obtained from the ATP study and the results of the WTP study presented in [5] are compared.

The remainder of the paper is organized as follows. The next section presents a short brief about the user fee policy in Sudan, the methodology and the model selection. The third section presents the statistical analysis approach, the interpretation of the results and the discussion. The paper concludes with policy implications and recommendations for the health care system in Khartoum in Sudan.

7.2. User fee policy in Sudan

Sudan suffers from a chronic shortage in the government's budget for health. The government has endorsed many initiatives to support and improve health and welfare [6]. In reality very

²¹ The modest amount of literature available about Sudan and the similarity in situations in developing countries encouraged us to use the relevant literature from other developing countries' experiences.

few resources are spent on health. The World Bank estimated the government health expenditure amounts 0.07% of the GDP in 2001 [7]. More often than not, only a limited proportion of the approved budget is actually available. Despite the rapid growth in total public sector outlays during the 1970s and 1980s, the share of direct central government spending allocated to the health sector declined from 5.3 percent to 1.2 percent of the total budget. Although actual direct health care expenditure increased on average by 6.4 percent per year in real terms during this period, the rate of increase was both the slowest among the major budget items and the most volatile [8].

In 1988, Sudan together with the other African countries endorsed the Bamako Initiative. This Initiative was launched to support efforts to make PHC more effective. The main goal of the initiative was to establish universal access to PHC. The attainment of this would be enhanced through a substantial decentralization of health decision-making to the district level; community management of PHC; user fees under community control and a realistic national drug policy [9]. Community financing constitutes the innovation spark and the cornerstone of the initiative. Community financing, a term derived from the Bamako Initiative, is different from user fee efforts conducted in other parts of the world. While the primary goal of community financing is the sustainability of health services by deterring excessive use, raising additional revenues and involving the community in health care management, the aim of user fees is to improve the quality of the health care delivery system [10]. The Bamako initiative also made it clear that free of charge public health services would no longer be supplied because this leads to unacceptably poor sustainability of the quality of services [11].

In 1990, the seminar for salvation of the health institution was held. The adoption of a system of a co-payment “self-reliance system” was the prominent outcome of that seminar. In 1992, the programme of “economical treatment” was adopted in some health centres in Khartoum, followed by the programme of “promotion of health services”. Both programmes encourage citizens to pay for public health services. The main goals for these programmes were to increase revenues so as to reduce the budget deficit, to improve administration by stabilizing the budget, to overcome the negative impacts of the free of charge policy and to establish a system of incentives to motivate and encourage health workers. The Economic Liberalization in 1992 encouraged and expanded the user fee policies to the whole country except the southern part.²² The adoption and expansion of the user fee policies using the standard model [12] was considered to be a first step in achieving the Bamako model.²³ Since then Sudan has not pursued the Bamako model and the pilot projects’ evaluation results show poor implementation and poor follow up [13]. Like other developing countries Sudan’s policy-makers and government officials have relied on user fee policies to overcome budget constraints and improve health services [14]. The introduction of user fee policies in public health care facilities has made policy-makers more concerned about the impact of the fees on the utilization of health services by the poor. The debates about health financing reforms and their impact on the protection of the poor and the high-risk groups are ongoing.

²² Due to an internal conflict it has become very difficult to establish such policies.

²³ Lucy Gilson (1997) mentioned that ‘Olan and Turbat (1995) identified two broad models of user fee that African countries have adopted. The standard model is rooted in concerns about existing inefficiencies and inequalities within health care systems around the world. The Bamako Initiative model is rooted in Africa’s experience of poor primary-level care. The Bamako model sees community participation in management as crucial’.

7.3. Methodology

7.3.1. Survey data

The survey was conducted in Khartoum in Sudan in 2001. Data were collected through a survey based on interviews. The questionnaire was pre-tested and retested after correction and modifications. A research team consisting of supervisors, coordinators, a statistician, data collectors, data entry workers, a secretary and a driver conducted the survey.²⁴ The team was joined by the Ajaweed Society research department which is located in the centre of Khartoum.²⁵

The survey covered the urban, suburban and rural areas of Greater Khartoum.²⁶ A multi-stage sampling procedure was adopted. As planned, 460 households were contacted and none of them refused to respond. An overall response rate of 100% was obtained. The survey targeted the heads of households (HH), or their first degree relationship (e.g. wives). The survey included questions on the respondents' demographics e.g. age, gender, tribe, origin of HH, family size, education, occupation. The respondents were asked a set of questions on their socio-economic position like income and expenditure. Due to transportation and security constraints the survey was conducted during daylight and thus most of the respondents were female (62.9%). More details about the demographic variables can be found in [15].

7.3.2. The contingent valuation method

To examine the ability to pay for public health services a contingent valuation method was used, with the take-it-or-leave-it elicitation method. Each respondent was asked whether he/she is able to pay a given price for good quality services [16]. Prices used in the survey varied around the estimated cost of the quality improvement. The respondents were divided into two groups. The respondents in group 1 are the ones who already pay for public health services. They were asked a set of questions to investigate their ability to pay an extra amount of money if these services are of good quality. The respondents in group 2 receive free of charge public health services. They were asked a set of questions to investigate their ability to pay for public health services if these services are of good quality (Appendix A shows the contingent valuation scenario). Four aspects of health services were selected to represent good quality: (a) specialist services, (b) laboratory and X-ray unit analysis, (c) availability of drugs, especially for children and (d) decreased waiting time. The response options given to investigate their ability to pay for good quality were, (1) I would not hesitate, (2) I would go into debt, (3) I will pay if I have enough money and (4) I will not pay. These options are designed to encourage the respondents' intentions rather than beliefs or attitudes because intentions are better predictors of behaviour [17]. The four aspects of good quality for each group are considered to be dichotomous (dependent) variables.

Appendix B shows the reliability of the contingent valuation method. For the dichotomous nature of the dependent variable the model chi-square is used as a reliability test. A significant level of the model chi-square less than .05 indicates that the likelihood of the observed de-

²⁴ The data collectors were students and graduates from Elahfad University for Women.

²⁵ Ajaweed is an NGO involved in counseling and had a bilateral collaboration with Khartoum Centre for Psychiatry and Counseling.

²⁶ Consists of the 3 towns of the capital (Khartoum, Omdurman and Bahary) and the surrounding area.

pendent variable-given the estimated probability-is significantly greater than their likelihood given a probability without the independent variables.

7.3.2.1. Recoding of dependent variables into binary ATP variables

To explain what determines the ATP for improved quality of public health services, we estimated a regression model in which the dependent variable was based on the four response options as follows. For each aspect of quality considered, if the respondent is able to pay the proposed amount, the dependent variable takes a value = 1. We merged the last three options (2), (3) and (4) and took them to mean that the respondent is unable to pay for this aspect of quality, and the dependent variable takes a value = 0. We therefore had 8 dependent variables for the two groups (Figure 7.1 shows the construction of the dependent variables for the two groups). The independent variables are the socio-demographic characteristics in table 7.1.

7.3.2.2. Recoding of dependent variables into binary WTP variables

The four response options mentioned earlier in this paper were used in the WTP analysis as well and are reconstructed for the ATP. The first three options to assess WTP (I would not hesitate), (I would go into debt), (If I have enough money) were merged together and considered as yes = 1, and the last option (I will not pay) was considered as no = 0. (This study and the study of WTP presented in Habbani et al (2006), [5] use the same data set, which helps to make the link between WTP and ATP) – see figure 7.1.

Figure 7.1. The recoding of the dependent variables

a: Group (1) is already paying for the public health services.

b: Group (2) receive free of charge public health services.

7.3.3. Steps in the regression analysis

7.3.3.1. Selection of models

The data used in this paper are taken from a multi-purpose household survey. All the variables irrelevant to the analysis were eliminated as a first step in the model-building strategy. To solve the problem of the low ratio of cases to variables a process of merging categories was

done for the variables age, family size, education, occupation, the type of the disease and the dependent variables [18].

A necessary step in the model building strategy is the selection of variables to fit the model. A univariable selection analysis of each variable, i.e. Chi square, t-test, correlation and the Ordinary Least Square (OLS) was done. Appendices C and D present the results of the OLS models for Group 1 and Group 2 respectively, as the last step in the univariable selection analysis. After completion of the univariable analysis, a selection for the multivariable analysis was done. Any variable with a level of significance of $< .05$ is a candidate for the multivariable model together with the variables considered important for the paper. Following the fit of the multivariable model, the importance of each variable included in the model is verified by a Wald statistic [19].

Models with only the significant variables of the OLS estimations proved to be poor models for the two groups. Both direct and the stepwise procedures were used. Compared to the OLS results, the full models of the direct procedure method for both groups show that some variables have been eliminated and that the models do not fit better than the OLS models. In the stepwise procedure, a backward logistic regression and a series of additions and removals together with interactions of variables was done.

7.3.3.2. Statistical method

Because of the dichotomous nature of the dependent variables, a binary logistic regression model was used for the statistical analysis to estimate the factors (independent variables) which influence the dependent variable 'ability to pay'. Appendix E presents the statistical analysis method.

7.4. Results

7.4.1. General characteristics of respondents

A description of the socio-demographic variables in the sample is given in table 7.1. The frequencies in table 7.1 show that the ability to pay as defined in this study by the respondents of group 1 ranges from 50.5% for 'specialist services' to 61.9% for 'decreased waiting time'. In group 2, the ability to pay ranges from 30.6% for the 'specialist services' to 51.6% for 'drug availability' and 'decreased waiting time'.

Table 7.1 also shows that almost 80% of respondents are in highly productive middle age (31-40). The family size scales suggest that the Sudanese society is composed of extended families. This explains the high dependency rate (93.5%) [20]. Primary education in table 7.1 refers to illiterate, pre-school Khalwa (Quraanic School), and primary school education. Secondary education refers to secondary and upper secondary schools. University education refers to graduates and post graduates. The relatively high percentage of university education only applies to Khartoum and the big cities, when we consider that the country's literacy rate is 40% for males and 15% for females [21].

The economic liberalization policies have led to a migration to the business sector. This explains the relatively high percentage of merchants (34.4%).²⁷ In table 7.1, 86% of the respondents have a monthly income between 100,000 Ls and 500,000 Ls. These wages cover a small

²⁷ Merchants refer to traders, shop owners and businessmen.

proportion of family expenses and are equal to one quarter of the family's expenditures [22]. Monthly income is an inadequate indicator for socio-economic status in developing countries. The variables referring to other income and to car ownership are better indicators of the socio-economic status of the family. The variable referring to other income is an example of how the family copes in bridging the income-expenditure gap. Questions on car and house ownership were asked to differentiate between different classes of socio-economic status, assuming that people who have a car and own a house are the rich. The variables 'have dependents' (55.6%), 'head of household pays tuition fees' (78.9%) together with 'family size' indicate the burden of additional expenditures on the family's budget.

The high percentage of people who paid for treatment during the last three months (86.2%) and who bought drugs during the last three months (90%) show a relatively high demand for health services. The response to questions on the number of episodes of sickness during the last three months (88.1%), the frequency of visits to health service units for treatment during the last three months (86.4%), and internal medicine diseases (49.8%), confirm this conclusion.

Table 7.1. Description of the dependent and the socio-demographic independent variables in the sample

The dependent and the Socio-demographic variables	Value range	Frequencies	N	Min	Max	Mean	Std. Deviation
Group 1 – dependent variables							
Seen by a specialist	1= yes 0= no	50.5 49.5	388	0	1	.51	.501
Lab and X-ray analysis	1= yes 0= no	51.3 48.7	388	0	1	.51	.500
Drugs availability	1= yes 0= no	59.9 40.1	387	0	1	.60	.491
Decreased waiting time	1= yes 0= no	61.9 38.1	388	0	1	.60	.486
Group 2 – dependent variables							
Seen by a specialist	1= yes 0= no	30.6 69.4	62	0	1	.31	.465
Lab and X-ray analysis	1= yes 0= no	34.4 65.6	61	0	1	.34	.479
Drugs availability	1= yes 0= no	51.6 48.4	62	0	1	.52	.504
Decreased waiting time	1= yes 0= no	51.6 48.4	62	0	1	.52	.504
Age	1= 31-40 yrs 2= 41-50 yrs	79.1 20.9	450	1	2	1.21	.407
Family size	1= 1-6 2= 7-10 3= 11 – 15	50.0 40.9 9.1	450	1	3	1.59	.652

The dependent and the Socio-demographic variables	Value range	Frequencies	N	Min	Max	Mean	Std. Deviation
HH education	1=primary 2= secondary 3= university	27.1 42.7 30.2	450	1	3	2.03	.757
HH occupation	1=employee 2=labour 3=merchant 4=jobless 5=military and police	30.2 16.3 34.4 3.3 15.8	450	1	7	3.49	2.217
Monthly Income HH			409	1	5	2.86	1.307
1= <100000	1= very low income	19.3					
2= 100000-150000	2= low income	21.5					
3=150000-300000	3= moderate income	27.4					
4=300000-500000	4= high income	17.8					
5=>500000	5= very high income	14.0					
Other income source	1= yes 2= no	37.8 62.2	450	1	2	1.62	.485
Have a car	1= yes 2= no	28.0 72.0	450	1	2	1.72	.449
Dependents	1= yes always 2= yes sometimes 3=none	41.6 14.0 44.4	450	1	3	2.03	.928
House ownership	1= owned 2=others 3= rent	70.4 13.8 15.8	450	1	3	1.43	.723
HH pay school fees & pay for others	1= yes always 2= yes sometimes 3=not pay	70.6 8.3 21.1	436	1	4	1.58	.917
Episodes of sickness during the last 3 months	1=once 2=twice 3=>2 4= none	21.2 22.0 44.9 11.9	304	1	3	2.27	.824
Disease type	1= surgery & ortho. 2= obs. & paediatrics 3= medicine 4=others	7.2 8.1 49.8 34.9	307	1	4	2.66	1.033
Visit Frequencies to HSU during the last 3 months	1= once 2=twice 3= >2 4= none	25.1 18.8 42.5 13.5	362	1	4	2.44	1.012
Pay for treatment during the last 3 months	1=yes always 2=yes sometimes 3=not paid	66.2 20.0 13.8	450	1	3	1.48	.725
Bought drugs during the last 3 months	1=yes always 2=yes sometimes 3=not paid	69.8 20.2 10.0	450	1	3	1.40	.664

7.4.2. Logistic regression estimation

The assessment of the goodness-of-fit for the eight models is presented in Appendix B. The models provide a good fit for the data, the percentage of correct predictions is between 66.6% and 79.9%, the model's chi-squares are significant and the McFadden R^2 is satisfactory for social science research and varies between 0.1 and 0.3 [19].

Tables (7.2a, 7.2b) and (7.3a, 7.3b) show the LRM results of the dependent variables of group 1 and group 2 respectively. In the tables we present the following:

B is the estimated logit coefficient. The binary logistic regression equation is used to estimate (predict) the odds that the dependent variable equals 1. One unit increase in the independent variable associated with B is associated with a unit increase in the log odds of the dependent variable. If the coefficient B is positive it means the event is more likely to happen and if it is negative it means the event is less likely to happen.

S.E. is the standard error of the coefficient. The 'asymptotic standard error of B' means the smallest possible value for the standard error when the data fit the model. ($B \pm S.E.$) This means it places a confidence interval around the logistic regression coefficient B.

Significance is the significance level of the coefficient ($p < 0.05$). While there are some variables in LRM that are not statistically significant they are still important for the significance of other variables in the model.

Exp (B) is the "odds ratio" of the individual coefficient. The odds ratio is the increase (or decrease if the odds are less than 1) in odds of being in one outcome category when the value of the predictor increases by one unit. The coefficients B are the natural logs of the odds ratios. The $\exp(B)$ is the effect of the independent variables on the "odds ratio" [23]. If the odds ratio is more than one this is considered as a positive odds ratio and the event is more likely to happen and if it is less than one it is considered to be a negative odds ratio and the event is less likely to happen. Due to the dichotomous nature of the dependent variable the chances of the event happening (success = 1) compared to its not happening (failure = 0) depends on the odds ratio values e.g. if the odds ratio is 3, this means that compared to the reference category the event is three times more likely to happen.

Table 7.2a. Logistic regression results for group 1 dependent variables

Group 1 de- pendent Vari- ables	Independent Variables	B	Standard Er- ror	Significance	Exp(B)
ATP for Specialist Services	Employee	-1.167	.401	.004*	.311
	Labourer	-1.203	.465	.010*	.300
	Merchant	-.246	.391	.529	.782
	Jobless	-1.175	.985	.233	.309
	Low income HH (100000-150000)	-.240	.391	.539	.787
	Moderate income HH (150000-300000)	.152	.364	.677	1.164
	High income HH (300000- 500000)	.826	.416	.047**	2.284
	Very high income HH (>500000)	2.037	.511	.000**	7.666
	Have a car	.657	.286	.022**	1.930
	Always pay tuition fees	-.197	.302	.514	.821
	Sometimes pay tuition fees	-1.601	.652	.014*	.202
	Always pay for treatment during the last 3 months	.465	.423	.022**	1.592
	Sometimes pay for treatment during the last 3 months	1.151	.502	.022**	3.162
	Constant	-.217	.578	.708	.805
ATP for Lab and X-Ray Analysis	Employee	-.990	.455	.030*	.372
	Labourer	-.853	.541	.114	.462
	Merchant	.037	.451	.935	1.038
	Jobless	-.836	1.221	.493	.433
	Low income HH (100000-150000)	.102	.472	.829	1.107
	Moderate income HH (150000-300000)	.874	.449	.059	2.333
	High income HH (300000- 500000)	1.511	.531	.004**	4.532
	Very high income HH (>500000)	1.366	.626	.029**	3.918
	Have other income	-.044	.328	.893	.957
	Have a car	.699	.352	.047**	2.013
	Owned a house	1.266	.557	.023**	3.545
	Others	.677	.662	.306	1.968
	Surgery & Orthopaedics	-.682	.662	.303	.506
	Obs. & Paediatrics	-.935	.331	.005*	.392
	Medicines	-.371	.957	.698	.690
	Always pay for treatment during the last 3 months	.479	.683	.483	1.614
	Sometimes pay for treatment during the last 3 months	1.065	.749	.155	2.902
	Constant	-1.443	.921	.117	.236
ATP for Drugs Availability	Employee	-.862	.419	.040*	.422
	Labourer	-.976	.473	.039*	.377
	Merchant	-.410	.416	.325	.664
	Jobless	-1.652	.931	.076	.192

Group 1 de- pendent Vari- ables	Independent Variables	B	Standard Er- ror	Significance	Exp(B)
	Family size (6-7)	.059	.498	.906	1.061
	Family size (7-10)	-.339	.501	.499	.713
	Low income HH (100000-150000)	-.774	.391	.048*	.461
	Moderate income HH (150000-300000)	.053	.372	.888	1.054
	High income HH (300000- 500000)	-.301	.422	.475	.740
	Very high income HH (>500000)	.727	.487	.136	2.069
	Have a car	.683	.297	.021**	1.980
	Owned a house	.721	.431	.094	2.491
	Others	.515	.519	.321	2.868
	Always pay tuition fees	-.035	.310	.909	.965
	Sometimes pay tuition fees	-1.307	5.074	.024*	.271
	Always pay for treatment during the last 3 months	.913	.413	.027**	2.491
	Sometimes pay for treatment during the last 3 months	1.054	.492	.032**	2.868
	Constant	-.228	.850	.789	.796
ATP for Decreased Waiting Time	Low income HH (100000-150000)	.119	.345	.729	1.127
	Moderate income HH (150000-300000)	.480	.329	.144	1.616
	High income HH (300000- 500000)	.341	.380	.370	1.406
	Very high income HH (>500000)	1.949	.521	.000**	7.022
	Have a car	.662	.283	.019**	1.939
	Always pay for treatment during the last 3 months	1.009	.372	.007**	2.744
	Sometimes pay for treatment during the last 3 months	1.138	.451	.012**	3.121
	Constant	-1.005	.410	.014	.366

* Statistically (significantly) less able to pay (p<0.05)
 ** Statistically (significantly) more able to pay (p<0.05)

Table 7.2b. Interpretation of the Logistic results of group 1

Dependent variables	Respondent profile Main influencing characteristics for quality aspects	
ATP for quality aspect of:	More likely	Less likely
Specialist services	High income or Very high income Have a car Always or sometimes pay for treatment during the last 3 months	Employee Labourer Sometimes pay school fees
Advanced lab and X-ray analysis unit	High income or Very high income Have a car Owned a house	Employee Labourer
Availability of drugs especially for children	Have a car Always or sometimes pay for treatment during the last 3 months	Low income Employee Labourer Sometimes pay school fees
Reduced waiting time	Very high income Have a car Always or sometimes pay for treatment during the last 3 months	

Table 7.3a. Logistic regression results for group 2 dependent variables

Group 2 dependent Variables	Independent Variables	B	Standard Error	Significance	Exp(B)
ATP for Specialist Services	HH education (Secondary)	-.684	.954	.473	.505
	HH education (University)	.915	.942	.331	2.498
	Low income HH (100000-150000)	-.196	1.387	.888	.822
	Moderate income HH (150000-300000)	-.511	1.275	.689	.600
	High income HH (300000- 500000)	1.105	1.255	.379	3.019
	Very high income HH (>500000)	2.192	1.523	.159	8.956
	Always have dependents	-1.537	1.048	.142	.215
	Sometimes have dependents	-2.114	1.149	.066	.121
	Always pay tuition fees	1.348	1.269	.288	3.850
	Sometimes pay tuition fees	-6.761	32.190	.834	.001
	Constant	-1.060	1.405	.451	.347
ATP for Lab and X-Ray Analysis	Have a car	1.887	.776	.015**	6.597
	Always have dependents	-1.544	.825	.069	1.131
	Sometimes have dependents	-2.220	1.104	.044*	.109
	Owned a house	-1.242	.812	.126	.289
	Others	-1.682	1.052	.121	.196
	Always pay for treatment during the last 3 months	.976	.798	.221	2.653
	Sometimes pay for treatment during the last 3 months	-.078	.805	.923	.925
	Constant	.649	1.051	.537	1.913
ATP for Drugs Availability	HH education (Secondary)	.586	.821	.476	1.796
	HH education (University)	2.404	.940	.011**	11.068
	Have a car	1.883	.898	.036**	6.574
	Always have dependents	-1.594	.927	.086	.203
	Sometimes have dependents	-1.799	1.131	.112	.166
	Owned a house	-.717	.907	.429	.488
	Others	-.239	.966	.804	.787
	Always pay tuition fees	1.865	1.129	.098	6.459
	Sometimes pay tuition fees	-.808	1.764	.647	.446
	Constant	-1.134	1.518	.455	.322
ATP for Decreased Waiting Time	HH education (Secondary)	.657	.731	.369	1.928
	HH education (University)	1.702	.795	.032**	5.482
	Always pay tuition fees	-1.214	1.226	.322	.297
	Sometimes pay tuition fees	-3.217	1.604	.045*	.040
	Always pay for treatment during the last 3 months	.599	.815	.463	1.820
	Sometimes pay for treatment during the last 3 months	.732	.798	.359	2.079
	Constant	.162	1.420	.909	1.176

* Statistically (significantly) less able to pay ($p < 0.05$); ** Statistically (significantly) more able to pay ($p < 0.05$)

Table 7.3b. Interpretation of the Logistic results of group2

Dependent variables	Respondent profile	
	Main influencing characteristics for quality aspects	
ATP for quality aspect of:	More likely	Less likely
Specialist services	-----	-----
Advanced lab and X-ray analysis unit	Have a car	Sometimes have dependents
Availability of drugs especially for children	HH education (university) Have a car	-----
Reduced waiting time	HH education (university)	Sometimes pay school fees

Tables 7.2a and 7.2b show the LRM results and the interpretations of the dependent variables of group 1. An example of how to read the two tables together: For the first dependent variable 'specialist services' of group 1, the variables 'employee', 'labourer', 'high income', 'very high income', 'have a car', 'sometimes pay school fees', 'always pay for treatment during the last 3 months' and 'sometimes pay for treatment during the last 3 months' are statistically significant. The odds ratios (>1) for the significant factors indicate that respondents who are more likely to be able to pay for the specialist services are people who have a high or very high income, have a car and always or sometimes pay for treatment during the last 3 months. The odds ratios (<1) for the significant factors indicate that employees or labourers and people who sometimes pay school fees are less likely to pay for specialist services.

Tables 7.3a and 7.3b show the LRM results and the interpretations of the dependent variables for group 2. The first dependent variable 'specialist services' has no significant variables for group 2, which indicates that the predictive value is low. An example of how to read the two tables together: The second dependent variable 'advanced lab and X-ray analysis' has only two significant factors for group 2: 'have a car' and 'sometimes have dependents'. While the other variables are not statistically significant they are still important for the significance of the model. People who have a car are six times more likely to pay for advanced lab and X-ray analysis services than those who have no car. It also shows a negative odds ratio for people who sometimes have dependents. This group is less likely to be able to pay for the advanced lab and X-ray analysis services.

Table 7.4a presents the results of WTP and ATP. A comparison shows the difference between the two outcome frequencies for both groups. There are no major differences with regard to the LRM, except the ATP result of those with a high income in group 2 who do not pay, which confirms the findings by Habbani et al (2005) [15], that rich people benefit from free of charge public health services. **Table 7.4b** shows that the t-tests for all pairs are statistically significant for both groups. This indicates that the difference between WTP and ATP is significant and not due to chance.

Table 7.4a. The WTP and ATP results for group 1 and group 2 (frequencies and respondents profiles)

Paired samples of WTP and ATP of group 1	Frequencies	The respondents' profiles of the regression estimation of WTP and ATP for group 1.	
Specialist services - WTP	86.9%	Group 1. WTP	High income
Specialist services - ATP	50.5%		
lab & X-ray analysis - WTP	85.8%		High demand for health services
lab & X-ray analysis - ATP	51.3%		
Drug supply for children - WTP	88.1%	Group 1. ATP	High income
Drug supply for children - ATP	59.9%		
Decreased waiting time - WTP	81.7%		High demand for health services
Decreased waiting time - ATP	61.9%		
Paired samples of WTP and ATP of group 2	Frequencies	The respondents' profiles of the regression estimation of WTP and ATP for group 2.	
Specialist services - WTP	75.8%	Group 2. WTP	High income
Specialist services - ATP	30.6%		
lab & X-ray analysis - WTP	77.0%		Big families
lab & X-ray analysis - ATP	34.4%		
Drug supply for children - WTP	80.6%	Group 2. ATP	High education
Drug supply for children - ATP	51.6%		
Decreased waiting time - WTP	75.8%		High income
Decreased waiting time - ATP	51.6%		
Group 1 - are people who already pay for public health services.			
Group 2 - are people who receive free of charge public health services			

Table 7.4b. Results of t-test paired samples of WTP and ATP of group 1 and group 2

Paired samples of WTP and ATP of group 1	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Specialist services - WTP Specialist services - ATP	.36	.482	.024	.32	.41	14.863	387	.000
lab & X-ray analysis - WTP lab & X-ray analysis - ATP	.35	.476	.024	.30	.39	14.289	387	.000
Drug supply for children - WTP Drug supply for children - ATP	.28	.450	.023	.24	.33	12.302	386	.000
Decreased waiting time - WTP Decreased waiting time - ATP	.20	.399	.020	.16	.24	9.789	387	.000
Paired samples of WTP and ATP of group 2	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Specialist services - WTP Specialist services - ATP	-.45	.502	.064	-.58	-.32	-7.088	61	0.000
lab & X-ray analysis - WTP lab & X-ray analysis - ATP	-.43	.499	.064	-.55	-.30	-6.676	60	0.000
Drug supply for children - WTP Drug supply for children - ATP	-.29	.458	.058	-.41	-.17	-4.995	61	0.000
Decreased waiting time - WTP Decreased waiting time - ATP	-.24	.43	.055	-.35	-.13	-4.412	61	0.000

Group 1 - are people who already pay for public health services.

Group 2 - are people who receive free of charge public health services

7.5. Discussion

The aim of this paper is to conduct a broad study of the ATP for improved quality of public health services in the Khartoum area of Sudan. Secondly the paper aims at exploring whether there are any differences in ATP between respondents who already pay for health services (group 1) and those who do not yet pay (group 2). Finally the paper aims to investigate the relationship between ATP and WTP.

The average percentage of the ability to pay for good quality public health services for group 1 and group 2 is 55.9% and 42.1% respectively. This indicates a moderate ATP for public health services with good quality. The logistic regression estimations indicate that rich people are most likely to be able to afford the public health service fees. This together with the differences observed from the comparison between ATP and WTP (55% versus 85% for group 1 and 42% versus 77% for group 2) indicates that health planners should be more cautious about the expansion of user fee policies for the poor because, on average, a moderate ATP may not constitute a solid ground for these policies among the poor.

These results, supported by other studies from developing countries, indicate that some people are unable to pay for improved quality health services [3]. Some studies also support rejecting

any WTP outcome as a definite sign of ATP [4]. Our results provide empirical support for this rejection. The expansion of poverty in Sudan, which is mentioned by some studies [24] and the poor economic indicators [7] support the inability of respondents to pay for health care. Health planners may consider a moderate ATP as a sufficient indicator for the expansion of user fees. They usually rely on other studies that show that the poor are willing and able to pay the high prices of the traditional healers and the private sector in developing countries [12 and 25]. Ambiguity about household income and expenditure and imprecise results about the inability to pay support the health planners' claims.²⁸ These results together with the semi-consensus among researchers that people are willing to pay for the quality of health services [12, 4, 25 and 3] support the health planners' arguments.

The LRM estimations show that, among respondents who do pay (group 1), the ATP is mainly determined by economic factors, while for respondents who do not pay (group 2) the ATP is determined by economic factors and a high education.

Regarding the logistic regression estimates for group 1, socio-economic factors are important determinants of the probability of the respondents' ability to pay for good quality public health services, as was found in Weaver, Kornfield, Chapko et al, (1993) [1] as well. Socio-economic variables include income variables and expenditure variables. For income variables the LRM analysis shows that the main income determinants included 'monthly income', 'employee', 'labourer', 'have a car', and 'house ownership'. The LRM shows that these socio-economic factors have a significant impact on the ATP. The higher a respondent's income together with high expenditures on health care, the stronger his/her ability to pay, and the more eager he/she is to pay for good quality public health services [5]. Generally there are no remarkable differences between the four aspects of quality of health care with regard to the socio-economic characteristics of group 1.

'Have a car', a strong indicator of one's economic status, is a significant variable in all four aspects of quality. This is confirmed by the significance of 'very high income' except in the equation for the 'drugs availability especially for children'. The high demand for health care services is one of the influential factors for the four aspects of quality. The 'decreased waiting time' aspect of quality is a favourite one for rich people. This confirms the findings by [5]. The high percentage of 'decreased waiting time' compared to the other three aspects of good quality of health services for the two groups is a surprising result. Many researchers have claimed that we should recognize time as an important determinant influencing the WTP and the ATP in developing countries [12, 14 and 3]. It is very difficult for a poor head of household to compensate a day of lost income when he becomes ill or accompanies one of the family members seeking health care [12 and 3]. So, if time is money for the rich it is even more so for the poor.

Regarding the LRM estimations for group 2, the factors 'have a car' and 'high education' are the determinants that influence the probability of being more likely to be able to pay for good quality public health services. The results show no significant variables in the equation for the aspect 'specialist services'. The descriptive results confirm these findings i.e. the lowest percentage among the two groups. This result means that priorities will be important in shaping the quality of health care services.

²⁸ They use a utilization model, which relies on the decrease in the number of patients using health services after the adoption of user charges regardless of the rationale role of the fees in deterring excessive use of health services (Joseph K. Konde-Lule and David Okello, 1998).

The significance of 'have a car' in group 2 is a confirmation of the findings that were presented in [5]. More highly educated respondents are more likely to be able to pay for the public health services of good quality than the lower educated [26]. The reason for this may be related to the strong link between a high income and a high education. Not only that, a high education means that people have more information to evaluate and judge [27]. Furthermore, more highly educated people are more able to understand the circumstances of the country and may be more willing to contribute positively to its renaissance.

The comparison between the two groups of respondents' ATP for public health services of good quality shows an obvious difference between them. Group 1 respondents who are experienced in paying for health services have more ATP than group 2 respondents who would be paying for the first time. This significantly higher ATP of group 1 in comparison to group 2 indicates the satisfaction of group 1 respondents with the existing public health services if we consider that they are willing and able to pay an extra amount of money. It also shows that more than 50% believe that if they pay an extra amount of money it will encourage the improvement of the quality of the health care services. The low percentage of people who are able to pay in group 2 may be due to fact that these people are really poor and cannot afford to pay. Not only that, it may reflect uncertainty about new experiences. Furthermore, it may be due to the amount of money that was mentioned in the contingent valuation scenario (Appendix – A). However the long history of receiving free of charge public health services as a human right is expected to be a psychological barrier and to prevent them from accepting the idea of paying for health care services. Moreover, this may be an inappropriate implementation of these policies and there are rumours about corruption that these fees are used to supplement the income of the health workers [3].

The obvious difference between the two outcomes of the ATP and WTP studies shows the importance of differentiating between ATP and WTP in Sudan. The similarities and differences of the outcomes between WTP and ATP studies are important for health planners. For instance if WTP and ATP are high and similar, this supports the implementation of the proposed policies [28]. On the other hand if they are similar but both WTP and ATP are low, this calls for a suspension of the proposed policies. If the WTP is remarkably higher than the ATP, this indicates adverse selection behaviour and policies should be revised and adapted to what the people can afford. On the other hand if the ATP is higher than the WTP, the planners should determine the causes, and consider how to increase people's awareness and get them involved.

7.6. Policy implications, recommendations and conclusion

One can conclude that a moderate ATP, the logistic regression estimations and the obvious differences between ATP and WTP should be considered as important indicators that user fee policies affect the utilization of health services by the poor.

In these circumstances, policy makers in Sudan should focus on vulnerable population groups like women, children and low-income people who are less likely to be able to pay. The availability of drugs at affordable prices together with the improvement of and acceptable prices for the lab and X-ray analysis services would benefit these vulnerable groups.

The adoption of the Bamako community financing model is recommended as it provides benefits in the form of higher community commitment; easy identification of the poor; setting of reasonable fees; it guarantees the circulation of revenues within the facilities; someone

to complain to; the sustainability of services in the event of any political instability and the establishment of health insurance for the informal sector [25, 29, 30 and 31].

The government should focus on the poverty problem and use different measures to alleviate poverty complications so as to protect the poor as regards provision of health services e.g. revitalization of means tests. Moreover the government should build on the high percentage of the people who pay for public health services (more than 80%) [15]. The high Sudanese solidarity [32] together with the high WTP [5] are promising opportunities to be considered. No doubt there will always be people who cannot afford to pay for health services. The poor need to be properly identified to make it easy for them to have access to health services of good quality.

To achieve quality aspects like 'decreased waiting time' the government should solve the problems that cause the delay in health services. This could be achieved by allocating fee revenues to the facilities where these fees were generated. Fees can further be used to boost the introduction of incentives and make more personnel available [3 and 33]. Money generated by fees can also be used to solve the chronic problem of electricity shortages that delay lab and X-ray analysis. Furthermore the retention of revenues within the facility helps managers to avoid shortages in consumables e.g. lab reagents, X-ray films, catheters and disposable syringes by acquiring them from the private market.

Finally, we hope that these issues of WTP and ATP studies will receive more attention from the government before any decisions are made on the health financing system.

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CHAPTER 8

Conclusions: The SWOT framework, policy implications and recommendations

8.1. General conclusions

8.1.1. Introduction

The aim of this study is to investigate whether community financing mechanisms can contribute to a better health of the people of Sudan. The findings of the study will be classified by the strengths, weaknesses, opportunities and threats (SWOT) framework. We will weight the findings against selected criteria that make community financing a success. These selected criteria are categorized in two groups. The first group concerns the appropriate implementation of community financing attempts. The second group is about the community financing performance with respect to resource mobilization, social inclusion, financial protection, good quality of health services, and community empowerment. Better health in broad terms requires more knowledge (formal and informal education), sufficient resources and effective responses to health problems. An enabling environment for health is essential to achieve better health [1].

This study is a case study composed of the analysis of primary and secondary data. The data collection was described in the introduction. Regarding the primary data the study applied a quantitative research approach of the contingent valuation method. The contingent valuation method is used to investigate the willingness and ability of the respondents to pay for public health services if these services are of good quality. The method is applied to four aspects of services. These are specialist services, advance lab and x-ray unit, availability of drugs especially for children and reduced waiting time. A logistic regression model is used to determine the attributes of respondents regarding the four quality aspects of services.

This concluding chapter aims to outline the general conclusions, the SWOT framework analysis, policy implications and recommendations. First, the main findings of the study and the answers to the research questions are presented. Second, the SWOT framework is discussed. Finally policy implications and recommendations are presented.

8.1.2. Community financing what, why and how: The Sudan experience

The findings in chapter 2 suggested that there is no consensus on what community financing is. Different definitions are used in different eras. These definitions in general came to mean that any active role of the community in financing and managing health services can be considered as a community financing approach [2, 3 and 4]. The evolution of the definitions reflects the different eras of health finance reform and the spirit dominating that era.

The chapter reveals that community financing schemes have emerged in developing countries because of political instability, economic shortages and the weak capacity of health organization [5 and 6]. The impact of the above mentioned causes are explicit in the expansion of poverty and the chronic failure to finance the health care system. In addition the high willingness of the people encourages and advocates the adoption of community financing attempts [4 and 7].

It also shows that the success in implementing community financing schemes requires a feasibility study, community study, and robust partnership with NGOs and the government to ensure training and technical support [8 and 7].

The chapter reviewed the main features and characteristics of the community financing approaches together with the determinants showing their strengths and weaknesses.

The chapter also reviewed some of the international experiences of community financing. It shows the diversity in community financing schemes regarding their purpose, set up and operation [9, 2 and 7]. Different studies have tried to design frameworks to help clarifying, classifying and evaluating community financing schemes [2]. Evidence from international experiences regarding resource mobilization, financial protection and social inclusion suggest careful adoption of any community financing scheme [7].

Regarding the Sudanese experience in community financing the chapter suggested that although Sudan has potential because of a high willingness to pay, social capital and resource mobilization, it is still lagging behind in community financing experiences. The poor adoption of some community financing initiatives has had a negative impact on the coverage of the informal sector. Health as a core determinant of development and poverty reduction has an important role to get all health partners together. The BDN and CFCI initiatives for comprehensive integrated sustainable community development were launched to reduce poverty by improving the livelihood of the people, health, education, building capacity of the community and local authority and to ensure child rights. These show promising results. The importance of these initiatives is that they address vulnerable rural communities in the most remote states of the country. The early positive results of the pilot studies strengthened the partnership of the WHO, UNICEF, the government and the community and ensured coordination and collaboration [10 and 11].

8.1.3. Poverty and health in Sudan: the poor protection

Chapter 3 showed that the Human Poverty Index in 2003 ranked Sudan number 52 out of 94 developing countries. It is clear that poverty as estimated by human deprivation is prevalent all over the country and remarkably high in rural areas [12]. Human deprivation varies in nature and impact. Poverty can be attributed to natural disasters or socio-economic factors. These factors may be local, regional or global. Generally these factors can be categorized as: natural disasters, misuse of environmental resources, inappropriate national policies, and armed conflicts [12].

Regarding the relation between poverty and health the chapter shows that poverty and health are intrinsically linked and are mutually reinforcing and deprivation in one area produces negative effects on the other. Ill health is both a cause and a consequence of poverty [13]. Those living in absolute poverty are five times more likely to die before reaching the age of five, and two and half times more likely to die between the ages of 15 and 59, than those in higher income groups. Differences in maternal mortality even show that the lifetime risk of dying in pregnancy in parts of Sub-Saharan Africa, where almost 50% of the population lives in absolute poverty, is one in 12, compared to one in 4000 in Europe [14].

In 1992, after the adoption of the user fees policy all over Sudan, the government used both the direct and the indirect targeting measures to protect the poor. In 1996 the government offered free of charge public health services at emergency departments as an indirect targeting approach. Many exemption mechanisms including list of drugs, geographical region and services attempted to protect the poor. No socio-economic studies were held to identify the poor, no comprehensive plan was prepared to address this chronic problem and no proper robust coordination between the different bodies concerned with health and poverty was arranged. The recent FMOH plan of poverty alleviation focusing on revitalization of the states' health

services in a sense fills this gap. The low coverage is still evidence of the bad situation [12, 15, and 16].

The chapter also presents the Zakat experience in Sudan. Although the Zakat Chamber has the potential and ability to make a difference for the poor, it still lacks coordination. More than 32 million US\$ are spent on health services. This amount of money has been spent mainly in tertiary health care i.e. equipping hospitals and specialized centres. Only 50,000 poor family were covered by the Zakat under the health insurance system (costing 2.4 million US\$) [17]. In contrast if all of the money that was allocated for health were used for poor families, more than 666,666 poor household will enjoy health insurance coverage for one year. That means 4,000,000 poor inhabitants would have access to health services.

8.1.4. Financing the health care system in Sudan: patterns, characteristics and determinants

The findings in Chapter 3 suggested that the health care system in Sudan has multiple sources of finance. These sources included general tax, earmarked tax, social insurance, private insurance, private sector for profit, user fees, abroad treatment, community financing, private sector not for profit, donors funding and traditional healers [5]. The chapter also showed that the government as the sole provider of health services spends very little. Per capita health expenditure has remained between US\$ 1 and US\$ 2.1 in 2004 [18].

The expenditure trend for the last few years showed a sluggish improvement in the release of the budget allocated. The allocation of resources to the health sector is highly skewed in favor of big urban towns and hospital oriented curative health care [5].

Chapter 4 showed that social health insurance does not exceed 14.5% of coverage and the resources earmarked to the formal sector. The majority (85.5%) of the informal sector has been left behind and is subject to the user fee policies and the private sector with for profit services [19]. The private sector for profit has grown tremendously. The expansion of this sector is often not included in the government health policy. This sector can play a significant role in tertiary health care services and attract the abroad treatment seekers [20]. User fee policies are a big share of health expenditure in Sudan and amount to more than 70% of public health expenditure. The user fee policy has a negative impact on the utilization of health services by the poor especially for the more vulnerable groups. The government started to render free of charge public health services at emergency department for the poor [18 and 5]. The treatment abroad increased in the absence of a policy and structure of the system. The demand for treatment abroad increased exponentially due to poor health care services in Sudan and the attraction of the medical tourism packages offered by some countries (in particular Jordan) [20]. The last estimation of the amount of money spent abroad for treatment was more than 50 million US\$/year. The government started a national programme to attract the people to stay at home for treatment and allocated 28 million US\$ and began to revitalize the FMOH and States Ministries of Health facilities [20 and 16]. The community financing supports the capital spending (buildings) of the different PHC facilities and their maintenance and plays a significant role for the health services [21]. The two community financing experiences in Sudan, the CFCI and the BDN show the high willingness and seriousness of the communities to take care of themselves [22 and 23]. Early in the 1990s the World Bank and the IMF ceased their operations in Sudan. The UN system accounted for 70% of the multilateral assistance with UNICEF, WFP, UNDP, IFAD, and IDA being the major partners. Care and Oxfam (UK) ac-

counted for 80% of NGOs assistance. Generally the donor funds are used in controlling communicable diseases and on nutrition and PHC. In the last couple of years the donors' funds increased both the allocated and the released amount of money [18 and 21].

Chapter 4 shows that the health finance system in Sudan has serious shortages in information regarding different sources of finance. In addition and more important there is an urgent need to know more about household income and expenditures on different aspects of life in particular health. A National Health Account should be a priority to explore these different sources of finance, to confirm available data, to identify the interrelation between different agencies contributing to health expenditure and to establish a health finance information system [18 and 5].

The chapter also shows that the health finance system suffers from severe lack of coordination in the absence of a National Health Policy.

Regarding the health finance performance chapter 4 showed that the budget falls below the real needs (although the government released more than the estimated amount it is still below the per capita rate for the Sub-Saharan countries). The health budget is mainly spent on hospital oriented tertiary curative services. The double tier system that was created by the Insurance Corporation will also lead to inefficient use of resources. The government tries to increase revenues by creating a private market.

The health finance system couldn't achieve equity in health care provision. That can be seen in the low coverage of the social insurance (14.5%) and the high expenditure out-of-pocket that amount to 70% of the total health expenditure. More than 60% of the population falls under the absolute line of poverty. The infra structure of transportation, safe water, sanitation, communication, electricity and etc. is poor especially in rural areas.

The failure of the health finance system to achieve good quality health services is confirmed by the absence of treatment protocols, accreditation policies and accountability system. It is also observed in the bad quality of services of both public and private health sectors that pushed numerous patients to seek treatment abroad (more than 60% of treatment abroad is due to wrong diagnosis) [20].

The health finance system shows an unsustainable pattern especially the government budget for health (except the 2004 health budget all other budgets show that the released budget is lower than the allocated one (see table 4.4 - chapter 4)); the health sector is vulnerable to budget cutbacks. Community financing schemes can fill the gap of the informal sector. Basic health services like the PHC mainly depend on donor funds.

8.1.5. Are free of charge public health services an impediment to the cost recovery policies?

The results obtained in chapter 5 suggest that the category most likely to receive free of charge public health services are the respondents who have other income and dependents. Given their high demand for health services and given that this group of people is likely to be the targeted population for free of charge health services, the cost recovery policies in Sudan are not likely to be threatened by exploitation by the well-off people. So, the government can continue to offer free of charge public health services at emergency departments with effective measures to stop any misuse.

The chapter suggested some recommendations. No doubt one of the top urgent priorities facing the health planners in Sudan is to establish a health care referral system. To do so the gov-

ernment needs to improve the quality of services at the health centers by keeping the revenues within these institutions. The retention of the payment revenue at the local level, as a supplement to public health care financing, can facilitate and improve the quality of services at the local level and keep the system viable [24, 25, 26 and 27]. Free of charge public health services in Sudan is a political decision taken without technical studies and support. There is a need for a better understanding of the packages of policies that meet the multiple objectives that politicians and the community pursue. If the government insists on executing the new policy of free of charge public health services for the third wards' classes, this may require careful and scientific handling. The success of cost recovery policies is contingent upon existing political, economic and managerial conditions. So, there is a need for assessing the cost recovery policies in terms of the political and economic circumstances under which the implementation occurs, the effect of cost recovery policies on equity and quality, the efficiency of operational performance, and the generation and maintenance of political and popular support [28].

**8.1.6. Household health-seeking behaviour in Khartoum, Sudan:
The willingness to pay for the public health services if these services are of good quality.**

The results of this chapter show that the majority (i.e. more than 75%) of the respondents are willing to pay for public health services. These results are obtained under the assumption that public health services are provided with good quality. It appears that with improved services, some reasonable floor fees could be set. This supports and encourages the continuity of the cost recovery policies because the majority of households are willing to pay a reasonable fee. Charges would be appropriate if the money collected is used to improve the quality of services. Thus special attention should be paid to the policies of fee revenues to circulate within the facility and to be used in improving the quality of services [27]. Policymakers in Sudan should focus on those quality improvements that might ultimately reduce the financial burden on the poor. This may include improving the quality of the lab and x-ray analysis and availability of drugs [29].

The continuity of the cost recovery policies will smooth the ground for the community-based health insurance to be established and help the government to contribute to the effectiveness and sustainability of the informal sector [30]. No doubt many more studies are needed to explore other areas important for this establishment.

The fact that there is no gold rule in contingent valuation, other contingent valuation studies are important to support the findings of the take-it-or-leave-it procedure and to overcome its biases. The combination of more than one contingent valuation method in one study will encourage the findings and provide more reliable results.

8.1.7. The user fee policy in Khartoum State in Sudan: the ability to pay for public health services in relation to willingness to pay.

The results of chapter 7 shows that the average ability to pay (ATP) for good quality public health services for group 1 (respondents who already pay for health services) and group 2 (those who do not pay for health services) is 55.9% and 42.1% respectively. This indicates a moderate ATP for public health services with good quality. The logistic regression estimations indicate that rich people are most likely to be able to afford the public health service

fees. This together with the differences observed from the comparison between ATP and WTP (55% versus 85% for group 1 and 42% versus 77% for group 2) indicates that health planners should be more cautious about the expansion of user fee policies for the poor because, on average, a moderate ATP may not constitute a solid ground for these policies among the poor.

The estimations show that, among respondents who do pay (group 1), the ATP is mainly determined by economic factors, while for respondents who do not pay (group 2) the ATP is determined by economic factors and a high education.

The obvious difference between the two outcomes of the ATP and WTP studies shows the importance of differentiating between ATP and WTP in Sudan. The similarities and differences of the outcomes between WTP and ATP studies are important for health planners.

The chapter suggested that policy makers in Sudan should focus on vulnerable population groups like women, children and low-income people who are less likely to be able to pay. The availability of drugs at affordable prices together with the improvement of acceptable prices for the lab and X-ray analysis services would benefit these vulnerable groups.

The adoption of the Bamako community financing model is recommended as it provides benefits in the form of higher community commitment; easy identification of the poor; setting of reasonable fees; it guarantees the circulation of revenues within the facilities; someone to complain to; the sustainability of services in the event of any political instability and the establishment of health insurance for the informal sector [31, 32, 33 and 34].

8.2. The SWOT framework analysis

Some researchers have tried to carve out frameworks to evaluate, clarify and classify different community financing schemes so as to reach an analytical framework that can be used in the analysis of different community financing experiences in both a retrospective and prospective manner [2, 5, 9 and 35]. There is no consensus on one framework but rather on a structure of a framework that is influenced by many factors regarding the country situation, culture and communities' needs assessment [2].

To answer the question 'can community financing contribute to a better health of Sudan' we need to check the potentials and limitations of the community financing schemes by exploring the advantages and disadvantages of this approach. Also we need to explore the characteristics that make this attempt a success. The constraints and obstacles that can lead to the failure of this endeavour should also be highlighted.

The features and determinants of community financing together with the international and Sudan experiences will be weighted against selected criteria. These criteria are carved out from different experiences to ensure that community financing can be a success [8]. The criteria are categorized in two groups of attributes. The first is the appropriate implementation of community financing schemes. This includes (a) feasibility assessment (b) community study (c) enabling environment (d) terms of references and job description (e) services offered and personnel engaged and (f) organization structure. Second, the performance of community financing with respect to (a) resource mobilization (b) social inclusion (c) financial protection (d) improving quality of services and (e) community empowerment.

The strengths, weaknesses, opportunities and threats (SWOT) framework will be used to classify the findings of community financing. Then the findings will be weighted against the se-

lected criteria to yield if the community financing approach is feasible for Sudan and can contribute to a better health.

Box 8.1 shows the strengths and weaknesses of the community financing schemes regarding their features, characteristics, from the national and international experiences. The box also shows the opportunities that can make the community financing a success in Sudan and mentions the threats that may lead to the failure of these attempts.

Box 8.1. The SWOT framework for community financing

Strengths	Weaknesses
<ul style="list-style-type: none"> • Risk pooling • Social inclusion to increase access • Financial protection against catastrophic expenditure • Increased resource mobilization for health provision • Community involvement, active participation and empowerment • Promotion of self-reliance and community responsibility • Low cost of operation • It improves quality of services (drug revolving fund) • It is easy to determine the poor • It can raise new resources (untapped) • The involvement of WHO and UNICEF with other NGOs • The high willingness of the people to pay for public services • The remarkable payments of the community in the CFCI experience • The income generating schemes of the BDN in improving people's livelihood • The moral commitment of the community protocol that was signed by different partners in the BDN experience • The integration approach of health and education as seen in the CFCI • The coordination units of the UNICEF in the CFCI experience • The criteria used to select the remote areas in the CFCI experience • The robust relation between the NGOs and the State and local governments • Community building capacity seen in the BDN and CFCI experiences • Health insurance purchases from both private and public services • The well structured plan of implementation in both the BDN and the CFCI experiences • The pilot projects of the BDN and the CFCI experiences • The success of the large scale community financing in China, Thailand, Indonesia, Bangladesh and west Africa • The unique contribution of the Sudanese people to the capital expenses in building PHC infra structure and other health facilities 	<ul style="list-style-type: none"> • It is a supplement not an alternative to finance health services • Exclusion of the poorest • It requires subsidies • It needs many skills in management and financial management • Prone to moral hazards and adverse selection • It requires high willingness and ability to pay • It needs seed money and financial support (drugs) • Low national government commitment • It is largely untested • Pro-poor orientation is undermined by regressive flat –rate contributions and by a lack of subsidies or premium exemption, which create a financial barrier for the poor • Providers can often exert monopoly power during price and payment negotiations • Inadequate partnership with other UN agencies and organizations engaged in community development activities seen in the BDN and CFCI • Delayed reimbursement of loans in the BDN experience

Opportunities	Threats
<ul style="list-style-type: none"> • Sudan is rich with natural resources i.e. vast arable land with plenty sources of water, oil, mines, live-stock etc. • Recent oil revenues can be used for CF • The peace agreement that ended the war in the South • The peace agreement in Darfur (with the largest fighting group) • The interim constitution determined that the country will go 6 years under rehabilitation and building infra structures then a general election towards democracy and political stability • The interim constitution mentioned that the basic health needs (PHC) are free of charge for all people of Sudan together with primary education • International community support (allocation of 4.7 billion US\$ for post war adjustments) • The Global Fund to eradicate HIV/AIDS, malaria and TB • The Millennium Development Goals • Ministry of health reforms • Establishing a federal system in Sudan for decentralization • Expansion in medical education and training • The Zakat chamber and its role in alleviating poverty • The FMOH programme in alleviating poverty • The poor protection methods • The huge number of people who have graduated from different new universities • The large base of the health insurance in the formal sector • The well established PHC infra structure 	<ul style="list-style-type: none"> • New internal conflicts e.g. Darfur • Increased number of displaced people • Expansion of urbanization • Expansion of poverty all over the country • The high illiteracy rate (>50%) • The high dependency rate (93%) • The massive brain drain • The burden of infectious diseases • The disparities between States • The modest ability to pay • Lack of knowledge and experience in community based insurance • The low commitment of the national government • The unsustainable financial resources • The low capacity of health organization • The rich people are not interested in such schemes and this will affect the main idea of share risks • The free rider phenomena appears clearly in Sudan informal experience • The limited contribution of women

8.2.1. The appropriate implementation of community financing

This is the first category in the selected criteria to weight the findings against. This category includes feasibility assessment, community study, enabling factors, terms of references and job description, services offered and personnel involved, and organizing structure.

8.2.1.1. Feasibility assessment

The SWOT strengths' cells show that feasibility studies need to be done in the remote areas [11]. In addition the BDN experience shows that the community is involved in need assessment studies supported by the technical teams of the WHO [10].

8.2.1.2. Community study

Sudan is comprised of 600 tribes. This diversity in colors, lingual and other characteristics gives the country its unique mosaic culture. Most of the population (70%) lives in rural areas with very low indicators of health, education and other development aspects [18]. The SWOT

shows that the threats of the internal conflicts, natural disasters, expansion of poverty and the burden of infectious diseases that affect the population settlements, has resulted in 4 million displaced people, uncountable refugees and tremendous growth of urbanization [18].

The SWOT presents the high social capital as strength of the Sudanese community [13]. This is seen in the Nafir practices and the unlimited support to the health infrastructure. The community can be organized for more self-reliance activities, as shown in the BDN and the CFCI experiences. The high willingness of the community to pay for good quality health services also reflects the high demand for these services. Although the empirical findings show modest ability to pay, the out-of-pocket costs reached more than 70% of health expenditure [15]. The SWOT reviews the weaknesses of communities in management and financial management which should alarm the planners whenever they consider these community financing schemes as a choice [11 and 34]. The SWOT shows the threat of the limited role of women in community financing [11 and 22]. A substantial role of women in community initiatives should be considered as a key factor of success.

8.2.1.3. Enabling factors

8.2.1.3.1. The political stability

The SWOT 'opportunities' include the peace agreement that the government of Sudan in January 2005 signed with Southern fighters and the Interim Constitution which was approved in June 2005 to end the longest war in Africa [36]. The Interim Constitution stated that the Sudan will go through a transitional period for 6 years to rehabilitate the whole country by building the essential infra structure. Then, a general election will be held towards democracy. This will be under the supervision of UN peacekeeper forces. The international community responded by rendering 4.7 billion US\$ for post-conflict adjustments and development projects. The SWOT also presents in the opportunity cell, that the government of Sudan in 2006 signed a peace agreement with one of the biggest groups of fighters in Darfur in an attempt to solve the whole problem of Darfur. Sudan adopted the federal system since 1992 in a step towards decentralization [18]. The transitional government after the peace agreement involved many political parties and shared power even down to state governments. A process of building capacities started in the central and state governments.

8.2.1.3.2. Economic stability

The SWOT shows the opportunity provided by the recent oil revenues [15]. This will contribute to economic stability, the stability of the national currency, and hopefully increase the development index. The ceased war in the South frees a considerable amount of money to be allocated for development [18]. The SWOT shows the opportunity of Sudan's richness in natural resources. This combined with the early signs of stability in Sudan has attracted numerous investors, especially from Arab countries to invest in Sudan. This ranks Sudan number two after Lebanon in outside investments from Arab countries. The expected 4.7 billion US\$ from the international community will also play a significant role in the development and stability of the country. The Ministry of Finance has adopted many policies for poverty alleviation and created The National Fund for States Support (NFSS) to subsidize poor states. In addition an increase in salaries and wages is observed [15].

8.2.1.3.3. The federal Ministry of Health (FMOH)

The weaknesses and threats because of the low capacity of FMOH are presented in the SWOT. The strengths and opportunities of FMOH reform can antagonize the low capacity. The FMOH started its reform in 2002 by building capacities, formulating a strategic plan, preparing the National Health Policy, the poverty alleviating programme, the rehabilitation of health services at the state level by the transfer of doctors and equipping hospitals, poor protection methods against user fee policy (exemption of region, drugs and services), preparing for conducting the National Health Accounts, conducting surveys on households, health services and health manpower, addressing the expatriates (health related) to come back home, and coordination with the universities to increase the medical students intake. The expansion of health insurance for the formal sector to the entire country accounted to the health reforms, as did the increase in the number of public health professionals, a robust relation with the bilateral agencies and NGOs, and the negotiations with the private sector for more coordination and collaboration [15 and 18].

8.2.1.3.4. The donors, bilateral agencies and NGOs

The role of donors, bilateral agencies and NGOs is essential in the development process in developing countries. Despite the decrease in donors and NGOs funds to Sudan during the 1990s, its contribution to health needs to be recognized [37]. After the peace agreement in 2005 the role of donors, bilateral agencies and the NGOs significantly increased. The SWOT shows the promising results that were gained from the BDN and CFCI pilot projects in integrating work between the government, bilateral agencies and the community. The Global Fund and the Millennium Development Goals are strong movements to support poor countries. The integration of technical assistance and the financial funds of the donors also support developing countries. The results obtained from the BDN and CFCI show the positive role of the WHO and UNICEF in the initiation of such schemes and in building trust with communities and government. It also shows the capabilities of these agencies in training communities to ensure the success of these initiatives. Although the donors and NGOs funds are instable and vulnerable to stop for any reason they are still more sustainable than other financial mechanisms.

8.2.1.3.5. The Zakat

The Zakat is one of the Islamic pillars. It is a form of community-based payments, fostered by the government but with full autonomy [17]. The Zakat can play a major role in fighting poverty in general and health problems related to poverty in particular. The Zakat has the potential to raise substantial funds for development. This is shown by the diversity of sources of collection for the Zakat. It is built on fairness by taking from the rich and disbursement to the poor. So it can play a significant role in increasing the coverage of the health insurance for the poor and needy. This will increase social inclusion and improve the access to health services for the poor. This will also mobilize additional resources to health services and contribute to the sustainability of the provision of health care. By paying for the poorest the Zakat protect the poorest against catastrophic expenditures. The Zakat can play an important role in the development process especially in remote and devastated areas because of its flexibility and the wide range of subsidies which include health care, education, income generating, and group

production schemes and women development. The Zakat pays both for Muslims and non-Muslims although it is an Islamic pillar.

8.2.1.4. Terms of references and job description

Key players and diverse stakeholders involved should be staffed and organized in clearly identified roles. The SWOT shows the BDN and CFCI experiences in the inclusion of local community members, supervisory committees, and community financing schemes managers, health services providers and community leaders [10 and 23]

8.2.1.5. Services offered and personnel involved

Community financing schemes primarily offer PHC services like immunization, family planning, prenatal care and child care. This may be extended to inpatient facilities. The interim constitution renders PHC services free of charge to the whole population of Sudan [15]. The CFCI promising results in improving immunization coverage is an achievement in community financing [11]. The BDN need assessment done by the communities determined packages of services, and accounted for the existing services, the affordability of members and the sustainability of these services [22].

8.2.1.6. Organization structure

The SWOT 'strengths of community financing' shows that the organization structures of the BDN and the CFCI determined the level of powers of management the flow of work [10 and 23]. The CFCI shows that a detailed description of the collection of premiums, offering services and reimbursement for providers can ease the whole operation [11].

8.2.2. The community financing performance

The findings of the SWOT will be investigated to examine the capability of community financing in achieving the second category of the selected criteria. This category includes resource mobilization, social inclusion, financial protection, good quality of health services and community empowerment.

8.2.2.1. Mobilization of resources

Mobilization of resources for health care provision is vital for both availability and sustainability of health services in poor countries. Some studies show the capability of community financing schemes in resource mobilization that contribute to the sustainability of the health services [35]. Regarding Sudan the SWOT shows the high commitment of communities in the CFCI [11]. The Zakat Chamber in Sudan can play a significant role by paying for the poorest and support health services directly. The cheap dues to join the health insurance in Sudan (50 US\$ per family (6 members) per year) are expected to attract more subscribers from the informal sector especially if it is organized by the Zakat or the government under community-based insurance [15]. This will mobilize resources for the available health services, if the health insurance policy is to purchase from the public and private health care services. The retention of these revenues in the health facilities will improve the quality and make the services more sustainable [27].

8.2.2.2. Social inclusion

Social inclusion is the one of the important community financing strengths that influences the adoption of these schemes [2, 5 and 35]. Social inclusion means the coverage of the community (mainly excluding the informal sector) under an umbrella of adequate health services by risk sharing mechanisms. That means the removal of any barriers especially the financial ones that prevent the community from enjoying the health services. In simple language it is the easy access to health services. Although community financing has the potential to achieve social inclusion it also presents two serious threats. The first threat appears in the modest ability to pay. This may lead to the exclusion of the poorest from the scheme [34]. The second threat regards the well off people who seek high quality health services and are not interested to join community financing schemes [34 and 35]. The absence of rich people from these schemes will threaten the risk sharing philosophy and may lead to the failure of this attempt. The Zakat can play a role in community financing schemes by covering the poorest and prevent their exclusion. Relying on Sudanese high solidarity and social capital seen in the SWOT, effective propaganda may increase people's awareness and knowledge about these schemes. Improving quality by using revenues for this purpose will also encourage the rich people to join community financing schemes.

8.2.2.3. Financial protection

The SWOT shows that financial protection of the poor against catastrophic expenditure is one of the strengths of the community financing [2 and 35]. The SWOT also presents the DBN income generating schemes as an opportunity in the development process to improve people's livelihood and to prevent poverty attacks [22]. In addition, if, the Zakat could achieve coverage of the poor it will offer them the opportunity to buy food, housing, cloths etc. Moreover the Zakat transfers ownership of properties to the poor which will be more effective than the loans of the BDN in the development process.

8.2.2.4. Improvement of quality of health services

Community financing can improve the quality of health services by mobilizing more resources in a sustainable way [35]. The improvement of quality is explicitly seen in the availability of drugs by establishing drug revolving funds [3]. The retention of revenues in facilities will improve the quality of health services. The SWOT also shows the strengths of the health insurance in Sudan by purchasing from both private and public services. This increases the competition between the two sectors and will result in better quality health services.

8.2.2.5. Community empowerment

The SWOT presents the low capacity of the community as one of the threats. The weaknesses of community financing is that it needs many skills in management and financial management [2, 3 and 6]. The strength of the SWOT is the community involvement and active participation especially in the CFCI and the BDN experiences [11 and 22]. It also shows the strengthening of self-reliance and community responsibility. The training of communities in the CFCI and BDN contributed to the strength of community financing in empowering communities. This can be seen in practicing democracy (selection of different committees), group dynam-

achieve promising results. Moreover by using the Zakat tool the problem of the modest risk pooling, as observed in Hsiao cooperative model can be solved.

To have a viable and integrated model of community financing in Sudan, the two experiences (models) of the WHO-BDN and the UNICEF-CFCI should be merged together. This is to form one model of community financing of integrated development goals for health, education and livelihood, so as to extend the potentials of both models and to minimize the constraints of each model (see chapter 2). This should be fostered by national and local governments. The FMOH, the Health Insurance Corporation and the Zakat are important partners in this proposal. The other UN agencies concerned with people's life and development should be invited to join this attempt as well. The robust relation between all these partners is expected to strengthen the available resources and to expand the outcomes. The following is a review of what those partners have in their basket to make this suggested community financing model a success:

The communities have the potential because of a high willingness but modest ability to pay, active participation, remarkable support in building the infrastructure of the PHC (Nafir), high social capital and solidarity practices (Nafir) and the liability to be empowered;

The WHO-BDN has the potential to contribute to a comprehensive implementation plan, involvement of communities in the need assessment studies, signing a social contract with the government and the community for moral commitment, training the communities in management skills, robust partnership between the community, WHO and the FMOH and seed money for income generating schemes;

The UNICEF-CFCI has the potentials to contribute to a comprehensive implementation plan, feasibility studies, integrated package of services (health, education and child rights), coordination units, robust partnership between the community, UNICEF, local government, Ministry of International Cooperation, and the National Fund of States Support (NFSS);

The National Government has started to achieve political and economical stability (oil revenues). The modest political commitment is seen in the sustainable financial support (NFSS) and the facilitation of the whole process. The government intended to offer free of charge PHC to all Sudanese people which was stated in the interim constitution. Also the government started its own programme of poverty alleviation and development of rural areas;

The Local Governments are highly committed to the community financing initiatives. They should retain the revenues in health facilities to improve the quality of health services. They have the understanding to establish robust relations with the NGOs to solve the chronic problems of safe water and the sanitation systems. The local governments can facilitate the inter-sectoral collaboration;

The FMOH has the capacity to execute the National Health Policy to get all partners of health in one boat. In addition it can coordinate with the NGOs to achieve the National Health Accounts and households surveys. The FMOH started the poverty alleviation programme by revitalization of the States' health services and the transfer of human resources to these States. The poor protection measurements (free of charge of services at Darfur region, free of charge for some drugs and emergency services) are essential. Health as a core determinant of development as seen in the Millennium Development Goals supports the robust partnership of the FMOH with the communities and the WHO in the BDN initiative;

The health insurance was launched to solve the problem of health in the formal and informal sectors. The wide adoption of the health insurance in the formal sector all over the country is an enrichment. The health insurance system is allowed to purchase from both the private and

the public sector. It has low costs for the informal sector and is allowed to help in rehabilitating and equipping the health facilities;

The Zakat Chamber has the capability to cover the poorest families under the health insurance system. Fighting poverty by direct and indirect subsidies is a flexible tool of support to cover the different aspects (individual and group production, safe water, agriculture seeds, women development etc.).

8.2.5. Final considerations

Although the findings of this study show that community financing schemes can be a success in Sudan and have the potential to achieve better health for the majority of the people it should be carefully adopted. In developing countries community financing schemes are not merely a health finance mechanism but they can lead to real changes in people's life [22 and 23]. These schemes, if planned with a comprehensive and broad vision, can achieve the development goals in a sustainable way. Sudan has the opportunity to make a difference by using community financing approaches in a nation-wide development policy. Any attempt of community financing in Sudan should involve the bilateral agencies (WHO and UNICEF) for their experiences and capabilities in training, technical assistance, trust of communities and the mediator role of these organizations. This will be achieved if all partners signed an agreement to identify roles and to share responsibilities. Community financing can be a national policy led by the NGOs or can be a NGOs initiative fostered by national and local governments. The government may prefer to create an independent body to lead the community financing initiative by inviting other partners to contribute to this attempt in a wide coordination effort. No doubt the available potentials and opportunities in Sudan can make a community financing a success.

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APPENDICES OF CHAPTER 1

Appendix-A. Health indicators for Sudan

Indicators	Values	Year	Source
Health Status indicators			
Infant mortality rate	68/1000	1999	WHO/2004*
Under five mortality rate	104/1000	1999	WHO/2004
Maternity mortality rate	50.9/10000	1999	WHO/2004
Life expectancy at birth - males	55.4 years	2000	WHO/2004
Life expectancy at birth - females	57.8	1999	WHO/2004
Fertility rate	5.9%	2000	WHO/2004
Infertility rate	7.9%	2003	Health gaps**
Crude death rate	11.5/1000	1999	WHO/2004
Delivery attended by trained personnel	57%	2000	WHO/2004
Trained attendance	72%	2000	WHO/2004
Contraceptive prevalence	7%	2000	WHO/2004
FGM	>90%	2002	Health gaps
Indicators of coverage with PHC			
BCG	73%	2003	WHO/2004
DPT3	74%	2003	WHO/2004
Measles	70%	2003	WHO/2004
Polio3	74%	2003	WHO/2004
TTs2+	36%	2003	WHO/2004
DPT drop-out-rate	17%	2003	Strategic plan
Exclusive breast feeding	20%	2003	Strategic plan
Selected Morbidity indicators			
Malaria	1,827,961	2003	WHO/2004
HIV/AIDS	354	2001	WHO/2004
TB	20439	2003	WHO/2004
Meningococcal meningitis	1937	2002	WHO/2004
Regular smokers	15%	2002	WHO/2004
MRI-children	12-24%	2003	Strategic plan***
Diarrhea-children	16%	2003	Strategic plan
Malnutrition-children	18.5%	2003	Strategic plan
Health expenditure indicators			
FMOH budget as % of government budget	4.8%	1990	WHO/2004
FMOH expenditure as % of GDP	0.8%	2000	WHO/2004
Total health expenditure as % of GDP	3.4 US\$	2000	WHO/2004
Health expenditure from government sources (per capita)	3 US\$	2000	WHO/2004
Total expenditure on health per capita	13 US\$	2000	WHO/2004
Human and material resources indicators			
Population with access to total health services	66%	2000	WHO/2004
Urban	84%	2000	WHO/2004
Rural	66%	2000	WHO/2004
Hospital beds	7.3%	2002	WHO/2004
PHC units and centres	1.1%	2001	WHO/2004
Access to safe water	34%	2003	World Bank
Access to sanitation	69%	2003	World Bank
Physicians	3%	2002	WHO/2004
Medical officers	17.6%	2002	Economic- Rev****
Dentists	0.6%	2002	WHO/2004
Pharmacists	2%	2002	WHO/2004
Nursing and midwifery personnel/10000	0.8%	2001	WHO/2004

* Demographic and Health Indicators for Countries of the Eastern Mediterranean WHO/2004

** Health Gaps in Sudan [11].

*** The Quarter country Strategic Plan [16]

**** Economic review 2002. Ministry of Finance and National Economy, Sudan.

APPENDICES OF CHAPTER 2

Appendix - A. Types of BDN projects with geographic, demographic data by coverage in the current BDN areas

Site of Project	State	Title of project	Type of project	Estimated population coverage at start	Estimated population covered at 2002
Gezira -Aba	Whit Nile	Agriculture project	Income generating	54 – 1997	261
Attamadon	River Nile	Cow and chicken raising	Income generating	1997	Not functioning
Um Gonium	White Nile	Rehabilitation of agriculture scheme and processing of milk products	Income generating and social sector	40 – 1998	700
Eddueim	White Nile	Rehabilitation of agriculture scheme and calve fattening	Income generating	200 – 1998	200
Dar Mali	River Nile	Goat raising and safe drinking water	social sector and Income generating	112 – 1998	2200
Arrossrris	Blue Nile	Poultry farm	Income generating	50 – 1998	Not functioning
Neima	White Nile	Poultry farm	Income generating	1500 – 1999	1500
Kosha	Northern	Safe water and fishing	social sector and Income generating	560 – 1998	560
Jummai	Northern	Fishing	Income generating	20 – 1999	20
Arashkol	Whit Nile	School breakfast and school health	social sector	600 – 1999	1500
Elrahad	North Kordofan	Fish nursery	Income generating	20 – 1999	567
Um Badda	Khartoum	Promotion of environment sanitation, woman literacy classes and woman handicraft	social sector and Income generating	35 – 1999	105
Raghawa and Dahawi	Gezira	-	-	-	-
Um Seigaoun	North Kordofan	-	-	-	-

Source: Adapted from report of evaluation of basic development need programme – Sudan [37]

Appendix - B. Distribution and coverage of vulnerable localities and communities

State	Total No. of localities	No. of vulnerable localities	Total No. of communities	No. of vulnerable communities	No. of CFCI communities 2002-2003	CFCI coverage/ vulnerable communities
Blue Nile	5	3	244	76	30	39
Gedarf	5	3	834	172	40	23
Kassala	5	3	350	149	30	20
N. Darfur	7	4	544	289	30	10
S. Darfur	9	8	950	332	40	12
W. Darfur	7	6	378	357	30	8
S. Kordofan	5	4	1314	228	40	17
S. Kordofan	5	4	540	150	30	20
S. Kordofan	5	5	750	157	30	19
Bahr El Gazal	3	3	238	120	10	8
Bahr El jebel	4	2	164	160	20	13
Upper Nile	8	8	163	138	24	17
Total	68	53 (63%)	6369	2328 (37%)	354	(15%)

Source: Service delivery in a difficult environment [41]

Appendix - C. Financial contribution of the different partners of CFCI (000SDD) 2003-2004 (Actual up to June for 2004)

CFCI partners		2003	2004
Federal contribution	Planned	39,230	50,769
	Actual	20,393 (52%)	34,705 (68%)
UNICEF contribution	Planned	96,348	118,848
	Actual	54,498 (57%)	57,020 (49%)
State contribution	Planned	64,708	47,342
	Actual	38,020 (59%)	32,067 (67%)
Locality contribution	Planned	14,150	142,042
	Actual	10,700 (76%)	82,300 (56%)
Community contribution	Planned	30,053	21,816
	Actual	28,874 (96%)	19,228 (88%)

Source: adapted from the Mid-Term Evaluation of the Child-Friendly Community Initiative [28]

APPENDICES OF CHAPTER 3

Appendix – A. The finances of the Zakat Chamber to hospitals and medical centres

Hospitals	Location - States	Money allocated (US\$)	Purpose
Radiotherapy Hospital	Khartoum	50,000	Genes Detector
Radiotherapy Hospital	Khartoum	324,000	Equipments
Urology Centre	Khartoum	153,000	Equipments
Sudan Cardiac Centre	Khartoum	1,500,000	Catheter lab
Sudan Cardiac Centre	Khartoum	250,000	Alternating Impulse Machine
Elteгани Elmahi Psychiatric Hospital	Khartoum	10,000	Furbishing
Military Hospital	Khartoum	37,000	HIV/AIDS lab
Military Hospital	Khartoum	200,000	Open Cardiac Surgery Sets
Tropical Hospital	Khartoum	10,000	Endoscope
Suba University Hospital	Khartoum	30,000	Equipments
The National Cardiac Centre	Khartoum	680,000	Equipments
Ahmed Gasim Centre for Cardiac and Renal Transplantation	Khartoum	50,000	Equipments
The Mortuary	Khartoum	60,000	Refrigerators
Ambulatory Vehicles	Khartoum	269,000	Cars
Radiotherapy Hospital	Gezira	100,000	Equipments
Total		3,723,000	

Adapted from the Patterns of the Zakat Chamber 2001-2004.

APPENDICES OF CHAPTER 5

Appendix A – the LRM results of the OLS significant variables

Variables	B	S.E.	Wald	Sig.	Exp(B)
Family size (1-6)	-.230	.594	.150	.699	.795
Family size (7-10)	-.417	.606	.474	.491	.659
Occupation (employee)	-.363	.499	.530	.467	.696
Occupation (laborer)	-.447	.635	.495	.482	.640
Occupation (merchant)	-.643	.555	1.341	.247	.526
Occupation (jobless)	1.205	.880	1.873	.171	3.336
Other income (yes)	.540	.379	2.025	.155	1.716
Have dependents (yes always)	.618	.449	1.892	.169	1.855
Have dependents (yes sometimes)	1.408	.524	7.220	.007	4.088
House ownership (owned)	-1.099	.471	5.452	.020	.333
House ownership (others)	.292	.561	.271	.603	1.339
Pay tuition fees (yes always)	.699	.543	1.652	.199	2.011
Pay tuition fees (yes sometimes)	.362	.745	.236	.627	1.436
Episodes of sickness last 3 months (once)	.573	.792	.522	.470	1.773
Episodes of sickness last 3 months (twice)	1.446	.772	3.505	.061	4.245
Episodes of sickness last 3 months (>twice)	.883	.733	1.450	.229	2.417
Pay for treatment last 3 months (yes always)	-1.155	.634	3.317	.069	.315
Pay for treatment last 3 months (yes sometimes)	.337	.632	.285	.594	1.401
Bought drugs last 3 months (yes always)	-1.153	.723	2.541	.111	.316
Bought drugs last 3 months (yes sometimes)	-1.757	.756	5.401	.020	.173
Constant	-1.051	1.201	.765	.382	.350

Appendix B – the LRM results of the full model of the direct procedure method

Variables	B	S.E.	Wald	Sig.	Exp(B)
Family size (1-6)	-.606	.768	.622	.430	.546
Family size (7-10)	-.521	.773	.455	.500	.594
Education (secondary)	-.658	.617	1.136	.286	.518
Education (university)	.087	.773	.013	.910	1.091
Occupation (employee)	-1.090	.698	2.439	.118	.336
Occupation (laborer)	-.792	.800	.982	.322	.453
Occupation (merchant)	-1.584	.751	4.454	.035	.205
Occupation (jobless)	1.450	1.194	1.474	.225	4.263
Monthly income (100000-150000)	.765	.795	.928	.335	2.150
Monthly income (150000-300000)	-.104	.773	.018	.893	.901
Monthly income (300000-500000)	1.187	.917	1.674	.196	3.276
Monthly income (>500000)	.537	1.157	.215	.643	1.710
Have Other income (yes)	1.182	.523	5.104	.024	3.262
Have a car (yes)	.219	.560	.153	.696	1.244
Have dependents (yes always)	.854	.645	1.751	.186	2.349
Have dependents (yes sometimes)	1.926	.704	7.484	.006	6.861
House ownership (owned)	-1.262	.598	4.457	.035	.283
House ownership (others)	-.266	.717	.138	.710	.766
Pay tuition fees (yes always)	.786	.704	1.247	.264	2.194
Pay tuition fees (yes sometimes)	-.121	1.012	.014	.905	.886
Episodes of sickness last 3 months (once)	3.668	17.948	.042	.838	39.178
Episodes of sickness last 3 months (twice)	4.490	17.942	.063	.802	89.079
Episodes of sickness last 3 months (>twice)	4.471	17.935	.062	.803	87.439
Disease type (obs&pediatrics)	-.633	1.126	.316	.574	.531
Disease type (internal medicine)	-1.689	.830	4.142	.042	.185
Disease type (others)	-.627	.824	.579	.447	.534
No. of visits last 3 months (once)	2.278	1.255	3.297	.069	9.758
No. of visits last 3 months (twice)	2.298	1.253	3.361	.067	9.951
No. of visits last 3 months (>twice)	1.008	1.202	.704	.401	2.741
Pay for treatment last 3 months (yes always)	-1.645	.814	4.081	.043	.193
Pay for treatment last 3 months (yes sometimes)	.184	.791	.054	.816	1.202
Bought drugs last 3 months (yes always)	-1.491	1.058	1.985	.159	.225
Bought drugs last 3 months (yes sometimes)	-2.130	1.066	3.992	.046	.119
Constant	-4.048	18.035	.050	.822	.017

Appendix C– the goodness of fit and the criteria for selected model

Models	Percent correct predictions	Omnibus test			-2Log Likelihood		McFadden	The LR test		Hosmer and Lemeshow		Sig.	variable	Confidence interval		Important variables not in the model
		Chi-square	df	Sig.	beginning	end		Chi-square	Critical value	Chi-square	df			lower	upper	
Full model	87%	79.659	33	0.000	224.542	144.884	0.3547	3.159	58.302	3.320	8	0.913	1- Sometimes have dependents	1.727	27.264	1- Monthly income 2- Have a car 3- Other income*have a car
Partial Model-1	84.8%	67.896	19	0.000	244.565	176.668	0.2776	31.784	38.582	4.340	8	0.825	1- Sometimes have dependents 2- One visit to HS unit last 3months 3- two visits to HS unit last 3months	2.338 1.36 1.424	24.526 79.06 99.14	1- Monthly income 2- Have a car 3- Other income*have a car 4- Owned a house
Partial model-2	87.3%	74.726	25	0.000	229.950	155.225	0.3249	10.341	46.928	5.444	8	0.709	1- Sometimes have dependents 2- two visits to HS unit last 3months	2 2	20 165	1- Monthly income 2- Have a car 3- Other income*have a car
Partial Model-3	85.4%	80.172	26	0.000	274.971	194.799	0.2915	49.915	48.290	7.133	8	0.522	1- Sometimes have dependents 2- twice visits to HS unit last 3months	1.837 1.249	17.652 30.588	1- Have a car 2- Other income*have a car
Partial Model-4	86.6%	77.483	25	0.000	238.814	161.331	0.3244	16.447	46.928	5.288	8	0.726	1- Sometimes have dependents 2- two visits to HS unit last 3 months	2.028 1.158	26.63 134.46	1- Merchant 2- Monthly income 3- Have a car 4- Other income*have a car
Partial model-5	85.5%	70.537	23	0.000	238.814	168.277	0.2953	23.393	44.181	10.88	8	0.208	1- Sometimes have dependents	2347	27.588	1- Monthly income 2- Have a car 3- Other income*have a car
Partial model-6	87%	86.911	27	0.000	238.814	151.904	0.3639	7.02	49.645	4.498	8	0.810	1- Sometimes have dependents 2- Sometimes pay for treatment	3.381 1.357	51.027 740.557	1- Monthly income 2- Have a car 3- Other income*have a car
Partial model-7	87.9%	85.111	24	0.000	292.205	207.094	0.2912	62.21	45.558	4.111	8	0.847	1- Sometimes have dependents 2- Two visits to health services unit last 3 months	1.919 1.173	16.791 18.620	1- Monthly income
Partial Model-8	87.3%	96.6	34	0.000	248.268	151.668	0.38909	6.784	58.302	5.174	8	0.739	1- Sometimes have dependents 2- Have other income 3- Monthly income 100000-150000 4- Monthly income 300000-500000	1.7 2.1 0.9 2	21.9 2547 691 1717.5	1- Have a car 2- Other income*have a car

APPENDIX D - METHOD OF STATISTICAL ANALYSIS

In order to have a predictable estimation for the different sets of variables, the LRM is applied and the general formula of the risk odds ratio (ROR) is used in order to estimate the effect of the socio-demographic independent variables ($X_1, X_2 \dots X_i$) on the dummy dependent variable [$Y = (1, 0)$] i.e. Receiving free of charge public health services. Equation one presents the logit formula which resemble the base for the ROR formula and interpreted as the coefficient β_i represents the change in the log odds that would result from one unit change in the variable X_i when all the other X 's are fixed. Equation (2) presents the ROR formula which consider as a derivative from equation (1). Thus, the product or $\prod$ formula for ROR tells us that, when the LRM is used, the contribution of the variables to the odds ratio is multiplicative [27]. SPSS package had been used to run the analysis and to obtain the results.

$$P(Y) = \alpha + \sum \beta_i X_i \quad (1)$$

$$ROR_{y_i, y_0} = \exp \left[\sum \beta_i (X_{1i} - X_{0i}) \right] = \prod \{ \exp[\beta_i (X_{1i} - X_{0i})] \} \quad (2)$$

ROR [(1, 0) variables]: $ROR = \exp(\beta_i)$ for the effect of the variable X_i adjusted for the other X 's. Interpretation from the product ($\prod$) formula: The contribution of each X_i variable to the odds ratio is multiplicative [27].

APPENDICES OF CHAPTER 6

Appendix A - The contingent valuation survey scenario

0) Do you receive free of charge health services at the public health facilities?
1- Yes ☐ No ☐

If no = (Group 1), [assume that we want to improve the quality of services of the nearest PHF to your residence regarding specialist services, advanced laboratories and X-ray units, availability of drugs and consumables especially for children and improve the environment for waiting places and reduce the waiting time.]

Are you willing and able to pay an extra 5000 Ls. at each visit to the PHF if you were to be seen by a specialist?
I would not hesitate. ☐
I would go into debt. ☐
If I have enough money. ☐
I would not pay ☐

Are you willing and able to pay an extra 5000 Ls. at each visit to the PHF if you were to be investigated by an advanced lab and X-ray unit?
I would not hesitate. ☐
I would go into debt. ☐
If I have enough money? ☐
I would not pay ☐

Are you willing and able to pay an extra 2000 Ls. at each visit to the PHF if there was an assurance that drugs and consumables especially for children would be available?
I would not hesitate. ☐
I would go into debt. ☐
If I have enough money? ☐
I would not pay ☐

Are you willing and able to pay an extra 1000 Ls. at each visit to the PHF if that would ensure the improvement of the environment for waiting places and reduce the waiting times?
I would not hesitate. ☐
I would go into debt. ☐
If I have enough money? ☐
I would not pay ☐

If yes = (Group 2), [assume that we want to improve the quality of services of the nearest PHF to your residence regarding specialist services, advanced laboratories and X- ray units, availability of drugs and consumables especially for children and improve the environment for waiting places and reduce the waiting time.]

Are you willing and able to pay 10,000 Ls. at each visit to the PHF if you were to be seen by a specialist?
I would not hesitate. ☐
I would go into debt. ☐
If I have enough money? ☐
I would not pay ☐

Are you willing and able to pay 10,000 Ls. at each visit to the PHF if you were to be investigated by an advanced lab and X- ray unit?
I would not hesitate. ☐
I would go into debt. ☐
If I have enough money? ☐
I would not pay ☐

Are you willing and able to pay the cost of drugs that have been determined by the pharmacy department on each visit to the PHF if there was an assurance that drugs and consumables especially for children would be available?
I would not hesitate. ☐
I would go into debt. ☐
If I have enough money? ☐
I would not pay ☐

Are you willing and able to pay 2000 Ls. at each visit to the PHF if that were to ensure the improvement of the environment for waiting places and reduce the waiting times?
I would not hesitate. ☐
I would go into debt. ☐
If I have enough money? ☐
I would not pay ☐

**Appendix B – The goodness of fit of the eight dependent variables
[group 1 and group 2]**

Dependent Variables group 1	Percent correct prediction	The Omnibus test			-2 Log likelihood		McFadden R ²
		Chi square	Degree of freedom	Significance	Beginning	End	
Specialist services	88.6%	34.485	12	0.001	264.441	229.956	0.1305
Lab and X-ray analysis	88.3%	54.649	14	0.000	283.172	228.524	0.1930
Drugs availability	88.3%	29.856	10	0.001	252.335	222.479	0.1184
Decrease waiting time	83.5%	30.947	13	0.003	256.184	225.237	0.1208

Dependent Variables Group 2	Percent correct prediction	The Omnibus test			-2 Log likelihood		McFadden R ²
		Chi square	Degree of freedom	Significance	Beginning	End	
Specialist services	79%	14.510	6	0.024	68.609	54.099	0.2115
Lab and X-ray analysis	78.7%	14.11	6	0.028	65.719	51.605	0.2148
Drugs availability	80.6%	16.675	4	0.002	60.925	44.249	0.2738
Decrease waiting time	83.3%	18.593	6	0.005	56.072	37.480	0.3316

Appendix C - The OLS estimate on the separate effects of individual HH characteristics on WTP for group 1.

Dependent variables	The coefficients	Family size		Education		Occupation				Monthly income (x 1000 Ls)				Other income	Have a car	Have dependents	
		1-6	7-10	secondary	university	employee	labour	merchant	Jobless	100-150	150-300	300-500	>500	yes	yes	Yes always	Yes sometimes
Specialist services	B	-.421	-.397	.071	.648	.213	-.227	.709	-.575	.863	.969	1.844	1.344	-.262	.663	.399	.409
	S.E.	.642	.648	.348	.428	.457	.485	.472	.759	.453	.425	.655	.592	.307	.386	.327	.515
	Wald	.429	.375	.042	2.290	.218	.219	2.252	.574	3.630	5.197	7.932	5.156	.729	2.948	1.488	.630
	Sig.	.512	.540	.837	.130	.641	.639	.133	.449	.057	.023	.005	.023	.393	.086	.223	.427
Lab and x-ray analysis	B	-.627	-.343	-.033	.836	.133	-.421	.621	-.575	1.357	1.330	1.901	1.705	-.208	.771	-.024	-.106
	S.E.	.637	.650	.335	.437	.452	.473	.465	.759	.456	.412	.579	.582	.298	.384	.312	.462
	Wald	.969	.279	.009	3.653	.094	.793	1.780	.574	8.876	10.436	10.790	8.574	.485	4.040	.006	.052
	Sig.	.325	.579	.922	.056	.760	.373	.182	.449	.003	.001	.001	.003	.486	.044	.939	.829
Drugs availability for children	B	-1.541	-1.460	-.049	.035	-.823	-1.118	-.088	-.955	.764	1.089	.866	.866	-.562	.373	.140	-.457
	S.E.	1.038	1.044	.386	.426	.582	.610	.606	.932	.480	.476	.525	.559	.316	.377	.348	.450
	Wald	2.202	1.957	.016	.007	2.003	3.358	.021	1.050	2.528	5.239	2.722	2.400	3.159	.978	.161	1.029
	Sig.	.138	.162	.899	.934	.157	.067	.885	.305	.112	.022	.099	.121	.075	.323	.688	.310
Decrease waiting time	B	-.774	-.882	.293	.912	.783	-.034	.779	.069	.782	.930	.338	1.804	-.042	.540	.215	-.153
	S.E.	.635	.637	.301	.374	.404	.414	.386	.731	.424	.402	.414	.654	.273	.323	.287	.403
	Wald	1.488	1.919	.949	5.961	3.755	.007	4.078	.009	3.395	5.352	.666	7.610	.024	2.802	.562	.144
	Sig.	.223	.166	.330	.015	.053	.934	.043	.925	.065	.021	.414	.006	.877	.094	.454	.704

Appendix C - Continued

Dependent variables	The coefficients																
	House owner-ship	Pay tuition fees		Episodes of sickness last 3 months		Disease type			No. of visits last 3 months			Paid for treatment last 3 months		Bought drugs last 3 months			
		owned	others	Yes always	Yes sometimes	twice	>twice	Obs&ped.	medicine	others	once	twice	>twice	Yes always	Yes sometimes	Yes always	Yes sometimes
Specialist services	B	.882	.501	.703	-.861	.205	.419	.160	.405	.737	-.312	-1.005	-.806	.921	1.460	.734	1.331
	S.E.	.407	.512	.353	.497	.449	.495	.675	1.244	.737	.717	.701	.647	.382	.574	.443	.588
	Wald	4.697	.957	3.955	3.000	.209	.718	.056	.106	1.001	.189	2.058	1.549	5.800	6.476	2.750	5.127
	Sig.	<u>.030</u>	.328	<u>.047</u>	.063	.647	.397	.812	.744	.317	.684	.151	.213	<u>.016</u>	<u>.011</u>	.097	<u>.024</u>
Lab and x-ray analysis	B	1.205	.858	.577	-.690	.127	.303	-.461	-.069	.132	-.032	-.305	-.245	1.271	1.406	1.041	1.322
	S.E.	.380	.492	.347	.508	.431	.468	.783	1.307	.831	.593	.610	.536	.365	.509	.418	.532
	Wald	10.042	3.047	2.758	1.841	.087	.419	.346	.003	.025	.003	.250	.209	12.108	7.637	6.204	6.174
	Sig.	<u>.002</u>	.081	.097	.175	.768	.517	.556	.968	.874	.957	.617	.647	<u>.001</u>	<u>.006</u>	<u>.013</u>	<u>.013</u>
Drugs availability for children	B	.886	.533	.987	-.209	.522	.674	-.5944	-.6.257	-.6.283	.988	.084	.414	1.223	.481	1.401	1.366
	S.E.	.424	.535	.359	.540	.533	.580	14.659	14.696	14.660	.620	.563	.495	.407	.479	.430	.534
	Wald	4.370	.993	7.567	.150	.957	1.351	.164	.181	.184	2.542	.022	.701	9.011	1.008	10.597	6.550
	Sig.	<u>.037</u>	.319	.006	.699	.328	.245	.685	.670	.668	.111	.881	.402	<u>.003</u>	.315	<u>.001</u>	<u>.010</u>
Decrease waiting time	B	.436	-.049	.208	-.351	.241	.501	-.120	.404	.097	.114	.258	.468	1.089	.777	1.005	.568
	S.E.	.395	.474	.317	.516	.394	.436	.669	1.244	.700	.456	.502	.431	.352	.438	.405	.460
	Wald	1.223	.011	.432	.463	.375	1.319	.032	.106	.019	.063	.264	1.177	9.571	3.148	6.163	1.523
	Sig.	.269	.918	.511	.496	.540	.251	.857	.745	.890	.802	.608	.278	<u>.002</u>	.076	<u>.013</u>	.217

Appendix D - The OLS estimate on the separate effects of individual HH characteristics on WTP for group 2.

Dependent variables	The coefficients	Family size		Education		Occupation				Monthly income (x 1000 Ls)				Other income	Have a car	Have dependents	
		1-6	7-10	secondary	university	employee	labour	merchant	jobless	100-150	150-300	300-500	>500	yes	yes	Yes always	Yes sometimes
Specialist services	B	2.451	2.015	1.342	2.197	.054	-.944	-1.946	6.411	-.118	-.205	-.300	-.588	.176	-.268	-.766	-.526
	S.E.	.857	.904	.721	.872	.985	1.029	.945	34.898	1.014	1.018	1.022	1.145	.637	.360	.863	.958
	Wald	8.177	4.971	3.462	6.343	.003	.842	4.241	.034	.013	.040	.086	.263	.088	.177	.788	.301
	Sig.	.004	.026	.063	.012	.956	.359	.039	.854	.908	.841	.769	.608	.767	.674	.375	.583
Lab and x-ray analysis	B	2.416	2.367	1.569	1.623	1.386	1.163	-.762	-.223	.486	-.087	-.575	.405	.043	1.130	-1.609	-.857
	S.E.	.858	.946	.784	.782	.949	1.214	.812	1.360	1.096	1.024	.993	1.339	.609	.823	1.112	1.223
	Wald	7.933	6.255	4.008	4.310	2.135	.917	.881	.027	.196	.007	.336	.092	.005	1.884	2.095	.492
	Sig.	.005	.012	.045	.038	.144	.338	.348	.870	.658	.932	.562	.762	.944	.170	.148	.483
Drugs availability for children	B	2.558	1.545	2.146	2.939	1.253	-.944	-1.638	6.411	-.431	-1.003	-1.099	-.511	0.000	.251	-1.386	-.944
	S.E.	.903	.876	.874	1.122	1.277	1.029	.945	34.898	1.295	1.235	1.238	1.506	.643	.735	1.118	1.220
	Wald	8.026	3.113	6.030	6.863	.962	.842	3.004	.034	.111	.660	.787	.115	0.000	.117	1.658	1.537
	Sig.	.005	.078	.014	.009	.327	.359	.083	.854	.739	.416	.375	.734	1.000	.732	.215	.439
Decrease waiting time	B	2.451	2.015	.845	1.984	1.003	-.452	-1.453	6.903	.827	1.232	.644	1.232	.533	1.210	.127	1.204
	S.E.	.857	.904	.692	.875	.987	.949	.857	34.896	.900	.988	.909	1.249	.603	.820	.718	.963
	Wald	8.177	4.971	1.491	5.140	1.033	.227	2.879	.039	.844	1.554	.503	.973	.783	2.181	.031	1.562
	Sig.	.004	.026	.222	.023	.309	.634	.090	.843	.358	.213	.478	.324	.376	.140	.859	.211

Appendix D - Continued

Dependent variables	The coefficients				House ownership		Pay tuition fees		Episodes of sickness last 3 months		Disease type			No. of visits last 3 months			Paid for treatment last 3 months		Bought drugs last 3 months	
	B	S.E.	Wald	Sig.	owned	others	Yes always	Yes sometimes	twice	>twice	Obs&ped.	medicine	others	once	twice	>twice	Yes always	Yes sometimes	Yes always	Yes sometimes
Specialist services					-.826 .745 1.232 .267	-.470 .911 .266 .606	-6.844 24.674 .077 .781	-8.426 24.680 .117 .733	.288 1.230 .055 .815	-1.569 .784 4.008 .945	-6.593 27.033 .059 .807	-7.509 27.053 .077 .781	-7.717 27.029 .082 .775	.894 1.121 .635 .425	1.386 1.190 1.356 .244	.368 1.038 .126 .723	1.204 .940 1.641 .200	-.588 .715 .676 .411	0.000 .770 0.000 1.000	.201 .932 .046 .830
Lab and x-ray analysis					-.420 .766 .300 .584	-.798 .872 .837 .360	-6.979 24.674 .080 .777	-7.692 24.682 .097 .755	-.134 .977 .019 .891	-.693 .750 .854 .355	.223 1.285 .030 .862	6.816 34.908 .038 .845	-.981 1.208 .660 .417	-.087 1.294 .005 .946	-.470 1.265 .138 .710	-.613 1.222 .252 .616	-.026 .981 .001 .979	-1.361 .869 2.454 .117	-1.347 1.113 1.465 .226	-1.003 1.235 .660 .416
Drugs availability for children					-.950 .863 1.212 .271	-.936 .996 .883 .347	-7.538 40.676 .034 .853	-8.980 40.680 .049 .825	.288 1.230 .055 .815	-1.340 .789 2.883 .090	-7.593 44.561 .029 .865	0.000 72.760 0.000 1.000	-8.717 44.558 .038 .845	-6.903 27.033 .065 .798	-6.903 27.033 .065 .798	-7.173 27.031 .070 .791	1.099 1.272 .745 .388	-1.435 .866 2.749 .097	-1.145 1.119 1.048 .306	-1.099 1.231 .797 .372
Decrease waiting time					-.662 .752 .774 .379	-.863 .870 .984 .321	-6.979 24.674 .080 .777	-7.509 24.681 .093 .761	.288 1.230 .055 .815	-1.792 .782 5.253 .022	-6.593 27.033 .059 .807	-7.509 27.053 .077 .781	-7.915 27.029 .086 .770	-.087 1.294 .005 .946	-.087 1.294 .005 .946	-.613 1.222 .252 .616	1.943 1.174 2.741 .098	-7.62 .710 1.151 .283	-.357 .872 .167 .683	-1.021 .954 1.145 .285

Appendix E - Method of statistical analysis

A logistic regression model was used due to the binary nature of the dependent variables.

For group 1, the first dependent variable which measures the WTP an extra amount of money for public health services if these services are 'introduced by a specialist' is yes: yes is equal to 1 if the respondent is still willing to pay an extra amount of money for public health services if these services are 'introduced by a specialist' and otherwise it is 0. The second dependent variable which measures the WTP an extra amount of money for public health services if these services are 'advanced lab and X-ray analysis' is yes: yes is equal to 1 if the respondent is still willing to pay an extra amount of money for public health services if these services are 'advanced lab and X-ray analysis' and otherwise it is 0. The third dependent variable which measures the WTP an extra amount of money for public health services if these services are 'available drugs especially for children' is yes: yes is equal to 1 if the respondent is still willing to pay an extra amount of money for public health services if these services are 'available drugs especially for children' and otherwise it is 0. The fourth dependent variable which measures the WTP an extra amount of money for public health services if these services are 'decreased waiting time' is yes: yes is equal to 1 if the respondent is still willing to pay an extra amount of money for public health services if these services are 'decreased waiting time' and otherwise it is 0.

For group 2, the first dependent variable which measures the WTP for public health services if these services are 'introduced by a specialist' is yes: yes is equal to 1 if the respondent is still willing to pay for public health services if these services are 'introduced by a specialist' and otherwise it is 0. The second dependent variable which measures the WTP for public health services if these services are 'advanced lab and X-ray analysis' is yes: yes is equal to 1 if the respondent is still willing to pay for public health services if these services are 'advanced lab and X-ray analysis' and otherwise it is 0. The third dependent variable which measures the WTP for public health services if these services are 'available drugs especially for children' is yes: yes is equal to 1 if the respondent is still willing to pay for public health services if these services are 'available drugs especially for children' and otherwise it is 0. The fourth dependent variable which measures the WTP for public health services if these services are 'decreased waiting time' is yes: yes is equal to 1 if the respondent is still willing to pay for public health services if these services are 'decreased waiting time' and otherwise it is 0.

However since the linear probability model (LPM) is heteroscedastic and may predict probability beyond the (0, 1) range, [32] a LRM is used to estimate the factors which influence the ones of the dependent variables, e.g. WTP an extra amount of money for Public Health Services if these services are 'introduced by a specialist' is the one (1/ 0) for the first model. In order to have an estimation for the different sets of variables for the eight models a logit model is applied and the general formula of the risk odds ratio is used (ROR), in order to estimate the effect of the socio-demographic independent variables ($X_1, X_2 \dots X_i$) on the dummy dependent variables [$Y = (1, 0)$]. Equation one presents the logit formula, which resembles the base for the ROR formula and is interpreted as the coefficient β_i it represents the change in the log odds that would result from one unit change in the variable X_i when all the other X 's are fixed. Equation (2) presents the ROR formula, which is considered as a derivative from equation (1). Thus, the product or $\prod$ formula for ROR tells us that, when the LRM

is used, the contribution of the variables to the odds ratio is multiplicative [33]. We used the SPSS package to run the analysis and to obtain the results.

$$P(Y) = \alpha + \sum \beta_i X_i \quad (1)$$

$$\mathbf{ROR}_{y_1, y_0} : \exp[\sum \beta_i (X_{1i} - X_{0i})] = \prod \{ \exp[\beta_i (X_{1i} - X_{0i})] \} \quad (2)$$

ROR [(0, 1) variables]: $\mathbf{ROR} = \exp(\beta_i)$ for the effect of the variable X_i adjusted for the other X 's. Interpretation from the product ($\prod$) formula: The contribution of each X_i variable to the odds ratio is multiplicative.

APPENDICES OF CHAPTER 7

Appendix A - The contingent valuation survey scenario

0) Do you receive free of charge health services at the public health facilities?
1- Yes ☐ 2- No ☐
If no = (Group 1), [assume that we want to improve the quality of services of the nearest PHF to your residence regarding specialist services, advanced laboratories and X-ray units, availability of drugs and consumables especially for children, improve the environment for waiting places and reduce the waiting time.]

1) Are you willing and able to pay an extra 5000 Ls. each time you visit the PHF to receive the services of a specialist?
1- I would not hesitate. ☐
2- I would go into debt. ☐
3- If I have enough money ☐
4- I will not pay ☐

2) Are you willing and able to pay an extra 5000 Ls. each time you visit the PHF to be examined by an advanced lab and X-ray unit?
1- I would not hesitate. ☐
2- I would go into debt. ☐
3- If I have enough money ☐
4- I will not pay ☐

3) Are you willing and able to pay an extra 2000 Ls. each time you visit the PHF to ensure the availability of drugs and consumables especially for children?
1- I would not hesitate. ☐
2- I would go into debt. ☐
3- If I have enough money ☐
4- I will not pay ☐

4) Are you willing and able to pay an extra 1000 Ls. each time you visit the PHF to ensure the improvement of the environment for waiting places and reduce the waiting times?
1- I would not hesitate. ☐
2- I would go into debt. ☐
3- If I have enough money ☐
4- I will not pay ☐

If yes = (Group 2), [assume that we want to improve the quality of services of the nearest PHF to your residence regarding specialist services, advanced laboratories and X-ray units, availability of drugs and consumables especially for children, improve the environment for waiting places and reduce the waiting time.]

5) Are you willing and able to pay 10,000 Ls. each time you visit the PHF to receive the services of a specialist?
1- I would not hesitate. ☐
2- I would go into debt. ☐
3- If I have enough money ☐
4- I will not pay ☐

6) Are you willing and able to pay 10,000 Ls. each time you visit the PHF to be examined by an advanced lab and X-ray unit?
1- I would not hesitate. ☐
2- I would go into debt. ☐
3- If I have enough money ☐
4- I will not pay ☐

7) Are you willing and able to pay the cost of a drug that had been determined by the pharmacy administration each time you visit the PHF to ensure the availability of drugs and consumables especially for children?
1- I would not hesitate. ☐
2- I would go into debt. ☐
3- If I have enough money ☐
4- I will not pay ☐

8) Are you willing and able to pay 2000 Ls. each time you visit the PHF to ensure the improvement of the environment for waiting places and reduce the waiting times?
1- I would not hesitate. ☐
2- I would go into debt. ☐
3- If I have enough money ☐
4- I will not pay ☐

**Appendix B – The Goodness-of-fit of the eight dependent variables
(group 1 and group 2)**

Dependent Variables group 1	Percent correct prediction	The Omnibus test			-2 Log likelihood		McFadden R ²
		Chi square	Degree of freedom	Significance	Beginning	End	
1- Specialist services	69.9%	80.102	13	0.000	469.951	389.849	0.1704
2- Lab and X-ray analysis	70.3%	56.296	17	0.000	331.220	274.924	0.1700
3- Drugs availability	66.6%	56.143	17	0.000	453.112	396.969	0.1239
4- Decrease waiting time	66.8%	37.471	7	0.000	461.899	424.427	0.0811

Dependent Variables Group 2	Percent correct prediction	The Omnibus test			-2 Log likelihood		McFadden R ²
		Chi square	Degree of freedom	Significance	Beginning	End	
1- Specialist services	77.2%	19.431	10	0.035	71.097	51.66	0.2734
2- Lab and X-ray analysis	77%	14.493	7	0.043	78.546	64.054	0.1845
3- Drugs availability	79.9	27.126	9	0.001	81.774	54.648	0.3317
4- Decrease waiting time	69.5	15.353	6	0.018	81.639	66.286	0.1881

Appendix C - The OLS estimate on the separate effects of individual HH characteristics on ATP for group 1.

Dependent variables	The coefficients	Family size		Education		Occupation				Monthly income (x 1000 Ls)				Other income	Have a car	Have dependents	
		1-6	7-10	secondary	university	employee	labourer	merchant	Jobless	100-150	150-300	300-500	>500	yes	yes	Yes always	Yes sometimes
Specialist services	B	.409	.166	-.016	.160	-.783	-1.157	-.065	-.128	.132	.360	1.012	2.264	-.010	.757	.348	-.367
	S.E.	.385	.389	.249	.272	.332	.381	.321	.646	.350	.325	.366	.462	.212	.234	.218	.336
	Wald	1.128	.183	.004	.345	5.569	9.209	.041	.039	.142	1.225	7.646	24.047	.002	10.500	2.532	1.195
	Sig.	.288	.669	.950	.557	<u>.018</u>	<u>.002</u>	.840	.843	.707	.268	<u>.006</u>	<u>.000</u>	.963	<u>.001</u>	.112	.274
Lab and X-ray analysis	B	.094	.012	.148	.419	-.530	-.941	.081	.375	.246	.484	1.012	2.122	-.103	.879	.400	-.276
	S.E.	.382	.386	.250	.274	.328	.377	.318	.669	.348	.325	.366	.447	.212	.237	.219	.333
	Wald	.061	.001	.350	2.343	2.612	6.243	.065	.314	.501	2.219	7.646	22.536	.235	13.788	3.345	.688
	Sig.	.805	.975	.554	.126	.106	<u>.012</u>	.799	.575	.479	.136	<u>.006</u>	<u>.000</u>	.627	<u>.000</u>	.067	.407
Drugs availability for children	B	-.330	-.518	.170	.457	-.759	-1.293	-.333	-1.006	-.342	.438	.187	1.237	-.340	.678	.253	-.248
	S.E.	.409	.413	.253	.280	.356	.395	.350	.651	.340	.323	.359	.430	.215	.244	.224	.330
	Wald	.650	1.577	.453	2.660	4.543	10.729	.907	2.382	1.014	1.838	.272	8.266	2.503	7.890	1.274	.562
	Sig.	.420	.209	.501	.103	<u>.033</u>	<u>.001</u>	.341	.123	.314	.175	.602	<u>.004</u>	.114	<u>.005</u>	.259	.453
Decrease waiting time	B	-.308	-.357	.167	.854	.190	-.827	.271	.229	.192	.588	.475	1.991	.049	.762	.311	-.314
	S.E.	.409	.413	.251	.290	.336	.374	.326	.670	.338	.321	.360	.498	.218	.251	.227	.331
	Wald	.566	.748	.443	8.652	.318	4.786	.693	.117	.324	3.346	1.748	15.981	.049	9.250	1.884	.901
	Sig.	.452	.387	.506	<u>.003</u>	.573	<u>.029</u>	.405	.733	.569	.067	.186	<u>.000</u>	.824	<u>.002</u>	.170	.342

Appendix C - Continued

Dependent variables	The coefficients																
	House ownership	Pay tuition fees		Episodes of sickness last 3 months		Disease type			No. of visits last 3 months			Pay for treatment last 3 months		Bought drugs last 3 months			
		owned	others	Yes always	Yes sometimes	twice	>twice	Obs&ped.	medicine	others	once	twice	>twice	Yes always	Yes sometimes	Yes always	Yes sometimes
Specialist services	B	.903	.520	.368	-1.342	-.469	-.297	-1.349	-.785	-.474	-.341	.000	-.015	.174	.418	.197	.312
	S.E.	.346	.419	.249	.541	.308	.316	.577	.277	.741	.380	.406	.347	.320	.386	.370	.418
	Wald	6.794	1.542	2.181	6.162	2.324	.887	5.472	8.037	.409	.805	.000	.002	.298	1.171	.283	.560
	Sig.	.009	.214	.140	.013	.127	.346	.019	.005	.523	.370	1.000	.966	.585	.279	.595	.454
Lab and X-ray analysis	B	1.341	.790	.508	-.631	-.534	.049	-.880	-.807	-.523	-.762	-.219	.368	.203	.480	.240	.312
	S.E.	.369	.439	.250	.474	.309	.315	.541	.278	.741	.385	.410	.352	.320	.387	.370	.418
	Wald	13.194	3.244	4.124	1.771	2.988	.024	2.646	8.440	.498	3.927	.285	.697	.405	1.538	.421	.560
	Sig.	.000	.072	.042	.183	.084	.878	.104	.004	.480	.048	.593	.404	.525	.215	.516	.454
Drugs availability for children	B	.726	.399	.464	-1.262	-.519	-.147	-.267	-.543	-.624	.014	.284	.377	.637	.501	.469	.341
	S.E.	.333	.407	.254	.490	.308	.319	.542	.280	.742	.379	.410	.350	.374	.390	.374	.422
	Wald	4.747	.959	3.330	6.628	2.845	.211	.243	3.767	.707	.001	.480	1.159	1.568	1.653	1.568	.651
	Sig.	.029	.328	.068	.010	.092	.646	.622	.052	.401	.970	.489	.282	.211	.198	.211	.420
Decrease waiting time	B	.564	-.314	.300	-1.070	.014	.119	-1.085	-.553	.368	-.092	.100	.162	.891	.693	.643	-.139
	S.E.	.329	.331	.255	.464	.308	.320	.544	.283	.848	.381	.412	.352	.323	.390	.371	.416
	Wald	2.936	.901	1.378	5.324	.002	.138	3.978	3.824	.189	.059	.059	.212	7.600	3.162	3.007	.111
	Sig.	.087	.342	.240	.021	.963	.710	.046	.051	.664	.809	.808	.645	.006	.075	.083	.739

Appendix D - The OLS estimate on the separate effects of individual HH characteristics on ATP for group 2.

Dependent variables	The coefficients		Family size		Education		Occupation					Monthly income (x 1000 Ls)				Other income	Have a car	Have dependents
			1-6	7-10	secondary	university	employee	labourer	merchant	Jobless	100-150	150-300	300-500	>500	yes	yes	Yes always	Yes sometimes
Specialist services	B		.515	.480	.159	1.139	.357	.069	.105	-7.286	-405	-318	.827	1.269	.152	.176	-.634	-1.386
	S.E.		.882	.942	.761	.707	.739	.909	.843	34.895	.935	.939	.876	1.021	.552	.599	.675	.845
	Wald		.341	.259	.043	2.597	.233	.006	.016	.044	.188	.115	.890	1.545	.076	.086	.884	2.690
	Sig.		.559	.611	.835	.107	.629	.939	.901	.835	.665	.735	.345	.214	.783	.769	.347	.101
Lab and X-ray analysis	B		.262	-.336	.560	1.070	.549	.693	.105	-7.286	-164	-.069	.693	1.135	.095	1.291	-.323	-.875
	S.E.		.792	.878	.732	.710	.734	.894	.843	34.895	.904	.909	.886	1.029	.539	.589	.607	.785
	Wald		.110	.147	.585	2.270	.559	.601	.016	.044	.033	.006	.611	1.216	.031	4.801	.284	1.243
	Sig.		.740	.702	.445	.132	.455	.438	.901	.835	.856	.939	.434	.270	.860	.028	.594	.265
Drugs availability for children	B		1.990	.714	.742	2.534	1.504	-.405	-1.204	-8.202	-.223	.182	.993	1.099	.000	1.230	-.470	-.588
	S.E.		.882	.932	.683	.760	.769	.838	.838	34.894	.803	.808	.853	1.033	.508	.608	.671	.749
	Wald		5.097	.586	1.182	11.126	3.826	.234	2.016	.055	.077	.051	1.356	1.132	.000	4.094	.491	.616
	Sig.		.024	.444	.277	.001	.050	.629	.156	.814	.781	.821	.244	.287	1.000	.043	.484	.433
Decrease waiting time	B		2.556	2.182	.678	1.754	1.511	.288	-.916	-.405	.154	.847	1.371	1.476	.259	.543	-.470	-.588
	S.E.		1.117	1.155	.659	.688	.742	.832	.851	1.339	.819	.827	.868	1.045	.509	.570	.671	.749
	Wald		5.240	3.570	1.058	6.508	4.150	.120	1.158	.082	.035	1.049	2.491	1.983	.258	.907	.491	.616
	Sig.		.022	.059	.304	.011	.042	.729	.282	.762	.851	.306	.114	.158	.612	.341	.484	.433

Appendix D – Continued

Dependent variables	The coefficients		House ownership		Pay tuition fees		Episodes of sickness last 3 months		Disease type		No. of visits last 3 months				Pay for treatment last 3 months		Bought drugs last 3 months	
			owned	others	Yes always	Yes sometimes	twice	>twice	Obs&ped.	medicine	others	once	twice	>twice	Yes always	Yes sometimes	Yes always	Yes sometimes
Specialist services	B	.775	.511		1.147	-7.593	-.336	-.039	-.223	.470	.470	.798	.087	.357	.704	.955	-.128	-.223
	S.E.	.678	.823		1.138	33.228	.936	.714	1.230	.716	1.328	1.249	1.294	1.233	.787	.767	.711	.851
	Wald	1.306	.385		1.015	.052	.129	.003	.033	.431	.125	.408	.005	.084	.800	1.552	.032	.069
	Sig.	.253	.535		.314	.819	.719	.956	.856	.511	.723	.523	.946	.772	.371	.213	.857	.793
Lab and X-ray analysis	B	-.323	-1.481		-.463	-1.945	-.074	-.634	-.288	.405	.405	-.693	-2.197	-1.727	.511	-.405	-1.138	-.770
	S.E.	.607	.903		.873	1.345	.848	.736	1.232	.719	1.329	1.061	1.190	1.072	.695	.723	.711	.823
	Wald	.284	2.690		.281	2.091	.008	.742	.055	.318	.093	.427	3.407	2.594	.540	.315	2.563	.875
	Sig.	.594	.101		.596	.148	.930	.389	.815	.573	.760	.513	.065	.107	.462	.575	.109	.350
Drugs availability for children	B	-.316	-.473		1.156	-1.384	.709	.485	-.901	.709	1.179	-1.099	-1.974	-1.705	-.511	-.678	-.916	-.405
	S.E.	.591	.725		.920	1.368	.807	.651	1.205	.653	1.305	1.242	1.249	1.211	.670	.659	.698	.816
	Wald	.290	.425		1.579	1.022	.770	.556	.559	1.176	.816	.783	2.496	1.982	.582	1.058	1.722	.246
	Sig.	.590	.514		.209	.312	.380	.456	.455	.278	.366	.376	.114	.159	.446	.304	.189	.620
Decrease waiting time	B	-.587	.152		-1.335	-3.686	.788	-.357	.891	.485	1.179	.511	-.993	-.724	.619	.251	.111	.000
	S.E.	.593	.735		1.137	1.524	.831	.652	1.017	.651	1.305	1.088	1.070	1.024	.665	.649	.667	.787
	Wald	.979	.042		1.379	5.850	.900	.300	.767	.556	.816	.221	.862	.499	.867	.150	.028	.000
	Sig.	.322	.837		.240	.016	.343	.584	.381	.456	.366	.639	.353	.480	.352	.698	.868	1.000

Appendix E - Method of statistical analysis

A non-parametric statistical analysis was used for the binary nature of the dependent variables.

For group 1 and group 2 regarding the 4 aspects of quality of health (8 dependent variables): yes is equal to 1 if the respondent is still able to pay for the specific aspect of quality of public health services and otherwise it is equal to 0.

However since the linear probability model (LPM) is heteroscedastic and may predict probability beyond the (0, 1) range, John Whitehead (2003) a LRM is used to estimate the factors which influence the ones of the dependent variables e.g. ATP an extra amount of money for public health services if these services are 'introduced by a specialist' is the one (1/ 0) for the first model. In order to have an estimation for the different sets of variables for the eight models a logit model is applied and the general formula of the risk odds ratio is used (ROR), in order to estimate the effect of the socio-demographic independent variables ($X_1, X_2 \dots X_i$) on the dummy dependent variables [$Y = (1, 0)$]. Equation one presents the logit formula which resembles the base for the ROR formula and interpreted as the coefficient β_i represents the change in the log odds that would result from one unit change in the variable X_i when all the other X 's are fixed. Equation (2) presents the ROR formula considered as a derivative from equation (1). Thus, the product or $\prod$ formula for ROR tells us that, when the LRM is used, the contribution of the variables to the odds ratio is multiplicative [34]. SPSS package is used to run the analysis and to obtain the results.

$$P(Y) = \alpha + \sum \beta_i X_i \quad (1)$$

$$ROR_{y_1, y_0} : \exp[\sum \beta_i (X_{1i} - X_{0i})] = \prod \{ \exp[\beta_i (X_{1i} - X_{0i})] \} \quad (2)$$

ROR [(0, 1) variables]: $ROR = \exp(\beta_i)$ for the effect of the variable X_i adjusted for the other X 's. Interpretation from the product ($\prod$) formula: The contribution of each X_i variable to the odds ratio is multiplicative.

Can community financing contribute to a better health in Sudan?

The summary

Community financing is an innovative method for developing countries to deal with chronic problems in health financing systems. This is perhaps why there has been an increasing interest in financing based at the community level. Community financing is still widely untested. Only a few studies have designed frameworks to evaluate, clarify and classify different community financing schemes.

The question addressed in this thesis is to what extent community financing can contribute to a better health in Sudan? This study is a case study of evidence based findings, based on the analysis of primary and secondary data. The study aims to weight the advantages, disadvantages, opportunities and threats of community financing features, characteristics, and performance by analyzing empirical findings from the international and national experiences.

Chapter 1 introduces the Sudan and the health delivery system in Sudan and provides a background for the study . The chapter also outlines the process of data collection and presents the method of analysis together with the analytical framework.

Chapter 2 reviews community financing in terms of what, why and how. Further it reviews the international experiences of community financing, as well as the Sudanese experience in community financing. Community financing for health is referred to as a mechanism whereby households in a community finance or co-finance the current and the capital costs of health services, and have control and involvement in the management of these community financing schemes.

The chapter shows that community financing schemes have emerged in developing countries because of political instability, economic shortages and weak capacity of the health organization. In addition the willingness of the people to pay for health care encourages and advocates the adoption of community financing attempts.

It also shows that the successful implementation of community financing schemes requires a feasibility study; a community study; and robust partnership with NGOs and the government to ensure training and technical support. The international experiences of community financing show the diversity in community financing regarding their purposes, technical, managerial and organizational aspects. Although in Sudan there is a willingness for establishing community financing schemes it is deficient in these experiences. The Basic Development Needs (BDN) and the Child Friendly Community Initiative (CFCI) that have been launched as community financing development schemes show significant results in reducing poverty in its broadest sense. It seems that a successful community financing scheme depends on political, economical, institutional and cultural prerequisites.

Chapter 3 reviews the problem of poverty in Sudan and its relation with health. It also reviews the different methods of protecting the poor and the role of the Zakat on that. The chapter shows that poverty is prevalent all over the country and is remarkably high in rural areas. The government has used both direct and indirect targeting mechanisms of protection of the poor. Although the Zakat chamber has the potential to increase coverage of the poor under the insurance scheme, it spent the majority of its funds on tertiary health care. The chapter concludes that health as a core determinant of development and poverty reduction has an important role to bring all health partners together including the Zakat chamber.

Chapter 4 explores and discusses the health care finance system in Sudan by reviewing data of different health finance mechanisms in Sudan regarding their definition, main features, strengths and weaknesses. The chapter shows that the health finance system in Sudan is built on multiple resources. It also shows that government expenditure on health care is very low, per capita expenditure was US\$ 3.3 in 2005. Social insurance contributed to health expenditure by 0.23 US\$ per capita, user fees are estimated to be just below 1 US\$ per capita, out-of-pocket of private and treatment abroad expenditure are 15-20 US\$ per capita and donor funds to the whole Sudan 3.5 US\$ per capita. Total expenditure on health care is estimated to be 27 US\$ per capita.

The chapter argues that the health finance system in Sudan suffers from chronic constraints that appear in a lack of information, lack of coordination, inefficiency, inequity, bad quality and fluctuation. General and specific recommendations are given to revitalize the health care finance system; on top of that the Federal Ministry of Health should establish a National Health Policy. The chapter concludes that a strong relation with the for-profit private sector should be established and translated into private-public partnership.

The next three chapters present the survey results. The analysis is carried out on a household survey conducted in the three provinces of Khartoum of Sudan in 2001. The data are collected through interviews based on an adapted questionnaire. A logistic regression model is used for the statistical analysis.

In chapter 5 we analyze the attributes and the characteristics of those who receive free of charge public health services in Khartoum of Sudan. We also investigate if there are any impediments for cost recovery policies on health care use.

The results show that a respondent who has other income, who always or sometimes has dependents and who visited a health services twice on average is more likely to receive free of charge public health services. This does not advocate the health planners' claims that the beneficiaries of free of charge public health services are the well-off people. The government can continue to offer free of charge public health services at emergency departments with effective measures to stop misuse.

In chapter 6 we analyse the extent of the willingness to pay for good quality public health services in relation to the demographic and socio-economic characteristics of respondents. We study willingness to pay by means of a contingent valuation method.

The results show that the overall percentage of people who are willing to pay for good quality public health services is either 80% or 75% depending on whether respondents already pay for these services (group 1) or not (group 2). Although the two groups are willing to pay for good quality public health services, the demographic characteristics that affect the willingness to pay differ between the two groups. The results of the logistic regression analysis for each group are remarkably similar. We conclude that if the quality of services is improved, reason-

able fees could be set. This supports the continuity of the policy to recover costs because virtually the majority of the households would be willing to pay reasonable fees.

In chapter 7 we analyze the ability to pay (ATP) for public health services if these services are of good quality. It also investigates the relation between ATP and willingness to pay (WTP). The ATP is related to the respondents' demographic and socio-economic characteristics. To study the ATP, a contingent valuation method is applied.

The results show that the average percentage of respondents who are able to pay for good quality public health services ranges from 42% to 55% depending on whether respondents already pay for these services (group 1) or not (group 2). The results of the logistic regression analysis for each group are remarkably similar. There are differences between the two groups in the characteristics that influence the probability of being more able to pay. An important difference between ATP and WTP outcomes is observed. To encourage the sustainability of health services through user fee policies the adoption of the Bamako model of community financing is recommended.

Chapter 8 outlines the general conclusions, the SWOT framework, the policy implications and recommendations. The chapter provides direct answers to the research questions and discusses the implications of these results. The chapter presents the SWOT framework analysis and its outcomes. The discussion suggests the feasibility of community financing to achieve better health in Sudan. Community financing can be a national policy led by the NGOs or can be a NGOs initiative fostered by national and local governments. No doubt the available potentials and opportunities in Sudan can make a community financing a success.

Kan community financing bijdragen aan een betere gezondheidszorg in Soedan?

Samenvatting

Community financing is een innovatieve methode voor ontwikkelingslanden gericht op de aanpak van structurele problemen met de financiering van de gezondheidszorg. Dit verklaart wellicht de toenemende belangstelling voor deze vorm van financiering. Community financing is nog niet uitgebreid getoetst. Slechts in enkele studies zijn kaders ontworpen om verschillende programma's te evalueren, verduidelijken en classificeren.

De vraag die centraal in dit proefschrift staat, is in hoeverre community financing kan bijdragen aan een betere gezondheidszorg in Soedan. Dit onderzoek bestaat uit een case-studie van evidence-based resultaten van een analyse van primaire en secundaire data. Het onderzoek kijkt naar de voor- en nadelen, mogelijkheden en bedreigingen van community financing en de kenmerken en effectiviteit daarvan op grond van een analyse van empirische resultaten van nationale en internationale programma's.

In hoofdstuk 1 wordt als achtergrond bij het onderzoek een inleiding gegeven over Soedan en de bestaande voorzieningen voor gezondheidszorg in dit land. In dit hoofdstuk wordt ook ingegaan op de manier waarop gegevens zijn verzameld, de onderzoeksmethodologie en het analytische kader.

Hoofdstuk 2 gaat dieper in op het 'hoe', 'wat' en 'waarom' van community financing. In dit hoofdstuk worden ook de nationale (in Soedan) en internationale ervaringen met community financing beschreven. Community financing van de gezondheidszorg kan worden omschreven als een mechanisme waarbij huishoudens in een gemeenschap geheel of gedeeltelijk bijdragen aan de kosten voor gezondheidszorg en betrokken worden bij het management van deze community financing-programma's.

Het hoofdstuk laat zien dat de opkomst van community financing programma's in ontwikkelingslanden het gevolg is van politieke instabiliteit, economische schaarste en de ontoereikende capaciteit en organisatie van de gezondheidszorg. Bovendien is de bereidheid van mensen om voor gezondheidszorg te betalen een stimulans voor het opzetten van dergelijke programma's.

Een succesvolle uitvoering van community financing programma's is afhankelijk van een aantal voorwaarden: een haalbaarheidsonderzoek, een studie van de gemeenschap, en een goede samenwerking tussen NGO's en de overheid met het oog op scholing en technische ondersteuning. De ervaringen met community financing op internationaal niveau geven de verscheidenheid aan doelstellingen en technische, management en organisatorische aspecten weer. In Soedan is de bereidheid om dergelijke programma's op te starten weliswaar groot, maar heeft men geen ervaring. De programma's Basic Development Needs (BDN) en het Child Friendly Community Initiative (CFCI) zijn dan ook specifiek bedoeld om ervaring op te

doen met community financing. Deze programma's hebben tot goede resultaten geleid op het gebied van armoedebestrijding in de breedste zin van het woord. Een succesvol community financieringssysteem lijkt afhankelijk te zijn van politieke, economische, institutionele en culturele voorwaarden.

Hoofdstuk 3 bespreekt de armoede- en gezondheidsproblematiek in Soedan en het verband daartussen. Ook worden in dit hoofdstuk de verschillende manieren besproken waarop de armen worden beschermd en de rol die de religieuze belasting 'zakat' hierin speelt. In het hele land heerst armoede, vooral in de landelijke gebieden. De overheid heeft zowel directe als indirecte mechanismen gebruikt om de armen te beschermen. Hoewel de 'Zakat chamber', de overheidsinstantie die de religieuze belasting int, ervoor kan zorgen dat meer armen onder het sociale verzekeringsstelsel vallen, geeft deze het grootste gedeelte van de beschikbare middelen uit aan tertiaire gezondheidszorg. De conclusie is dat de gezondheidszorg een beslissende factor is voor de ontwikkeling en armoedebestrijding en als zodanig een cruciale rol speelt in het bijeenbrengen alle belanghebbende organisaties, inclusief de Zakat chamber.

In hoofdstuk 4 wordt de financiering van de gezondheidszorg in Soedan onderzocht door het vergelijken van gegevens van verschillende financieringsmechanismen. Daarbij wordt onder andere gekeken naar de belangrijkste kenmerken en de voor- en nadelen van deze mechanismen. Uit het onderzoek blijkt dat de gezondheidszorg in Soedan uit verschillende middelen wordt gefinancierd. Bovendien zijn de overheidsuitgaven voor gezondheidszorg erg laag: \$ 3,30 per persoon in 2005. Sociale verzekeringen dragen \$ 0,23 per persoon bij; eigen bijdragen worden geschat op iets minder dan \$ 1,00 per persoon; de kosten die direct aan de dienstverlener worden betaald en kosten voor behandeling in het buitenland bedragen \$ 15 - 20 per persoon, en giften van donoren voor heel Soedan bedragen \$ 3,50 per persoon. De totale overheidsuitgaven voor gezondheidszorg worden geschat op \$ 27,00 per persoon.

In dit hoofdstuk wordt duidelijk dat het financieringsstelsel voor de gezondheidszorg in Soedan aan een aantal structurele problemen lijdt, namelijk een gebrek aan informatie, coördinatie en inefficiëntie, ongelijkheid, slechte kwaliteit en fluctuatie in beleid. Er wordt een aantal algemene en specifieke aanbevelingen gedaan om de financiering van de gezondheidszorg nieuw leven in te blazen. Bovendien zou het Federale Ministerie van Gezondheid er goed aan doen een nationaal gezondheidsbeleid te ontwikkelen. Het hoofdstuk eindigt met de conclusie dat een goede samenwerking tussen de overheid en het bedrijfsleven moet worden gerealiseerd in de vorm van een publiek-privaat samenwerkingsverband.

In de volgende drie hoofdstukken worden de resultaten van het onderzoek gepresenteerd. De analyse is gebaseerd op een enquête die is afgenomen in huishoudens in de drie provincies van Khartoem in 2001. De gegevens zijn verzameld aan de hand van interviews die gebaseerd zijn op een aangepaste vragenlijst. Voor de statistische analyse is gebruik gemaakt van logistisch regressie.

In hoofdstuk 5 worden de eigenschappen en kenmerken geanalyseerd van de mensen die gebruik maken van gratis gezondheidszorg van de overheid in Khartoem. We gaan daarbij ook na of er belemmeringen zijn voor beleid dat de kosten voor voorzieningen in de gezondheidszorg op de gebruikers verhaalt.

De resultaten tonen aan dat respondenten die meerdere bronnen van inkomsten hebben, die altijd of soms verantwoordelijk zijn voor het levensonderhoud van anderen en die gemiddeld twee keer gebruik hebben gemaakt van gezondheidszorg, een grotere kans maken op gratis gezondheidszorg. Dit komt niet overeen met de stelling van beleidsmakers dat juist het rijkere deel van de bevolking gratis gezondheidszorg genieten. De overheid kan dan ook doorgaan

met het aanbieden van gratis gezondheidszorg in afdelingen voor spoedeisende hulp en daarnaast effectieve maatregelen nemen om misbruik tegen te gaan.

In hoofdstuk 6 wordt gekeken naar de bereidheid van de respondenten om te betalen voor gezondheidszorg van goede kwaliteit in verhouding tot hun demografische en sociaal-economische kenmerken. Daarbij wordt gebruik gemaakt van een contingent valuation-methode.

De resultaten tonen aan dat respectievelijk 80% en 75% van de mensen bereid zijn om te betalen voor gezondheidszorg van goede kwaliteit, afhankelijk van het feit of ze al betalen voor deze dienstverlening (groep 1) of niet (groep 2). Hoewel beide groepen bereid zijn te betalen voor gezondheidszorg van goede kwaliteit, verschillen de twee groepen wat betreft de demografische kenmerken die deze bereidheid beïnvloeden. De resultaten van de logistische regressies van beide groepen vertonen opvallende overeenkomsten. We concluderen dat als de kwaliteit van de diensten verbetert, hiervoor een redelijke vergoeding kan worden gevraagd. Dit pleit voor voortzetting van het beleid om de kosten terug te verdienen, aangezien de meerderheid van de huishoudens bereid zou zijn een redelijke bijdrage te betalen. In hoofdstuk 7 wordt het vermogen om te betalen voor gezondheidszorg van goede kwaliteit onderzocht. Daarbij wordt ook gekeken naar het verband tussen het vermogen en de bereidheid om te betalen. Het vermogen om te betalen is gerelateerd aan de demografische en sociaal-economische kenmerken van de respondent. Ook hier wordt weer een contingent valuation-methode toegepast.

De resultaten tonen aan dat respectievelijk 42% en 55% van de respondenten in staat zijn te betalen voor gezondheidszorg van goede kwaliteit, afhankelijk van het feit of de respondenten al voor deze dienstverlening betaalden (groep 1) of niet (groep 2). De resultaten van de logistische regressies voor beide groepen vertonen opvallende overeenkomsten. De twee groepen vertonen verschillende kenmerken die invloed hebben op de kansen dat ze beter in staat zijn te betalen. Er is een belangrijk verschil tussen de uitkomsten van het vermogen en die van de bereidheid om te betalen. Om voortzetting van het aanbieden van gezondheidsdiensten door middel van gebruikersbijdragen te stimuleren wordt het Bamako-model voor community financing aanbevolen.

In hoofdstuk 8 geven we de algemene conclusies, de SWOT-analyse, de gevolgen en aanbevelingen voor het te volgen beleid. In dit laatste hoofdstuk worden directe antwoorden gegeven op de onderzoeksvragen en worden de gevolgen van deze resultaten besproken. Ook wordt in dit hoofdstuk de SWOT-analyse en de uitkomsten daarvan gepresenteerd. Uit de discussie blijkt dat een betere gezondheidszorg in Soedan met een community financing-programma haalbaar is: ofwel als een nationaal programma dat door NGO's wordt geleid of als een initiatief van NGO's dat door nationale en lokale overheden wordt ondersteund. De voorzieningen en mogelijkheden die in Soedan voorhanden zijn, zullen ongetwijfeld bijdragen aan het succes van community financing.

الملخص:

هل يمكن لتمويل المجتمع للخدمات الصحية أن يساهم في الصحة المميزة بالسودان

تمويل المجتمع للخدمات الصحية يعتبر طريقة خلاقة تتبعها الدول النامية في معالجة المشاكل المزمنة في تمويل الصحة وهذا ما يوضح زيادة الاهتمام بالتمويل المبني علي قاعدة مشاركة المجتمع . وتمويل المجتمع للصحة ما زال حتى الآن وبصورة واسعة لم يختبر ويجرب وهناك بعض الدراسات التي وضعت بعض الأطر والتقييم والتوضيح والتصنيف لمختلف مشاريع تمويل المجتمع للخدمات الصحية .

وفي هذه الدراسة السؤال المطروح هو : إلى أي مدى يمكن لتمويل المجتمع للخدمات الصحية أن يساهم في الصحة المميزة بالسودان . وهذه الرسالة عبارة عن دراسة حالة مبنية علي جمع الأدلة والقرائن وذلك بتحليل بيانات أولية وثانوية . كما تهدف الدراسة إلى وزن الإيجابيات والسلبيات والسوانح والمهددات لمواصفات وصفات أداء تمويل المجتمع للخدمات الصحية ، وذلك بتحليل نتائج دراسات محلية وعالمية عن تمويل المجتمع للخدمات الصحية .

الفصل الأول عبارة عن خلفية للدراسة فيها عرض للسودان والنظام الصحي فيه ، كما يشرح الفصل طريقة جمع البيانات وطريقة التحليل الإحصائي وإطار التحليل الكلي للدراسة .

الفصل الثاني يعرف تمويل المجتمع للخدمات الصحية ما هو ؟ ولماذا؟ وكيف ؟ كما يقوم بعرض الخبرات والتجارب الدولية والمحلية لتمويل المجتمع للخدمات الصحية ويرجع تمويل المجتمع للخدمات الصحية إلى العملية التي تمارسها الأسرة في تمويل أو مساعدة تمويل في الميزانية الجارية أو الرأسمالية للخدمات الصحية مع مشاركة المجتمع في إدارة هذه العمليات التمويلية .

الفصل يوضح أن ظهور تمويل المجتمع للخدمات الصحية في الدول النامية كان نتيجة لعدم الاستقرار السياسي والقصور الاقتصادي وضعف المنظمة الصحية، بالإضافة إلى موافقة وأريحية المواطنين في الدفع لتمويل الخدمات الصحية مما كان له التشجيع والدعم في تطبيق هذه المبادرات . الفصل أيضاً يوضح أن التنفيذ الناجح لمشاريع تمويل المجتمع للخدمات الصحية يتطلب دراسة جدوي لكل مشروع ودراسة للمجتمع مع وجود علاقة قوية مع المنظمات غير الحكومية والدولة لضمان التدريب والدعم الواسع في هذه التجارب من النواحي الفنية والنواحي الإدارية والنواحي التنظيمية . مع أن في السودان موافقة وأريحية للمواطنين في تطبيق مشاريع تمويل المجتمع للخدمات الصحية إلا أن تجاربه في ذلك قليلة .

إن تجربتي (BDN) للاحتياج الأساسي للتنمية ومبادرة المجتمع الصديقة للأطفال (CFCD) واللذان انطلقنا كمبادرات تنموية في تمويل المجتمع للخدمات الصحية أظهرتا نتائج مهمة في تقليل حدة الفقر علي مستوى عام. الفصل يختم بأنه يبدو أن نجاح مشاريع تمويل المجتمع للخدمات الصحية يبني علي مكونات متطلبات سياسية ، اقتصادية مؤسسية وثقافية .

الفصل الثالث يعرض مشكلة الفقر وعلاقته بالصحة في السودان ، كما يعرض الوسائل المختلفة لحماية الفقراء في سياسات عائد القيمة ودور الزكاة في ذلك . الفصل يوضح أن الفقر ظهر في كل السودان وبالأخص في المناطق الريفية . الدولة استخدمت الطريقة المستهدفة المباشرة وغير المباشرة في حمايتها للفقراء من سلبيات سياسات عائد القيمة . كما أوضحت الدراسة أنه ومع وجود إمكانيات عالية للزكاة في زيادة التغطية الصحية للفقراء عبر التأمين الصحي ألا أنها صرفت معظم تمويلها في المستوي الثالث للرعاية الصحية (Tertiary Health Care) . الفصل ختم بأنه يمكن للصحة بدورها المحوري في قيادة العملية التنموية وتقليل حدة الفقر أن تجمع شركاء تقديم الخدمات الصحية والزكاة في صعيد واحد .

الفصل الرابع استعرض وناقش نظام التمويل الصحي في السودان وذلك بعرض مختلف آليات تمويل الصحة في السودان من حيث التعريف والخصائص والضعف والقوي . الفصل أوضح أن نظام التمويل الصحي في السودان قائم علي تعددية في التمويل ، كما أوضح الفصل أن اتفاق الحكومة علي الصحة ضعيف قد بلغ 3.3 دولار أمريكي للمواطن في العام 2005م، وإتفاق التأمين الصحي الاجتماعي علي الصحة بلغ 0.23 دولار أمريكي للمواطن، ودفع المستخدم للخدمات الصحية الحكومية أقل من 1 دولار أمريكي للمواطن، وبلغ الدفع المباشر للمواطن للقطاع الخاص والعلاج بالخارج من 15 - 20 دولار أمريكي للمواطن واتفاق المانحين علي الصحة في السودان بلغ 3.5 دولار أمريكي للمواطن وعليه يكون إجمالي الاتفاق علي الصحة في السودان قد بلغ 27 دولار أمريكي للمواطن .

الفصل أظهر أن نظام التمويل الصحي في السودان يعاني من مشاكل مزمنة ظهرت في القصور في المعلومات والتنسيق والفاعلية والعدالة الصحية وعدم الجودة والاستقرار . الفصل قدم توصيات عامة وخاصة لإحياء نظام تمويل الخدمات الصحية وفي قمة ذلك أن تبادر وزارة الصحة الاتحادية بقيام (تأسيس) وثيقة السياسات الصحية القومية . الفصل اختتم أنه لا بد من قيام علاقة وثيقة مع القطاع الصحي الخاص الربحي تترجم لتأسيس علاقة مشتركة بين القطاع الحكومي والقطاع الخاص الربحي.

الثلاث فصول القادمة قدمت نتائج المسح الميداني (البيانات الأولية) والتحليل الإحصائي الذي بني علي مسح أسري تم في محافظات الخرطوم الثلاث بالسودان في 2001م . جمعت البيانات عبر معاينات من استبيان صمم لذلك كما أن التحليل الإحصائي تم استخدام معادلة تراجع لو غرثمية (LRM).

في الفصل الخامس قمنا بتحليل صفات ومواصفات الذين تلقوا علاجاً مجانياً في المؤسسات الصحية الحكومية . كما قمنا بفحص واستكشاف لو أن هناك أي معوقات لسياسات عائد القيمة المطبقة في الخدمات الصحية . النتائج أوضحت أن المستجيب الذي له دخل إضافي والذي عليه كفالة إضافية والذي تردد علي خدمة صحية مرتين في المتوسط أكثر احتمالية أن يتلقي علاجاً مجانياً في المؤسسات الصحية الحكومية . هذه النتائج لا تدعم دعوي مخطوطو الصحة والذين إدعوا فيها أن المتلقين للخدمات الصحية المجانية في المؤسسات الحكومية هم المواطنين ميسوري الحال . عليه يمكن للحكومة الاستمرار في تقديم الخدمات الصحية المجانية بالنسبة لخدمات الطوارئ (حوادث المستشفيات) مع المعالجات الناجعة لوقف استغلال الخدمات الصحية المجانية .

في الفصل السادس قمنا بالتحليل الإحصائي إلي أي مدي تكون الموافقة والأريحية في الدفع للخدمات الصحية الحكومية ذات الجودة علي ضوء الصفات الديموغرافية والاقتصادية والاجتماعية للمستجيبين . وقد قمنا بدراسة موافقة وأريحية المشتركين باستخدام طريقة تقييم الاحتمالات (Contingent Valuation).

النتائج أظهرت أن النسبة الكلية للمواطنين الموافقين ولهم أريحية للدفع (شراء) خدمات صحية بجودة محسنة من المؤسسات الحكومية هي 80% و 75% تعتمد علي إذا كان المستجيبون يتلقون علاجاً مجانياً وهذه هي المجموعة الأولى أو المستجيبون لا يتلقون علاجاً مجانياً وهذه هي المجموعة الثانية ، مع إن نتائج المجموعتين أظهرت موافقة وأريحية عالية في الدفع (شراء) للخدمات الصحية الحكومية إلا أن الصفات الديموغرافية للمجموعتين مختلفة .

نتائج التحليل الإحصائي التراجعي لكل مجموعة أظهر تشابهاً واضحاً للمستجيبين في كل مجموعة . الفصل ختم بأنه لو تحسنت جودة الخدمات الصحية يمكن وضع قيمة معقولة علي هذه الخدمات وهذه تدعم استمرار سياسات عائد القيمة لأنه من الواضح أن الغالبية من الأسر لها الأريحية في دفع (شراء) قيمة معقولة للخدمات الصحية الحكومية .

في الفصل السابع حللنا القدرة علي دفع قيمة الخدمات الصحية الحكومية لو كانت هذه الخدمات ذات جودة محسنة. كما اختبرنا العلاقة بين الموافقة وأريحية الدفع مع القدرة علي الدفع لشراء الخدمات الصحية الحكومية . القدرة علي الدفع تم تحليلها علي ضوء المواصفات الاقتصادية والديمغرافية للمستجيبين . لدراسة القدرة علي الدفع (شراء) الخدمات الصحية الحكومية تم استخدام طريقة تقييم الاحتمالات .

النتائج أظهرت أن نسبة المستجيبين الذين لديهم القدرة علي دفع قيمة الخدمات الصحية الحكومية ذات الجودة المحسنة بلغت 42% - 55% بناءً علي إذا كان المستجيبون يتلقون علاجاً مجانياً (المجموعة الأولى) أو لا يتلقون علاجاً مجانياً (المجموعة الثانية) . نتائج التحليل الإحصائي التراجعي للمستجيبين في كل مجموعة أظهرت تشابهاً واضحاً ، كما أظهرت اختلافاً بين المجموعتين في الصفات التي تجعل المستجيبين أكبر احتمالاً في أن تكون له القدرة علي الدفع للخدمات الصحية الحكومية ذات الجودة المحسنة . كما ظهر فرق واضح بين نتائج الموافقة والأريحية علي الدفع مقارنة بنتائج القدرة علي الدفع. لتشجيع ودعم استدامة الخدمات الصحية من خلال سياسة دفع المريض لقيمة الخدمات الصحية تم التوصية علي تطبيق مبادرة باماكو لتمويل المجتمع للخدمات الصحية .

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Curriculum Vitae

Khalid Habbani was born on the 21st, of November 1958, in Ed-Dueim, Sudan. He was graduated at Faculty of Medicine, Alexandria University, Egypt in 1985. He worked as a house officer in the Khartoum and Ed-Dueim Teaching hospitals and Suba University Hospital. In 1987 He seconded to work as a Medical Director in The Islamic Organization of Da'wa and Charity. This work rendered him the opportunity to serve among the displaced and refugees across the country.

In November 1989 he joined the Khartoum Teaching Hospital as a Medical Director for 6 years and a half. He joined a Master programme of Public health in 1996/1997 at Maastricht University, the Netherlands. He went back home and appointed as a General Director of Ahmed Gasim Hospital for Cardiac Surgery. In March 1998 he registered for a PhD study in Maastricht University which accepted as a joint programme between Ministry of Health, Khartoum State of Sudan and University of Maastricht. Recently he has worked at the department of Health Economics, Federal Ministry of Health, Sudan.