

DETERMINANTS OF INFORMAL SECTOR PARTICIPATION IN THE NATIONAL HEALTH  
INSURANCE FUND IN KASSALA STATE (EASTERN SUDAN)



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## Abbreviations



CDF	Community Development Fund
EMRO	Eastern Mediterranean Regional Office
FMOH	Federal Ministry of Health
FMOF	Federal Ministry of Finance
GDP	Gross Domestic Product
SMOH	State Ministry of Health
VHI	Voluntary Health Insurance
NHIF	National Health Insurance Fund
UNDP	United Nation Development Program
WB	World Bank
WHO	World Health Organization

## Chapter I

### Introduction

#### 1.1. General review:

Globally, more than 1.3 billion people lack access to medical services and almost 150 million individuals every year suffered from catastrophic health expenditure because of the high out of pocket medical spending. Therefore, most health systems act to address these two issues by implementing the health insurance model (WHO 2008).

Many developing countries adopt the health insurance model to achieve more accessibility for health services as well as maintaining the financial protection for both insured and health systems (Nguyen 2010). The concept of health insurance based on the solidarity, which promotes the collection and redistribution of member's contributions it in term of health services according to their needs .

The system of public health insurance undergoes many steps of development, from a social security scheme for the civil servants to national health insurance bodies that act to insure the whole population under the concept of universal health care coverage (NHIF report 2012). Furthermore, the voluntary health insurance model designed to cover the outreach population who can afford to pay the premium. Although there are a big debate about the effectiveness of this scheme in providing good quality services (Spaan, 2012) and achieve financial

protection (Galarraga, Sosa-Rubi, Salinas-Rodriguez, & Sesma-Vazquez, 2010) , but there are many experiences that reinforce the point that , this model is effective in increasing health provision for the out of reach population (Wagstaff, Lindelow, Jun, Ling, & Juncheng, 2009). Moreover, this scheme faces many challenges that interfere with its survival like, the low enrollment rate and the high numbers of drop in their memberships. There are many factors that precipitate these problems, which consider under the socio economic status of the members or the failure of this system to maintain the services when the insured member is in need.

## **1.2. Current health situation in Sudan :**

In Sudan, the picture is not different from other developing countries , since there is severe governmental budget deficit , high out of pocket spending and many barriers in accessibility to health services .The national health insurance fund (NHIF) was introduced in 1994 .The aim of NHIF IS to respond to the national policy of the Federal Ministry Of Health (FMOH) in implementing an easy access to services and social protection for all Sudanese population under the term of the universal health care coverage.

The current situation in NHIF revealed that there is a high percentage of coverage for the formal sector, and there is a continuous successful plan for insuring the poor citizen by governmental subsidies from Federal Ministry of Finance (FMOF) and ALZAKAT FUND. Yet, the coverage of the informal sector remain one of the

challenges that face the (NHIF) due to the high numbers of target population in this sector in addition to that the concentration of these population in the rural area that characterized by minimum or absence of health facilities (NHIF, 2012a).

Understanding the perception of the households in the informal sector is necessary to maintain the process of enrollment and the retention of members in the scheme. This should be taken seriously when we consider the voluntary nature of the enrollment in these schemes, which may facilitate the entry and exit from the scheme (Vellakkal1, 2013, Jehu-Appiah, 2012) .In addition to that, the presence of some features of market failure in the voluntary health insurance model like adverse selection, moral hazard and risk selection can result in negative impact on the sustainability of the scheme (Rajkotia & Frick, 2012).

The main concern of this study is to analyze the perception of the households in the informal sector in Kassala state, Eastern Sudan towards NHIF, and to explore the implication of these perceptions on the participation in the voluntary scheme of the NHIF. The methodology of this study based on primary data collected by semi structured survey that covered sample of the households of the informal sector in Kassala state, Sudan. To support the concept of this study, many literature reviews was collected from different countries with focusing on the experiences of developing countries in this area. In general, most of these review summarize that the desire of household to enroll, continue, dropout or not to enroll is based mainly



on some factors like the socio economic and health status of the household .Moreover, the managerial performance of the scheme as well as the availability and quality of services also have strong correlation with this mechanism (Jehu-Appiah, 2012, Appiah. j 2012).

### **1.3. Rationale for conducting this study:**

The aim of this study is to support the effort of expanding health insurance coverage among the households of the informal sector in Kassala state. The study provided evidence based results of behavioral analysis of the target population and find how these different perceptions impact the decision to enroll and continue in the voluntary scheme of NHIF.

There are many reasons behind conducting this research. First of all, although NHIF was implemented since 1994, but still there are few studies that analyze and investigate the corresponding issues like coverage and health services. This seems to be surprising especially with the continuous motivation of the head quarter of NHIF to conduct studies and research.

In Sudan, many policies and incentive have been implemented to increase the enrollment among the informal households. These policies include enrollment through group, cluster, union and even individuals. However, all these experiences were faced by the persistent low rate of enrollment and even more , there is a high dropout among the membership of the scheme (NHIF, 2012a) . This problem impacts

the direct national objective of achieving universal health care coverage under the umbrella of NHIF.

#### **1.4. Common problem:**

The problem of this thesis is associated with the households of the informal sector in Kassala state in eastern Sudan. This sector represent about 60 % of the total target population, and unlike the formal sector which is 100% insured ,the insurance coverage of the informal sector still low and estimated by 15 % (NHIF, 2012b).

Many challenges face the scheme that target the informal households like the voluntary nature of enrollment which result in high percentage of uninsured households. Moreover, although of the medical benefit and the initial enrolment of members, but still there is a large number of members who stop renewing their subscription. Actually there is no accurate figures for the dropout members in many executive directorate offices of the (NHIF), but some studies estimate that more than 40 % of the total members of the informal sector have been dropout .This high percentage indicates the possible serious impact on the financial protection of members as well as the scheme (.especially when we put in mind the progressive increasing of health expenditure in SUDAN. Another factors that should be considered also, is the implementation of the welfare scheme that represent a governmental subsidy to the poor population. This scheme makes many informal

households willing to enjoy enrolling in this free program instead of paying for their enrollment.

### **1.5. Research Question :**

What are the main factors that determine the participation of informal sector households in the National Health Insurance Fund in Kassala state, eastern Sudan?

### **1.6. Objectives :**

#### **1.6.1. General objective :**

The general objective is to identify the main factors that influence the perceptions of the informal sector households towards the participation in the National Health Insurance Fund in Kassala state, eastern Sudan

#### **1.6.2. Specific objectives :**

- To explain the main factors that lead household to enroll in NHIF.
- To explain the main factors that lead household to renew their enrollment in NHIF.
- To explain the main factors that lead household to dropout from NHIF.
- To explain the main factors that prevent household from enrollment in NHIF.

### **1.7. Hypotheses:**

- Perceived quality of health services motivate the enrollment of informal households in NHIF scheme.

- Absence of health facility reduces the enrollment of informal households in NHIF scheme .
- Perceived high premium lead to dropout of informal households in NHIF scheme .
- Health status of the family will affect the decision of continuation in NHIF scheme .

#### **1.8. Scope:**

This study designed to explain the difference in perceptions among the households of the informal sector and its implication on their participation in the voluntary scheme of national health insurance fund in Kassala state, Sudan. The study selects 7 localities out of the total 11 localities of Kassala state. Selection was based on the existence of the NHIF voluntary scheme.

The year 2011 was used as benched mark, members who enrolled before and after this year are insured members: if they renew their subscription they will be regarded as regular members and if not they will be regarded as dropout .Furthermore, households who enrollee during 2011 will be regarded as new enrollee while households who never enrolled before or after 2011 will be regarded as never insured members.

To conclude, 784 questionnaires and 5 in depth interviews were conducted to explore the determinant of participation of informal households in the NHIF in Kassala state, Sudan.



## CHAPTER 2

### Background

#### 2.1 General background:

With a land area of 1,861,484 sq.km, Sudan located in the northern east of Africa .Its neighbors are Chad and the Central African Republic on the west, Egypt and Libya on the north, Ethiopia and Eritrea on the east, and South Sudan, Kenya, Uganda, and Democratic Republic of the Congo on the south. The River Nile – that run from south to north- traverse the country into two halves .The total population about 35.5 million, of which the majority lived in rural area 62% while only 30% lived in urban area, the remaining 8% are nomads (World Statistics Pocketbook 2013) .The growth rate is 2.5% and the dependency ratio is 79.9% ("The World Factbook," 2013).

The national economic indicators deteriorate to the worst level especially after the separation of Southern region, which resulted in 80% decline in the foreign currency earnings and a 35.6% reduction in budget revenue (African Economic Outlook 2012). Furthermore, an estimation of 40% of population are poor as a sequel of the long history of conflict in the south and in Darfur.

Table 1: Economic indicators in Sudan, Ethiopia and Egypt in 2010

Indicators in 2010	Egypt	Sudan	Ethiopia
Gross domestic product (GDP) in Billion US\$	218.8	64.8	26.3
Gross domestic product per capita (US \$)	2803.5	1422.3	302.09
Gross domestic product, deflator (Annual %)	10.1	18.8	80.3
GDP growth (annual %)	5.1	3.4	9.9
Gross national savings (% of GDP)	14.1	18.021	7.54
Unemployment rate (% of total labor force)	9	17.5	-

Source: (International Monetary Fund, 2013)

## 2.2. Informal sector in Sudan:

The informal sector is one of the characteristic economic features in most of the developing countries. The International Labor Organization (ILO) defined the informal sector as “very small-scale units producing and distributing goods and services”.

In Sudan, the informal sector first appeared in the 1970s, following a huge migration influx from rural to urban areas as the result of unequal development, wars and drought. Although there is no updated information about the volume of the informal sector in Sudan but some studies suggest that the informal sector represent about 60% of the national labor market .The high unemployment rate lead many middle class households to join this sector searching for alternative job and income sources (UNDP Sudan Website 2012). The International Labor Organization (ILO) identified the informal sector in Sudan as a private sector with 10

to 20 workers, and is divided into three levels according to their earning ; high, middle, and low(Salih, 2007 ).

Displaced people represent high percentage in the informal sector. They provide cheap labor such as: labor in the construction, hawkers, and craftsmen.

There are many challenges that face household in this sector, this include; the low and irregular income, absence of government supervision, lack of efficient law and absence of vocational training .The result of these challenges is lack of both social and financial protection including the medical right.

### **2.3. National health system of Sudan:**

The Sudanese government maintains the provision of free health services for all citizens since independence in 1956. However, because of economic hardship due to the long-standing civil war in the south, the government shifts towards users fees for services(EMRO, 2006). This policy was implemented to fill the gap in financing health services through alternative channels. However , there is a new challenges that appeared as a sequel of this policy .Firstly , due to progressive declining of national budget to health and the liberalization policies ,the price of health services increased and many people face financial constrain that push them under the poverty line .Secondly , the high cost of services play as a barrier that reduce the access and utilization of services by many individuals especially the poor .To address these problem , the government announced the implementation of the



national health insurance in 1995 as a tool that act to improve equity in provision and maintain the financial stability of the system (FMOH, 2007b).

### **2.3.1. Structure of the health system:**

The administration of Sudan national health system based on three layers, the upper layer is the federal level that represented by the federal ministry of health that responsible for the drawing of the national policy and planning , creating the relationship with national and international partners in addition to the monitoring and evaluation of the performance of the health system .The intermediate layer is the state level which follow the federal guidelines and at the same times, its responsible for planning and implementing of projects according to the health situation in each state .The locality or the district level is the lower level in the national health system that concern with service delivery at the local level mainly in term of primary health care through health centers or rural hospitals (FMOH, 2007a).

### **2.3.2. Health services delivery system:**

The provision of health services is also organized in three levels: primary level for primary and basic healthcare, secondary level for hospitalization and medical consultation services and the tertiary level that provide sophisticated health services.

Beside the federal and state ministries of health ,there are many Parastatal bodies that share in the provision of services at different levels .Example of these

partners are the national health insurance fund (NHIF) , armed force , police medical services , universities , private sector and some national societies. However, because each of these partners work in isolation manner, there are very clear lack of coordination and guidance (FMOH, 2004).

In general ,the public sector remain the main provider for health , while the participation of the newly involved private sectors are limited only in the capital and some few cities (FMOH, 2008) .

Delivery of health services remain one of the most serious challenges that face the national health system .There are many obstacles that could be summarized in : weak infrastructure, insufficient budget and human resources ,absence of referral systems, lack of work standards (FMOH, 2007b).

On the other hand, there is marked difficulty in accessibility to health services especially in the rural area. According to the national health account 2008 , about 20% of the population have no access to health and less than the half of the health facilities have at least the minimum requirement for providing services . Moreover, there was a recent severe lack in the medical staffs due to their immigration outside the country searching for better situation. In addition to that, even for the remaining staff, more than 70% prefer to serve in the urban area especially Khartoum the capital and other major towns.

Indicators	Kassala state	National level
Ratio of medical doctors per 100,000 pop	10.5	34.6
Ratio of specialist per 100,000 pop	2.7	5.6
Ratio of midwives per 100,000 pop	33.5	45.5
Ratio of hospital per 100,000 pop	0.8	1.2
Ratio of Hospital Beds per 100,000 pop	56.9	82

Table 2: Comparison in health indicators between Kassala state and national level

### 2.3.3. Health finance resources in Sudan:

Health care financing system of Sudan is mixture of budget financing, social insurance and very small private insurance, but system mainly depends on private household expenditure which is largely paid on an out-of-pocket basis (FMOH, 2008). In 2008, the FMOH conduct the first national health account report for the country. The report which based on both federal and state data, act seriously to consider all health provider in the country including the external fund. The results of the NHA 2008 show that, the total National Health Expenditures in Sudan amounted to 7.1 billion SDG (3.3 billion USD), with per capita spending 232 SDG (111 US\$). More than 63 % of the total health fund derived from the households in shape of out of pocket payment. The public sector participate by 29%, national health insurance 4% while the participation was only 2% for private sector and external aid (FMOH, 2008).

Table 3: Financing sources of national health system

<b>SOURCE</b>		<b>Amount SDG</b>	<b>Percent</b>	<b>Per Capita</b>
<b>Public Sources</b>	Federal Ministry Of Finance	734,642,519	10.3%	23.93
	State Ministry of Finance	1,029,147,641	14.4%	33.52
	Localities	92,364,552	1.3%	3.01
	Parastatal funds	51,369,882	0.7%	1.67
	Other Public (Al-Zakat)	150,633,828	2.1%	4.91
<b>Private Sources</b>	Employer Funds	168,846,947	2.4%	5.50
	National NGOs	7,720,495	0.1%	0.25
	Community Finance	2,231,655	0.0%	0.07
	Household funds (FS.2.2)	4,583,326,532	64.3%	149.30
	Other Private funds	11,816,539	0.2%	0.38
<b>External</b>	Donors Funds (FS.3)	296,860,914	4.2%	9.67
<b>Total SDG</b>		7,128,961,504	100%	232.22
<b>Total USD</b>		3,394,743,573		USD

Source: (National Health Account 2008)

#### 2.4 National Health Insurance Fund in Sudan NHIF:

In 1994, Sudan parliament passed the legislation of social health insurance. It started as a scheme that serve the civil servant , but few years later the name was shifted to the national health insurance fund (NHIF) .The main objectives of the (NHIF) are to ensure the coverage of the Sudanese citizen , contributing in increase

accessibility to health care with public health facilities , utilizing the revenues to improve the quality of care , participating in poverty reduction, and to improving access to the health services and (NHIF, 2012a).

NHIF in Sudan based on the concept of solidarity. The enrolment unit is the family and not the individuals. All members have the right to get the same package of services regardless the different scheme and the different way of payment. Recently, the policy of the national card helps the insured member to get their services wherever they are inside the country.

The NHIF organized in federal and state level (NHIF, 2012b). In the federal level, the headquarter act as semi-autonomous body under the supervision of Federal Ministry of Social Welfare and NHIF board. The main responsibility of headquarter is to set the national planning and policies ,building capacities ,maintaining drug supply according to states need and monitoring and evaluating the performance at state level .

On the other hand, the state level represented by 16 executive directorates distributed over the whole states of the country. These directorates are connected directly to the head quarter in term of administration and finance and they are responsible for implementing the national policies at the state level. In some cases , there are administrative units at the locality level , that aim to

motivate certain activities ( health provision , insurance coverage ) under the control of the corresponding directorate (NHIF, 2012a).

At the end of 2011, about 11.8 million citizens enrolled in the NHIF, which represent about 37.3% of the target population<sup>1</sup>. The coverage rate of formal sector was 38% while the informal sector represents 20% out of the total population covered. The remaining 42% belong to various social support sectors like; pensioners in public and private sectors, students and poor households. (NHIF Annual Report 2011).

For members in the formal sector (public and private), the premium is 10% of the salary; 6% from the employer usually collected at federal level<sup>2</sup> and 4% collected from the employee at the state level. The retired of public sector are covered by flat rate premium that paid by National Fund for pensions and National Social Security fund, respectively. For the informal sector, there is a prepayment mechanism in which members need to pay the premium of 3 months as minimum before being eligible to receive the medical benefits. In 2007, the social support scheme was introduced to cover poor population under NHIF using flat rate contribution paid by Federal Ministry of Finance and Alzakat Chamber. The criterion of selection for this scheme depends on the definition of poverty by the concept of Al Zakat Chamber.

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<sup>1</sup> The target population of NHIF represents 80% of the total population of the country.

<sup>2</sup> Some executive directorate collects the 10% at the state level.

Table 4: Main features of the NHIF coverage' sectors

Sector	Target	Payer
Public	10% of the salary	6% from the employer & 4% from the employee.
Private	10% of the salary	6% from the employer & 4% from the employee.
Pensioners (public sector)	Flat rate	100% Ministry of Finance.
Pensioners (private sector)	Flat rate	100% National Social Security Fund.
Informal sector	Flat rate	100% the household.
Students	Flat rate	100% Ministry of Finance or Zakat Chamber.
Poor families	Flat rate	100% Ministry of Finance, Zakat Chamber or other charity Organizations.

Source: NHIF report 2012

#### 2.4.1. Voluntary scheme of (NHIF) for the informal sector :

This scheme is voluntary in nature and every household in the informal sector is legible to enroll. When the informal scheme was firstly introduced in 2003, the only way for enrolment is through the meaning of groups. The minimum number of each group is 50 households ,In each group , there is a coordinators that act as a communicator between the group and NHIF (NHIF, 2012a) .

According to (NHIF) law , the subscription is based on the pre-payment of at least three months before being eligible to receive the medical benefit of the scheme .The mechanism of payment is differed from state to another (depending on economic and geographical conditions ) , but in general , there are two types of

premium collection methods that depend on the preferences of household and scheme officers : Direct payment to NHIF office or paying through agent

There is a federal legislation to maintain the follow of contributions from members, but because of its inefficiency , many enrolled members and stop renewal their membership .The percentage of drop out in some cases exceed 50 % of total membership in the scheme (NHIF, 2012b) .

Recently, a new policy introduced and it allows the individual enrolment of household in the informal scheme (established in five states) and it is under assessment and evaluation.

#### **2.4.2. Compulsory scheme for NHIF:**

This scheme was oldest scheme of NHIF. It was designed for the enrollment of the formal sector. This sector includes the civil servants, pensioners of public and private sector in addition to students.

The coverage rate in this scheme is high because of its mandatory nature , and financial flow is stable because of the coordination between the NHIF and federal and state ministry of finance.

#### **2.4.3. Benefit Package of NHIF:**

The benefit package of the NHIF is mainly curative .It cover all level of services ( primary , secondary and tertiary) .Moreover , there is a referral system that connect the lower level to the upper ones . The main services that covered under (NHIF) are :



outpatient services, inpatient services, laboratory investigations, diagnostic procedures like X rays ,ultrasound, endoscopy in addition to the CT scan and MRI (NHIF, 2012b) . The therapeutics includes the surgical operations except the open cardiac surgery and the plastic surgery. Most of the drugs are included (the exception is few drugs for certain conditions), there is 25% co-payment out of the cost of drug . Moreover, there is drug list that regulate the drug prescription throughout the different level of health provision.

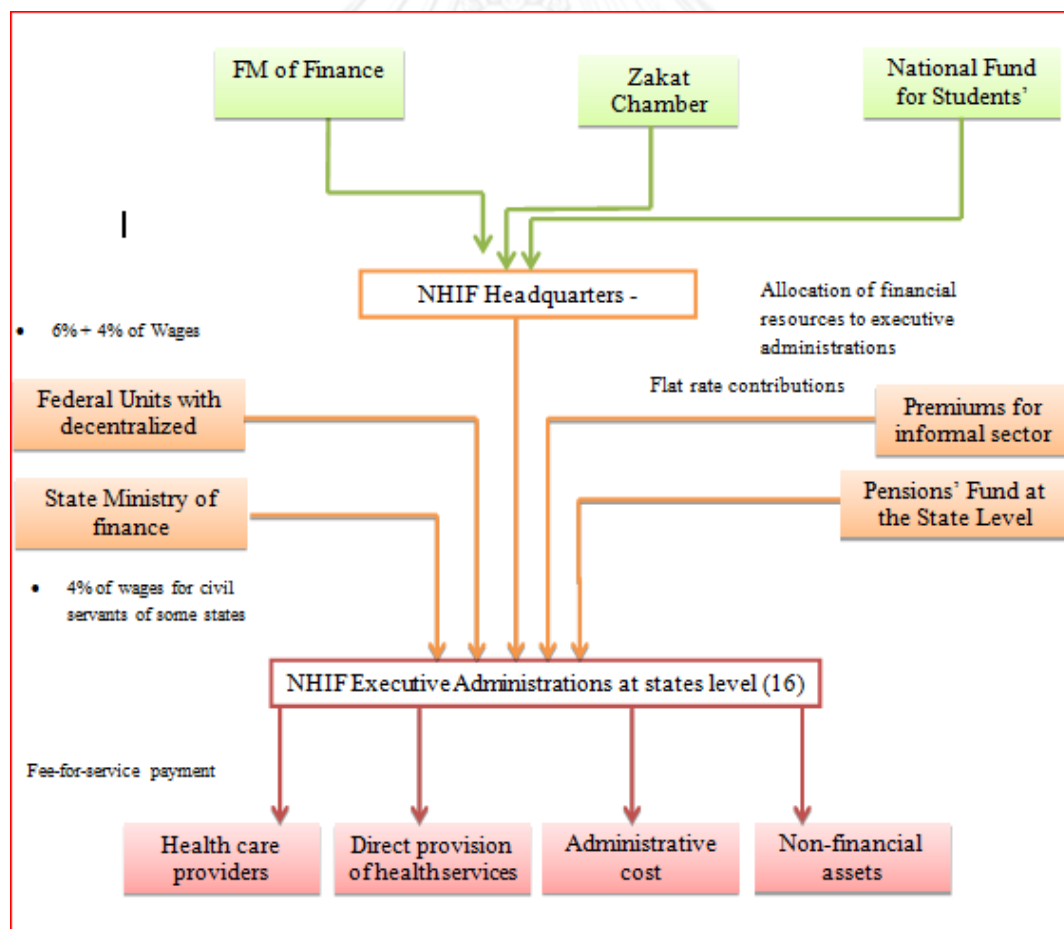
The delivery of health services in the national health insurance fund based on two main ways; the direct provision , in which NHIF own the health facility, therefore it will be responsible for both administrative and medical cost. The second method is contracting with other provider (ministry of health, private sector, police medical services). The direct provision services are most costly and NHIF used it when there are no available partners especially in small towns and rural area.

Moreover, and so as to ensure the provision of acceptable services especially in the remote area, there is a coordination between the FMOH and the NHIF to provide the Basic Health Care Package at the primary health level .Moreover, in some situation and due to the lack of the health facilities, the NHIF has to provide the service directly using its own resources.

#### 2.4.4. Financial resources of the national health insurance fund:

The main financial resources of funds include member's contributions, government support for salaries and socially supported members, revenues from investments and donations as well as revenues from cost sharing on medicine and NHIF owned health facilities. In 2011, 58% of revenues were from payments for formal sector members, 26% from payment for socially supported members, and 12.5 % from revenues from cost sharing (NHIF, 2012a) .

Figure 1: Financial pathway of NHIF Sudan



Source: NHIF annual report 2012.

## 2.5. Kassala state

Kassala State is one of three states that represent the eastern part of Sudan .It shares an international border with Eritrea to the East. The state made up of 11 localities and has total population about 1,789,806 with an annual growth rate of 2.5%. Rural, urban and pastoral populations in the state represent 53%, 35% and 12% respectively (Hussein, 2011).

Table 5: Kassala population by localities

Locality	Population
Kassala Town	298,529
Kassala Rural East	154,630
Kassala Rural West	79,376
New Halfa	211,864
Nahr Atbara Rural	136,911
Al Girba	98,939
Wad Al Helew	84,681
Aroma	102,759
Shamal Al Delta	91,851
Hameshkoreib	255,288
Telkuk	274,978
Total	1789,806

Source: Kassala statistic report 2012

### 2.5.1 Health profile of Kassala state:

Health infrastructures vary from one locality to another, but it generally concentrated in the most three urban localities Kassala, New Halfa and Al Girba. The

total numbers of hospitals are 12 while there are 86 health centers and 52 basic health care units.

There is a high maternal mortality rate that is about 466 per 100,000 population compared to the national rate which is 216 per 100,000. Also infant mortality rate seem to be higher than the national level 76 , 57 per 1000 infant respectively .

Regarding education, male have better chance to receive adequate level of education in comparison to female. As a result, male have the highest rate compared to female 47.9 and 38.3% respectively.

Generally, the health indicators of the state reflect the need for urgent health reform so as to overcome this urgent problem.

Table 6: Health indicators in Kassala state compared to national level

Indicator	Kassala state	Sudan
Birth Registration	51.8	60
Immunization rate	89	87
Infant Mortality per 1000 live birth	76	57
Under5 mortality rate 1000 live	-	78
Global Underweight Prevalence	38.5	32.2
Global Acute Malnutrition	16.7	16.4
Maternal Mortality Rate (per 100,000)	466	216
Skilled birth attendance coverage	69.7	72.5
Use of Improved Drinking Water Sources	68.5	81
Hospital per 100,000 Pop	0.8	1.2
Primary School Enrolment	44.8	72
Secondary School Enrolment	14.6	33
Literacy rates (Male)	47.9	50.6
Literacy rates (Female)	38.8	49.2

### 2.5.2. National health insurance fund in Kassala states:

Kassala executive directorate is one of the 16 directorates that act to implement the national policies of NHIF in Sudan .The directorate was established in 1997 as Health Insurance Authority which directed towards the civil servant. Later on , the name was shifted to Kassala executive directorate so as to meet the new objectives of NHIF that targeting the whole population of the state (NHIF, 2011).

By the end of 2012, 389,392 citizens are covered by NHIF, which represent about 21.7 % of the target population of the state. Among this percentage, the formal sector represents 48 %, informal sector 15 % while 37 % belong to various

social support sectors; Pensioners, students and poor households. (NHIF report Kassala state 2012).

Concerning the informal sector, although of the exerted effort to reach all the target population, but the rate of enrollment is still low. Only 15 % are covered out of the total 171308 informal households (NHIF, 2011).

On the other way , the health service delivery system is based on two policies , the direct provision in which the NHIF own the facility and the contracting policy in which NHIF purchase the services from state ministry of health or other health agent .Moreover , the system is organized in three level , the first level is the primary care level which resemble the gate for all insured people to get the services , second level is consultant and specialist level in which the insured get the services either in NHIF facilities or the private clinics and the third level is the hospital level where insured patient can get the tertiary services(NHIF, 2012a) .

The total numbers of health facilities that provide services to the insured population are 45 facilities. These facilities are distributed over the different localities in term of health centers, private facility and hospitals (NHIF, 2011).

Table 7: Health facilities that provide NHIF services in Kassala state 2012

Locality	Hospital provide NHIF services	Total hospital (2008)	Health centers provide NHIF services	Total health centers (2008)
Kassala Town	3	5	17	34
Kassala Rural East	0	1	2	9
Kassala Rural West	0	0	1	4
New Halfa	2	2	3	18
Nahr Atbara Rural	1	1	1	4
Al Girba Rural	1	4	3	8
Wad Al Helew	1	1	2	1
Aroma Rural	1	1	1	8
Shamal Al Delta	1	1	1	5
Hameshkoreib	1	1	1	2
Telkuk	1	1	1	3
Total	12	18	33	96

Source: (Kassala NHIF statistic report 2012, FMOH 2008)

## CHAPTER 3

### Literature Review

#### 3.1 Informal sector:

Several studies attempted to define the informal sectors by focusing on the difference characteristics between it and the formal sector in term of legal definition and government recognition (Tagnman, 2006).

The international labor organization (ILO) defined the informal sector as any economic units that owned by person or group of partners in the same household, Moreover , in 1972 the Kenyan Mission Report described the characteristic features of this sector as easy entry, small scale units, household ownership for any skills outside the formal sector . There are many advantages that were associated with this sector: the most important one is the positive effect on reducing the unemployment rate (World Bank).

(Chen, 2006; in Cuevas et al. 2008) classified the informal workforce as informal self-employment and informal wage employment. They furthers explained that informal self-employment either works alone or in shape of enterprise made up of members of informal producers .On the other hand , the informal wage employment includes the informal working without formal contract .It's a worth noting that the informal worker can occupy more than one jobs.



On the other hand, there are some disadvantages that associated with the informal jobs. This could be summarized in; the poor working condition; absence of the standard legislation and lack of income taxation and social protection. Moreover, the deprivation of medical benefits like health insurance and working in unhealthy and unsafe environment make all informal households under risk of poverty when they face illnesses (ILO, 2009, ILO, 2004, and Baron, 2005).

### **3.2. Concept of Health Insurance:**

In most developing countries , there is no enough resources to maintain health care provision for the whole population even if we consider the external aid that many countries may receive, so the presence of private participation in shape of health insurance model is very important to ensure health care coverage especially in the rural area and among people outside the formal sector (van der Gaag, 2012) .

The concept of health insurance is based on the Solidarity which developed as a part of the cultural and historical learning process .Solidarity is based on sharing responsibility of the whole society , so this will motivate the distribution of risk of illnesses over large numbers of people by mobilizing the collected contributions (Goudge et al., 2012). Furthermore, the aim of health insurance is to provide financial protection and improve accessibility to necessary health services. This could be obtained when insured members become able to utilize health services without being under the risk of high out of pocket health expenditure. However, theory

suggests that the social benefits of health insurance that result from reducing the medical care spending must be weighed against the potential social losses that arise from irrational behaviors of insured or insurer side.(Wagstaff, Lindelow, Jun, Ling, & Juncheng, 2009).

In general, health insurance theory based on that, an individual will decide to enroll if the expected benefits of Insurance are greater than the costs of enrolment. On other words, the risk-averse status of persons determine their desire to enroll .This is because people like to maximize their utility even under condition that they don't know whether they will be sick or not. Since most of people are risk averse, so they would like to pay the premium of health insurance instead of being under the risk of high out of pocket expenditure when they got sick and they have no health insurance.

To achieve successful and sustainable health insurance coverage , we should select the appropriate policy for the implementation of the programs .When the society is affordable and believe in the concept of solidarity and sharing the burden of disease ,then public programs that manipulate price or a governmental subsidies can play a significant role .On the other hand , the mandatory enrollment is efficient when the society suffer from problems like Asymmetrical information or moral hazard (Baicker .K 2012).

### 3.2.1. Voluntary health insurance:

The voluntary health insurance model (VHI) became one of the effective tools of health provision in many developing countries. The main objectives from implementing this scheme are to achieve the social protection of the population by reducing the catastrophic health expenditure and to improve the accessibility to health services especially in the rural (Jowett, 2003). Moreover, the voluntary health insurance has positive impact on the financing of health systems, since it's regarded as extra financial resource. VHI play also an important role in increasing the financial resources for health care costs, making public budget to be directed to poor population (Neelam Sekhri 2007).

The voluntary health insurance could be classified into different types according to its objectives. For example , in developed countries, the voluntary health scheme could be : substitutes for the statutory health care system, provides complementary health services excluded or not fully covered by the state, or provides supplementary cover for faster access and increased consumer choice (Thomson, 2002) .

In Vietnam, (C. V. Nguyen, 2012) evaluated the effect of voluntary health insurance on utilization of medical services and health care expenses among insured citizens. The findings support other literatures in that, voluntary health insurance has

positive impact on health care utilization and the average annual medical visits increased by 45 – 70 % among insured members.

On the other hand, some studies including (Sepehri et al. 2006, Jowett et al. 2003, Bales et al. 2007 and Wagstaff 2009) , conclude that there was no significant impact of the voluntary health insurance on the out of pocket expenditures .

Table 8: Types of health insurance according to their objectives

Type	Objective	EU examples
Supplementary	Offers faster access and enhanced choice of provider	Ireland, Poland, Sweden and United Kingdom
Complementary (services)	Covers services excluded from or only partially covered by the statutory benefits package	Denmark, Hungary and Netherlands
Complementary (user charges)	Covers statutory user charges	France, Slovenia
Substitutive	Covers people excluded from or allowed to opt out of the statutory system	

Source: Adapted from Mossialos and Thomson (2004) and Foubister et al (2006)

### 3.2.2. Health insurance for the informal sector:

Although this sector in generally represents a big share in many developing countries, but it still faced by real problem in accessing to health services. This is because households of the informal sector are usually out of reach of governmental

regulation and they don't have any formal employer-employee relationships that are needed for their enrollment in health insurance (Alkenbrack & al., 2013).

Many countries that act to achieve universal coverage were faced with these challenges of taking up the informal sector. So, an understanding of these barriers which influence the demand for health insurance among these groups is very important for health reform (H. Nguyen & Knowles, 2010) .

The implementation of VHI is effectively increasing the access to health care. Many studies evaluate the utilization of health services among insured members and it found that, there is a strong relationship between being a member in health insurance scheme and increasing the utilization of health services, especially at the primary health care level (Mitta, 2004; Jutting 2004; Jacob and Krishnan 2001).

On the other hand , some studies examined the association between the utilization of health services and the level of health spending among insured members , the results show that health insurance has an obvious impact in reducing the total health expenditure and so it protect the member from impoverishment effect of the catastrophic health expenses . (Sepehri et al. 2006; and Jutting, 2002).

### 3.2.3. Demand for health insurance:

Studies about the demand for health insurance by informal sectors in the developing countries are abundant. Most of these literatures examine the different factors that implicate the decision of people towards enrolment into the voluntary scheme. Some of these studies found that demand for health insurance is strongly affected by the premium and the related additional payment in term of copayments or coinsurance (Chen et al. 2002; Lofgren et al., 2008; Ying et al., 2007).

Analytically, factors that determine the enrollment of households in any voluntary health insurance scheme could be divided into scheme-side and households-side factors. The household side reflects some characteristics like demographic, socioeconomic and health status. In addition to that, awareness about the concept of health insurance, perceived quality of services and accepting the pre-payment concept have positive impact on the mechanism of participation. On the other side, the scheme factors compromise the criteria which attract households to enroll and continue in the scheme, like: present of simple and efficient methods for collecting the premium and availability of the service (Mathauer. I 2008). So, the success of any health insurance scheme depend mainly on the understanding of the households perceptions that act some times as a barrier which prevent their enrolment and continuation (Baicker .K 2012).

### *3.2.3.1. Impact of socio economic status:*

(Sarpong et al., 2010), investigate the relationship between the socioeconomic status and the enrolment of households in the national health insurance system (NHIS) in Asante Aim in the Ashanti Region, Ghana .The study interviewed 7223 households and it found that the rate of health insurance is 38% out of total surveyed households . The socioeconomic status of the insured group was found as follow, 21% were low income, 43% were middle income and 60% of the enrollees were highly income. The result of this study revealed that the socioeconomic status has a strong effect in the mechanism of enrolment of Asante Aim district households .Furthermore , for the NHIS leaders , in order to achieve the universal coverage in this district , they should modified the schemes and install new policy that facilitate the enrolment of the poor population .

Moreover, (Hongman Wang 2008) examined factors that associated with the enrollment, satisfaction, and sustainability of the New Cooperative Medical Scheme (NCMS) program .The study interviewed 890 households from six rural areas in rural Beijing to investigate the impact of demographic characteristics ,socioeconomic status, awareness about NCMS policies. The results of the analysis show that 85% of the interviewees reflect their experience with the high cost of services. 50% of total respondents show that the premium should be less than existing one. For other factors, males are less likely to enroll and individuals with higher education level are

less likely to participate when compared to individuals with low level education and members with good level of awareness like to continue in the scheme more than those who are less aware about the scheme.

### ***3.2.3.2. Impact of the health status of the households:***

Because of the voluntary nature of enrollment, there are some features of market failure that threatened the sustainability of this scheme. (Neelam Sekhri 2007) categorized these problem in four points. The first point is the adverse selection in which households with worse health status enroll while healthy people remain uninsured. The result will be progressive increasing in the medical cost that may end with collapse of the insurance scheme. Secondly, risk selection when insurers discouraging people from purchasing insurance so as reduce the impact of adverse selection, which leaves the healthier outside the scheme. Thirdly, moral hazard is a situation in which the insured persons start to behave irrationally by consuming unnecessary services than if they were not insured. The result will be increase the overall health cost and put the scheme under the financial risk. The forth problem is the provider induced demand which resemble the moral hazard but the difference here it's produced by medical providers when they try to maximize their profits by requesting unnecessary services or prescribes over medication, the ultimate result will be cost escalating of services.



Adverse selection is one of the common problems that associated with the voluntary health insurance market. This phenomenon occurs when members with bad health status select insurance that is priced for lower-risk consumers (Rothschild and Stiglitz 1976). The impact of adverse selection on the financial sustainability is very serious, especially as the number of high risk member increase and the premium became no more sufficient to cover the cost of health expenditure.

Many literatures investigate this problem in different regions including developed and the developing country. They used methods for checking either the relationship between enrollment and health status of enrollees or enrollment and health service utilization from after controlling for moral hazard effects (Wang, Zhang, Yip, & Hsiao, 2006).

(Wang et al., 2006) examined the perceptions of the rural households and its impact on their decision to enroll in rural mutual health insurance scheme in China (RMHC). The study used logistic regression technique to analyze measures of health status, medical expenditure, and other socio-economic and demographics features from a baseline survey of the rural respondents .The study indicate that, there is significant adverse selection especially in the partially enrolled group which reflects the possibility of the financial instability of the scheme if the adverse selection is not taken seriously.

Furthermore, the nature and severity of illnesses has a significant role in the demand for health care, this what (Agyei-Baffour, 2013) found in rural China where people preferred to seek medical care mainly under severe or recurrent illnesses.

#### ***3.2.3.3. Impact of demographic factors on decision of enrollment:***

Education is very important factor that has positive impact on the participation of households in the health insurance scheme. This could be explained by that, as the level of education increased, the person became more aware about the benefit of health insurance. There are many studies that detect the relation between the educated individuals and their desire to enroll in health insurance scheme (Almualm, 2013), (Appiah . j 2012) and (Mathauer, 2008).

#### ***3.2.3.4. Impact of awareness about the scheme, perceived quality of services and premium on decision of enrollment:***

The perception of clients about the scheme features is of great importance. (Agyei-Baffour, 2013) explore the perception of clients and providers on the new capitation policy of the national health insurance fund in Ghana. The outcome of the cross section study shows that, most of the members know about the new policy. Moreover, the majority of insured members believed that this policy is bad in term of package limitation and it interfere with their expectation with the provided services.

On the other hand, (Mulupi, Kirigia, & Chuma, 2013) interviewed 594 households from 2 districts in central Kenya. The study aimed to examine the perception of those household about the health insurance scheme. The study found that, many respondents heard about the scheme but at the same time, most of them don't know much about the concept and the regulation of the scheme. Therefore, the study notifies the managers of the scheme to focus more in increasing the awareness of population about the program so as to achieve a sustainable coverage.

Quality of health services also regarded as a significant factor that influences the decision of households to participate and continue in the voluntary health insurance scheme. In Guinea, the mutual health organizations (MHO) found remarkable dropout in the membership of the scheme (De Allegri, 2006). The (MHO) found that the poor quality of services is the main reason behind this dropout.

There is another study which carried out by (Appiah . j 2012) in the Central and Eastern Regions of Ghana including both urban and rural population . The aim of this study is to investigate the perception of the target population about the voluntary health scheme and the provided health services so as to detect if there any association between this perception and the desire of population to enroll or remain in the scheme .The survey sample was drawn using a three-stage sampling levels (district, national census enumeration area and communities), it include 3301

households (13 865 individuals). The result of the study demonstrates that the members were satisfied with the availability of health services but they have negative perception concerning the attitude of the medical staff and the price of the membership. Therefore, the administrative officers of the scheme should realize these points of view in order to increase the enrolment rate and to maintain the continuation of the membership.

#### ***3.2.3.5. Impact of scheme factors on decision of enrollment:***

Availability of health services plays an important role in the mechanism of participation in any health insurance scheme. Most of individuals prefer to get their services nearby their location. How over , the perceived quality of services and the good reputation of the provider play also an important role in some other cases (Agyei-Baffour, 2013).

In Kerala state , India , (Vellakkal1, 2013) found that there is lack of incentive to work among the schemes officers which affect the rate of enrolment .Therefore , motivation of the staff can result in better rate of enrolment .Another significant factors that mentioned in the study was the level of awareness has obvious association with enrolment in the voluntary scheme , so the understanding of people to the concept and the law of scheme will help many people not to enroll only but to be retained in the scheme for a long time .

#### 3.2.4. Continuation and Dropout:

One of the most important concerns of many voluntary schemes is to maintain the continuation of members (Ekman, 2004; Ahmed et al., 2005; McCord and Churchill, 2005). Since enrollment is voluntary, so, members required to renew their membership periodically.

(McCord 2005) described the phenomena of Dropping out as the failure of clients to renew their insurance. This problem is associated mainly with the voluntary health insurance schemes. The rate of dropout varies from one scheme to another and sometimes, it reached very high rates (70–80%) out of the total enrollee of the scheme. The factors that result in dropout are many, it includes perceived poor quality of care, delays in health insurance card production and lack of scheme trust (Jehu-Appiah et al. 2011; NHIA 2010; NDPC, 2009;). The drop out phenomena can threaten the sustainability of the scheme by two mechanisms; there will be reduction in financial pool as member's size decreased and the dropout of members may motivate more members to leave the scheme (Clement Adamba).

In Ghana, some data shows that there is as much as a 21 percent dropout rate from the national health insurance system. This dropout was seen obviously in rural areas as compared to urban areas. This made the study conclude that renewal was affected by location rather than by economic status (Bjerrum and Asante, 2009).

(Hengjin Dong 2009) conduct a study in Burkina Faso, the study used data from both national household survey and the community health schemes office .The aim of the study is to investigate the main causes behind the high rate of drop out in the national voluntary schemes .The conclusion of the study reveal that, this dropout has a negative impact on the financial protection of house hold and the stability of the scheme. It also found that the problem was strongly correlated to the socioeconomic and medical status of the dropped out members' households.

On the contrary, continuation is important for both members and scheme. Insured members will continue protecting themselves from the out of pocket spending and at the same time, the high size of membership is important to maintain the financial stability of the scheme .This is true because of that , all voluntary schemes relay on premium as a source of finance (Hengjin Dong 2009). The continuation of members not help only in increasing the awareness about the scheme, but it also regarded as a member satisfaction about the scheme (Sinha, 2007) .

(Supakankunti, 2001), reflect the full picture about why people in the informal sector buy insurance or not and why members used to continue or dropped. The study was conducted in 1994-1995 in a northern province in Thailand called Khon Kaen that had a population of 1,652,030. About 1000 households from the target population were asked to respond to a questionnaire so as to investigate

their different characteristics. The sample includes four different categories of households: individuals who had not enrolled in the health card or (never enroll), individuals who had enrolled recently (new enrollee, individuals who had renewed their subscription (regular enrollee) and individuals who had not renew their subscription, (dropouts group). The questionnaire was designed to collect data about the socio-economic status , health care seeking behaviors, health care services utilization, source of health care financing and the attitude of the target groups regarding the health scheme and utilization rate .

The analysis of the data depends on the identification of the significance of various variables so as to explain the relationship between the different four groups. Then a logistic regression model was used to examine the important predictors about the enrolment, re enrolment, dropped out and never enrolment in the scheme. The study came out with that the most important factors that differentiate the members ( new enrolled , regular enrolled and drop out) from the never enrolled households are : the educational level , the household income , the number of employed members in the family , the perception of people about the provided services and presence of long standing or recurrent illnesses among the member of the household which indicate that the voluntary health scheme of Khon-Kaen suffered from the adverse selection.

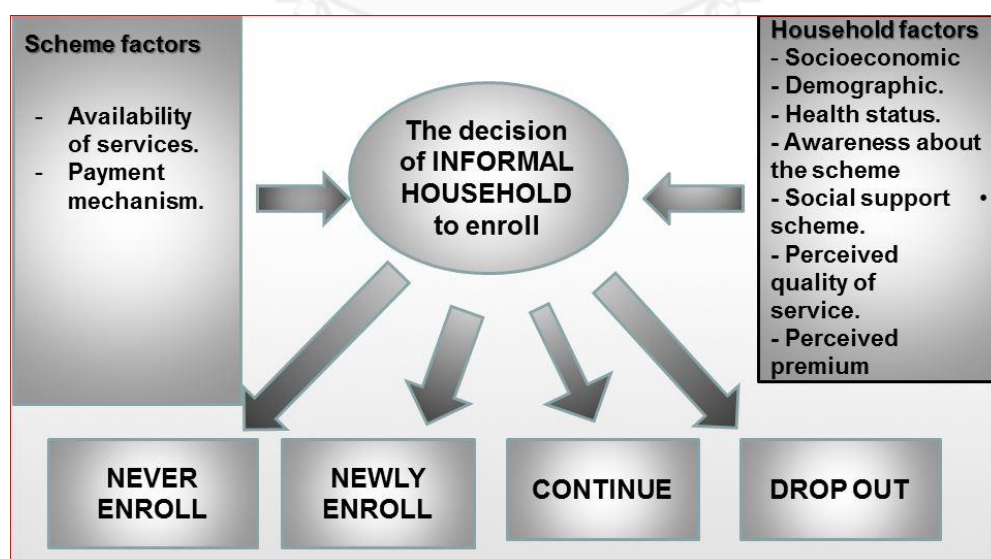
## CHAPTER 4

### Conceptual framework

#### 4.1 Conceptual framework:

The demand for health insurance among informal household is determine by many factors that could be generally categorized into household factors and scheme related factors. The household related factors reflect their characteristics like demographic, socioeconomic, health status, awareness about the scheme and perceived both quality of services and premium. The scheme related factors compromise the criteria which attract households to enroll and continue in the scheme, like; availability of services and presence of simple and efficient methods for collecting the premium, presence of the service and satisfaction from the provided services (Mathauer, 2008),(Supakankunti, 2001).

Figure 2: Conceptual framework





## CHAPTER 5

### Research Methodology

#### 5.1. Description of Study area:

Kassala State is one of three states that represent the eastern part of Sudan. The state made up of 11 localities and has total population about 1,789,806 with an annual growth rate of 2.5%. Rural, urban and pastoral populations in the state represent 53%, 35% and 12% respectively.

Kassala-NHIF directorate was established in 1997 as Health Insurance Authority which directed towards the civil servant. Later on , the name was shifted to Kassala executive directorate so as to meet the new objectives of NHIF that targeting the whole population of the state (NHIF, 2011).

By the end of 2012, 389,392 citizens are covered by NHIF, which represent about 21.7 % of the target population of the state. Among this percentage, the formal sector represents 48 %, informal sector 15 % while 37 % belong to various social support sectors (Pensioners, students and poor households).

#### 5.2. Study design:

The design of this study made up of two parts:

- 1- Quantitative research method: represented as cross-sectional survey that use semi structured questionnaires to collect primary data collected from the household of the informal sector in Kassala state, Sudan in 2014.
- 2- Qualitative research method: In depth interviews with 5 characters that represent the NHIF, SMOH and community leaders from urban and rural areas.

The study used year 2011 to identify the targeted households according to their health insurance status:

- (i) Never insured: head of household who never enrolled before or after 2011.
- (ii) Regular: head of household who enrolled before 2011 and renew his/her membership after this year.
- (iii) New enrollee: head of the household who enrolled within or after 2011.
- (iv) Drop out: head of the households who stop renewing his/her subscription for at least 1 year.

Furthermore, to improve the prediction of data, the study selected 196 from each group; (never insured, regular, new enrollee and drop out) so the total number of became 784 participants.

### 5.3. Population of the study:

The study populations are the head of households in the informal sector in Kassala state which are 171308 households.

### 5.4. Sample size:

The minimum sample size was calculated from the total target households of the informal sector (171308 households) using the following equation:

$$n = Nz^2Pq / Nd^2 + z^2Pq$$

$z = 1.96$  for the 95% level of confidence, then

Where:

$n$  = minimum sample size.

$N$  = population size = 171308.

$d$  = precision 0.05

$P$  = proportion of population that has a particular attribute = .15 (NHIF, 2011)

$q = 1-p$

So:

$$n = 171308 * (1.96 * 1.96) * 0.15 * (1 - 0.15) / (171308 * 0.0025) + (1.96 * 1.96) * 0.15 * (1 - 0.15) = 196.4 = \mathbf{196}$$

Furthermore, as the purpose of this study is to explore the determinant of participation for 4 health insurance status groups; (never insured, regular, newly enroll and dropout).Therefore, the study select 196 from each group so the total number became 784 respondents.

### **5.5. Sampling methods:**

According to the Federal system of government in Sudan, each state is divided into localities and under each locality there are some executive units that are further spited into towns and villages.

Therefore , Kassala state have 11 localities , we select 7 localities that have an established voluntary health insurance scheme .These localities are , Kassala Town, Kassala Rural East , Kassala Rural West , New Halfa, Al Girba , Wad Al Helew and Aroma . The remaining four localities were excluded either due to lack the scheme (Hameshkoreib and Telkuk) or because there is difficulty in access to them due to time constraint (Shamal Al Delta and Nahr Atbara Rural).

Under each locality, urban and rural areas are selected using data from the fifth population census.

So as to ensure the equity in distribution and presentation of the different categories of participants, the number of households was determined according to the weight of the informal sector in the locality.

Table 9: Weight of informal sector in the selected localities

Locality	Number of informal households	% of informal sector
Kassala Town	97646	57
Kassala Rural East	8565	5
Kassala Rural West	11992	7
New Halfa	17131	10
Al Girba	17131	10
Wad Al Helew	10278	6
Aroma	8565	5
Total	171308	100

Source: NHIF kassala annual report 2011

Table 10: Weight of informal sector and the corresponding number of participants

Locality	% of informal sector/ localities	Number of participants
Kassala Town	57	447
Kassala Rural East	5	39
Kassala Rural West	7	55
New Halfa	10	78
Al Girba	10	78
Wad Al Helew	6	47
Aroma	5	39
Total	100	784

Source: NHIF kassala annual report 2011

To select the blocks and villages, the study obtained the list from the fifth national census, then according to Sudan Technical And Ethical Review Committee that determine the numbers 30-40 of blocks and villages to be involved in study as

maximum, so the study select 40 blocks /villages that are distributed according to the weight of informal sector in each locality.

Table 11: Selection of blocks/villages in the selected localities

Locality	Total numbers of blocks /villages	Calculation	Targeted blocks/villages
Kassala Town	94	$0.57 * 40$	23
Kassala Rural East	126	$0.05 * 40$	2
Kassala Rural West	76	$0.07 * 40$	3
New Halfa	104	$0.1 * 40$	4
Al Girba	83	$0.1 * 40$	4
Wad Al Helew	66	$0.06 * 40$	2
Aroma Rural	125	$0.05 * 40$	2
Total	674		40

The study then used systemic random sampling to identify the selected blocks /villages:

Locality	Total numbers of blocks /villages	Targeted blocks /villages	Interval <sup>3</sup>	Selection blocks /villages <sup>4</sup>
Kassala Town	94	23	4	2,6,10,14,18,22,26,30,34,38,42,46,50,54,58,62,66,70,74,78,82,86,90
Kassala Rural East	126	2	63	5,68
Kassala Rural West	76	3	25	7,32,57
New Halfa	104	4	26	5,31,57,83
Al Girba	83	4	21	4,25,46,67
Wad Al Helew	66	2	33	6,39
Aroma Rural	125	2	63	2,65

Table 12: Systemic selection of blocks /villages per selected locality

Then selection of insured households within the targeted blocks/village was obtained by using systemic random selection from NHIF lists. For the never insured participants, the study used convenient sampling with help of key persons in the targeted areas.

To conclude, a semi structured questionnaire was distributed to a sample of 784 informal households participated in this study that cover 40 geographical areas in 7 localities of Kassala state in eastern Sudan. The sample include the 4 health insurance status groups (never insured, regular, new enroll and dropout) according to the weight of the informal sector in each locality. Furthermore, 5 in depth interviews

<sup>3</sup> The interval is the total numbers of villages divided by the numbers of selected villages.

<sup>4</sup> The number of block and villages was obtained from the 5<sup>th</sup> population census.

were conducted with representatives of NHIF, SMOH and community leaders from urban and rural areas.

Table 13: Final distribution of sample on different localities

Locality	Never insured	New enrollee	Dropout	Regular	Total
Kassala Town	111	111	111	111	444
Kassala Rural East	10	10	10	10	40
Kassala Rural West	13	13	13	13	52
New Halfa	20	20	20	20	80
Al Girba Rural	20	20	20	20	80
Wad Al Helew	12	12	12	12	48
Aroma Rural	10	10	10	10	40
Total	196	196	196	196	784

#### 5.6. Inclusion criteria:

To be included in this study, one has to be a head of households, resident and above 18 years old from the informal sector in one of the following localities:

Kassala Town, Kassala Rural East, Kassala Rural West, New Halfa, Al Girba, Wad Al Helew and Aroma.

#### 5.7. Research assistant:

5 officers from Kassala NHIF executive directorate and targeted areas were selected and trained to conduct the questionnaire and collect data from the target households.



## 5.8. Data analysis:

### 5.8.1 Quantitative analysis:

The collected primary data was coded and cleaned before preparing data set in Stata 12. Descriptive analysis was done by using chi square test to show the difference in characteristics (demographic, socioeconomics and cultural) among the head of the households in the different groups. Then multi nomial regression was performed to predict the relation between dependent variable and other explanatory variables.

The dependent variable is the health insurance status of the head of the household that has 4 categories: never insured, regular, new enrollee and drop out.

The independent variables reflect the socioeconomic, demographic, health status and perception about premium and quality of services among the participants.

Regarding awareness, the study used 7 questions to assess the knowledge of participants about the scheme. These questions include; purpose of enrolling in NHIF, mechanism of enrollment, premium, renewing mechanism, provided service package, rate of drug copayment and importance of retention in the scheme.

Then:

- |   |                   |
|---|-------------------|
| If the head of house hold answer 5 or more questions: | perfect awareness |
| If the head of house hold answer 3 to 4 questions:    | average awareness |
| If the head of house hold answer 2 or less questions  | poor awareness    |

Finally, awareness expressed by 2 dummy variables: dummy average awareness and dummy perfect awareness.

To investigate the ability of participant to pay premium, the study used the differences between the average monthly income and the non-medical expenditure. Then this difference was adjusted to the current monthly premium; if its equal of more than the premium then the participant is able to pay and if less this means he/she is unable to pay premium.

Although there are some questions to investigate the relationship between joining the social support scheme and the continuation in the voluntary scheme, but the study realized that, the data is inconsistent because many people deny telling the truth because they don't like to lose their subsidized cards. Therefore, the study reflects this relation in the descriptive statistics and drops the variable from the regression set.

For more details, table (14) shows the different explanatory variables with their expected signs.

Table 14: Independent variables and their expected sign

1

2

Variable	Definition and Measurement		Expected sign
Dummy (urban/rural)of head of HH	1 = Urban	0 = Rural	+
Dummy Gender of head of HH	1 = Male	0 = Female	+/-
Age of head of HH	Age of the head of the household in years		+
Dummy Marital status of head of HH	1 =Married	0 = Single, divorced or widows	+
Income of head of HH	Average monthly income in Sudanese pound		+
legal dependent members	Number of dependent legal members		+
Visit	Average number of monthly medical visits during last 3 months		+
Dummy Distance of nearest health facility	1 = 5km or less	0= More than 5 km	+
Perceived quality of services	1 = Satisfied	0= Not satisfied	+/-
Dummy Perfect awareness	1= if perfectly aware	0 = If otherwise	+
Dummy average awareness	1= if averagely aware	0 = If otherwise	+
Prepayment concept	1= if accept	0 = If not accept	+/-
Payment mechanism (insured)	1= if through agent	0 = If direct payment	+/-
Ability to pay premium	1= able to pay	0 = If not able to pay	+

The multinomial logistic regression was used to detect the relationship between the health insurance status of the head of the households and the different predictors. The study used two set of regression; whole sample set and sub sample (insured) set.

Model specification:

As the dependent variable is the health insurance status of the head of the household, and it has 4 nomial categories (Never insured, Regular member, newly enrolled and Dropout member), so model specification will be written like this:

Health insurance status = f (Age, Gender ,Income, (urban/rural), Marital Status, Education , Occupation, number of legal dependents ,Health Status, Distance of nearest health facility ,Type of nearest health facility, Awareness About Scheme, perceive quality of services ,Pre-payment concept, Payment Mechanism and Perceived premium).

As in (Caleb Michael Akers, 2014,,) the general model is:

$$\Pr(y_i = j) = \frac{\exp(X_i\beta_j)}{1 + \sum_{j=1}^J \exp(X_i\beta_j)}$$

Where:

$\Pr (y_i =j)$  is the probability of belonging to group  $j$ ,

$x_i$  is a vector of explanatory variables

$\beta_j$  are the coefficients, which are estimated using maximum likelihood estimation.

### 5.8.2. Qualitative analysis:

The aim of this part is to support the prediction of the logistic model. The selection criteria for these interviews based on:

- The participant should be from Kassala state.
- The respondent should be perfectly aware about the scheme and the process of participation.
- The respondent should be able to represent at least one of these dimensions: NHIF, SMOH and the local communities.

According to the above criteria, the study selects the following characters:

- (1) Executive manager of NHIF in Kassala state.
- (2) Manager of population coverage and customer services in NHIF kassala state.
- (3) Representative of State ministry of health.
- (4) A Community leader from the urban area.
- (5) A Community leader from the rural area.

The main questions of the interviews are:

- In your point of view, what are the main factors that determine the enrolment in the voluntary scheme of NHIF in Kassala state?
- What the factors the make members of the scheme to renew their subscription?
- Why some people stop renewing their subscription?
- What other factors that make many people not enrol in the scheme?

These questions were asked in a semi structured form , which give the participants to reflect his opinion without interruption or restriction .The author just act to ensure that the discussion is in line with scope and design of the thesis .

After selecting the participants, time and place of interviews wrere determined according to the preferences of the participants. The average time of each interview is about 45 minutes except the representative of state ministry of health who was busy, so he completes answering some question by email. The author of this study conducts the whole interviews by using tape recorder and writing the main points.

Finally, the study used the thematic analysis to elicit findings from the raw data of the in depth interviews.

### 5.9. Possible benefit:

By explaining the main factors that influence the perceptions of households in the informal sector in Kassala state SUDAN, the decision maker will be able to implement the best policies and solution so as to increase both enrollment and retaining of members in the voluntary scheme of the state.



## CHAPTER 6

### Results and discussion

In this chapter, the results of analysis will be shown in details, including both the quantitative and in depth qualitative methods.

The survey was conducted in March 2014 in 7 selected localities in Kassala state , which are ; Kassala town , Kassala Rural East , Kassala Rural West , New Halfa, Al Girba , Wad Al Helew and Aroma . These localities are characterized by the existence of the voluntary scheme of NHIF. The semi-structured questionnaire was distributed to 784 individuals representing the households in the informal sector in the selected localities. Among these sample, about 96% are head of the households while the remaining 4% are members that participated because the head of the household outside the locality at the time of the study. The survey includes questions about the demographic, socioeconomic and health status of the interviews. It contains also direct questions about their perceptions towards the scheme according to their current health insurance status. The survey was conducted by well-trained team made up of 5 members of NHIF including the author of this study and 10 key persons from the selected area. The study managed the non-response rate with the help of key persons in the selected localities by repeating the visits to all head of households whom were absent at the time of the first and second visits.



## 6.1. Results

### 6.1.1 Descriptive analysis:

In this area , the study describe the demographic ,socioeconomic and cultural features of the head of the households and their members among the different four groups of participant ( Never insured ,regular , newly enrollee and drop out ) in Kassala state ,Sudan .

#### (urban/rural) of the households:

Table (15) shows the distribution of households in the seven selected localities (Kassala town, Kassala Rural East, Kassala Rural West, New Halfa, Al Girba, Wad Al Helew and Aroma). About 602 (76.8) of the total participants lived in urban area while the remaining 182 (23.2) are from rural.

(urban/rural)	Frequency	%
Urban	602	76.79
Rural	182	23.21
Total	784	100

Table 15: Distribution of respondents according to their (urban/rural)areas.

The percentage of urban households in this study is higher than that of state and national level which is 26.3% and 30% respectively. This result shows that the informal sector in Kassala state share the large portion of the urban area.

#### Gender of the head of the households:

It's very obvious that male are dominant as a head of households, since they represent about 689 (87.9%) compared to female 95 (12.1%) out of the total respondents. Most of females in this study are below 50 years old, married and from urban areas.

Gender	Frequency	%
Male	689	87.88
Female	95	12.12
Total	784	100

Table 16: Gender distribution among respondents

This result conforms to the Sudanese contexts which regard male as the main responsible for the households and even when the head of the household is absent, the grandfather or brothers will be responsible for the households.

#### Education level of the head of the household:

The diagram shows that the most frequent level of education is the secondary which represent 286 (36.5%) of the total participants, followed by the primary level 266(33.9%) then the non-formal level which about 174 (22.2). The

lowest educational level is the university or higher education which represent about only 58 (7.4%).

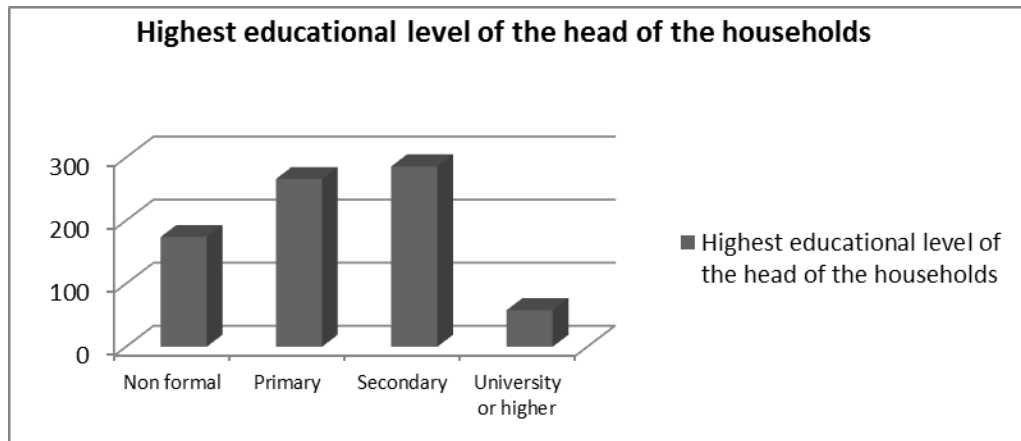


Figure 3: Highest level of education of the head of the households

#### Occupation of the head of the households:

Among the participant group, 441 (56.3%) are day labor. This group, which represents the largest portion of respondents include head of households who works in some jobs like; constructions, portorage, driving and street sellers. Furthermore, farmers represent about 152 (19.4%) out of the total respondents, while merchants are about 106 (13.5%). A minor group of 85 participants (10.8%) represents other jobs like workers in factories or within a small business group.

Occupation	Frequency	%
Merchant	106	13.5
Day labor	441	56.3
Farmers	152	19.4

Others	85	10.8
Total	784	100

Table 17: Occupation of the head of the households

#### Marital status of the head of the household:

Most of the respondents are married and represent about 90% of the total participants while the single are 47 persons representing about 6% of the total respondents. The remaining 30 participants (3.8%) are either divorced, widows or separated as a sequel of intra household problems.

Marital status	Frequency	%
Single	47	5.99
Married	707	90.18
Others	30	3.83
Total	784	100

Table 18: Marital status of the head of the households

#### Health status of the households:

To assess the health status of the head and members of the households, the study investigates the presence or absence of chronic illnesses among the target households. The result shows that 495 (63.1 %) of the respondents have no chronic illnesses within their households while the remaining 289 (36.9%) experience chronic illnesses for at least one member of the household.

Health status	Frequency	%
No chronic illnesses	495	63.14
Chronic illnesses	289	36.86
<b>Total</b>	<b>784</b>	<b>100</b>

Table 19: Health status of the respondents

It's worth noting that, the study finds Hypertension and Diabetes Mellitus are the most common diseases among the chronic illnesses group with almost similar rates of 36.33% and 35.99 respectively. Moreover, about 22.2% of the chronic illnesses' group suffers from more than one long standing diseases.

Types of chronic illnesses	Frequency	%
Hypertension	105	36.33
Diabetes Mellitus	104	35.99
Cardiac disease	7	2.42
Psychiatric illness	1	0.35
More than one disease	64	22.15
Others	8	2.77
<b>Total</b>	<b>289</b>	<b>100.00</b>

Table 20: Types of chronic illnesses among the target households

**Type of nearest health facilities:**

The underlying table reflects the nearest health facilities to the respondent's residence. Health centers are the common nearest health facility for 467 (59.57%) out of the total participants. In the second rank, private clinic provides health services for about 232 (29.59%) followed by hospital which represent the nearest facility for 81 (10.33%) out of the total respondents. The health unit care represents the nearest health services for only 4 respondents (0.51%).

Type of health facility	Frequency	%
Health care unit	4	0.51
Public health center	467	59.57
Private clinic	232	29.59
Hospital	81	10.33
Total	784	100

Table 21: Type of nearest health facility

This result is compatible with the current medical situation in Kassala state, in which most of the families preferred to seek medical services from the health centers that distributed nearby their blocks or villages. This could be due to that, NHIF regard these centers as a gatekeeper for receiving medical benefits or because of the reasonable cost of services when compared with private clinics. On the other hand, people seek hospital services more commonly in case of emergency or sophisticated services.

In term of facilities' operator among the target health facility , the NHIF operate more than 50% of the provided services while the private sector represents

about 31.38% .The remaining 17.35% are operated by the state ministry of health (SMOH).

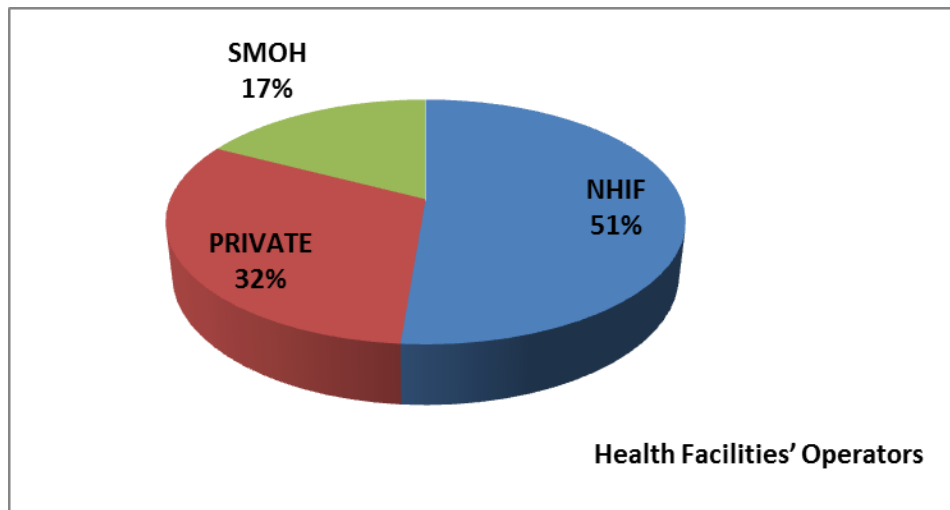


Figure 4: Operators of the health facility in Kassala state

#### Distance of nearest health facility:

Concerning the distance of the nearest health facility, the study shows that 274 (35%) out of the total respondents received medical services from facilities that lies less than 5 Km from their residences. The majority of the respondents that represent about 412 (52.55%) are 1-5 Km far from the nearest health facility .Only 98 participants (12.5%) show that they live at least more than 5 Km from the nearest health facility .

Distance of nearest health facility	Frequency	%
Less than 1 Km	274	34.95
From 1-5 Km	412	52.55

More than 5 Km	98	12.50
<b>Total</b>	<b>784</b>	<b>100</b>

Table 22: Distance of the nearest health facility

**Waiting time:**

This is one of the most important indicators of perceiving quality of services. It's measured by calculating the time that patient spent in the facility before being seen by provider. Table (23) shows the average waiting time before receiving the services. On average 70% of the respondents (549) head of households tell that they need to wait from 30-60 minutes before meeting the providers, while 1132 (16.8%) participants wait less than 30 min before medical consultation. Only 13.14% out of the total respondents need to wait more than one hour before getting access to providers.

Waiting time	Frequency	%
Less than 30 minutes	132	16.84
From 30-60 minutes	549	70.03
More than 60 minutes	103	13.14
<b>Total</b>	<b>784</b>	<b>100</b>

Table 23: Waiting time in health facilities.

**Perceived quality of services:**

The study examines the satisfaction of the respondents from the provided services. The satisfaction is based on perception of the participant towards certain



aspects like; the availability of full medical staff, attitude of the staff, availability of drug and laboratory services, price of services and the cleanliness of the facility.

As appears in table (24), 480 (61.22%) of the respondents were satisfied from the provided services while 304 (38.78%) are not satisfied

Satisfaction	Frequency	%
Not Satisfied	304	38.78
Satisfied	480	61.22
Total	784	100

Table 24: Satisfaction with the provided services

Regarding the unsatisfied group, the study asked to mention the main reason for their dissatisfaction. Therefore, 168 (55.2%) out of the total group is said because of the unavailability or the low quality of the provided drug. Moreover, about 24.6 % suffered from the long waiting time; near 7% complain of the bad cleanliness of the health facilities and 5.5% experienced bad attitude of the medical staff.

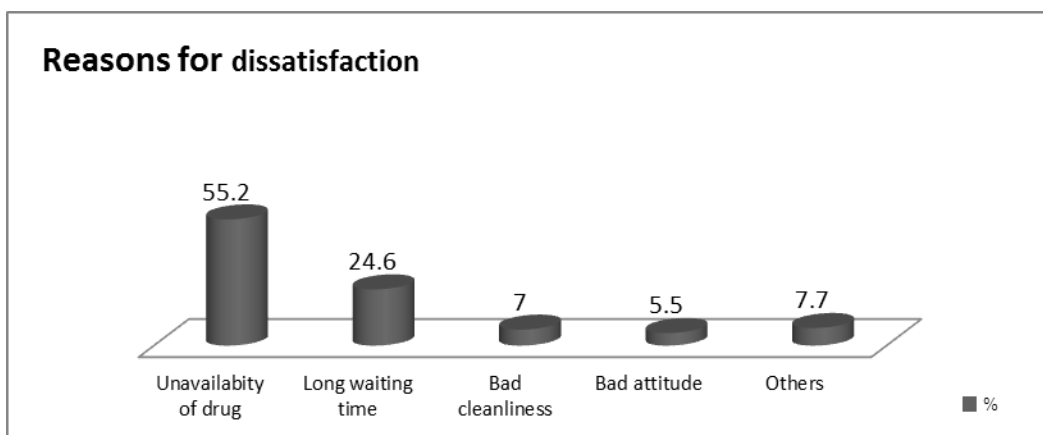


Figure 5: Main causes of dissatisfaction

#### Awareness about the scheme:

The most interesting finding is that 412 respondents that represent about 52.55 are perfectly aware about the scheme in term of how to enroll, medical benefits, premium, mechanism of payment and the co-payment of drug. Furthermore, the percentage of respondents who are either poorly aware or not aware are equal and represent about 186 (23.72%) for each group.

Awareness about the scheme	Frequency	%
Poor	186	23.72
Average	186	23.72
Perfect	412	52.55
Total	784	100

Table 25: Awareness level among the participants

Because awareness is an important factor that affect the decision of participation in the scheme, cross tabulation between the health insurance status and awareness was run as shown in the following table:

Health insurance status	Perfectly aware		Averagely aware		Poorly aware	
	Freq	%	Freq	%	Freq	%
Never insured	29	14.80	36	18.37	131	66.84
Regular member	161	82.14	31	15.82	4	2.04
Newly enrolled	135	68.88	49	25.00	12	6.12
Dropout	87	44.39	70	35.71	39	19.90

**Pearson chi2 (6) = 337.0051 Pr = 0.000**

Table 26: Cross tabulation between health insurance status and awareness

From table (26), we find that 67 % of the poorly aware head of the households are from the never insured group (131 out of 186 households), while most of the perfectly aware respondents are either regular or new enrollee.

#### Prepayment Concept:

The study asked the participants if they accept to pay regularly in advance to the scheme even they are not in need to the services. The result shows that 626 (79.89%) of the respondents agree with the concept of the prepayment mechanism when they participate or desire to participate in the scheme, while only 158 (20.15%) out of the total respondents not believe in this concept.

Prepayment concept	Frequency	%
Agree	626	79.89
Not agree	158	20.15
Total	784	100

Table 27: Perception about prepayment mechanism

Furthermore , the study found that 88.6% of the head of households who not agree with the prepayment mechanism are either never insured or drop out .On the other hand , almost 60% of the group that believe in this concept are either regular or newly enrolled members .

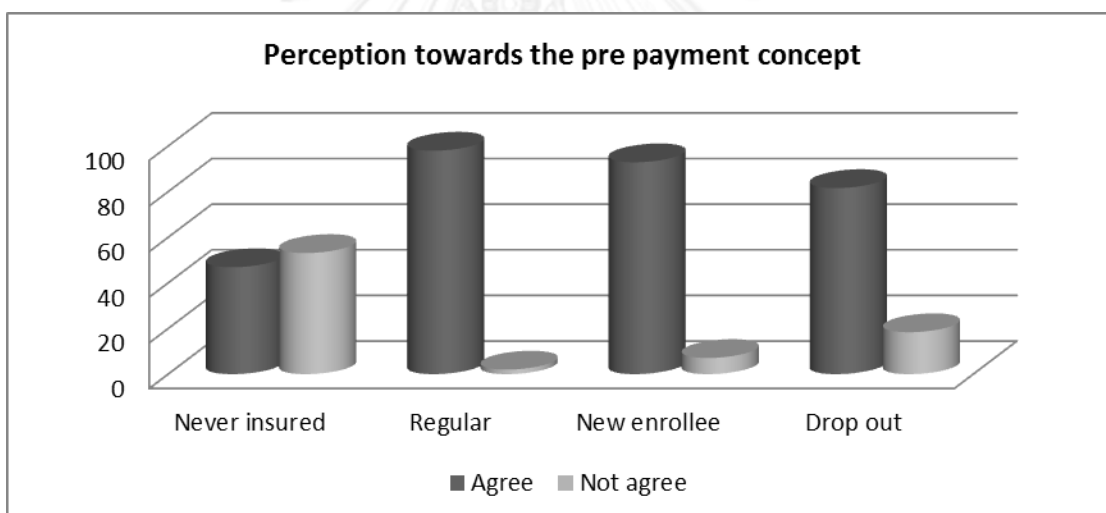


Figure 6: Cross tabulation between health insurance status and prepayment concept

This result shows the strong impact of this factor in the decision of participation in the voluntary scheme.

**Payment mechanism:**

This variable is restricted to the insured group only (Regular, New enrollee and Drop out members) so the total number of observations is (588). It indicates the two optional ways for members when they pay the insurance premium. There are two factors influence the households decision about these mechanism; the trust in the agent and the distance from the NHIF office. The underlying table shows that 378 (64.29%) out of the total respondents prefer paying their premium directly to NHIF officers, while the remaining 210 (35.71%) pay their premium through agents.

Payment mechanism	Frequency	%
Directly to NHIF	378	64.29
Through agent	210	35.71
Total	588	100

Table 28: Preferable payment mechanism

For more details, cross tabulation was done between the different insured groups (Regular, New and Drop out) and the payment mechanism. The result shows that most of members; regular (71.94%), new enrollee (58,16) and drop out (64.29%) pay their premium directly to NHIF officers. This shows that there is no negative impact from using any one of these mechanisms.

Health insurance status	Directly to NHIF		Through agent		Total
	Freq	%	Freq	%	
Regular member	141	71.94	55	28.06	196
Newly enrolled	114	58.16	82	41.84	196
Dropout	123	62.76	73	37.24	196
Total	378	64.29	210	35.71	588

Pearson chi2 (2) = 8.4000

Pr = 0.015

Table 29: Cross tabulation between health insurance status and payment mechanism.

#### Descriptive analysis of the continuous variable:

Variable	Orbs	Mean	median	S. deviation	Min	Max
Age	784	45.125	45	10.41377	16	74
Legal dependents	784	5.928163	6	2.591863	1	22
Total income/month	784	1296.32	1000	762.8559	300	5000
Total expenditure/month	784	1221.983	1000	603.7215	300	4000
Food expenditure/month	784	1017.736	900	439.4163	200	3500
Medical expenditure/month	784	104.5523	90	69.89085	20	750
Number of visits	784	2.353316	2	0.9949626	1	7

Table 30: Statistical measures of the continuous variables

From the above table, the mean of the age of the respondents is 45 years old and the average family size is 6. The average monthly income of the respondents is so close to their average monthly expenditures, 1296.32 and 1221.983 SDG respectively. The study remarks that most of the respondents are not certainly about how much they spend per month, but they all believe that they are not saving anything at all. Furthermore, Food expenditure represents more than 83% of the

total expenditure and it costs monthly about 1017.736 SDG. These results reflect the low socioeconomic status of households in this sector and the risk of facing poverty or catastrophic health expenditure under any urgent situation. The average monthly visits for health facilities is 2 with average monthly medical expenditure about 90 SDG.

#### **Never insured vs. insured (regular and new enrollee):**

The study defined the never insured as any head of the household who has never enrolled in the NHIF scheme, before or after year 2011. According to the design of the study, there are 196 respondents from this group.

In table (31), the study examines the main demographic and socioeconomic differences between the insured (regular and new enrollee) and never insured group. In general, the never insured are healthier, less educated, less aware about the scheme and not believe in the concept of pre-payment.

There are no obvious differences between the two groups in their residence , occupation and marital status, but in term of education, about 39.2% of the never insured are non-formal in compared to 14.3 % of the insured group. The presence of chronic illnesses among the insured group is more than double that in the never insured members 48% and 22.5% respectively



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Variable	Never insured (196)	Insured ( regular , new enrollee (392)	Pr
<b>(urban/rural)</b>			
Rural	23.47	18.62	0.168
Urban	76. 53	81.38	
<b>Gender</b>			
Male	93.88	84.95	0.002
female	6.12	15.05	
<b>Education</b>			
Non-formal	39.29	14.29	
Primary	32.65	31.38	0.000
Secondary	19.9	46.43	
University or higher	8.16	7.91	
<b>Marital status</b>			
Single, divorced, others	11.73	9.44	0.386
Married	88.27	90.56	
<b>Occupation</b>			
merchant	10.2	17.09	
day-labor	70.41	48.21	0.000
farmer	11.22	20.92	
other	8.16	13.78	
<b>Health status</b>			
well	77.55	52.04	0.000
ill	22.45	47.96	
<b>Awareness:</b>			
poor	66.84	4.08	0.000
average	18.37	20.41	
perfect	14.8	75.51	
<b>Pre-payment concept :</b>			
Not agree	53.06	4.59	0.000
Agree	46.94	95.41	

Table 31: Demographic and socioeconomic differences between insured and never insured group

Concerning awareness, the study outcome agreed with (Jehu-Appiah, 2012) in that, over 66 % of the never insured group in both rural and urban areas are poorly

aware about the scheme, while among the insured group, there is about 75.5% who are perfectly awareness about scheme features.

Moreover, the never insured members have less believe in the concept of the prepayment mechanism since only 47% agree with this concept in compared to 95.4% of the insured group.

On the other hand, on asking the never insured group about why they don't enroll in the scheme, 35.7 % show that they don't know how to enroll, while 16.84 % experienced financial hardship in term of low and irregular income in addition to their inability to pay regularly to the scheme. Moreover, 10.7% just they don't like to enroll either because they prefer to pay when the need the services or they have other routes for health care services like non for profit organization.

Reasons for not enrolling	Frequency	%
I don't know how to enroll	70	35.71
Financial hardship	33	16.84
I Just don't like to enroll	21	10.71
I do not know how high the premium is	17	8.67
Medical services are bad	11	5.61
I don't trust the NHIF	10	5.10
I cannot afford to pay the premium for three months upfront when enrolling	8	4.08
Medical package is not enough	7	3.57
I am healthy	7	3.57
No nearby health insurance service	7	3.57
I have not heard about the scheme	3	1.53
My family members are healthy	2	1.02
Total	196	100.00

Table 32: Reasons for not enrolling in scheme

#### **Dropout members vs. continued (regular and new enrollee):**

The main significant features of the dropout group are, they are healthier and less aware about the scheme. Table (33) reflects the main differences between dropout members and the continued group (regular and new enrollee):

Variable	Drop out (196)	Insured (392)	Pr
<b>(urban/rural)</b>			
Rural	32.14	18.62	0.000
Urban	67.86	81.38	
<b>Gender</b>			
Male	87.76	84.95	0.357
Female	12.24	15.05	
<b>Education</b>			
Non-formal	20.92	14.29	0.005
Primary	40.31	31.38	
Secondary	33.16	46.43	
University or higher	5.61	7.91	
<b>Marital status</b>			
Single ,divorced, others	8.67	9.44	0.762
Married	91.33	90.56	
<b>Occupation</b>			
Merchant	9.69	17.09	0.006
Day-Labor	58.16	48.21	
Farmer	24.49	20.92	
Other	7.65	13.78	
<b>Presence of chronic illnesses:</b>			
No	70.92	52.04	0.000
Yes	29.08	47.96	
<b>Awareness</b>			
poor	19.90	4.08	0.000
average	35.71	20.41	
perfect	44.39	75.51	
<b>Prepayment concept</b>			
Not agree	18.37	4.59	0.000
Agree	81.63	95.41	

Table 33: Demographic and socioeconomic differences between dropout and insured group

For the health status of the targeted households, the study found that 48 % of the total insured (regular and enrollee) respondents have at least one member in

their household who suffer from chronic illnesses, while the rate of chronic illness among dropout group is 29%. This result shows that there is high rate of chronic illness among scheme members. In other words, the scheme is suffering from adverse selection that made many of the enrollee continue to maintain receiving medical services for their long standing and costly diseases.

Furthermore, the level of perfect awareness about the scheme and the acceptance of the concept of prepayment are higher among regular than drop out participants' 75.5.14% and 44.3% respectively. This finding explains the positive impact of awareness in the mechanism of enrollment and continuation in the scheme.

Regarding the pre-payment concept, about 82% of the drops out members agree to pay in advance – at least when they enroll- compared to 96% of the continued members who agree with the same concept. The study found that, both group accept the concept more than the never insured members where only 47% believe in paying in advance to the scheme.

For more details about the factors that lead those member to leave the scheme, the study found that 60 (30.6%) out of the total 196 stop renewing because they got the chance to enroll in the free social support scheme, 45 (22.9%) experience financial hardship, 32 (16.3%) complain from the bad quality of services

and 16 (8%) said that they don't trust the scheme. Other reasons are shown in table (34):

Reasons for drop out	Frequency	%
Enroll in social support scheme	60	30.61
Financial hardship	45	22.96
Quality of services is bad	32	16.33
I don't trust the NHIF scheme	16	8.16
None of my family members were sick	8	4.08
No health insurance services near my residence	7	3.57
The Co-pay for drugs is too high	6	3.06
I didn't get sick	6	3.06
Medical package is not enough	5	2.55
I just don't want to enroll	1	0.51
Health facility is far from my residence	0	0.00
Others	10	5.10

Table 34: Main reasons of drop out

For the main causes of enrollment among the continued (regular and new enrollee) groups, the study reflects that more than 50% of members enrol to protect their household from the high out of pocket spending, while almost 13% enrol because they believe that health insurance provide a better medical services and only 13% said that they have at least one member who complain of chronic illness. The last finding reflects the asymmetrical information problem where members usually deny when they asked about their health problems. The remaining causes for enrollment were explained in details in table (35):

Reasons for enrollment	Regular %	New enrollee %
High medical spending per year	61.22	53.57
At least one household member has a chronic illness	13.27	12.76
Insurance offers a good medical package	14.80	20.92
I believe in the concept of health insurance	6.63	3.06
My friends recommended the NHIF	1.53	2.55
Respected elders in community recommended the NHIF	0	1.02
I have Large household size	2.04	3.57
Many dependents.	0.51	2.55

Table 35: Main reasons for enrollment

#### 6.1.2. Multinomial regression model:

In this part, the study used two sets of multinomial logistic regression to investigate the relationship between the dependent variable (health insurance status) and the various explanatory variables. The dependent variable made up of four categories; never insured, regular, new enrollee and drop out). The independent variables describe the demographic, socioeconomic, medical and cultural characteristic of the respondents and it include; Age, Gender, (urban or rural), Marital status, Occupation, Educational level, Monthly Income, Monthly Medical expenditure, Number of medical visits, Type of health facility, Distance of nearest health facility, Satisfaction which reflects the perceived quality of services, Awareness about the scheme, Pre payment concept, Enrolling in the social support scheme and the payment mechanism

### 6.1.2.1 Full sample model:

This set includes the whole sample (784) observations. The aim from this model is to identify any significant predictors between the insured group (regular, new enrollee and drop out) when compared to the never insured group. The models are free from multicollinearity. Also Probe > chi2 = 0.0000 reports a null hypothesis of no association between health insurance status (dependent variable) and the explanatory variables.



#### (1) Regular group: ( full sample model)

Variable	Coef	S. error	z	p	RRR
(urban/rural)	0.6048885	0.329637	1.84	0.067	1.831048 *



Age	0.0041693	0.014107	0.3	0.768	1.004178
Gender	-1.212666	0.498665	-2.43	0.015	0.2974034 **
Education	0.9494701	0.289735	3.28	0.001	2.58434 ***
Marital status	0.7425654	0.497084	1.49	0.135	2.101319
Income	0.0003367	0.000209	1.61	0.107	1.000337
legal dependent	-0.0639492	0.071944	-0.89	0.374	0.9380527
Visits	0.4938744	0.190545	2.59	0.01	1.638653 ***
health status	0.7464581	0.289876	2.58	0.01	2.109515 ***
Facility type	0.0589363	0.296873	0.2	0.843	1.060708
Distance	-1.113252	0.394071	-2.83	0.005	0.3284889 ***
Satisfaction	-0.4712835	0.281153	-1.68	0.094	0.6242006 *
average awareness	2.642598	0.626082	4.22	0.000	14.04965 ***
perfect awareness	4.477732	0.636131	7.04	0.000	88.03481 ***
Prepayment	1.385755	0.622372	2.23	0.026	3.997844 **
day labor	-0.414949	0.286371	-1.45	0.147	0.6603739
Premium	-0.3341566	0.306534	-1.09	0.276	0.7159416
_cons	-4.632117	1.11127	-4.17	0.000	

\* = significant at 90% significance level **never insured is base outcome**

\*\* = significant at 95% significance level

\*\*\* = significant at 99% significance level

Table 36: variable that predict continuation vs. never insured (full sample logistic regression)

In comparison to the never insured group, we found that, the following variables are significant among the regular member; (urban/rural), gender, education, visits, health status, distance, average awareness, perfect awareness and prepayment concept. These findings come with findings of other studies like (Vellakkal, 2013),

Dummy (urban/rural) has positive sign and significant at (0.067), the RRR tells us that, holding other variables are constants, the relative ratio of urban respondents

among regular group are higher by 1.83 than the rural respondents in compared to the never insured group . For gender, which has negative sign and significant at (0.015), the relative ratio of regular male members is less than the regular female members by 0.3.

Like other literature reviews , (Supakankunti, 2001), (Hengjin Dong 2009) and (Sinha, 2007) , the study found that education is significant among regular compared to never insured group .The variable higher education is positive and significant at (0.001) and reflect that the probability of being higher educated is higher among the regular members by 2.6 times that among never insured group .

On the other hand, the regular members seem to seek medical visits more than never insured group. The study found that, the variable visits is statistically significant at (0.01) and the RRR shows that, holding other variables constant, the probability of numbers of average monthly visits is higher by 1.6 in regular group compared to the never insured group. Although this could indicate the improvement in accessibility to health services among the insured members, but at the same time it may indicate the risk of moral hazard among the same groups. However, the scope and instrument of this study is not enough to confirm or exclude the moral hazard.

Regarding health status of the households , it was represented by the dummy chronic illnesses variable; (1= at least one member of the household has chronic illnesses ,0= not).The model outcome shows that this variable is positive and

significant at (0.01) and the relative ratio of being with chronic illnesses among the regular group is higher by 2.1 compared to the never insured group. This result which come with (Wang et al., 2006), and it confirms that the scheme suffers from the adverse selection problem which could be regarded as one of the main causes of members' retention in the scheme .

Distance from the nearest health facility is a dummy variable ( 1= 5km or less , 0= more than 5 km ) .The outcome of the variable is positive and significant at (0.005) and it reflects that the ratio of regular member who live 5km or less from health facilities are higher by 0.33 than those who live in the same distance among the never insured group .

As what have been found in (Appiah . j 2012) & (Anil Gumber, 2000), the study finds that both average and perfect awareness are positive and significant among the regular members , P.value = ( 0.00) for both variables . Furthermore, among regular members average awareness is higher by 14.05 and perfect awareness is higher by 88.03 in comparison to never insured group. This big gap in awareness between the two comparative groups reflects the effect of this variable on the decision of participation in the scheme.

For the prepayment concept, which regarded as an essential factor in the continuity of members in the scheme, the study examined this concept by using a dummy variable of prepayment concept (1= agree with the concept, 0= not agree).

The outcome of the model show that this variable is significant at (0.026) with positive sign , and it reflects that , holding other variables are constants , any additional member in the regular members will increase the relative ratio of believing in this concept by almost 4 in compared to the never insured group .

The remaining variables were not statistically significant , which mean that they could not predict any association between the regular and never insured group .These variables include ; age , marital status , income , legal dependents, facility type , perceived quality of services , joining social support scheme , in ability to pay premium and dummy day labor. Some of these results not match with the outcome of other literature reviews ; (Supakankunti, 2001) , found that age , income and medical expenditure play an important role in the mechanism of continuation in the scheme.

(2) New enrollee group: (full sample model)

	<b>Coef</b>	<b>S. error</b>	<b>Z</b>	<b>P</b>	<b>RRR</b>
(urban/rural)	0.2650163	0.314927	0.84	0.4	1.303452
<b>Age</b>	-0.0354007	0.013642	-2.59	0.009	0.9652186 ***
<b>Gender</b>	-1.341641	0.470178	-2.85	0.004	0.2614162 ***
<b>Education</b>	0.9651688	0.274436	3.52	0.000	2.625231 ***
<b>Marital status</b>	0.8093545	0.46213	1.75	0.08	2.246457 *
<b>Income</b>	0.0001508	0.000208	0.72	0.469	1.000151
<b>legal dependent</b>	-0.0770736	0.072362	-1.07	0.287	0.9258217
<b>Visits</b>	0.6358974	0.186597	3.41	0.001	1.888716 ***
<b>health status</b>	0.4487869	0.280935	1.6	0.11	1.566411
<b>Facility type</b>	0.0585148	0.280944	0.21	0.835	1.060261

Distance	0.1411845	0.413518	0.34	0.733	1.151637
Satisfaction	-0.1692921	0.271542	-0.62	0.533	0.8442622
average awareness	2.198315	0.43648	5.04	0.000	9.009816 ***
perfect awareness	3.30151	0.46427	7.11	0.000	27.15361 ***
Prepayment	0.8516385	0.421426	2.02	0.043	2.343483 **
day labor	-0.3367087	0.276145	-1.22	0.223	0.7141169
Premium	-0.6468394	0.293264	-2.21	0.027	0.5236983 **
_cons	-2.06162	0.933158	-2.21	0.027	

\* = significant at 90% significance level

**never insured is base outcome**

\*\* = significant at 95% significance level

\*\*\* = significant at 99% significance level

Table 37: Variables predict new enrollment vs. never insured (full sample logistic regression)

Perceptions of the head of the household have a fundamental impact on the mechanism of participation in the voluntary scheme of NHIF in Kassala state, Sudan. Therefore, the table (37) shows the significant differences in perception and preferences between new enrollee and never insured.

In comparison between the new enrollee and the never insured, we find that the following variables are statistically significant; Age, Gender, Education, marital status, visits, Average awareness, Perfect awareness, prepayment and perceived premium.

For Age which is a continuous variable, the sign is negative and its statistically significant at (0.009). The model shows that, holding other variables are

constant, any additional year in member's age will decrease the probability of being among the new enrollee group by 0.97 in compared to the never insured. Gender also has a negative sign and significant at (0.004). This indicates that the probability of being male among the new enrollee is lower by 0.26 than being female when compared to never insured group. This result is similar to that found in (Evans & Shisana, 2012), and indicate that female like to enroll rather than male. Furthermore, marital status was statistically significant at (0.08) and this reflects also that marriage play in the enrollment in the scheme.

As in (Manuela De Allegri, 2006), Education is significant at (0.000) and has positive sign which indicate that secondary or higher educated members are more likely to enroll in the scheme. The interpretation of this is that when the households are more educated, they will be able to know more about the benefits of the health insurance and so this will attract them to enroll.

The variable visit is also significant at (0.001) and has positive sign that indicate the new enrollee utilize health services more than the never insured group. The interpretation will be the same as that of the regular group.

Regarding awareness, just like the regular group, the new enrollee has better awareness about the scheme in compared to the never insured group. For more details, holding other variables constants, any increase in the level of average and perfect awareness will increase the probability of being new enrollee by 9 and 27.1

respectively relative to the never insured members. This result also shows the strong impact of awareness in the mechanism of enrollment in the scheme.

For the pre-payment concept, the dummy variable was statistically significant at (0.043) with positive sign. This result indicates that the new enrollee believe in this concept more than the never insured group.

Interestingly, the study finds that the dummy perceived premium is significant at (0.027) with negative sign. The relative risk ratio reflects that the probability of inability to pay premium is higher by 50% in new enrollees when compared to the never insured. This result may suggest that there are other significant factors that deter the enrollment in the scheme apart of the financial status.

### (3) Dropout group:

Variable	Coef	S. error	z	p	RRR
(urban/rural)	-0.3684137	0.271185	-1.36	0.174	0.6918309
Age	0.0075319	0.011921	0.63	0.528	1.00756
Gender	-1.037284	0.44732	-2.32	0.02	0.3544161 **
Education	0.3399285	0.25973	1.31	0.191	1.404847
Marital status	0.6279855	0.43135	1.46	0.145	1.873832
Income	0.0002471	0.000187	1.32	0.187	1.000247
legal dependent	-0.0152672	0.069358	-0.22	0.826	0.9848488
Visits	-0.085134	0.179088	-0.48	0.635	0.9183892
health status	-0.085719	0.270917	-0.32	0.752	0.9178521
Facility type	0.3717099	0.255432	1.46	0.146	1.450212
Distance	0.3413491	0.364989	0.94	0.35	1.406844
Satisfaction	-0.7557089	0.24436	-3.09	0.002	0.4696776 ***
average awareness	1.384298	0.33509	4.13	0.000	3.992021 ***

<b>perfect awareness</b>	1.685445	0.374062	4.51	0.000	5.394851 ***
<b>Prepayment</b>	0.6566555	0.332604	1.97	0.048	1.928332 **
<b>day labor</b>	-0.0697264	0.258225	-0.27	0.787	0.9326489
<b>Premium</b>	-0.6386898	0.268597	-2.38	0.017	0.5279837 **
<b>_cons</b>	-0.8303668	0.832199	-1.00	0.318	

\* = significant at 90% significance level

**never insured is base outcome**

\*\* = significant at 95% significance level

\*\*\* = significant at 99% significance level

Table 38: Variables that predict drop out vs. never insured (full sample logistic regression)

The outcome of the model shows some significant factors that characterize this group in comparison to the never insured group. These factors include; gender, perceived quality of services, Average awareness, Perfect awareness, prepayment and perceived premium.

Gender is statistically significant with negative sign (0.02). It reflects that, any additional year will reduce the probability of being drop out by 65% in comparison to the never insured group.

Perceived quality of services is one of the most important factors that influence the perception of continuation in the scheme. Like (Hengjin Dong 2009) &(Bart Criela, 2003) the study find that members in the drop out group are less satisfied with the provided services. The variable shows negative sign and it was significant at (0.002). The RRR shows that the drop out group are dissatisfied by 53% compared with never insured group. The causes of dissatisfaction are many, but the



most important factors according to the experience of the respondents are; unavailability or the low quality of provided drug, the long waiting time in the health facilities and the bad cleanliness of the health facilities.

The drop out members have higher level awareness about the scheme when compared to the never insured group. Both average and perfect awareness are positive and statistically significant at (0.00) respectively. This result concludes that the never insured group has the poorest level of awareness among the different three insured group. Moreover, the variable prepayment is significant at (0.48) with positive sign.

Another important factor that seems to aggravate the drop out problem is the perceive premium .This variable is significant at (0.017) and has negative sign which mean that drop out members are unable to pay premium in compared to never insured group .The least finding comes with (Hengjin Dong 2009).

#### **6.1.2.2 Sub sample model:**

In this section, the study use a sub sample multinomial logistic regression model to predict the relationships between the insured group (regular, new enrollee and drop out members). The total number of observations is (588) and the regular group was selected to be the reference group.

For the dependent variable it's the health insurance status of the head of the households which have 3 outcome categories ( regular , new and drop out ) .The explanatory variables are ; dummy (urban/rural), Age , Gender, Education , Marital status , Income , legal dependent , Visits , Health status , Facility type , Distance ,perceived quality of services , Average awareness , Perfect awareness, Pre payment , Perceived premium , Payment mechanism and Dummy day labor.

The study add the variable payment mechanism to the regression model to predict its impact on the participation process .Payment mechanism is a dummy variable (1= pay premium through agent, 0= pay premium directly to NHIF officers).

(i) New enrollee : (sub sample)

Variable	Coef	S .error	Z	P	RRR
(urban/rural)	-0.2767185	0.2796871	-0.99	0.322	0.7582679
Age	-0.0400562	0.0121367	-3.3	0.001	0.9607355 ***
Gender	-0.1936403	0.327161	-0.59	0.554	0.8239543
Education	-0.0039916	0.2237728	-0.02	0.986	0.9960163
Marital status	-0.0018791	0.4066209	0	0.996	0.9981227
Income2	-0.0002196	0.0001626	-1.35	0.177	0.9997804
Legal dependents	-0.004693	0.0536323	-0.09	0.93	0.995318
Visits	0.1342733	0.1347212	1	0.319	1.143705
Health status	-0.2763565	0.2191965	-1.26	0.207	0.7585425
Facility type	0.1013131	0.2551858	0.4	0.691	1.106623
Distance	1.175474	0.3660632	3.21	0.001	3.239679 ***
Satisfaction	0.316456	0.2239849	1.41	0.158	1.372256
Average awareness	-0.4275121	0.6961845	-0.61	0.539	0.6521295
Perfect awareness	-1.121564	0.6878022	-1.63	0.103	0.3257698
Prepayment	-0.4303314	0.6726779	-0.64	0.522	0.6502935

<b>Payment</b>	0.4333421	0.2381195	1.82	0.069	1.542404 *
<b>Day labor</b>	0.1156717	0.2259997	0.51	0.609	1.122627
<b>Premium</b>	-0.1846374	0.2530403	-0.73	0.466	0.8314057
<b>_cons</b>	2.26973	1.027921	2.21	0.027	

\* = significant at 90% significance level                      **regular group is base outcome**  
\*\* = significant at 95% significance level                      \*\*\* = significant at 99% significance level

Table 39: Variables that predict new enrollee vs. regular (sub sample logistic regression)

The result of the sub sample model shows that, there are only three significant factors that distinguish the new enrollee from the regular group .These factors are Age, Distance and Payment mechanism.

Regarding Age , the study find that the new enrollee are younger than the regular group .For more details , the variable has negative sign and statistically significant at (0.001) and it reflect that , any additional year to the age of the participants will reduce the probability of being among the new enrollee members by 0.96 compared to the regular group .

Distance of the nearest health facility is also statistically significant at (0.001) with positive sign .The RRR could be interpreted as that , the new enrollee live closer to health facility in compared to the regular members .

Payment mechanism is a dummy variable (1= pay premium through agent, 0 = pay premium directly to NHIF officers). Its statistically significant at (0.69) with positive sign. The RRR shows that, holding other variable constants, the probability of

paying through agent is higher by 1.54 among new enrollees in compared to regular members.

The remaining variables are insignificant and so they are unable to predict any relationships between the new enrollee and regular groups.

(ii) Drop out group: (sub sample model)

Variable	Coef	S .error	Z	P	RRR
(urban/rural)	-0.94578	0.28223	-3.35	0.001	0.388376 ***
Age	0.008262	0.012937	0.64	0.523	1.008296
Gender	0.038325	0.384193	0.1	0.921	1.039069
Education	-0.63931	0.244724	-2.61	0.009	0.527655 ***
Marital status	-0.17218	0.462997	-0.37	0.71	0.841826
Income2	-0.00016	0.000194	-0.81	0.419	0.999844
Legal dependents	0.044527	0.062888	0.71	0.479	1.045533
Visits	-0.61781	0.171274	-3.61	0.000	0.539125 ***
Health status	-0.87097	0.249905	-3.49	0.000	0.418544 ***
Facility type	0.416243	0.286767	1.45	0.147	1.516254
Distance	1.438525	0.393036	3.66	0.000	4.214475 ***
Satisfaction	-0.27495	0.241564	-1.14	0.255	0.759608
Average awareness	-1.15892	0.661949	-1.75	0.08	0.313825 *
Perfect awareness	-2.66702	0.658621	-4.05	0.000	0.069459 ***
Prepayment	-0.94606	0.648422	-1.46	0.145	0.388268
Payment	0.057558	0.260093	0.22	0.825	1.059246
Day labor	0.284754	0.249702	1.14	0.254	1.329434
Premium	-0.38523	0.276326	-1.39	0.163	0.680297
_cons	4.017923	1.068458	3.76	0	

\* = significant at 90% significance level      **regular group is base outcome**

\*\* = significant at 95% significance level      \*\*\* = significant at 99% significance level

Table 40: Variables predict dropout vs. regular (sub sample multi nomial logistic regression)

Unlike the new enrollee group , the result of the drop out group versus the regular ones reflect many significant factors .The drop group seems to more from rural area with more healthy members and less number of medical visits . Moreover, although they live near health facilities but they are less satisfied from the provided services. Furthermore, most of members in this group are day labors and they are less aware about NHIF scheme.

Regarding dummy urban (urban/rural), its significant at (0.001) with negative sign .The RRR indicates that, holding other variables are constants, the probability of being from urban area is reduce by 61% among the drop out group when compared to the regular members. This mean that most of the drop out group in this study is from rural area .This fact may explain one reason for dropping out because usually the shape and package of services in the rural area is less than that found in the urban area.

Regarding education, the variable is significant at (0.009) and has negative sign .This indicates that the higher education level is lower among the dropout members when compared to the regular group.

Health status of the households seems to have a strong implication on the decision of continuation in the scheme. The study found that, the drop out members have less chronic illnesses when compared to the regular group. The negative sign of the variable chronic illnesses - which is significant at (0.000) – indicate that, holding other variables not changed, the probability of chronic illnesses is lower among drop out group by 58%. Again this result confirms the problem of adverse selection that mentioned above when discussed regular and new enrollee members.

Concerning distance, the dummy variable is statistically significant at (0.000) with positive sign. This shows that drop out members are living closer to health facility in compared to regular members. This seems to be interesting and it reflects that, availability of services is not the main factors that impact the continuation in the scheme.

Regarding visits, the variable is statistically significant at (0.000) with negative sign. The RRR reflects that, the drop out members seek health care 46% less than the regular members. Although this result come in line with that the statement that " drop out members are healthier than the regular group" but, it may shows at the same time why they don't continue in the scheme, especially if we know that they live 5km or less from health facility.

Regarding awareness, although dropout members aware better than never insured, but this statement will be reversed when compared to the regular group.

Average and perfect awareness variables have negative sign and they are statistically significant at (0.08) and (0.000) respectively. The RRR for perfect awareness shows that, the dropout are less perfectly aware by 96% when compared to the regular group. This gap in awareness between the two groups can conclude another factor that result in the high dropout rate in NHIF –Kassala state voluntary scheme.

Other variables like , Age , gender, Marital status , Income , legal dependents , Facility type , Pre payment , perceived Premium, Payment mechanism and occupation, seems to be not significant and so its unable to predict the relationship between drop out and regular members.

### **6.1.3. Qualitative analysis:**

The aim of this section is to support the outcome of the multinomial regression by exploring the insight of the selected respondents about the mechanism of participation in the voluntary scheme of the NHIF in Kassala state. The study selects the following characters: Executive manager of NHIF in Kassala state, Manager of population coverage and customer services in NHIF Kassala state, Representative of State ministry of health, Community leader from the urban area and Community leader from the rural area.

#### **6.1.3.1 Analysis of in depth interviews:**

According to the conceptual framework of the study, the decision of participation in the scheme is influence by demand side and scheme factors. The

demand side reflects the household characteristics like the demographic , socioeconomics and health status , while the supply factors compromise the criteria which attract households to enroll and continue in the scheme, it include : affordable premium , present of efficient methods for collecting this premium , availability of the service and satisfaction from the provided services . There for, the study used these factors as codes to organize the outcome of the interviews for each health insurance status (enrollment, continuation, drop out and not enrolling).

#### **6.1.3.2 Factors motivate enrollment**

The executive manager of NHIF in Kassala state said that, they exert all their effort to expand the coverage in the informal sector, but the response is usually low or under their expectation. According to his experience, there are two main factors that influence the mechanism of enrollment. These factors are the awareness of members about the benefit of the scheme and the perceived quality of NHIF services especially the services that provided by the direct health centres<sup>5</sup>.

*We get many new members from these continuous awareness campaigns and many households appreciate our benefit package.*

On the other hand, the manager of population coverage and customer services in NHIF-Kassala state remarked that the new enrollment in the scheme related mainly to the high medical spending, since many people need to pay times

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<sup>5</sup> Direct health services is a term used when the national health insurance fund, Sudan own the health facility and provide the services directly without intermediaries.



the amount of the premium if they remain un-insured. Another cause that he mentioned is the health status of the enrollee:

Most of the new enrollee are either chronically ill or they need urgent expensive surgical intervention.

According to the opinion of the representative of the state ministry of health, the informal sector is the greatest sector in the state, so most of the households like to enrol to benefit from the insurance services in this scheme.

It was understood from the interview with 2 community leaders that the high medical spending and the perceived quality of are the main reason that affect the decision of many households to participate in the scheme. Moreover, the educated head of the households are the most participating group since education help households to understand well the benefit of the scheme.

#### ***6.1.3.3. Factors motivate continuation in the scheme:***

As what found in the quantitative results, the in depth outcome find that the following factors maintain the membership of the scheme; education, perceived quality of services and the health status of the household members.

From the prospect of the NHIF-Kassala state, members renew their subscription because they believe in the concept of health insurance and they have good perception about the provided services .But, on the other hand, a high rate of regular members have a history of chronic or debilitating disease.

Furthermore, the representative of SMOH think that, retention is the normal and expected behaviour of the majority of well oriented participants and families, since the longer retention under the insurance is the maximum expected benefit.

Another factor for retention – according to the opinion of a community leader- is feeling of protection by the scheme:

*When someone referred to Khartoum (Capital of Sudan) for sophisticated investigation that may cost thousands SDG, and because he/ her has health insurance card, they don't need to pay anything a part of 25% of drug cost. This situation makes the member happy and like to retain .Moreover, he may ask other member to enrol and benefit from the scheme.*

#### **6.1.3.4. Factors result in drop out:**

Addressing the drop out problem is of great importance since drop out affect the financial stability of the scheme and financial protection of members at the same time(Hengjin Dong 2009).

The managers of NHIF- kassala state expressed their understanding to the financial hardship that face some households but, they said that the recent actuarial study shows that the minimum premium should be 48 SDG which is higher than the current premium (40 SDG), so no way to reduce it more. They mentioned that, other households aren't serious in paying the premium regularly especially when they are well. Then later, the premium accumulated and household became unable to pay.

Dropout – in the opinion of SMOH representative - is usually expected when the member feel that, the program is no longer useful or he did not benefit from it during his/her membership. This perceived about the provided services is always associated with their personal experience (waiting time, quality of drug, etc.).

Moreover, the payment through agents in some situation may increase the rate of dropout .This take place when people not trust the agent or the agent is not available all the time. On the other hand, members stop subscription if they didn't find nearby services and generally no body like to pay unless fell that he/she benefit from the services.

#### **6.1.3.5. Factors result in high un-insurance rate:**

Regarding the high never insured rate, the outcomes of the in depth interviews conclude that, most of the households are low socioeconomic status, so they can face financial hardship at any time. Furthermore, the NHIF officers said that; some households in the informal sector find their way to enrol in the in the free social support scheme.

*Although the social support scheme was designed for poor only, but still many households from informal sector joined and received benefits from it.*

This problem reduce the rate of enrollment, because most of the families now waiting to have a chance and enrol in this scheme.

The representative of SMOH, have no certain reasons for the high uninsured member in the sector, but he went on saying; I believe the proportion of peoples

who are coming under the informal sector is greater than the formal one. So the voluntary or informal scheme is the only way for them to get the insurance service.

Awareness is another reason that influences the decision of the uninsured families. Many household in the rural area either not heard about the scheme or have poor awareness about the process of participation.

*I met many people who like to enrol but they don't know how to do that*

He continued saying, the NHIF administrator should direct their effort more to the rural area to increase the level of awareness among the households.

#### 6.1.3.6 Summary of finding:

Table 41: Summary of in depth interviews outcome

Enrollment	Continuation	Dropout	Un enrollment
<b>Awareness about the scheme</b>	Satisfaction with provided services	Financial hardship	Financial hardship.
<b>Health status of the household</b>	Health status of members.	Joining social support scheme	Poor awareness about the scheme
<b>High medical spending</b>	-High medical spending	Dissatisfaction with provided services	Dissatisfaction with provided services
<b>Believe in NHIF</b>	-Education	Payment through	

<b>concept</b>		agent
<b>Education</b>	-Trust NHIF scheme	-Absence of nearby services

## 6.2. Discussion:

The study tries to explore the main factors that impact the participation mechanism in the voluntary scheme of NHIF-Kassala state. There are 4 possible conditions that can define the health insurance status of the head of the informal sector household; never insured regular member, newly enrolled member or dropout.

In this part of the study, we are going to discuss the main finding of the study by exploring the relationships between the different four groups.

### 6.2.1. Impact of demographic factors:

The study used the following variable to reflect the demographic characteristics of the respondents; dummy urban (urban/rural), age, gender (dummy male and female), marital status (dummy married, otherwise) and education (dummy higher education or otherwise).

Most of the participants in this study are from urban area 602 (76.8%). This percentage doesn't match with national and state figures that estimate the urban residency by only 30%. The explanation here is that this study target the locality that

characterized by the existence of the voluntary scheme, and most of these locations were urban rather than rural.

Therefore, concerning dummy (urban/rural), about 81% of regular and new enrollee are from urban location followed by dropout and never insured 76.8% and 76.5% respectively. The outcome of the full model shows that urban location is significant at 1% level with positive sign among the regular group compared to the never insured, while in the sub sample model, the results shows that the dropout group were rather from rural area when compared to the regular members. The last finding comes in line with (Hengjin Dong 2009).

The mean age of the participant is 45 years old. Our study reflects the new enrollees are the youngest among the remaining groups and moreover, any increase in the age of the head of the households will reduce the probability of enrolling in the scheme.

Like what found in (Hongman Wang 2008), our study shows that, being female household head will increase the probability of enrolling and retaining in the scheme.

Marital status was found to have no significant impact in the participation mechanism since it was significant only at 90% level among the new enrollee when they compared to the never insured group.

As expected, our study found that, there is a positive impact of education on the enrollment and continuation in the scheme. In both full sample and sub sample models, education has positive sign and significant at 99% level. This positive relationship was found in many studies (Hongman Wang 2008),(Owusu-Sekyere & Chiaraah, 2014)and(Appiah . j 2012), and it reflects that, as the level of education increase, the head of the household will realize more the importance of joining the health insurance scheme.

#### **6.2.2. Impact of socioeconomics factors**

Our study shows that, the average monthly income is so close to their average monthly expenditures, 1296.32 and 1221.983 SDG respectively. Furthermore, the average monthly food expenditure about 1017.736 SDG, while the average medical expenditure is about 90 SDG. These results indicate the low socioeconomic status of informal sector households and how they are under impoverishment if they face any moderate or high medical expenditure.

unlike what found in (Owusu-Sekyere & Chiaraah, 2014), our study find that, income has no significant impact on the participation mechanism. This result was found also in (Supakankunti, 2001) , where there was no obvious difference in term of economic status among the four different group.

### 6.2.3. Impact of health status of the household:

To investigate the health status of households, our study used the presence or absence of chronic illnesses among the member of the household .Therefore, the study finds a strong relationship between the health status of the household and their decision to participate in the scheme. More than 50% of the regular members have at least one member with chronic illnesses, followed by 43% of the new enrollee, 29% of the drop out and finally only 22% of the never insured group. Moreover, both sample and subsample models shows the significant relationship between health status and being regular members. This fact shows that, health status of the household members is one of the main determinants of continuation in the voluntary scheme of NHIF-Kassala state. This finding confirms the hypothesis of this study which state that members are continued in the scheme because of their health status. Furthermore, this result shows also that, the scheme is suffering from the adverse selection problem that affects the enrollment and retention of membership.

### 6.2.4. Impact of nearest health facility and medical visits:

The study used dummy private and public to examine the impact of facilities type on the participation process. Although more than 40% of the never insured members have private facility near their residence compared to 25% of the insured members (regular, new enrollee and drop out), but the regression analysis found no



significant relationship between the type of nearest health facility and enrollment mechanism.

Regarding distance of nearest health facility, the study found that, the new enrollee and drop out group live closer to the health facility compared to the regular and never insured group. The variable distance is dummy 5 km or less is significant at 99% in both full and sub sample models. This finding is interesting and came in line with (Dongfu Qian, 2009) and it reflects three main points:

- It accepts and confirms our hypothesis which state that availability of services is important for the enrollment mechanism.
- Regular members are still renewing their subscription although they live far from health facility and this explained by the adverse selection problem and their need to the health insurance services.
- The drop out members stops renewing their subscription although they are living near health facilities. This fact reflects that, there is other strong reason for their drop out which will be discussed later.

For the impact of medical visits, the study asked the respondents about the average monthly visits during the last three months. The mean numbers of visits is 2 visits per month. The regression analysis shows significant relation at 99% level that indicates, regular and new enrolees have more medical visits than the dropout and never insured members. This result may indicate that the scheme increase accessibility to health services among insured members. In addition to, this finding

could be explained by the facts that dropout and never insured members are healthier when compared to continued members. However, moral hazard should be concerned also, but because of the scope of this study, it's difficult to confirm or reject the presence of this hazard.

#### **6.2.5. Impact of awareness about the scheme and prepayment concept:**

Our study found that, the highest awareness level was found among the regular and new enrollee members which was 82% and 69% respectively. The never insured group has the lowest awareness level among the total respondents 14% only. Furthermore, the multivariate regression shows the strong relationship between average and perfect awareness and the enrollment and continuation in the scheme. This finding came with (Vellakkal1, 2013) in that, increase level of awareness about the scheme will motivate the participation mechanism.

In addition to, the study examined the acceptance the prepayment concept among the respondents to detect its impact on enrollment and continuation. Like awareness, the result of the full sample model reflects that, the regular members and new enrollee members agree more with this concept more than the never insured group. This acceptance reflects that, insured members feel more secure within the scheme, so they like to continue paying to maintain this protection.

#### 6.2.6. Impact of perceived quality of services and premium:

Satisfaction with provided services has positive impact on joining health insurance scheme (Appiah . j 2012). Our study shows that, among each group, drop out have the highest number of dis-satisfied members 47% followed by regular group 40% then new enrollee and never insured members. The main causes of dissatisfaction are unavailability or low quality of drug, long waiting time before seeing by providers and bad cleanliness of facilities. The full sample multinomial logistic regression confirms the bad perceived of quality of services among the drop out group at 99% level, but the multivariate finding reject the hypothesis which state that perceived quality of services is important for motivating enrollment in the scheme.

Regarding perceived premium, the study used the difference between the monthly income and non-medical expenditure to evaluate the ability of respondents to pay premium. The result shows that drop out group is characterized by higher rate of in ability to pay 51.5% followed by the new enrollee 48% while the inability to pay premium among regular and never insured are 37% and 39% respectively. The full sample model shows that, among both dropout and new enrollee, the perceived premium show negatively significant relationship between (dropout, new enrollee) and their ability to pay premium. It's surprising that never insured are able to pay while the new enrolees are not, but this could be explained by the fact that the main cause for not enrolling is the low or poor awareness level about the

scheme and how to enroll, while the new enrollees join the scheme mainly to protect themselves from the high out of pocket medical spending. One more interesting finding is that the ability to pay in not affected by the residence of respondents, since 56% of urban and 53% of rural participants was found to be able to pay premium. This finding indicates the similar financial affordability of informal sector households.

On the other hand, payment method regarded on of the determinant of continuation in the scheme. According to NHIF context, there are 2 optional ways for paying premium (directly to NHIF office or through agents). Therefore, the study found that, 72% of the regular members prefer to pay directly to NHIF, while 58% of the new enrollee choose to pay through agents and dropout members 63% of dropout used to pay directly to scheme. The subsample model show slight relationship between the new enrollee and the payment through agent at 90% level.



## CHAPTER 7

### Conclusion, recommendation and limitation

In this part, the study will reflect the following, conclusion of the outcome of the analysis, the recommendations and the limitation of the study.

#### 7.1 Conclusions:

In Sudan, the informal sector represents more than 60% of total labor force. The national health insurance fund NHIF through its branches in the different states provide a voluntary scheme for the enrollment of the households in the informal sectors. There are challenges that face this scheme like the low enrollment rate and the high dropout of members. These problems threaten the financial sustainability of both scheme and members.

In Kassala state, the estimated numbers of households in the informal sector are 171308. The coverage rate in this sector reached 15% by the end of 2012.

However, some reports show that the dropout exceeds 40% out of the total enrollee.

The aim of this study is to identify the main reasons that affect the decision of households in participation in NHIF scheme in Kassala state, Eastern Sudan. The study was carried from Feb-March 2014, using 784 questionnaires that distributed over 7 selected localities out of the total 11- in Kassala state and 5 in depth interviews with characters that represent NHIF-Kassala state, SMOH and community leaders. The study used State program to analyse the collected data using multinomial logistic regression models.

Concerning the primary data, the study finds that:

Males are dominant as a head of households with (87.9%)

The average age of the participants is 45 years old.

About 76.8% of the total participants lived in urban areas while the remaining 182 (23.2) are from rural locations.

Most of the respondents are married and they represent about 90% of total respondents.

The most frequent level of education is the secondary which represent 36.5%, followed by the primary level 33.9% then the non-formal level 22.2%, while the lowest educational level is the university or higher education which represent about only 7.4%.

56.3% of the respondents are day labor. Farmers represent about 19.4% while merchants are about 13.5%.

The average monthly income is so close to their average monthly expenditures, 1296.32 and 1221.983 SDG respectively. Furthermore, the average monthly food expenditure about 1017.736 SDG, while the average medical expenditure is about 90 SDG.

Concerning the health status of the households in term of suffering from longstanding illnesses, the result reflects that, 63.1 % of the total respondents have no chronic illnesses within their households while the remaining 36.9% experience chronic illnesses for at least one member of the household.

Moreover, Hypertension and Diabetes Mellitus are the most common diseases with almost similar rates of 36.33% and 35.99 respectively.

For the type of nearest health facility, the study shows that, health centers are the common nearest health facility for 59.57% out of the total participants, followed by private clinic 29.59%, then hospital 10.33%. Furthermore, the NHIF operate more than 50% of the provided services while the private sector represents about 31.38%. The remaining 17.35% are operated by the state ministry of health (SMOH).

Regarding distance of the nearest health facility, the study shows that the majority of the respondents that represent about 87.5% are 1-5 Km far from the

nearest health facility, while only 12.5% live at least more than 5 Km from the nearest health facility.

Concerning perceived quality of services, the study shows that, 61.22% were satisfied with the provided services while 38.78% are not satisfied. The most common reasons of dissatisfaction, is the unavailability or the low quality of the provided drug (55.2%), suffers from the long waiting time (24.6 %), near 7% complain of the bad cleanliness of the health facilities and 5.5% experienced bad attitude of the medical staff.

Concerning awareness about the scheme - in term of how to enroll, medical benefits, premium, mechanism of payment and the Co-payment of drugs - the study finds that, 52.55% of the total respondents are perfectly aware while respondents who are either averagely aware or poorly aware are equal and represent about 23.72%. Furthermore, 70.4 % of the poorly aware head of the households are from the never insured group, while 71.8 % of the perfectly aware respondents are either regular or new enrollee.

Regarding accepting the prepayment concept, the analysis shows that, 80% out of the total respondents believe in the concept, while only 20 % not believe in it. Furthermore, 88.6% of the head of households who not agree with the prepayment mechanism are either never insured or drop out and 60% of the group that believe in this concept are either regular or newly enrolled members.



On asking the insured group (regular, new enrollee, drop out) about the preferable payment mechanism, 378 (64.29%) out of the total insured respondents prefer paying their premium directly to NHIF officers, while the remaining 210 (35.71%) pay their premium through agents.

On the other hand, the study examines the main demographic and socioeconomic differences between the insured and non-insured group. In general, the never insured are healthier, less educated, less aware about the scheme and not believe in the concept of pre-payment. Furthermore, on asking the never insured group about why they don't enroll in the scheme; 35.7 % show that they don't know how to enroll, while 16.84 % experienced financial hardship and 10.7% just they don't like to enroll.

The main significant features of the regular group are, they are more educated, more aware about the scheme and believe in the prepayment concept. For the main causes of enrollment, the study reflects that 120 (61.22%) out of the total regular members enrol to protect his/her household from the high out of pocket spending, while 14.8% enrol because they believe that health insurance provide a better medical services and only 13% said that they have at least one member who complain of chronic illness.

For the new enrollee, the main distinctive features of this group in comparison to the never insured are; more educated, more aware about the scheme and have more incidence of chronic illness.

Concerning dropout, the study found that 60 (30.6%) stop renewing their subscription because they got the chance to enroll in the free social support scheme, 45 (22.9%) experience financial hardship, 32 (16.3%) complain from the bad quality of services and 16 (8%) said that they don't trust the scheme.

The results of the quantitative and qualitative analysis conclude the following:

**1- The main factors that motivate enrollment:**

- a- urban location .
- b- Higher education.
- c. Younger age.
- d- Awareness about the scheme.
- f- Number of medical visits per month.

**2-The main factors that maintain continuation in the scheme:**

- a- Urban location.
- b- Higher education.
- c- Awareness about the scheme.
- d - Health status of the household.
- e- Number of medical visits per month.
- f- Believing in the prepayment concept

**3- The main factors that result in drop out:**

- a- Rural location.
- b- Bad perceived of quality of services.

c - Perceived premium.

d- Good health status of the household.

**4- The main factors that deter enrollment:**

a- Low educational level.

b- Low awareness level.

c- Good health status of the household.

These findings of the study confirm the hypotheses that state; Perceived high premium lead to dropout of informal households in NHIF scheme and Health status of the family will affect the decision of continuation in NHIF scheme. On the other hand, the study fails to reject the following hypotheses; Perceived quality of health services motivates the enrollment of informal households in NHIF scheme and absence of health facility reduces the enrollment of informal households in NHIF scheme.

**7.2. Recommendation:**

To reform the current situation of the voluntary scheme of NHIF-Kassala state, in term of motivation of enrollment, retention of members in the scheme and reduction of the high rate of drop out, the study suggests the following:

**(i) Motivate enrollment:**

- Increase the level of awareness about the scheme by inducing more awareness campaigns especially in (TV and radio).

- Increase accessibility to health insurance services by reforming the current health map and adding new health facilities especially in rural area.

**(ii) Maintain retention and reduce dropout rate:**

- Improving the quality of services provided, especially the pharmaceutical supply.

- Coordination with Al Zakat Chamber and other sponsors to update the current poor household database and find the efficient method that prevent the selection of households of the informal sector within the social support scheme.

**(iii) Addressing the adverse selection problem:**

To address the adverse selection problem, the study recommends that, NHIF headquarter should seek legislation for implementing compulsory universal coverage or at least to implement a compulsory waiting period before starting the benefit of the scheme.

**7.3. Limitation of the study:**

The limitation of this study can be summarized in the following: the study was focus in Kassala state, so, in order to generalize the outcome; future studies should focus to examine these factors on the national level.

Because it's difficult to determine the weight of each health insurance status from Kassala- NHIF records, the study used the proportional weight of informal sector to determine the sample size in the selected localities. Moreover, the study use the monthly income and the non-medical expenditure to evaluate the financial affordability of the participants, so in the future, studies may need to investigate the participants about their willing to pay the current premium and the preferable mechanism and time for payment.



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## APPENDIX

### APPENDIX A

#### Participant information sheet (English)

#### Household survey of informal sector in Kassala state, Sudan

<b>Thesis title:</b> DETERMINANTS OF INFORMAL SECTOR PARTICIPATION IN THE NATIONAL HEALTH INSURANCE FUND IN KASSALA STATE (EASTERN SUDAN)
By: Mr WAEL AHMED FAKIHAMMED
<b>Function of researcher:</b> I am student in the M.Sc. in Health Economics and Health Care Management Programme. Faculty of Economics. Chulalongkorn University. Bangkok, Thailand
<b>Thesis objective:</b> The aim of this thesis is to identify the main factors that influence the perceptions of the informal households towards the participation in the voluntary scheme of (NHIF) in Kassala state, Sudan
<b>Procedure outlining what the participating in the project involve :</b> Questions will be asked about demographic, socioeconomic and health status of household members. Additional questions will be asked to explore the factors behind the household's current health insurance status (Non-insured, Insured - Regular member, Insured - New member or Drop-out).
<b>Mechanism of participation</b> The target population consists of households in the informal sector who will be represented by the head of households. Participation in this survey is voluntary, so agreement of the head of household is important before conducting the survey.
<b>Risk from participation</b> There is no expected risk from participating in this survey. The collected data will be kept confidential during the research process
<b>Benefit for participant or community</b> The benefit of this study is directed to the informal sector in Kassala state. By identifying the main factors that impact the participation in health insurance, the NHIF will be able to implement the policies that motivate the expansion of health insurance to this sector, which mean easy accessibility to health with continuous financial protection to the insured households.

For further questions, please feel free to contact the researcher (Tele :+249911245988 ,  
Email :dr\_wael88@yahoo.com)

Consent form :

I have been informed and understand the purpose of the study, and I agree to participate as outline

to me Name : ..... Signature : ..... date : .....
---

Data Collector name ..... Date : ..... Questionnaire NO : .....

Locality : .....	City : .....	village : .....
------------------	--------------	-----------------

Are you the head of household?  Yes  No (interviewer: if no, stop)

What is the age of the head of household? .....years.

What is the gender of the head of the household?  Male  Female

What is the highest educational level completed by the head of the household?

Non formal  Primary  Secondary  University or higher

What is the marital status of the head of the household?  Single  Married  Others, specify

What is the occupation of the head of the household?

Merchant  Day labor  Farmer  Others, specify .....

What is the average monthly income of the head of the household ..... SDG

What is the average monthly Income of the household ? .....SDG.

What kind of dwelling do you live in?

hut  mud  brick  others

This dwelling is :

owned by head of household  rented  Others, specify .....

Does household own any of the following? 1 = yes 0 = no

a. Motorcycle [ ] b. Car [ ] c. Another House [ ]

d. land [ ] e. Others specify ..... [ ]

What is your family's size? ..... person/s

No of legal dependents:

Parents ..... person/

Wife ..... person/s

Male below 18ys ..... person/

Unmarried female ..... person/s

What are your average monthly household expenditures?.....SDG

How much does this household on average spend on food per month? .....SDG.

How much does this household on average spend for healthcare per year?.....SDG

Does any member of the household have chronic illnesses?

Yes  No

If yes, specify type of illness by household member

Household member	Relationship to head of household	Type of illness
1		
2		
3		

How often did the household members seek health services per month during the past 3 months?  
..... Times.

What is the type of the nearest health facility?

Basic health care unit:

Operated by :  state MOH,  NHIF,  Others , specify.....

Public health centre:

Operated by :  state MOH,  NHIF,  Others, specify.....

Private clinic

Hospital:

Operated by :  state MOH,  NHIF,  private sector  Others, specify .....

How far is the nearest health facility ?

less than 1 Km  From 1-5 Km  More than 5 Km.

Do you normally go to the nearest health facility?  Yes  No

If no, specify the facility family members normally go to .....

What type of transportation do you normally use to reach the facility in question 18?

On foot  Public transportation  Taxi  Others, specify .....

If public transport, taxi etc.: How much does it cost? ..... SDG

In general, How long did the head of the household wait in the facility before being seen by the provider ?

Less than 30 min    From 30 – 60 min    More than 60 min

During your last visit to the health facility, did the doctor prescribed some medication for you ?     
Yes    No

If yes, how many drugs did you got from the total prescription? .....

Are you satisfied with the services of the nearest facility?    Yes    No

If no, what is the most likely factor of dissatisfaction from the below:

- Bad attitude or behaviours of some of the facility staff.    Long waiting times.  
 Lack of comfortable waiting area.    High cost of drug co- payment.  
 Inadequate staff .    Lack of cleanliness of the facility .  
 Lack of drugs in the pharmacy .    Lack of laboratory investigation .  
 Other , specify .....

Now I would like to test your knowledge about health insurance and the NHIF.

What is the purpose of enrolling in NHI?.....

How can you enrol in NHI? .....

For how many months do you have to pay the premium upfront when enrolling.....

How high is the NHI premium? .....

What benefits do you get? Your family?.....

How high is the co-payment for drugs ?.....

Why do you agree to pay a monthly amount of money although you may not be sick all the time ?

Has the head of household ever had NHIF health insurance?    Yes    No   (interviewer: if yes, go to questions 29-35; if no, go to questions 36-37).

Do you or any dependent members of your household have a social support card (Alzokat fund)?

Yes    No

If yes, number of dependent family member with a social support card ..... person/s

Questions from 29 to 35 : if the household has been or is insured (health insurance status: Insured-regular member, Insured-new member and drop- out)

Why did you choose to enrol? (interviewer: inquire about the most important factor and tick only one box)

- High medical spending per year    At least one household member has a chronic illness  
 Insurance offers a good medical package    Large household size  
 Many dependents.    I believe in the concept of health insurance

- My friends recommended the NHIF                       Respected elders in this community recommended the NHIF  
 Others, specify .....

What was the date of first enrolment in the NHIF? Month ..... / Year .....

How long did it take to get your NHIF health insurance card? ..... Months.

Did you pay the premium for the first 3 months upfront upon enrolment?  Yes  No

How do you pay the monthly premiums (i.e. after the first 3 months)?

- Directly to NHIF officers       Through agent

Do you pay the premium regularly?  Yes  No

If the answer of question 34 is no, when was the last time you paid the premium? Month ... / Year..

35- What is the main factor that deters you from renewing your subscription? (interviewer: inquire about the most important factor and tick only one box)

- |  |   |
|--|---|
| <input type="checkbox"/> Financial hardship                  | <input type="checkbox"/> I didn't get sick                        |
| <input type="checkbox"/> None of my family members were sick | <input type="checkbox"/> Health facility is far from my residence |
| <input type="checkbox"/> Medical package is not enough.      | <input type="checkbox"/> Quality of services is bad.              |
| <input type="checkbox"/> The co-pay for drugs is too high    | <input type="checkbox"/> I don't trust the NHIF scheme            |
| <input type="checkbox"/> Others, specify .....               |   |

Questions 36 to 37 for non-insured households:

Why have you not enrolled in the NHIF? (interviewer: inquire about the most important factor and tick only one box)

- |   |   |
|---|---|
| <input type="checkbox"/> I do not know how high the premium is (interviewer follow-up: if the current annual premium was 360 SDG, would you like to participate? <input type="checkbox"/> Yes <input type="checkbox"/> No). |   |
| <input type="checkbox"/> I cannot afford to pay the premium for three months upfront when enrolling   | <input type="checkbox"/> I don't know how to enroll.              |
| <input type="checkbox"/> I am healthy   | <input type="checkbox"/> Health facility is far from my residence |
| <input type="checkbox"/> My family members are healthy  | <input type="checkbox"/> Medical package is not enough            |
| <input type="checkbox"/> The co-pay for drugs is too high   | <input type="checkbox"/> I have not heard about the scheme        |
| <input type="checkbox"/> Financial hardship   | <input type="checkbox"/> No nearby health insurance service       |
| <input type="checkbox"/> I cannot afford to pay the premium   | <input type="checkbox"/> Others, specify .....                    |
| <input type="checkbox"/> I don't like to enrol.   |   |

Are there any factors that could induce you to participate in NHIF?

- No.                       Yes, specify .....

Thank you for participating in this survey.

APPENDIX B

**Participant information sheet (Arabic)**

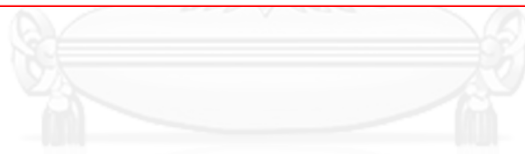


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CHULALONGKORN UNIVERSITY





- 16 ما هو متوسط الالتحاق الشهري على الرحلية الصحية لبدء الأسرة؟ ..... جنيه سوداني
- 17 ما هو متوسط التردد الشهري لفراد الأسرة على المرافق الصحية خلال الثلاثة اشهر الماضيه؟ ..... مرة
- 18 ما نوع مرافق صحي لتسرة؟ اسم المركز .....  
 وحدة رحليه صحيه تتبع ل :  وزارة الصحة الولايه  التأمين الصحي  اخرى حدد .....  
 مرافق صحي حكومي يتبع ل :  وزارة الصحة الولايه  التأمين الصحي  اخرى حدد .....  
 عيادة خاصه   
 مستشفى يتبع ل :  وزارة الصحة الولايه  التأمين الصحي  اخرى حدد .....
- 19 كم يبعد هذا المرافق الصحي عن سكن الأسرة؟  اقل من 1 كلم  بين 1-5 كلم  اكثر من 5 كلم
- 20 هل تتردد عادة على المرافق المذكور في السؤال 18 نعم  لا
- اذا كنت الاجابه لا ، حدد نوع المرافق الذي تتردد عليه العائله .....
- 21 ما نوع المواصلات التي تستخدمها للوصول الى المرافق الصحي  بالاجهاد  مواصلات عامه  تاكسي  اخرى حدد .....
- 22 في حالة المواصلات العامه او التاكسي ، كم تبلغ تكلفه الترحيل الى المرافق الصحي ..... جنيه سوداني
- 23 في العاده ، وبعد الوصول للمرافق الصحي ، كم من الزمن تستغرق في الانتظار قبل مقبله الطبيب المعالج؟  
 اقل من 30 دقيقه  من 30 الى 60 دقيقه  اكثر من ساعه
- 24 خلال زيارتك الاخيره للمرافق ، هل قام الطبيب بكتابه روثته دوائيه  نعم  لا
- في حالة نعم ، كم عدد الادوية المكتوبه ..... كم عدد الادوية التي وجنتها في صيدلية المركز .....
- 25 هل انت راضى عن شكل الخدمة المقدمه عبر مرافق صحي؟ نعم  لا
- في حالة لا : ما هو اكثر سبب لعدم رضائك ضمن الاسباب التاليه ( اختر سببا واحدا من المذكوره اثناء ) :  
 التعامل الغير جيد من الكادر الطبي بالمركز  الانتظار الطويل لتلقي الخدمة   
 عدم وجود مكان انتظار مريح  عدم الاهتمام بنظفه المرافق   
 عدم توفر كادر طبي متكامل  عدم توفر الدواء بالصيدليه   
 عدم توفر الخدمة المعجله  ارتفاع تكلفه ريع فيهه الدواء   
 اخرى حدد .....
- 26 الان اود ان اختير معرفتك بنظام ونوايح التأمين الصحي :  
 ما هو الهاتف من الدخول تحت مظله التأمين الصحي  
 كيف يمكنك الإلتزام تحت مظله التأمين الصحي  
 ما هو الحد الانسي من الشهور التي يجب دفع قيمتها مقدم اشراك للتأمين الصحي؟  
 ما هي الخدمات العلاجيه المجانيه المقدمه عبر التأمين الصحي؟  
 كم يبلغ المؤمن عليه من اجمالي فيهه الروثته الدوائيه؟  
 لماذا ولماذا على دفع رسوم الاشراك الشهري رغم عدم جودك او افراد اسرتك للخدمة الطبيه طوال الوقت؟  
 انا حظي الرعيه في دفع فسط شهري من المال للتأمين الصحي مع قناعتى ان ذلك من هم اكثر مرضا مني واكثر استهلاكا للخدمة الطبيه  نعم  لا



- 27 هل يمتلك رب الأسرة بطاقة الصندوق القومي للتأمين الصحي  نعم  لا  
 28 هل تمتلك أو أي فرد من الأسرة بطاقة دعم اجتماعي (الزكاة أو المالية الإتحادية)  نعم  لا  
 في حالة نعم ، كم عدد الأفراد الذين يمتلكون هذه البطاقات ..... شخص .

**الإسئلة من 29 إلى 35 لرب الأسرة المقيم له ( منتظم ، متساقط او دخول جديد ) :**

- 29 لماذا فمت بالدخول في التأمين الصحي :  
 التكلفة العالية للخدمة الطبية  
 يقدم التأمين الصحي خدمات جيدة  
 لدي عدد كبير من القصر  
 تم إخباري عن التأمين الصحي بواسطة أحد الإصفاء  
 تم إخباري عن التأمين الصحي بواسطة أحد الشخصيات التي أثق بها  
 أخرى حدد ..... السنة  
 30 ما هو تاريخ اشتراكك في التأمين الصحي ؟ الشهر ..... السنة .....  
 31 كم استغرقت من الزمن للحصول على بطاقة تأمين صحي ؟ ..... شهر  
 32 هل فمت بنفع رسوم الإشتراك المبدئي (3 شهور مقدما) عند الدخول  نعم  لا  
 33 كيف تقوم بنفع اشتراكك للتأمين الصحي ؟  مباترة إلى موظف التأمين الصحي  عبر مندوب  
 34 هل تقوم بنفع الإشتراك بانتظام ؟  نعم  لا  
 إذا كنت الإجابة لا :  
 ما هي آخر مرة فمت فيها بنفع اشتراكك للتأمين الصحي ؟ الشهر ..... السنة .....  
 35 ماهي أهم الأسباب التي منعك من من تجديد اشتراكك للتأمين الصحي ( اختر سببا واحدا من المذكورة انحاء ) :  
 اعاني من ضلقة مالية  
 كل أفراد الأسرة سليمين وغير مرضى  
 المرافق الصحي بعيد عن السكن  
 الخدمات المقدمة غير كافية  
 ارتفاع تكلفة ربيع القيمة في الروثته الدوائيه  
 أخرى حدد .....  
 لا توجد خدمة تأمين صحي قرب السكن  
 فقط لا أود الإلتزام للتأمين الصحي  
 الخدمات المقدمة غير جيدة  
 لا أثق في نظام التأمين الصحي

**الإسئلة من 36 إلى 37 لرب الأسرة غير المقيم له**

- 36 لماذا لم تتربط في التأمين الصحي ( اختر سببا واحدا من المذكورة انحاء ) :  
 اعاني من ضلقة مالية  
 لم أسمع عن التأمين الصحي من قبل .  
 لا اعرف كيف انضم إلى التأمين الصحي  
 لا اعرف قيمة الإشتراك الشهري للتأمين الصحي ، إذا عرفت أن قيمة الإشتراك السنوي في التأمين الصحي هي 450 جنيه سوداتي هل ترغب في الإشتراك  نعم  لا  
 كل أفراد الأسرة سليمين وغير مرضى  
 المرافق الصحي بعيد عن السكن  
 الخدمات المقدمة غير كافية  
 قيمة الإشتراك الشهري عالية جدا  
 لا توجد خدمة تأمين صحي قرب السكن  
 فقط لا أود الإلتزام للتأمين الصحي  
 الخدمات المقدمة غير جيدة  
 لا أثق في نظام التأمين الصحي  
 37 هل هناك أي أسباب يمكن أن تدفعك إلى الإشتراك في التأمين الصحي  
 لا  نعم ، حدد .....  
 .....

**شكرا جزيلا على مشاركتك في هذا الاستبيان**

	HI status	(urban/rural)	Age	Gender	Educate-n	Marital st~s	Income	Legal dep	visits
HI status	1								
(urban/rural)	-0.1334	1							
Age	-0.0328	-0.0637	1						
Gender	0.006	0.0093	0.2688	1					
Education	-0.1125	0.1117	-0.1178	-0.0118	1				
Marital status	-0.0144	-0.0487	0.2857	0.3446	-0.0172	1			
Income	-0.1401	0.0132	0.0342	0.044	0.0909	0.0514	1		
Legal dependents	-0.0751	-0.0108	0.2345	0.1633	-0.0921	0.2434	0.1508	1	
Visits	-0.1862	0.0569	0.207	0.143	-0.0711	0.1469	0.1824	0.6245	1
Health status	-0.1986	0.0709	0.1352	-0.014	0.0316	-0.0299	0.075	0.0363	0.1308
Facility type	0.0048	-0.1341	0.0439	0.0333	0.0722	0.1126	0.0502	-0.0154	-0.0106
Distance	0.1165	0.0882	0.028	0.0191	0.1788	-0.0428	0.0004	-0.0558	-0.0945
satisfact~1	-0.0551	-0.0042	0.038	-0.0485	0.0136	-0.0245	0.0456	-0.0959	-0.0623
Average aware	0.1863	0.0712	-0.0113	-0.0093	-0.0447	-0.0165	-0.1328	-0.0728	-0.1111
Perfect aware	-0.3234	-0.0543	0.0423	-0.0301	0.0839	0.0269	0.0915	0.0417	0.0857
Prepayment	-0.2308	0.0211	0.0704	-0.0105	0.0417	-0.0196	0.0073	-0.0095	-0.0285
Social supp~d	0.4129	-0.1349	0.0446	-0.0408	-0.1516	-0.0679	-0.0764	-0.0402	-0.1086
Payment	0.0782	-0.0036	0.0591	0.0983	-0.0086	0.0404	-0.0663	-0.0304	-0.0322
Premium	0.3526	-0.0242	0.0491	0.0432	-0.0399	0.0251	-0.0679	-0.0295	-0.1055
Day labor	0.1084	0.0087	-0.0635	-0.0511	-0.0539	-0.0138	-0.267	-0.0265	-0.0187
	Health status	facili~e	Distance	satisf~1	Aver aware	Perfect awar	prepay~t	Social ~d	Payment
Health status	1								
Facility type	0.0403	1							
Distance	0.0402	0.0427	1						
Perceived quality	-0.0561	0.0253	0.0305	1					
Average aware	0.0119	-0.0806	-0.0533	-0.0538	1				
Perfect aware	0.0682	0.1481	0.077	0.0968	-0.7999	1			
Prepayment	0.1374	0.0991	0.0304	0.0474	-0.0301	0.3976	1		
Social supp~d	-0.0684	0.0543	-0.0342	0.0742	0.1378	-0.1424	-0.029	1	
Payment	-0.0612	-0.1125	0.1505	-0.0021	0.0442	-0.0654	-0.1194	-0.0519	1
Premium	-0.0876	-0.0235	0.105	0.0568	0.0517	-0.0713	-0.0857	-0.097	0.0257
Day labor	-0.0846	-0.08	-0.0681	0.0254	0.0289	-0.1097	-0.1081	0.0122	-0.0583
	Premium	Day labor							
Premium	1								
Day labor	-0.0024	1							

## APPENDIX D

**Result of multinomial logistic regression:****(I)(Full sample set (never insured, regular, new enrollee and drop out**

Iteration 0: log likelihood = -1086.8548

Iteration 1: log likelihood = -856.00106

Iteration 2: log likelihood = -837.50335

Iteration 3: log likelihood = -835.04078

Iteration 4: log likelihood = -835.03544

Iteration 5: log likelihood = -835.03544

Number of obs = 784

Prob > chi2 = 0.0000 LR chi2(51) = 503.64

Log likelihood = -835.03544 Pseudo R2 = 0.2317

### Never insured is base outcome

Regular group	Coef	S.error	Z	p	95% Conf. Interval	
(urban/rural)	0.604889	0.3296374	1.84	0.067	-0.04119	1.250966
Age	0.004169	0.0141069	0.3	0.768	-0.02348	0.031818
Gender	-1.21267	0.4986648	-2.43	0.015	-2.19003	-0.2353
Education	0.94947	0.2897349	3.28	0.001	0.3816	1.51734
Marital status	0.742565	0.4970841	1.49	0.135	-0.2317	1.716832
Income	0.000337	0.0002089	1.61	0.107	-7.3E-05	0.000746
legal dependent	-0.06395	0.0719437	-0.89	0.374	-0.20496	0.077058
Visits	0.493874	0.1905446	2.59	0.01	0.120414	0.867335
health status	0.746458	0.2898763	2.58	0.01	0.178311	1.314605
Facility type	0.058936	0.2968726	0.2	0.843	-0.52292	0.640796
Distance	-1.11325	0.3940707	-2.83	0.005	-1.88562	-0.34089
Satisfaction	-0.47128	0.2811527	-1.68	0.094	-1.02233	0.079766
average awareness	2.642598	0.6260818	4.22	0	1.4155	3.869695
perfect awareness	4.477732	0.6361313	7.04	0	3.230938	5.724527
Prepayment	1.385755	0.6223716	2.23	0.026	0.165929	2.605581
day labor	-0.41495	0.2863713	-1.45	0.147	-0.97623	0.146328
Premium	-0.33416	0.3065339	-1.09	0.276	-0.93495	0.266639
_cons	-4.63212	1.11127	-4.17	0	-6.81017	-2.45407

### (2) New enrollee: Full sample model (never insured base outcome)

	Coef	S. error	z	p	95% Conf. Interval	
(urban/rural)	0.265016	0.3149272	0.84	0.4	-0.35223	0.882262
Age	-0.0354	0.0136422	-2.59	0.009	-0.06214	-0.00866
Gender	-1.34164	0.4701776	-2.85	0.004	-2.26317	-0.42011
Education	0.965169	0.2744363	3.52	0.000	0.427284	1.503054
Marital status	0.809355	0.4621299	1.75	0.08	-0.0964	1.715112
Income	0.000151	0.0002081	0.72	0.469	-0.00026	0.000559
legal dependent	-0.07707	0.0723624	-1.07	0.287	-0.2189	0.064754

visits	0.635897	0.1865968	3.41	0.001	0.270175	1.00162
health status	0.448787	0.2809346	1.6	0.11	-0.10183	0.999409
Facility type	0.058515	0.280944	0.21	0.835	-0.49213	0.609155
Distance	0.141185	0.4135178	0.34	0.733	-0.6693	0.951665
satisfaction	-0.16929	0.2715424	-0.62	0.533	-0.70151	0.362921
average awareness	2.198315	0.4364795	5.04	0.000	1.342831	3.053799
perfect awareness	3.30151	0.4642696	7.11	0.000	2.391558	4.211462
prepayment	0.851639	0.4214259	2.02	0.043	0.025659	1.677618
day labor	-0.33671	0.2761449	-1.22	0.223	-0.87794	0.204525
premium	-0.64684	0.2932644	-2.21	0.027	-1.22163	-0.07205
_cons	-2.06162	0.9331575	-2.21	0.027	-3.89058	-0.23266

**(3) Drop out: Full sample model ( never insured is base outcome)**

	Coef	S. error	z	p	95% Conf. Interval	
(urban/rural)	-0.36841	0.2711848	-1.36	0.174	-0.89993	0.163099
Age	0.007532	0.0119213	0.63	0.528	-0.01583	0.030897
Gender	-1.03728	0.4473196	-2.32	0.02	-1.91401	-0.16055
Education	0.339929	0.2597304	1.31	0.191	-0.16913	0.848991
Marital status	0.627986	0.4313499	1.46	0.145	-0.21744	1.473416
Income	0.000247	0.0001873	1.32	0.187	-0.00012	0.000614
legal dependent	-0.01527	0.0693583	-0.22	0.826	-0.15121	0.120673
visits	-0.08513	0.179088	-0.48	0.635	-0.43614	0.265872
health status	-0.08572	0.2709166	-0.32	0.752	-0.61671	0.445268
Facility type	0.37171	0.2554319	1.46	0.146	-0.12893	0.872347
Distance	0.341349	0.3649893	0.94	0.35	-0.37402	1.056715
satisfaction	-0.75571	0.24436	-3.09	0.002	-1.23465	-0.27677
average awareness	1.384298	0.3350896	4.13	0.00	0.727534	2.041061
perfect awareness	1.685445	0.374062	4.51	0.00	0.952297	2.418593
prepayment	0.656656	0.3326036	1.97	0.048	0.004765	1.308547
day labor	-0.06973	0.258225	-0.27	0.787	-0.57584	0.436385
premium	-0.63869	0.2685971	-2.38	0.017	-1.16513	-0.11225
_cons	-0.83037	0.8321989	-1	0.318	-2.46145	0.800713

**(II) Sub sample set: (regular, new enrollee and drop out):**

Iteration 0: log likelihood = -645.98403

Iteration 1: log likelihood = -545.94773

Iteration 2: log likelihood = -542.61805

Iteration 3: log likelihood = -542.57269

Iteration 4: log likelihood = -542.57268

Number of obs = 588

Prob > chi2 = 0.0000

LR chi2(36) = 206.82

Log likelihood = -542.57268

Pseudo R2 = 0.1601

### 1- New enrollee : ( regular is base outcome) subsample model

	Coef	S. error	Z	p	95% Conf. Interval	
(urban/rural)	-0.27672	0.279687	-0.99	0.322	-0.8249	0.271458
Age	-0.04006	0.012137	-3.3	0.001	-0.06384	-0.01627
Gender	-0.19364	0.327161	-0.59	0.554	-0.83486	0.447584
Education	-0.00399	0.223773	-0.02	0.986	-0.44258	0.434595
Marital status	-0.00188	0.406621	0.000	0.996	-0.79884	0.795083
Income2	-0.00022	0.000163	-1.35	0.177	-0.00054	0.000099
Legal dependent	-0.00469	0.053632	-0.09	0.93	-0.10981	0.100424
Visits	0.134273	0.134721	1.000	0.319	-0.12978	0.398322
Health status	-0.27636	0.219197	-1.26	0.207	-0.70597	0.153261
Facility type	0.101313	0.255186	0.4	0.691	-0.39884	0.601468
Distance	1.175474	0.366063	3.21	0.001	0.458004	1.892945
Satisfaction	0.316456	0.223985	1.41	0.158	-0.12255	0.755458
Average awareness	-0.42751	0.696185	-0.61	0.539	-1.79201	0.936984
Perfect awareness	-1.12156	0.687802	-1.63	0.103	-2.46963	0.226503
Prepayment	-0.43033	0.672678	-0.64	0.522	-1.74876	0.888093
Payment	0.433342	0.23812	1.82	0.069	-0.03336	0.900048
Day labor	0.115672	0.226	0.51	0.609	-0.32728	0.558623
Premium	-0.18464	0.25304	-0.73	0.466	-0.68059	0.311313
_cons	2.26973	1.027921	2.21	0.027	0.255042	4.284417

### 2- Drop out : ( regular is base outcome): subsample model

	Coef	S. error	z	p	95% Conf. Interval	
(urban/rural)	-0.94578	0.28223	-3.35	0.001	-1.49894	-0.39262
Age	0.008262	0.012937	0.64	0.523	-0.01709	0.033618
Gender	0.038325	0.384193	0.1	0.921	-0.71468	0.791329
Education	-0.63931	0.244724	-2.61	0.009	-1.11896	-0.15966
Marital status	-0.17218	0.462997	-0.37	0.71	-1.07964	0.735276
Income2	-0.00016	0.000194	-0.81	0.419	-0.00054	0.000223
Legal dependent	0.044527	0.062888	0.71	0.479	-0.07873	0.167786
Visits	-0.61781	0.171274	-3.61	0.000	-0.9535	-0.28212
Health status	-0.87097	0.249905	-3.49	0.000	-1.36078	-0.38117
Facility type	0.416243	0.286767	1.45	0.147	-0.14581	0.978296
Distance	1.438525	0.393036	3.66	0.000	0.668189	2.208861
Satisfaction	-0.27495	0.241564	-1.14	0.255	-0.74841	0.198503
Average awareness	-1.15892	0.661949	-1.75	0.08	-2.45632	0.138476

Perfect awareness	-2.66702	0.658621	-4.05	0.000	-3.95789	-1.37614
prepayment	-0.94606	0.648422	-1.46	0.145	-2.21694	0.324823
Payment	0.057558	0.260093	0.22	0.825	-0.45221	0.56733
Day labor	0.284754	0.249702	1.14	0.254	-0.20465	0.774161
Premium	-0.38523	0.276326	-1.39	0.163	-0.92682	0.156363
_cons	4.017923	1.068458	3.76	0.000	1.923783	6.112063

## APPENDIX E

Transcript of in depth interviews:

### 1- Executive manager of NHIF- Kassala state:

The executive manager of NHIF in Kassala state said that, they exert all their effort to expand the coverage in the informal sector, but the response is usually low or under their expectation.

According to his experience, there are two main factors that influence the mechanism of enrollment. These factors are the awareness of members about the benefit of the scheme and the perceived quality of NHIF services especially the services that provided by the direct health centres.

*We get many new members from these continuous awareness campaigns and many households appreciate our benefit package.*

The rate of enrollment usually increase following any Awareness campaign especially that used local slangs in Television and radio .Moreover , many families find that NHIF scheme is providing good services when compared to other options .

Concerning continuation in the scheme, the executive manager of the NHIF- Kassala scheme, remarks that some of the members renew their subscription because they believe in the concept of health insurance and they have good perception about the provided services. But, on the other hand, he mentioned that high rate of regular members have a history of chronic or debilitating disease, which mean they need to continuous medical supervision.

For the dropout problem, he believes that it is a serious problem that threatens the sustainability of the scheme. He said that although some people complain from the current premium but still the recent actuarial study shows that the minimum premium should be 48 SDG which is higher than the current premium (40 SDG), so no way to reduce it more. The manager also mentioned that, drop out is common among rural members because they are less aware about the scheme and they have a less good perception about the provided services when compared to the urban members.

On the other hand, the main factor behind remaining uninsured – according to the executive manager – is that most of these households have low socioeconomic status, so they can face financial hardship at any time. Furthermore, the manager of NHIF said that, some households in the informal sector find their way to enrol in the in the free social support scheme.

*Although this scheme was designed for poor only, but still many households from informal sector joined and received benefits from it.*

This problem reduce the rate of enrollment, because most of the families now waiting to have a chance and enrol in this scheme.

## **2- Manager of population coverage and customer services:**

On the other hand, the manager of population coverage and customer services in NHIF – Kassala state refer the new enrollment in the scheme to the high medical spending, since many people need to pay times the amount of the premium if they remain un insured. Another cause that he mentioned is the health status of the enrollee:

*Most of the new enrollee are either chronically ill or they need urgent expensive surgical intervention.*

He mentioned that, the voluntary nature of the scheme facilitate the enrollment of those more ill members.

Concerning continuation in the scheme, the manager of population coverage, mentioned that, the reasons for continuation in the scheme are similar to the reason for enrollment (high medical spending and the bad health status).

For dropout, he said that, most of the members face financial hardship that prevent them from continuation in the scheme. This is related to the nature of their irregular and low earning jobs. Moreover, many members are not serious to pay the premium:



*Some members remember their insurance card subscription when they are in need of services*

The result of this is that, the net amount of payment will accumulate and the member became unable to pay to NHIF.

Regarding the high rate of never insured members in the sector, the manager of population coverage declared that, there are two main reasons: the financial hardship that characterize many households, in addition to the bad perceived about NHIF services.

### **3- Representative of state ministry of health –Kassala state:**

The study made an in depth interview with a manager from the SMOH, to reflect his opinion about the participation in the voluntary scheme of NHIF-Kassala state.

For the new enrollee, he said that, the informal sector is the greatest sector in the state, so most of the households like to enrol to benefit from the insurance services in this scheme.

Concerning continuation, he declared that, this is an ultimate expectation:

*This is the normal and expected behaviour of the majority of well oriented participants and families, since the longer retention under the insurance is the maximum expected benefit.*

So, according to his point of view, education plays an important role in the mechanism of continuation in the scheme.

Dropout – in the opinion of SMOH representative - is usually expected when the member feel that, the program is no longer useful or he did not benefit from it during his membership. This perceived about the provided services is always associated with their personal experience (waiting time, quality of drug, etc.).

The representative of SMOH, have no certain reasons for the high uninsured member in the sector, but he went on saying; I believe the proportion of peoples who are coming under the informal sector is greater than the formal one. So the voluntary or informal scheme is the only way for them to get the insurance service.

### **4- Community leader (urban area):**

To complete the picture, the study interviewed one community leader from the urban area to explore his opinion about the factors that affect the decision of participation in the voluntary scheme of NHIF.

Concerning enrollment in the scheme, he said that, people like to enrol because of the high medical spending. The new enrollee usually is more educated and knows more about the scheme.

Regarding retention in the scheme, the community leader mentioned that, people retain because they feel they are protected by the scheme:

*When someone referred to Khartoum (Capital of Sudan) for sophisticated investigation that may cost thousands SDG, and because he/her has health insurance card, they don't need to pay anything a part of 25% of drug cost.*

This situation makes the member happy and like to retain .Moreover, he may ask other member to enrol and benefit from the scheme.

For dropout, the leader said that, many people like to continue, but some of them can't afford to pay the premium regularly. Moreover, the payment through agents in some situation, may increase the rate of dropout .This is either because people not trust the agent or the agent is not available all the time.

People not enrol because they face financial hardship. He continues saying that, the health status is not a determinant for enrollment and if people are afford them will enrol immediately in the scheme.

**Community leader (rural area):**

On the other hand, one community leader from the rural area was interviewed to reflect his point of view.

The leader start with that, health insurance provider better service, people appreciates the medical package that protects their families from the risk of high medical spending.

For the factors that lead to retention in the scheme, the leader mentioned that, most of people trust the scheme and have good perceived about the provided services.

When we asked the leader about why people drop out, he said that, this happened with people who are far from the health services .Member UN likely to continue if he didn't find nearby services. Also he mentioned that, because most of these household are farmers, they may face some financial hardship that prevent them from renewing their subscription in the scheme.

Awareness is the main reason that influences the decision of the uninsured families. Many household in the rural area either not heard about the scheme or have poor awareness about the process of participation.

*I met many people who like to enrol but they don't know how to do that*

He continued saying, the NHIF administrator should direct their effort more to the rural area to increase the level of awareness among the households.

VITA



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