CAPITATION PAYMENT METHOD AS A POLICY TOOL VERSUS FEE FOR SERVICES FOR THE FINANCIAL SUSTAINABILITY OF THE NATIONAL HEALTH INSURANCE IN SUDAN: ALGADARIF CASE STUDY

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A Thesis Submitted in Partial Fulfillment of the Requirements
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การเปรียบเทียบวิธีการจ่ายแบบรายหัวกับการจ่ายแบบค่าธรรมเนียมเพื่อความยั่งยืนทางการเงินของระบบประกันสุขภาพแห่งชาติของซูดาน: กรณีศึกษารัฐอัลกาดาริฟ

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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต
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Thesis Title	CAPITATION PAYMENT METHOD AS A POLICY TOOL VERSUS FEE FOR SERVICES FOR FINANCIAL SUSTAINABILITY OF THE NATIONAL HEALTH INSURANCE IN SUDAN: ALGADARIF CASE STUDY
By	Mr. Ammar Mohammed Abdalla Alasha.
Field of Study	Health Economics and Health Care Management.
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อัมมาร์ โมฮัมเหม็ด อับดัลลา อลาชา: การเปรียบเทียบวิธีการจ่ายแบบรายหัวกับการจ่ายแบบค่าธรรมเนียมเพื่อความยั่งยืนทางการเงินของระบบประกันสุขภาพแห่งชาติของซูดาน: กรณีศึกษารัฐอัลกาดาริฟ. (CAPITATION PAYMENT METHOD AS A POLICY TOOL, VERSUS FEE FOR SERVICES, FOR FINANCIAL SUSTAINABILITY OF THE NATIONAL HEALTH INSURANCE IN SUDAN: ALGADARIF STATE CASE STYDY) อ. ที่ปรึกษาวิทยานิพนธ์หลัก: รศ.ดร. ศิริเพ็ญ ศุภกาญจนกันติ., อ. ที่ปรึกษาวิทยานิพนธ์ร่วม: รศ.ดร.นพ. จิรุตต์ ศรีรัตนบัลล์, 109 หน้า.

หลักการเปลี่ยนวิธีการชำระเงินจากการจ่ายแบบค่าธรรมเนียมมาเป็นการจ่ายแบบรายหัวของกองทุนประกันสุขภาพแห่งชาติรัฐอัลกาดาริฟเป็นขั้นตอนที่มีความสำคัญในการดำเนินการต่อไปเพื่อหลีกเลี่ยงปัญหาความไม่ยั่งยืนทางการเงินของกองทุนอันเนื่องมาจากวิธีการจ่ายเงินแบบค่าธรรมเนียม

วัตถุประสงค์ของการศึกษานี้คือการวิเคราะห์กระแสเงินสดและฐานะทางการเงินของระบบประกันสุขภาพแห่งชาติในรัฐอัลกาดาริฟ ในช่วงห้าปีที่ผ่านมา (2551-2555) และเพื่อประเมินสถานะความยั่งยืนทางการเงินในช่วงปี 2556-2560ในกรณีที่เปลี่ยนแปลงระบบการจ่ายเงินแบบค่าธรรมเนียมที่ใช้อยู่เดิมมาเป็นการจ่ายแบบรายหัว การศึกษานี้พยายามที่จะคำนวณอัตราต่อหัวโดยใช้วิธีการจัดสรรจากบนลงล่างจากนั้นจึงทำการสำรวจความยั่งยืนทางการเงินในสามสถานการณ์ที่แตกต่างกัน; ในสถานการณ์ (A) นั้นรายได้รวมเพิ่มขึ้นตามแนวโน้มในอดีตและค่าใช้จ่ายด้านสุขภาพรวมภายใต้ระบบการจ่ายแบบค่าธรรมเนียมกับผู้ป่วยนอกที่เกิดขึ้นจริง โดยค่าใช้จ่ายผู้ให้บริการให้ปรับตามอัตราเงินเฟ้อคาดการณ์ 30%, 35% และ 40%ส่วนในสถานการณ์ (B) นั้นเป็นเช่นเดียวกับสถานการณ์ (A) แต่ผู้ป่วยนอกจ่ายภายใต้วิธีการจ่ายแบบรายหัว โดยปรับอัตราเงินเฟ้อเดียวกัน และในสถานการณ์ (C) เช่นเดียวกับสถานการณ์ (B) แต่รายได้เพิ่มขึ้น 2% ในแต่ละปีที่จะมาถึง (2556-2560) อ้างอิงจากสถานการณ์ของระบบประกันสุขภาพแห่งชาติโดยปรับค่าตัวแปรต่างๆ ตามอัตราเงินเฟ้อ ทั้งนี้จะใช้การปรับค่าด้วยอัตราการใช้บริการกับทุกสถานการณ์จำลองในการศึกษา

วิธีการที่ใช้ในการศึกษานี้ จะใช้การวิเคราะห์กระแสเงินสด วิธีการวิเคราะห์แนวโน้ม วิธีอัตราการเจริญเติบโตและวิธีการคำนวณอัตรารายหัว ซึ่งข้อมูลที่ใช้สำหรับการวิเคราะห์ มีดังนี้คือ รายได้รวม ค่าใช้จ่ายทั้งหมดและการคำนวณอัตรารายหัวได้ทำการรวบรวมมาจากบันทึกทางการเงินและรายงาน ของระบบประกันสุขภาพแห่งชาติ – รัฐอัลกาดาริฟ ในช่วงปี 2551-2555 และข้อมูลที่แท้จริงของผู้ป่วยนอกได้รับข้อมูลจากผู้ให้บริการในปี 2555

ผลการวิจัยแสดงให้เห็นว่าช่องว่างทางการเงินสำหรับปี 2551-2555 นั้น เป็นลบ ยกเว้นในปี 2551 และ 2552 ดังนั้นระดับช่องว่างทางการเงินที่คาดการณ์จะติดลบในสถานการณ์สมมติทั้งสามสถานการณ์ ซึ่งหากระบบการจ่ายเงินของกองทุนประกันสุขภาพแห่งชาติยังคงใช้ระบบการจ่ายเงินแบบค่าธรรมเนียมกับผู้ป่วยนอกต่อไป จะเกิดภาระทางการเงินสูงขึ้น โดยเฉพาะในกรณีที่อัตราเงินเฟ้อและอัตราการใช้บริการอยู่ในระดับสูง แต่ผู้ให้บริการจะได้รับกำไรที่สูงขึ้น แต่หากใช้ระบบการจ่ายเงินต่อหัว กองทุนประกันสุขภาพแห่งชาติจะสามารถลดค่าใช้จ่ายลงได้ถึง 14 เปอร์เซ็นต์ในระหว่างช่วงปี 2556 – 2560 แต่ผู้ให้บริการจะขาดทุนมากขึ้น โดยเฉพาะในกรณีอัตราเงินเฟ้อและอัตราการใช้บริการสูง ดังนั้นอาจเกิดการเปลี่ยนแปลงพฤติกรรมของผู้ให้บริการได้เพื่อชดเชยผลกระทบดังกล่าว สำหรับในแง่ของความยั่งยืนทางการเงินนั้น การดำเนินนโยบายควรเพิ่มรายรับให้มากขึ้นจากภาคส่วนที่มิใช่ของรัฐบาล เช่น ผ่านการใช้การเพิ่มความครอบคลุมการลงทุนที่เกี่ยวข้องและเพิ่มอัตราการอุดหนุน ในระหว่างช่วงปี 2556 – 2560 ที่ทำการศึกษา

สาขาวิชา เศรษฐศาสตร์สาธารณสุขและการจัดการบริการสุขภาพ ลายมือชื่อนิสิต... .....

ปีการศึกษา 2555 ลายมือชื่อ อ. ที่ปรึกษาวิทยานิพนธ์หลัก .....

ลายมือชื่อ อ. ที่ปรึกษาวิทยานิพนธ์ร่วม.....

5585702829: MAJOR HEALTH ECONOMICS AND HEALTH CARE MANAGMENT
KEYWORDS: CAPITATION/FEE FOR SERVICES/FINANCIAL SUSTAINABILITY SUDAN NATIONAL HEALTH INSURANCE/ ALGADARIF

AMMAR MOHAMMED ABDALLA ALASHA: CAPITATION PAYMENT METHOD AS A POLICY TOOL VERSUS FEE FOR SERVICES FOR FINANCIAL SUSTAINABILITY OF THE NATIONAL HEALTH INSURANCE IN SUDAN: ALGADARIF CASE STUDY THESIS ADVISOR: ASSOC. PROF. SIRIPEN SUPAKANKUNTI, Ph.D. THESIS CO-ADVISOR: ASSOC. PROF. JIRUTH SRIRATANABAN, M.D., Ph.D., 110 pp.

Moving away from Fee-For-Services payment method in the National Health Insurance fund- Algadarif State to capitation, is an important step towards averting the financial sustainability problem of the scheme associated with such payment

The objectives of this study are to analyze the cash flow and the financial status of the National Health Insurance –Algadarif State during the last five years (2008-2012) and to evaluate the financial status during the years 2013-2017 if the Fee for Services payment method changes into capitation payment method. The study tries to calculate the per capita rate by using top-down allocation method and then investigates the financial sustainability in three different scenarios; Scenario (A) Total revenues increase according to the trend in the past and the total health expenditures under FFS with the actual outpatient provider's expenditures adjusted to the expected inflation rate 30%, 35% and 40%. Scenario (B) the same as (A) but the outpatient paid under capitation payment method for both NHIF and providers adjusted to the same inflation rates. Scenario (C) revenues increase by 2% and the NHIF perspective under both FFS and capitation adjusted to inflation rate. All scenarios also adjusted to different utilization rate

The methods used by the study are based on cash flow analysis, trend analysis, growth ratio method and per capita calculation method. Data used for analyzing total revenues, total expenditures and calculating per capita rate are obtained from the financial and coverage records of the NHIF-Algadarif State during the year 2008-2012 and the actual outpatient expenditures data are obtained from the providers in the year 2012.

The findings indicate that, the financial gap for the years 2008-2012 are negative except in the year 2008 and 2009, therefore the expected financial gap are negative in the three scenarios from NHIF perspective. If the NHIF continue on FFS for outpatient, will incur more loss especially at high inflation and utilization rate, in contrast the providers will gain more profit. Under capitated outpatient the NHIF will decrease the expenditures by 14% for the coming year 2013-2017, but the providers will get loss especially at high inflation and utilization rate so the providers may change their behavior to compensate the loss. For financial sustainability, the scheme should increase its revenues from non-government source such as expand the coverage, investments and increasing the contribution rate during the year 2013-2017.

Field of Study: Health Economics and Health Care Management Student's Signature ……..

Academic Year 2012..... Advisor's Signature …..

Co-advisor's Signature.....

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LIST OF ABBREVIATIONS

FFS	Fee for Services
FMOF	Federal Ministry of Finance
FMOH	Federal Ministry of Health
FMOSW	Federal Ministry of Social Welfare
GDP	Gross Domestic Product
G P	General Practitioner
MA	Medical Assistant
MMR	Maternal Mortality Rate
MOH	Ministry Of Health
NHIF	National Health Insurance Fund
NHIFS	National Health Insurance Fund State
OOP	Out of Pocket
PHC	Primary Health Care
SCSB	Sudan Central Statistics Bureau
SSS	Social Security Scheme
SSO	Social Security Office
SID	Supplier induced Demand
SMOF	State Ministry OF Finance
SMOH	State Ministry OF Health
SNHA	Sudan National Health Account
THE	Total Health Expenditure
WHO	World Health Organization

CHAPTER I
INTRODUCTION

1.1. Rational

Over the past sixteen years, since government of Sudan embraced a National Health Insurance Fund (NHIF)scheme as a policy aims at promoting equitable access, improving quality of the curative medical services and raising revenues for the health sector, issues of escalating expenditure on health services against limited resources has become more and more prominent putting the financial sustainability of the scheme under great pressure and high risk .However , until relatively recently, a little had been written on these issues and a little actions had been taken on the real ground to know and treat some of root causes of this fatal issue .

The National Health Insurance (NHI) in Sudan, namely NHIF –Algadarif State, which responsible for managing the health insurance scheme at State level, has been suffering from many issues that threatening its financial sustainability, resulted in a small gap between the revenues and the expenditures of the State, and this gap is getting smaller and smaller over time making the ability of the scheme to providing benefits to the enrollees in the long run is a true challenge. Apart of these root causes of this issues is the mechanism that has been used to transfer fund to the health care providers since 1997, which is Fee For-Services with its a broad disadvantages as a source for escalating the health care expenditure, regarding to its financial incentives for providers to over provision of the health services to gain more profits, at the same time, putting the health insurance scheme under suffering of a great deal of loss.

This study will try to find out an alternative reasonable mechanism to ensure efficient use of the State scarce resources, aiming at financial sustainability of the scheme from the NHIF – Algadarif State perspective, so the study will forecast for capitation payment method as a policy tool for a certain range of health services (e.g. outpatient care services that includes; consultation for the General Medical Doctors, Medical Assistants, Specialists, Laboratory and diagnostic services and Medicines), and the rest of medical services that represent the inpatient care services will continue paid under the old FFS payment method, hopefully this will lead to a reduction in the

health care expenditure or at least stabilize a great part of the expenditures in the long run to enable the scheme to achieve its financial sustainability.

Beside using Fee for Services as a dominant provider compensation method, it is so interesting to know that there are other root causes sharing the deterioration of the financial sustainability of the scheme and make it more complicated and challenging over time, regarding to the lower contribution rate for almost halve of subscribers those represent the poor families, whom are enrolled to the scheme through a sponsor scheme (Zakat Chamber), comparing with their relatively high average cost of health services that has been utilized. Moreover, the governmental budget of the scheme which represents the premium of the mandated formal sector, usually paid irregularly and in most occasions the actual obtained budget is far less than the approved budget because of economic crises and galloping inflation that attacked the country during the last years. Additionally, the President decision in 2010 which revealed that to divert the ownership of all health facilities that belonging to the NHIF, to be under supervision of the Ministry of Health (MOH), at the same time those health facilities has been considered and experienced by the NHIF authority as a way for cost containment. The most useful and interesting area that we can to invest more in order to try to solve this financial sustainability problem for the time being is through introducing a rational provider payment method that could lead to reduction of the health care expenditures and ensure efficient use of our limited resources. (AnetLerman, 2002)

This study will examine the financial sustainability of the Health Insurance Scheme at Algadarif State from the State perspective in the term of financial gap and financial ratio, based on analyzing secondary actual data of the revenues, health care expenditures, assets and liabilities of the State at a particular time under the current fee for service payment mechanism. Then the study will project for capitation payment mechanism for a defined health service which almost represent the outpatient care services, follows by measuring the financial gap under different scenarios with considering the most possible events that may take a place in the future, finally the study will come up with the results of comparing the financial gaps for the different scenarios and different perspectives by examine them under term of profit, loss or breakeven point.

1.2. Problem and Significance

The National Health Insurance in Sudan, and at the level of Executive Directorates that represent the Health insurance scheme at States level, has been suffering from many issues that threatening its financial stability, and may lead to a disastrous reduction of capacity for functioning and producing an effective benefit for both users and stakeholders over time, and can be summarized as follows:-

Firstly, the enrollment unit of the health insurance scheme is the family, meaning that the employee and his dependents (Parents, Wife, and Children) whatever the size of the family which arranges between 5-7member/family in the State, the average monthly premium for a family in the formal sector about 30 SDG equivalents (5$) which represents 4% of basic monthly salary paid by the employees and 6% paid by employers, for the informal sector about 15 SDG(2.5$) monthly, poor families through Zakat Chamber paid 9 SDG (1.5$), student paid 3 SDG (0.5$), almost the poor families those enrolled the scheme through Zakat Chamber represent 40% of the total insurance coverage in the State .The average cost of the medical services that provided per individual from these categories between 25-35 SDG monthly (4-6$), so when we compare the average premium with the average cost we can notice the vast gap between them. Moreover, the utilization rate per member is 2times/year, and this rate is relatively high comparing with the standards. (NHIF.S, 2012)

Secondly, regarding to the budget paid by the Federal and state Ministry of Finance (FMOF, SMOF) as employers which equivalent 10% of an employee's salary (Civil Servant) and which paid for the scheme monthly as a premium is tax based, and we found that the actual obtained amount varies between 50-70% of the approved government budget. Furthermore, it's not stable and usually paid irregularly as a part of economic crises and galloping inflation rate effect, finally this led to insufficient long term government funding. (NHIF.S, 2010)

Thirdly, the decision of the President in 2010, that considers the diversion of health facilities ownership from the health insurance to the Ministry of Health, accordingly the health insurance scheme has to acts only as purchaser and not a provider, at the same time those health facilities are has been considered and experienced by the health insurance scheme as an effective tool for cost containment

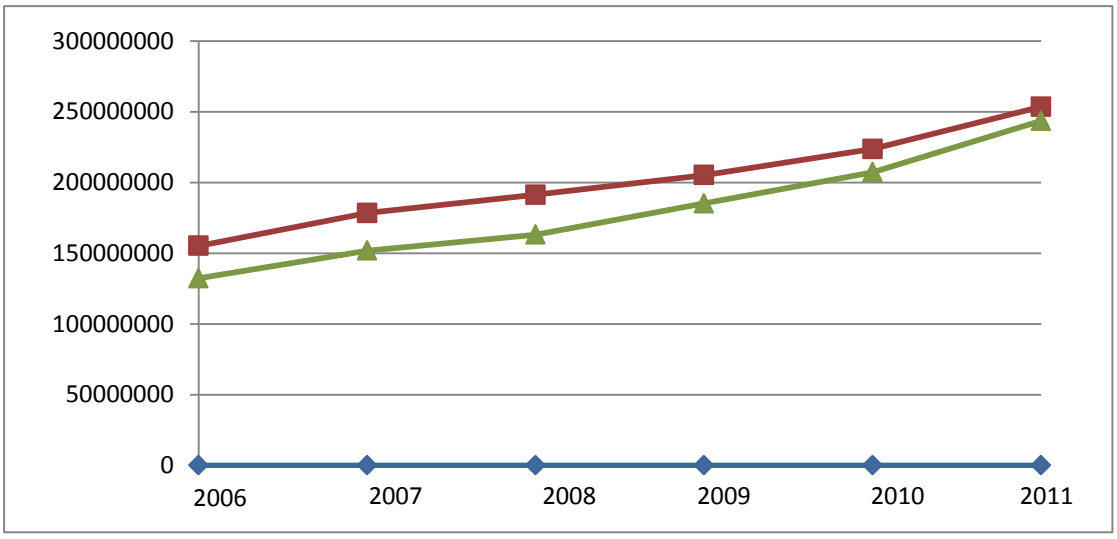
and a way to ensure sustainable health services provision accompanied with acceptable quality.

Finally, the NHIF in the State as well as in all Sudan, has been used to compensate for the health service providers by fee for services as a dominant payment method in both direct and indirect health facilities, and no doubt this method can leads to escalation of the health care expenditures, as it financially incentives the providers to overutilization of the health care services, regarding to prescribing an unnecessary services, corrupted claims and supplier induced demand (SID) which always taken a place.

As a summary, all above mentioned factors can lead to either increasing the health care expenditures, or decreasing the scheme's budget, so under increasing expenditure against decreasing revenue the scheme no longer will suffers from the issue of financial sustainability. Find a solution for achieving financial sustainability of the scheme is our challenge, and it is not possible to solve this issue through those factors linked to economic crises, or the President decision, so this enforce the study to select the provider payment arena to try to solve the problem of the financial sustainability, so this study will focus and invest more in this area in order to help the health insurance scheme to be self financially sustainable (figure 1. 1)

Figure 1. 1 The Revenues and claims paid by Algadarif State (2006-2011)

unit: million SDG



Source: National Health Insurance –Anual Report Algadarif State, 2006-2011

1.3. Research Questions

1.3.1. Primary Question

Is it feasible to introduce a new payment method like capitation in the National Health Insurance Fund –Algadarif State, to be financially sustainable?

1.3.2. Secondary Questions

- How much are the revenues, health care services expenditures of the NHIF-Algadarif State, under the current FFS payment mechanism?
- How to come up with per capita rate for outpatient services, that could allow the National Health Insurance Fund – Algadarif State to be financially sustainable?
- Will the Health Insurance Fund – Algadarif State be financially sustainable, by changing the payment method into capitation for the outpatient health care services?

1.4. Research Objectives

1.4.1. General objective

To come up with the Feasibility of introducing a new payment method like capitation in the National Health Insurance –Algadarif State to be financially sustainable.

1.4.2. Specific Objectives

- To analyze the existing situation of the revenues, both government and non-government revenue and the health care expenditures of the NHIF-Algadarif State.
- To project for revenues and the health expenditures of both government and non-government budget of the NHIF-Algadarif State, after changing the payment method onto capitation.
- To come up with the per capita rate that would allow NHIF– Algadarif State to be financially sustainable
- To compare the capitation and Fee- for-Services as a mix payment method in the NHIF-Algadarif State for purchasing the health services, with the current Fee-For-Services method in term of financial sustainability.

1.5. Scope of the Study

The study makes an attempt to analyze the financial status of the NHIF - Algadarif state before changing the current FFS payment mechanism into capitation payment mechanism, for a defined health services package (outpatient care services) in term of financial ratio and financial gap. The revenues and expenditures will be clarified by the actual data of the NHIF – Algadarif State between the period 2008 and 2012. The study will take into consideration the total revenues from both government and non-government sources. The total health expenditures will be considered for the purpose of this study into direct health expenditures and indirect health expenditures, the direct health expenses encounter by the health services which paid under FFS and the indirect health expenditures which includes labor, material and capital cost will be considered as a whole picture and not specify item by item .The study will depend on the actual revenues and expenditures between the period 2008 and 2012 and tries to predict the financial sustainability in term of financial gap when the payment method for the outpatient care services transformed onto capitation for the years 2013-2017.

The capitation package represents almost the First – contact medical care (outpatient care services) which includes; Medical Doctors visit, Medical Assistants visit, Specialist consultation, laboratory investigations services, diagnostic services(x-ray-us scanning) and medicines. The inpatient services will remains under FFS. The revenues and expenditures will be anticipated after assuming different scenarios and events that may take place in the future.

CHAPTER II
BACKGROUND

Health Insurance in Sudan has a strong relationship and link with the health system and socioeconomic status of Sudan, therefore an overview of socioeconomic status, health system in Sudan as well as Algadarif State information background regarding to health insurance and health system will be presented.

2.1. The socioeconomic status in Sudan

Republic of Sudan (the official name), is located in Northeast Africa, it is the third largest country in the African continent and the sixteen largest in the world, covers total area around 1,882,000 square Km .The country has an international border with 7 other countries, Egypt in the North with border about 1.273 Km, Eritrea in the east with border about 636 Km, Ethiopia Southeast with about 727 Km, South Sudan 1973 Km, Central African Republic 448 Km, Chad1.340 Km and Libya sharing border about 383 Km. The total land boundaries running along 6.751 Km. Sudan's terrain is generally flat plain, interrupted by some mountain range with semi-desert areas in the northern and western, the River Nile traverses the country from South to North while the Red Sea washes about 550 miles of eastern coast making Sudan as a bridge between Africa and the Middle East.(Figure 2. 1)

The climate is mostly dry but the amount of rainfall increases towards the South area. Sudan’s rainy season continue for about three months from July to September, so the climate is desert and savanna in the North and central regions and tropical in the South, thus the country faces a number of environmental disasters related to the climate, changes including soil erosion, desertification and recurrent drought and flooding during the rainy seasons. People depend mainly on the scarce rainfall for basic agriculture and many are nomads travelling with their herds of sheep and camels seeking pastures. The irrigated farms exist beside the river Nile that grows cash crops like Cotton and Dura and other seed. The work force in Sudan classify into; Agriculture work force that represents 80%, Industry and Commercial represent 7% and government work force represent 13% of the total work force, unemployment rate around 19.7% in 2010. The decentralization system (Federal system), was implemented in Sudan in 1994, therefore Sudan has been divided into 17 State and for

Figure 2. 1 The Map of Sudan

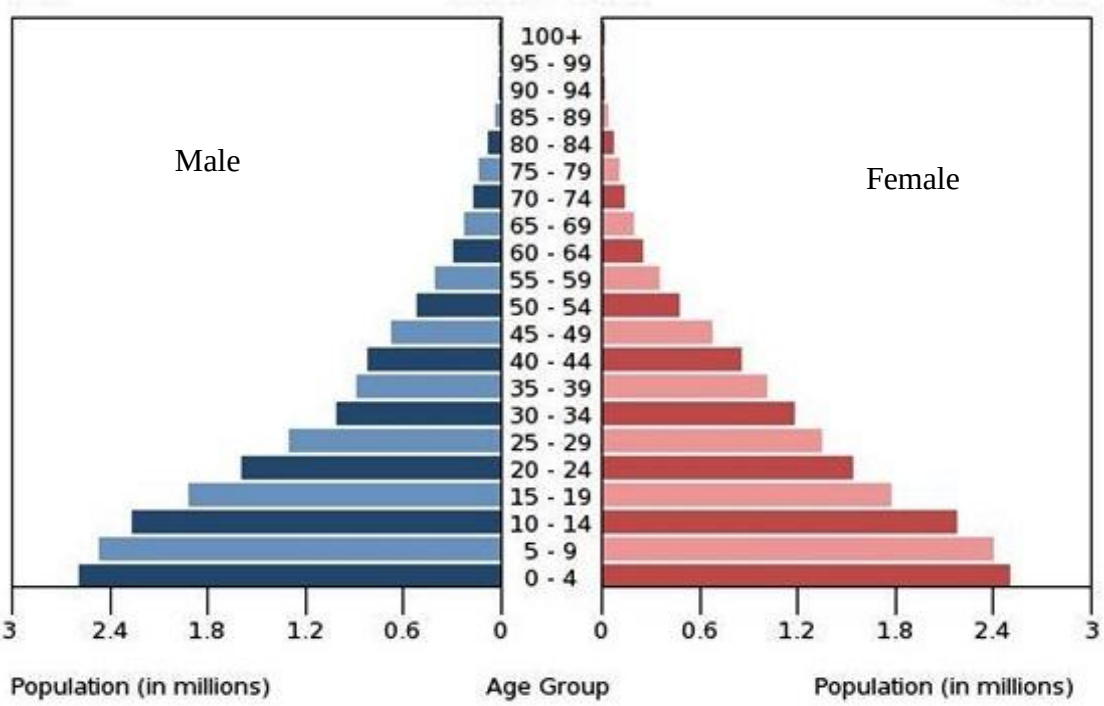
Source: Sudan Central Statistics Bureau, 2012

each State composite about 5-12 localities or districts, the federal system applied in Sudan to meet the needs of multicultural and multiethnic group of population.

The total population in Sudan around 33.419.625 people according to the last census in 2008 and the annual population growth rate 2.5%. Regard to the sex and age structure in Sudan, the most dominant age group is the youth group between 14-24 years as in most developing countries, female to male ratio is approximately 1:1 (figure 2. 2). 57% of the population lives in rural areas with rate of urbanization about 32%, major city population is Khartoum (The Capital) around 5,021 million in 2009. The poverty rate in Sudan is high comparing with neighboring countries like Egypt and reach about 46.5% in 2010.The religion of the population almost 98% is Islam after secession of the South of Sudan in 2009, and the remainder is Catholic. The official language in Sudan is an Arabic language in addition to almost 100 tribal languages and accents .The literacy rate about 61%, male's literacy rate represents 71.8% and the literacy among the females represents 57%.

Figure 2. 2 Population's pyramid in Sudan 2012

Unit: population in million



Source: Sudan Central Statistics Bureau, Annual Report, 2012

Sudan was experienced one of the longest civil war in modern African history that started since the independence in 1956, and has devastated most of infrastructure in the country, and also withdrawn the economic activities and market development resulting in very low level of income and economic power. In 2011 the conflict resulted in secession of the South Sudan, the region of the country that had been responsible for about three quarter of the Sudan's oil production, carrying out an austerity programs to lessen government expenses as a part of economic reform plan. The external debts of Sudan reached 38, 37 billion US$ and the inflation rate reached 24.2% in 2012 and expected to reached 30% by the end of 2013(Table 2.1).The Gross Domestic Product(GDP) per capita last was reached 486.21 US$ in 2011 which equivalent to 4% of the world's average, historically, from 1960 until 2011,Sudan GDP per capita average at 319.84 US, thus Sudan was classified as a low income country according to the World Bank standards.(World Bank, 2012)

Table 2. 1 Inflation Rate in Sudan (2001-2012)

Year	2001	2002	2003	2004	2005	2006
Inflation Rate %	9.8	8.3	8.3	7.3	5.6	15.7
Year	2007	2008	2009	2010	2011	2012
Inflation Rate	8.8	14.9	13.4	15.4	18.4	24.2

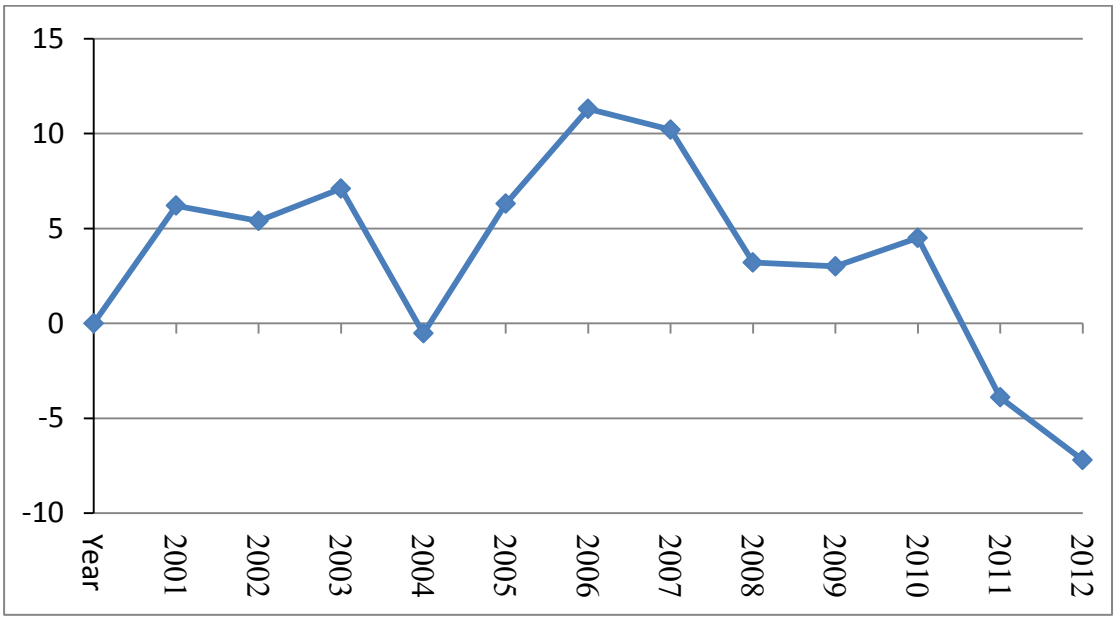
Source: Sudan Central Bank Report, 2001-2012

Table 2. 2 Annual Growth Rate in Sudan (Real Growth Rate 2001-2012)

Year	2001	2002	2003	2004	2005	2006
Growth Rate %	6.2	5.4	7.1	-0.53	6.3	11.3
Year	2007	2008	2009	2010	2011	2012
Growth Rate %	10.2	3.2	3	4.5	-3.9	-7.2

Source: Sudan Central Bank Report, 2001-2012

Figure 2. 3 The Real Growth Rate in Sudan 2001-2012



Source: Sudan Central Bank Report, 2012

The real GDP growth rate started at 4.7% in 2002, then dropped to -0.53 in 2004, and then increased sharply in 2006, then started to decrease to reached -7.2 in 2012 due to increasing the inflation in rhythm rate more than increasing the income rate of citizen and also due to secession of South Sudan and ongoing conflict at Blue Nile region and Darfur .GDP composition by sector about 23.9% of agriculture, 32.5 % from Industry and 43.6% for services (figure 2. 3)

2.2. Health care system in Sudan

Health system in Sudan observed a lot of change over time, started in 1899, when it used to be delivered by the army, and then in 1949 the Ministry of Health was lunched to be responsible for the medical services management and delivery, in 1994 the government has been adopted the federal system(Decentralization system) with three health system; the federal level, the state level and the local or district level which is outstanding as an effective administrative level with its own resources and responsible for basic services including primary health care. The responsibilities of each level summarized by the following table (SNHA, 2008)

The adopted decentralization system in Sudan was faced many problems arising from the quick implementation without preceding an effective and necessary

training programs, therefore even the senior staff qualifications at state's ministry are so poor and that resulted in a great deal of health issues remains unsolved in spite of immature reforms plans of the Federal Ministry of Health. (SFMH, 2003)

Table 2. 3 Levels of Health System in Sudan

The level	Federal M Of Health	State M of Health	Localities or Districts
Responsibilities	-Strategic planning and policy making -Resource mobilization and allocation -Regulation, monitoring and evaluation -Coordination and external relations -Training	-Planning and formulation of State's policies -Local funding for the plans and strategies. -Implementation of plans according to federal policy	-Implementation of national and State's policy -Delivery of health services especially primary health care services

Source: Sudan National Health Account, 2008

The epidemiological profile of Sudan is largely directed by communicable diseases, the main cause of morbidity and mortality are the parasitic diseases such as malaria, and the country alone responsible for about 50% of burdens of malaria in the region and malaria is responsible for about 70% of morbidity especially among children and pregnant women and the fatality rate among the inpatient cases of malaria range between 5%-12%.The other communicable disease includes; Tuberculosis, Respiratory Tract Infections and wide spread of chronic malnutrition.

Table 2. 4 Health Indicators in Sudan 2010

Indicator	Value %
Infant mortality rate /1000 live birth	57
Child mortality rate /1000 live birth	23
Under –five mortality rate/1000 live birth	78

Maternal mortality ratio/100,000 live births	216
Total fertility rate (child/women)	5.6
Life expectancy m/f (year)	59/59

Source: Sudan Central Statistical Bureau, 2010

2.2.1. Health Care Delivery in Sudan

Health care has been delivered in Sudan at three levels; at the tip are teaching general and specialist hospitals, having a variable number of specialist and beds, and providing secondary and tertiary care. The second level is the rural hospitals which providing secondary care and diagnostic facilities. Primary care is provided through a variety of outlets include primary health care units, dressing stations, dispensaries and health centers.

The numbers of public hospitals across the country in 2007, at the federal level about 18, and at the state level the number is 68 and at localities level reached the 287 hospital so the total number of public hospitals about 373 hospital, the overall number of hospital's beds is 24.476 beds, the bed per 100,000 population is 76.8 and the hospital per 100,000 population is 1.1. (SMOH, 2007)

The number of health human resources increases progressively over time and the table below display the development of some human resources.

Table 2. 5 Some Human Health Resources in Sudan 2003-2007

Year	2003	2004	2005	2006	2007
Medical Doctor	5948	6604	8008	8798	9573
Dentist	244	283	371	332	512
Pharmacists	674	697	894	1004	756
Nurse	17174	16826	17923	18433	18083

Source: Federal Ministry of Health, Annual Report, 2007.

The number of inhabitants per doctor per 100.000 including General Doctors and Registrars in the year 2007 was 29.9 and the number of inhabitants of Dentists /100.000 populations was 0.4, for specialists were 4.6 and for Nurse was 48.6, and the average number of inhabitants for all Doctors / 100.000 populations was 15. Recently Sudan suffers from severe loss of human resources (brain drain) in the health sector

2.2.2. Primary Health Care (PHC) in Sudan

In 2007, the government of Sudan had a commitment to provide minimum primary health care free to all citizens, according to the Sudan's Interim Constitution which specifies the government's commitment to" promote public health ,establish, rehabilitate and develop basic medical and diagnostic institutions and provide free primary care and emergency services for all citizens". The health policy in Sudan describes the minimum content of PHC package in 2007 which includes promotion of child health; immunization against disease, vaccine, nutrition, counseling, growth monitoring and implementation of integrated management of childhood illness package, promotion of reproductive health; safe motherhood and family planning , treatment of common health problems and control of endemic diseases such as Malaria, Tuberculosis, HIV, etc. protection and promotion of environmental health and sanitation, treatment of simple diseases, injuries and mental health, basic Emergency Obstetric Care .Federal health unit provide the first five services while last are specific to rural hospitals ,but unfortunately only 19% of primary health facilities provide all of the components of the minimum package. (FMOH, 2007)

2.2.3. Health Care Financing in Sudan

Since 1956, the health services are used to be provided to all citizens free of charge .However, the government has been suffering from many economic crises and constraints. In 1991 the government has been implemented a cost sharing policy to ensure community participation and to come up with accessibility, equity and acceptable quality of provided health services with the least possible cost. The health care in Sudan is financed by several different public and private financing sources .That includes :(SNHA, 2008)

- The Ministry of Health at both Federal and State levels.
- The National Health Insurance Fund.
- The Private Health Insurance Schemes.
- Out of pocket expenditure.
- The Military Force Medical Scheme
- The Police Medical Fund and Donation.

According to the National Health Account (SNHA) in Sudan in 2008, revealed that the health care expenditure per GDP is around 5.6 % and the total health expenditure per capita is 110 USD. Sudan lies in the middle of the spectrum comparing with the Eastern Mediterranean regions (EMR). The Ministry of Health plays a basic role in financing and funding the health sector in Sudan almost account 23% of the Total Health Expenditures, other ministries for 4%, the household out of pockets account for 63%, the governmental Health Insurance Fund for 4%, other private market for 2% and Donor agencies for the remaining 2%.(Table 2. 6)

Table 2. 6 Health Care Expenditure by Financing Agents in Sudan 2008

	Financing Agents	Amount SDG	Percent	Per Capita
Public Agents	Federal Ministry of Health	489,290,753	6.9%	15.94
	Ministry of Defense	208,100,000	2.9%	6.78
	Ministry of Interior Affairs	36,803,697	0.5%	1.20
	Ministry of Higher Education	26,770,910	0.4%	0.87
	Other Ministries	4,034,232	0.1%	0.13
	Zakat Fund	53,197,663	0.7%	1.73
	State Ministry of Health	1,059,379,770	14.9%	34.51
	Local Authorities	145,034,121	2.0%	4.72
	National Health Insurance Fund	183,770,960	2.6%	5.99
	Khartoum State Health Insurance Funds	84,420,847	1.2%	2.75
Private Agents	Parasternal Firms	34,191,927	0.5%	1.11
	Private Insurance Enterprises (other than social insurance)	55,110,794	0.8%	1.80
	Private household out-of-pocket payments	4,486,071,402	62.9%	146.13
	Nonprofit institutions (other than social insurance)	19,276,672	0.3%	0.63
	Other private firms and corporations	108,157,423	1.5%	3.52
Rest of the World Agents	Donors	74,616,472	1.0%	2.43
	International NGOs	60,733,862	0.9%	1.98
Total SDG		7,128,961,504	100%	232.22
Total USD		3,394,743,573		USD 110.58

Source: Sudan National Health Account, 2008

2.3. National Health Insurance in Sudan

Since 1994, the government of Sudan has launched health insurance scheme, as an alternative option to overcome the downsides of payment at the point of service delivery that developed from health financial reform, and also to assured equitable access to quality of health care services. On other hand, is projected mainly to increase the health sector incomes, reduce monetary barrier to care, and to improve the efficiency of resources allocation, so the health insurance scheme is considered among the most crucial projects that have a great socioeconomic impact on insurers as well as the whole community. The enrollment in the scheme like the other scheme in the world, is compulsory for the formal sector includes government and regular sector employees, and the insurance in Sudan is differentiated from the other insurance system by the expansion of services to include the informal sector such as, poor families, shepherds and farmers, whose are avoided in other countries health insurance system for being too risky and difficulties faced during collection of premium contributions.

According to the health insurance public act of 2003, the health insurance fund is a affiliated to Ministry of Social welfare & Child affairs, instead of its supervision under the Federal Ministry of Health. The organization and administration of the scheme is formed of a board of Directors and Director general, Director board comprising representatives of government, employees and employers, and the Director General headed units of consultation and four major institutions include; division of planning, medical services, financing and administration project domain of the General Director. In addition, there are executive directorates at state level that has the authority to function and implement activities under the direct supervision of the NHIF presidency. The population coverage of the scheme extended and keeps expanding over time, and by the end of 2010 the total coverage reached 33.9% of the targeted population that represent 11.825.504 people. (Table 2. 7).

2.3.1. Financing of the National Health Insurance Fund in Sudan

Financing of the scheme is formed basically by substantial contributions (premium) paid by the eligible inhabitants, which is a combination of 4% of the employee's monthly salary in addition to 6% as government subsidies for the formal

sector. The informal sector and are agreeable to join, have to pay specific amount for premium annually or half annually paid on a monthly basis, other sources of financing for the scheme comprise contributions from federal governments, State government and also revenue generated through investments by the scheme, charity donations, other from contributions that support the objectives of the insurance plan and financial resources provided by the State allocated to insurance scheme.

Table 2. 7 Population Coverage by States in Sudan by the year 2010

State	Total population	Insured	Percentage
Khartoum	5274321	2035131	38.6
Sinner	1285058	513883	40.0
Jazeera	3575280	1205137	33.7
Algadarif	1348378	628027	46.6
Red sea	1396110	381028	27.3
River Nile	1120441	457374	40.8
White Nile	1730588	531412	30.7
North Darfur	2113626	595186	28.2
Blue Nile	832112	290378	34.9
West Darfur	1308225	488444	37.3
North kordofan	2920992	1021255	35.0
Northern	699065	398335	57.0
Kassala	1789806	569882	31.8
South kordofan	1046619	283629	27.1
South Darfur	4093594	883642	21.6
West kordofan	359785	193068	53.7
Total	30894000	10475811	33.9

Source: National Health Insurance Fund, Annual Report, 2010

According to the targeted population and the coverage by sector, we can find that, the general sector has the highest sharing percentage of the insurance coverage, about 98.8% as the enrollment of this sector is a compulsory, and also the coverage is higher among the families of martyrs and pension which represent 100% for both, and lower insurance coverage for the poor families and the informal sectors. (NHIF, 2010)

2.3.2. The Health Care Delivery in National Health Insurance Fund

The scheme provides health services for their clients through two types of the health delivery system. First is the direct provision of health services through health facilities that own and managed by the Health Insurance scheme at Federal and State level, the second way is the indirect provision of health services through health facilities that owned and managed by the other partners such as Ministry of Health, Private sector, Military and Police health facilities. In 2010 the number of health facilities that provided health services for the health insurance prescribers are increased and reached 294 direct health centers, 21 are direct hospitals, and the indirect health centers reached 289, and 506 for the indirect hospital, so the total health facilities that provided health services for the clients reached around 1110, so the average number of health facilities per 1000 inhabitants is 1/1000 inhabitants. In 2005, the health insurance scheme releases member cards to each of the members of the insurer's family, this act as a national card allows its holder to receive the services at any health facilities that provide insurance services, in all States in Sudan, without any constraints. (NHIF, 2010)

The benefit package of the scheme includes; all medical consultations, such as General Practitioner, Medical Assistant and Specialists consultation also composite of; admission, diagnostic procedures and therapeutic that including surgical operation with some kind of operation excluded, such as plastic surgery, open heart surgery and neurosurgery operations, also the package includes the dental services. However, not all medicines are included, and are prescribe according to Health Insurance Drug List, for each level of health professional and only the generic name is allowed and not by trade name, the insured has to pay 25% of the cost of the medicines as a co-payment, a measure to rationalize drug use and containing the cost of medicines (cost sharing) through discouraging the unnecessary drug. (NHIF, 2010)

2.3.3. National Health Insurance Fund–Algadarif State:-

Algadarif State, is one of the 17 States of Sudan, located in eastern region, it has an area of 75,263 Km square, and estimated population around 1,522,350. From an administration perspective, the state has 10 localities, Algadarif locality is the capital of the State .Poverty ratio like the other States of Sudan contribute more than 46.6% of the population, the State is rich with its vast agricultural land and heavy rains, so 80% of the population are farmers and shepherds. The health indicators in the State are relatively same as the health indicators picture of the whole country.

The health insurance in the State has been started 1996, and as the rest of the other State, the State started with the enrollment of the formal sector, and then the enrollment expanded to cover more than 305 employers(sections) by the end of 2012, the insurance coverage reached 38.3% from the targeted population. The health insurance in the State provides health services to the clients through two options, either direct provision through health facilities that owned by the scheme, or indirect provision through health facilities belong to Ministry of Health which acts as the main providers for the health insurance services.(Table 2. 8).

2.3.4. The Benefit Package:

The health insurance in the State provides many health services for the insurers, through many channels such as hospitals; health centers and clinics .The benefits comprise the following health services and drugs (NHIF, 2001)

- Visit to Medical assistants General Practitioners and Specialist.
- Hospitalization and admission services
- Laboratory and diagnostic services.
- Maternal coverage including delivery, prenatal and postnatal care.
- Cancer surgical treatment only.
- Kidney's transplantation support with other partners.
- Dental treatment in a case of x ray, removal, filling and gum treatment only.
- Surgical operations except open cardiac surgery and neurosurgery.
- 75% of the medicines paid by the insurance scheme and the reminder carried by the insurers as a co-payment.

Financing of the health insurance scheme in the State in general, depends on the premium of the formal sector that includes Civil Servant and regular private, central or federal fund, State fund and investments. The targeted population by sectors includes; public sector, private sector, the poor families, martyrs' families, pensioner, university students and the informal sector (self-employees) that includes those people willing to voluntary enroll under the scheme's umbrella. (NHIF S, 2010)

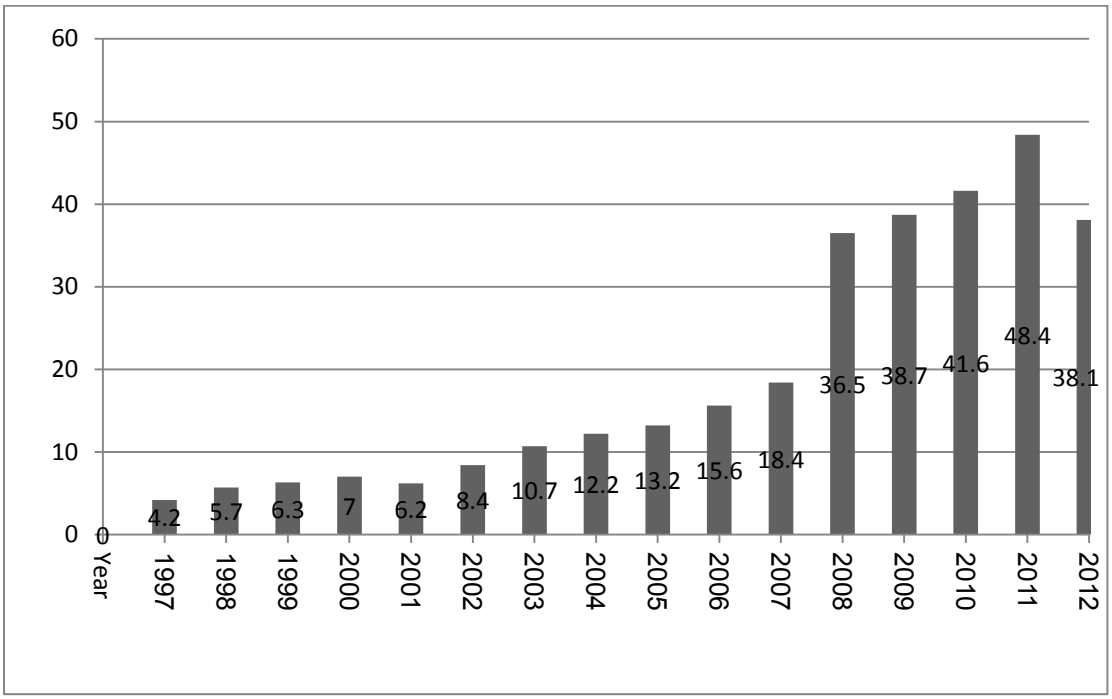
Table 2. 8 Health Facilities provide Insurance Services (1997-2011)

Year	Hospitals		Health Centers		Clinics	Total
	Direct	Indirect	Direct	Indirect		
1997	-	5	6	8	-	19
1998	1	16	7	8	-	32
1999	1	16	7	8	-	32
2000	1	16	7	10	-	34
2001	1	11	10	6	-	28
2002	1	13	14	6	-	34
2003	-	17	13	7	-	37
2004	1	15	14	8	-	38
2005	1	15	13	9	-	38
2006	1	16	16	7	-	40
2007	1	19	18	12	-	50
2008	1	21	20	15	-	57
2009	1	19	20	17	4	61
2010	1	21	18	22	4	66
2011	-	24	17	26	5	72

Source: National Health Insurance Fund-Algadarif State, Statistical Report 2012

The coverage percentage was increased year by year and reached in 2011 about 48.4% then declined by the end of 2012 to 38.3% after revised and recalculated by expertise from the of the NHIF at residency level, depending on the actual number of population whose enrolled under the scheme umbrella and after excluding the clients from the informal sector those dropped out the scheme and those clients enrolled through sponsored institutions that failed to pay their premium. (Figure 2. 4)

Figure2. 4 The Growth Rate of the Insurance coverage (1997-2011)



Source: National Health Insurance Fund-Algadarif State, Coverage Report 1997-2011

CHAPTER III
LITERATURE REVIEW

Literature review tries to explain the concept of health insurance, financial sustainability, the impact of fee for services and capitation payment method in health care expenditures of health insurance schemes and behavior changes of both purchasers and providers, previous studies concerned financial sustainability through provider payment mechanism, methods used and final results

3.1. Concept of Health Insurance

Health Insurance is an agreement between the policyholder and a third party or government program to compensate the prescribers for their health expenses derived from medically curative treatment or preventive care provided by a healthcare professionals "Insurance serves two principal functions in improving the economic welfare of a nation. First, insurance pool together the financial risk that facing a large group of people each of them have a small probability of losses. Second, insurance enables individual to transfer their risk to an insurance plan by paying a premium". (Hsiao, 2000)

Show and Griffin (1996) defined the health insurance as a plan targeting to maintain the welfare of the insurer who catch illness, by collecting and pooling financial contributions from many people and purchasing health services for them, therefore the insurer burden catastrophic event can be able to cover the health services expenses.

Health insurance schemes, has been accepted by many low, most middle and high income nations in order to support health expenses incur by a portion of their citizens to ensure access to quality of health care services. There are two types of health insurance, the first type is the public social insurance, which its enrollment is compulsory for a certain eligible group of people whom they mandated to pay a specified premium as a contribution in order to be eligible to receive a specific health services benefits .The mandated group of people often are employees either civil servant or from the regular private sector, and the premium or contribution paid usually as a percentage of their wages with some percentage paid by the governments as subsidies for those sectors in some countries.

The contribution to social insurance plan defined actuarially, depending on many measurements such as the likelihood of the illness among the citizens, the range of the benefit package and the number of population enrolled in the plan. The health insurance rely on pooling of the risk on the low of the large Number to ensure equity in receiving health care benefits, but unfortunately, social insurance seldom extended to enroll population in rural area or those workers in informal sector such as farmers because of difficulties to collect premium from them . (Hsiao, 2000)

The second type of health insurance is the private health insurance which is obtainable through not-for profit and sometimes through for profit organizations. This type of insurance rarely found in low-income countries and if it is there, actually is likely concentrated rich region such as cities and big towns, usually the enrollment unite is the individual and not the whole family as in the public social system and the premium based on the individual health status characteristics and on restricted contract between the plan and the insurers, also depend on the benefits package that provided by the company or chosen by the subscribers. The premium charged from insurer is always high and should reimburse the expected utilized health services by the insurer, the operational expenses and a profit. The major problem of the health insurance scheme is the moral hazard and adverse selection that always make the insurance system bearing a high risk. (Hsiao, 2000)

3.2. Financial sustainability

Sustainability has been defined as (UNICEF 1992)" the ability of the system to produce benefits valued sufficiently by users and stakeholders to ensure enough resources to continue activities with long term-benefits". The Canadian Public Health Association (CPHA) Identifies five main components regard to achieve sustainable development; Technical sustainability, social sustainability, political sustainability, financial sustainability and managerial sustainability. (Olsen, 1988)

Financial sustainability can be defined also as the capacity of a program or a project to organize and efficient use of internal and additional external resources on a dependable bans to achieve ongoing and future objectives level of performance, in term of access, utilization, quality, safety and equity, so the health services are sustainable when it's operated by an organization system with the long-term ability to

mobilize and allocate an appropriate resource that includes; manpower, technology, information and finance for activities that encounter individual or community health needs. (Olsen, 1988)

Sustainability has determining factors that are linked with each other in dissimilar ways, and can be categories into major three group; environmental, activity profile and organizational capacity. The environmental factors are those, which uncontrollable by the health organization but have direct or indirect effect on the health organization sustainability, this kind of factors can be related the political and socioeconomic situation, economic situation comprising governmental budget allocated to the health and general health status. The second group of factors is the activity profile which includes the type, volume and the range of health services that provided by the health organization which depend on the needs for health services and the availability of resources. The third group is the operational capacity which represents the ability to carry out asset of tasks faced by the organization, it includes the vision and the mission of the organization as well as the policy, planning and monitoring and evaluations, so a health service can be reasonably sustainable if there is a positive relationship between activities and capacity within a given environment over a period of time. (Olsen, 1988)

The problem of financial sustainability can be broadly categorized in three ways, which involve:-

- Increase in health spending due to factors affecting both demand and supply for health services that resulting from ageing of the population, advance technology, increasing expectation and population characteristics change of the community.
- Inability of the government to mobilize and allocate adequate and continues resources to the health sector regarding to resource constraints and economic crises.
- Escalating of medical services price as a part of inflation that could be resulted from economic difficulties.

To come up with financial sustainability of the health system there are three approaches can be lead to guarantee continuity of producing benefits in the long-run, which are:-

- Increase the national income allocated to the health plan to be aligned with the same level of the health care services expenses.
- Decreasing the liabilities to a level at which the health plan can achieve using its available resources.
- Improve the capability of the health system to use the resources efficiently by increasing the value from existing resources and by improving the health system performance.
- Creating and generating anew alternative and extra revenues sources

3.2.1. Measurement of financial sustainability

Financial stability and growth are monitored usually by three measures. (WHO, 1994) :

- Net income (Financial gap): The difference between revenues and the expenditures, either positive or negative net income.
- Liquidity: The ability of the system to generate demanded cash flow to meet its obligations or liabilities.
- Solvency (current ratio): The ratio of the assets and liabilities or debts, which can measure the ability of the system to pay its short term debts for the next year.

3.3. Provider payment system

The provider payment system could be strong measure or arrangement to reshape the health system towards the efficiency and achieving most policy objectives and health outcomes. Provider payment system can be defined as the payment method linked all systems like agreement, accountability financing mechanism that link the payment method with managerial capacity and data base system and financial system. Payment mechanism has been narrowly defined as the way to transmit the fund from payers to the providers. (John C.et al, 2009) .

The provider payment method has a wide-ranging effects and incentives on all perspective and many aspects including in the health system such as accessibility to the health care services, provider satisfaction, and patient satisfaction, quality of the health care and the cost of the health services as well as the volume of the health services. The provider payment mechanisms can alter the behavior of payers and

providers and consequently lead to noticeable changes and reshape the health system and outcomes.

World Health Organization (WHO, 1996) "suggests that the goal of the provider payment system should improve efficiency, quality, ensure accessibility, offer patient physician choice and easy to implement". The payment method additionally depends on the health care policy and objectives. There are a multiple payment methods according to the level of the health services, either primary or secondary health care level or tertiary. Payment methods are widely used to compensate the primary health care providers are such as fee-for services (FFS) with or without schedule fee, capitation payment mechanism and budget, those mechanism can fulfill the objectives of the primary health care that can includes prevention and promotion of the health services accompanied sometimes with treatment of common diseases.

3.4. Capitation payment mechanism

Capitation payment method is a prospective payment mechanism used by health system, in which the providers of health services, are prepaid a fixed amount for each patient enrolled over a specific period of time either monthly or yearly, and for a specific range of health services or specific benefit package .Regardless the number of health services utilized by the clients, the capitation rate pay to the health providers monthly or every year, basis to cover health expenses for the members of the plan. It is a type of risk sharing arrangement between purchaser and providers. The risk of this type of method of payment is bearing mainly by the providers. (Gosden T, 2000)

The amount of per capita rate depend mainly on the expected utilization of the clients for the health services but with adjustment for specific health conditions that may include the age, gender, and geographical location and residence as these factors can influence the health care services expenses. (Rhodes, 2012)

Capitation payment mechanism has many shape and arrangements linking between insurance schemes or the purchaser and the providers, either proportional capitation or fully capitation, meaning either for the outpatient or the inpatient care

services or both at the same time, so it depends on the range of benefits package that predefined by the insurance schemes. (AnetLerman, 2002)

The capitation payment method can influence and change the behaviors of the medical staff e.g. physicians and that can be summarized as follows:-

- Capitation can incentivized the physicians to under provision the health services, and enhance referral of the patients to the next level so as the providers shift the risky health problem to the other level.
- Enforce the physician to work in a groups so as to pool the cost incurred such as telephones, rents etc.
- Enhance the physician to concentrate more on preventive medicine rather than curative medicine as the later can cost more.
- Encourage physician to reduce the input resources in order to bear less cost.
- Capitation can lead to change in the provider internal management mix system regard to preferring a certain type of personnel such as nurses rather than doctors.
- Capitation can leads to changing the health instruments that be used with other financing system such as FFS

Capitation payment mechanism can enforce both payers and providers to come up with the actual cost of various health services and the related data such as utilization rate for different health services e.g. Laboratory investigations, surgical operations and physician's visits. (AnetLerman, 2002)

3.4.1. Common Capitation Methods

There are three common capitation payment methods can be summarized as follows

- Per member per month rate: this type of capitation method doesn't need calculation for risk adjusted group such as for the elderly and for female at productive age group but depending on paying the same amount of per capita rate for each enrollee.
- Per member per year payment; depending on risk adjusted for a certain age, sex and geographical area characteristic.

- Percentage of premium method: by paying to the purchaser a percentage according to the contribution revenues derived from the client. (AnetLerman, 2002).

3.4.2. Component of a Per Capita Payment System

Building up the per capita rate for a kind of health services should at least composite of three main steps: defining the capitated package first e.g. Outpatient care services followed by specifying the cost for the capitated package and then, finding a measure for assigning the clients to each providers. The first step should identify the capitated package that going to be paid under capitation payment mechanism, it could be a part from PHC package or it could be outpatient care services or the outpatient care services, then the cost of the package should be calculated, either by top down allocation or down up costing, or combined both. In top down allocation, the organization budget specified for the package should be identified first then divided by the number of all clients involved in the system, so this type of costing is from purchaser perspective and may not satisfy the providers, the second type of costing is down up costing, in which the actual cost of the package from both purchasers and providers perspective included then we can come up with the average cost that satisfy both partners, then we can come up with the base per capita by multiplying the cost with the average utilization /member /year, also we can adjust risk coefficient to incentivized providers for a certain risk group such as elderly people or a certain geographical areas(Figure 3. 1) .Monitoring and financing system is required to ensure success of the capitation method. (John C.et al, 2009)

3.5. Fee for services payment method

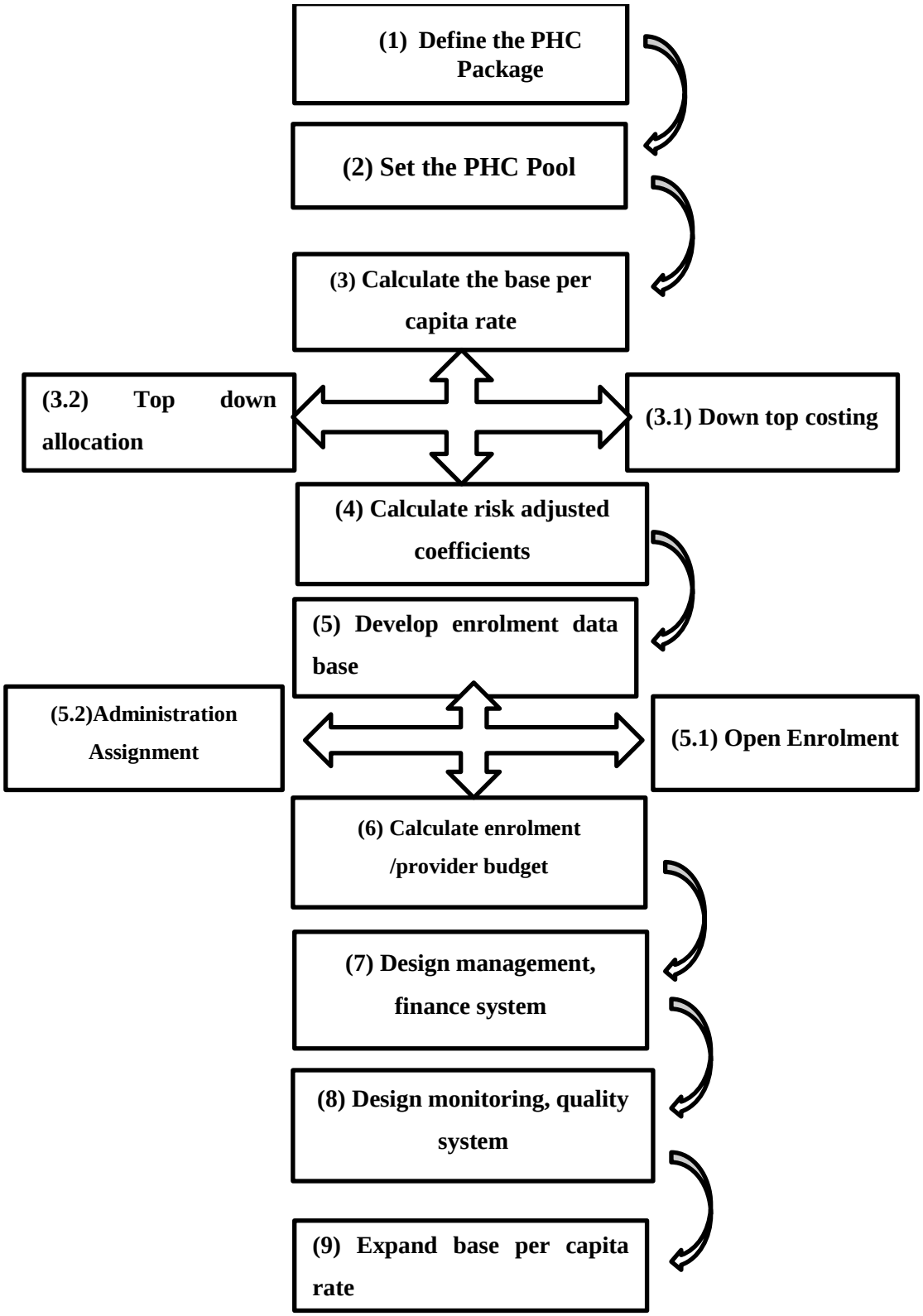
FFS payment mechanism is the oldest type of the payment mechanism has been used for provider compensation. This type of payment mechanism used by health plan or insurance companies to compensate the providers for every service offered to the clients, it's different from the capitation payment method if the subscriber not visiting the providers, the insurance plan will not going to give the providers or the hospital any money. The mount paid for the providers, based on the numbers of services utilized by subscribers as well as the price of these health

services, so in this type of payment, the health insurance scheme always bearing the risk. (Gosden T. et al 2000)

FFS give an incentive for physicians over utilized the health services for the clients as the payment is depending on the volume of services provided, rather than quality of care. additionally, FFS is the dominant physician payment method in many country including United States of America, but in those countries implemented this type of payment, they suffering from continues escalating of health expenditures due to rose of the cost of health services and there for led to inefficiency using of resources, so many countries seek for reasonable payment mechanism that could enhance efficiency of using their limited resources through adopting and moving towards capitation and diagnostic related group by sorting a certain diseases together.

According to the input or output base the FFS can be categorized into two types. The first type is fee for services restricted with fee schedule and at this type the providers are paid for their all claims including each services provided to the clients, therefore the providers under this category are going to increase the relative highly price services for profit purpose and not according to the need of the patient. The second type is FFS with fee schedule, and at this type there is an agreement between the purchaser and the providers in which the providers can compensated by specific percentage of the total cost of the health services and not the whole cost, but this type of payment can encourage the providers to provide to increase the number of services provided but at this time they choose the less costing services. (John, 2009)

Figure 3. 1 Steps in Designing of a Per Capita PHC Payment System



Source: Providers Payment Mechanism: How to Manual, John, C.et al, 2009

Experience from other Countries and the Previous Studies:-

The capitation payment mechanism has been experienced by many countries including many developed and developing countries .Introducing of capitation varies among countries, so some countries tailored it for a certain age group such as the elderly and other countries accompanied it with FFS such as in some European countries such as in Denmark, Italy, and the UK .In USA capitation payment is implemented in both inpatient and outpatient.

Stephen M. et al (1992) conducted a study, found that capitation for comprehensive health services had led to 40% fewer inpatient admissions in comparison to FFS system, and the length of stay dropped by almost 50% under capitation comparing with FFS.

Benjamin T. et al (2009) conducted a study that analyzed the financial effect of capitation matrix system on total knee and total hip replacement, implement cost over 1 year period, at a community hospital system paid through capitation, and the study found that, in the first year after implementation of capitation system, cost for hospital decreased by 26% for both total knee and hip procedures, but the study should investigates the long run term cost, also the study didn't mentioned the number of procedures before and after implementation of capitation as the decreasing cost may be due to reducing number of provided procedures, on the other hand the study didn't conduct the cost from purchasers perspective.

Winnie C and Siripen S. et al (2001) conducted study in Thailand in 2001, attempted to detect the impact of capitation payment system which adopted by Social Security Scheme (SSS) on the use of resources, specifically a reduction of treatment resources, market structure and internal management of hospitals. The study used medical record data and contracting data from SSO, hospital claim data from SSS and semi-structured interview, the method used in this study is econometric model, the study revealed that, SSS patient in general, use fewer resources with capitation when compare to FFS payment method, also found that capitation led to increase in quality competition among contractors and subcontractors. Moreover, capitation led to change internal management system of hospitals regarding to changing physician payment method, utilization review and essential drug list.

Catalano R. et al (2000) conducted a study comparing the cost of mental health services for children and youth under FFS and under capitation, the authors concluded that compared to FFS, capitation reduces health service costs. But the study did not mention the utilization and demand of health services under FFS and under capitation, because the drop in the cost may be due to providers holding up provision of health services, also the study mentioned nothing about the impact on the quality and accessibility of care.

Dusheiko M. et al (2006) conducted before and after study comparing waiting times for elective surgery at the time before and after suspended capitation in UK, they found that there is a significant reduction in waiting times regard to admission or length of stay, that leading to decrease the cost of hospitalization, after suspending capitation for FFS there was an increase in the volume of elective admissions, that means capitation is a way towards using our scarce resources more wisely and efficiently.

Kerr EA. et al (I997) conducted a study comparing physician satisfaction with their quality of care between physicians reimbursed by capitation, salary or FFS, through questionnaires sent to physician group in California, measuring four criteria; patient relationship, quality of care, ability to treat patients based on physician's self-decision and ability to refer patients to specialists, the study concluded that physicians paid under capitation found to less satisficed comparing with physician under salary or FFS, this result is expected as FFS financially incentives for physicians to provide unlimited services to gain more profit compared to capitation, on the other hand, if the capitation fee is less than the actual cost from a physician's perspective may be the root cause of this dissatisfaction, this study is different as the calculated capitation will come up with a per capita rate that includes the actual cost from a physician's perspective and that may satisfy the physicians.

Barton M. et al (2001) conducted a study comparing access to effective care for elderly patients under FFS, salary and capitation, the study was targeted the enrolled in Medicare, access was measured in three areas, preventive care, diagnostic care and chronic disease care, the study found that, compared to FFS, access to care was either as good or better under salary and capitation, this study encourages us to

conduct our study but we should consider the differences of economic status and theme between developed and developing countries.

Joan R. et al (2002) conducted study in Colorado, to examine cost and access for mental illness patient services for two group of patient. The first group, the providers paid under FFS and. The second group the providers paid under capitation payment mechanism, and the variable measured are services cost, utilization and access, study found that cost per person was reduced under capitation payment compare to patient under FFS, also the study found that by the end of year two, the cost reduced by two-third comparing capitation to FFS, but also found that the access under capitation was also reduced. Lower access is expected to be in the capitation payment mechanism, but with close monitoring evaluating system as my study will suggest we can avoid this challenge.

Coleman et al.(2000) conducted a prospective cohort study comparing the health services utilization of the older adult receiving rehabilitation services for hip fracture. Utilization measure includes length of stay, physician visits, nursing time and time in therapy, and also the study compared quality of care in term of return to community living and mortality rate. The study found that comparing to organization using FFS and organization using capitation payment methods for the same health services, capitation was associated with a decrease in health services utilization but the health outcomes did not change comparing with FFS.

Gosden T. et al. (2003) Conducted a before and after study, investigating whether a change in payment mechanism from capitation to capitation and fee-for services, lead to significant change in primary care physician activities. Physician activities measured by consultation face to face and telephone consultation, renewal prescription, referral to hospitals and to specialists' .The author concluded that physician activities increased and referral rates decreased under capitation with FFS payment method.

Table 3. 1 Papers Reviewed –Methods and Results

Author(Topic)	Indicator studied	Explanatory variables	Method	Result
Cole et al (1994) (Payment and outcomes in health care)	Length of patient stay	Capitation vs. FFS	Econometric , Logit Model	The cost is less in capitation
Winnie C. and Siripen S. et al(2001) (Impact of capitation payment : Social Security Scheme)	LOS, Drug, lab, Doctor, Total charge	Capitation	Descriptive - Qualitative	Capitation reduces the cost vs. FFS
R. Catalano et al (2000) (The effect of capitated financing of mental health .Colorado)	Total charge	Capitation vs. FFS	Descriptive	Capitation reduces the cost, increase effort towards prevention
Gosden T.et al (2000) (Capitation , Salary, FFS.PHY behaviour)	Utilization services ,visit, referral, Laboratory	Capitation, FFS, Salary	Descriptive	FFS more visit, curative, diagnostic services vs. capitation
Bloom JR et al (2002) (Mental health cost and access under alternative capitation system)	Cost, utilization, access	Capitation vs. FFS	Descriptive	Cost reduced two-third in capitation vs. FFS, access lower in capitation
Barton et al (2001).(Measuring access to effective care among elderly enrollees in managed and FFS care)	Access and cost	Capitation vs. FFS	Retrospective cohort study	Access under capitation is good or better compared with FFS, and less cost in capitation

CHAPTER IV
RESEARCH METHODOLOGY

4.1. Conceptual framework

To measure the current financial sustainability under FFS payment method in term of financial gap of the NHIF-Algadarif state, the comparison between revenues and expenditures based on FFS as the current payment mechanism will be organized. On the revenue side, the state received revenues from both government and non-government side, the governmental revenue includes; premium contributions represent 10% of the formal sector employees' salaries, chapter 1’ national health staff, and governmental grants, opt-out income, and the poor family's premium through Federal Ministry of finance, donations and others which cannot categorize. The non-governmental revenue includes; premium contribution of the poor families through Zakat chamber, the revenue of the informal sector premium (self-employees) and other private sector, direct health care facilities income, investments and others.

The government revenues of the NHIF-Algadarif State and for purpose of this study can be categorized as, Federal Government Revenue (FGR) which includes premium contributions for the formal sector that represent 6% of employee's salary, Chapter '1 NHIF staff, pensioner contributions, students at university level, poor families, orphans, donations and others including e.g. Opt-Out and exemptions. The State government revenue (SGR) which includes premium contribution for the formal sector that represent 4% of the employee's salary, contributions for some poor families and donation.

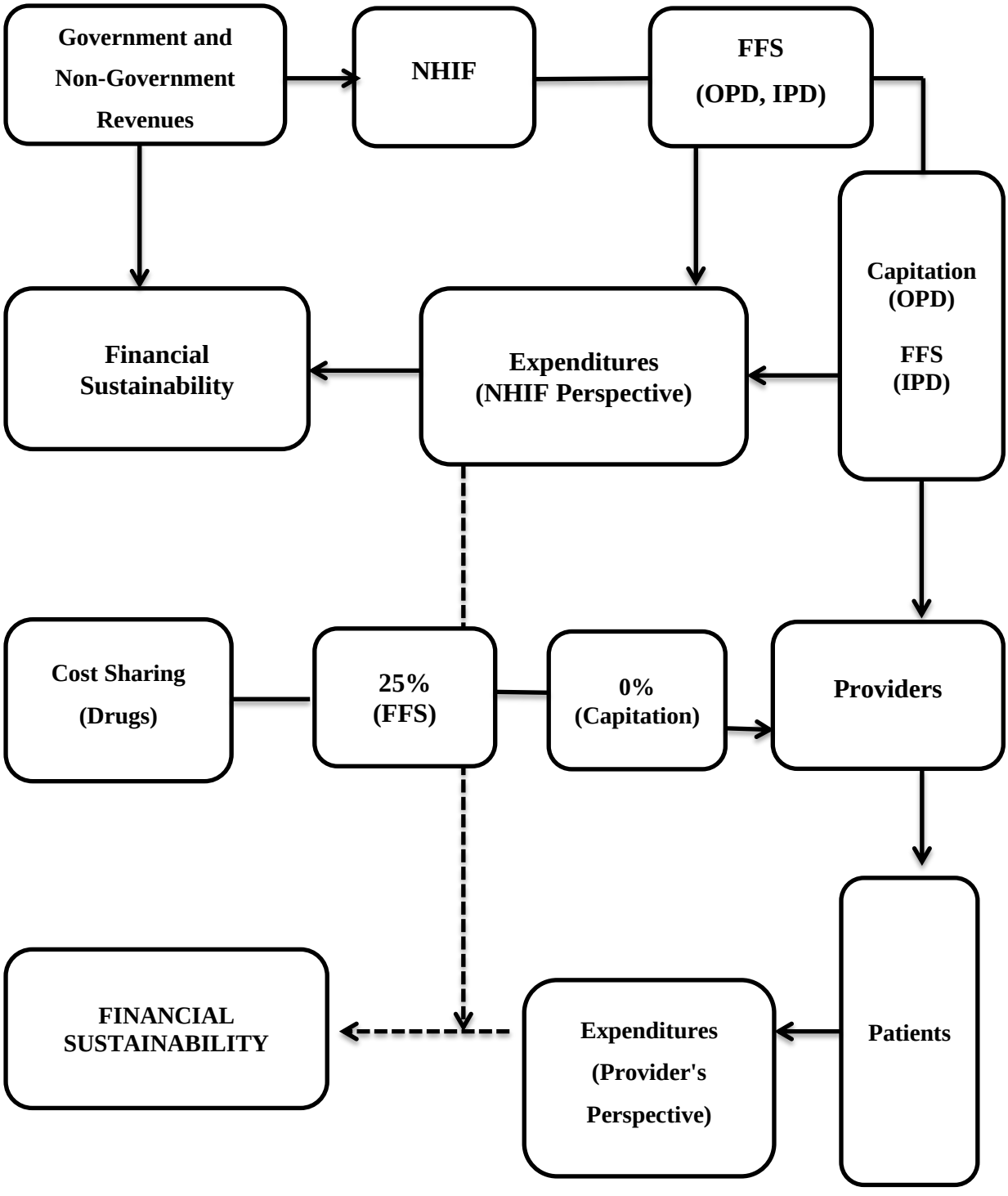
The non-government revenues of the NHIF-Algadarif State and for purpose of this study can be categorized as, family's contribution through Zakat chamber at both Federal level and State level, the families includes, poor families, families of martyrs, Imams and preachers, prisoners and investment that includes the direct health facilities income and other non-government revenues that including sales.

On the expenditure side, the study will not going to specify the cost items by items, also will use the term of expenditure as a proxy for the cost, so the expenditures will be categorized into two components, the direct health expenditure and indirect health expenditures. The direct health expenditure according to the NHIF benefits

package, includes Physician visit fee, Medical Assistants visit fee, Specialist visit fee, laboratory investigations, hospitalization, diagnostic procedures, surgical operations, medicine (75% of the price of drug) and others. The Indirect health expenditures include labor cost, capital cost and material cost, the capital cost will be treated as capital expenditures e.g. for repairing and maintaining the assets. The current financial sustainability will be measured in term of financial ratio (Current Ratio) by defining the liabilities and assets of the NHIF-Algadarif State.

Under the expected capitation payment situation, the revenue side of both government and non-government side will not change regarding to the components. The health expenditures of the defined health package (capitated package) will be replaced and paid under the capitation payment method, the rest of health services expenditures that represent the inpatient care services will continue to be paid by FFS. The indirect health expenditures for the expected situation will remain in its same components as in the current situation. There for the indirect health expenditure and the inpatient care services will be treated as a fixed cost in both situations. The financial sustainability at this situation will be measured in term of financial gap and then compare the different gaps after assuming a certain assumptions regarding to different expenditure perspectives and the events that may take place in the future, the financial gaps will be examined under the expected results, profit, loss or breakeven point.(Figure 3. 2)

Figure 4. 1 Conceptual Framework (NHIF and Provider's Perspective)

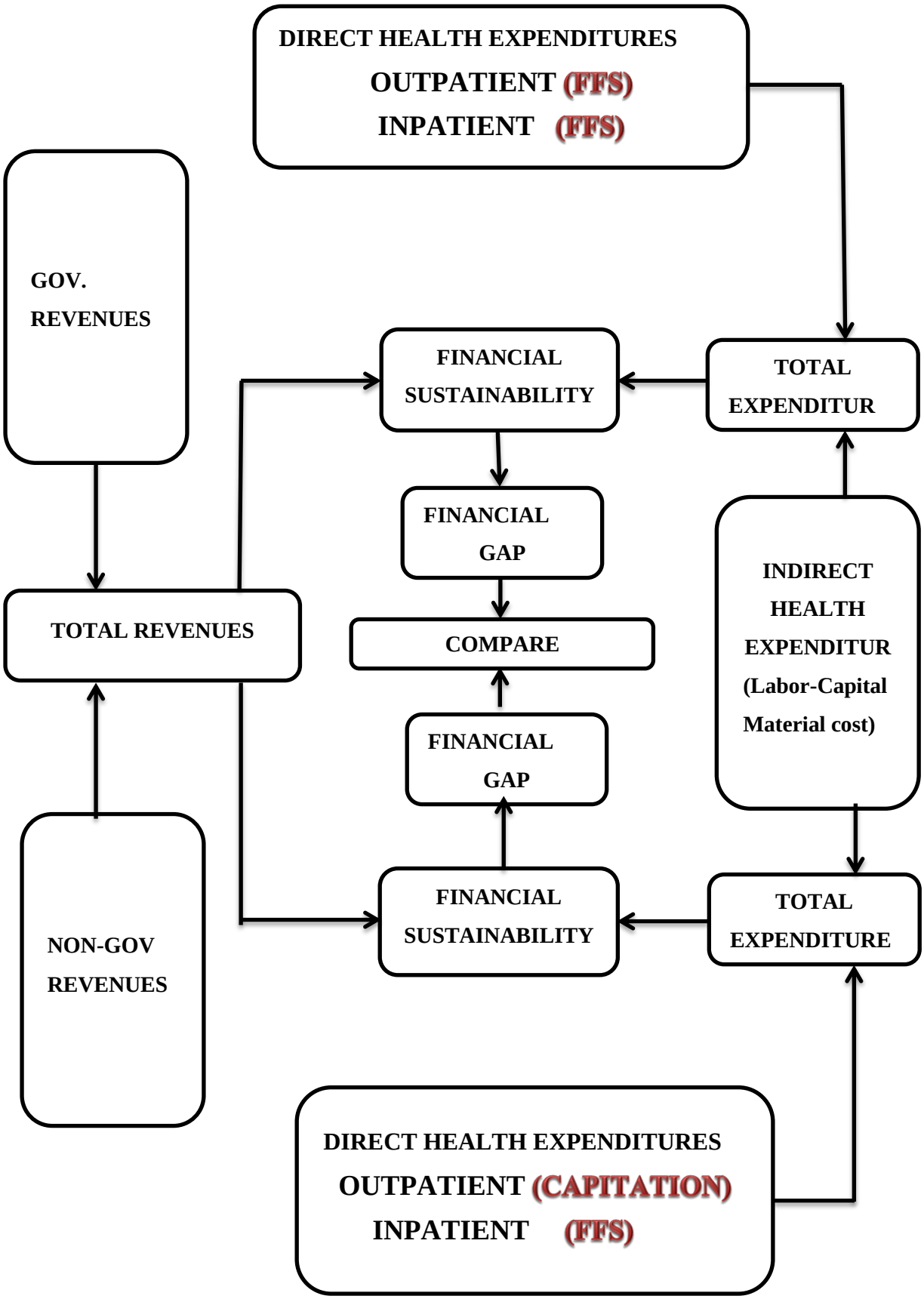


OPD: Represent the Outpatient Care Services.

IPD: Represent the Inpatient Care Services

25%: Copayment paid by insurers for drugs

Figure 4. 2 Conceptual Framework (NHIF-Perspective)



4.2. Operational Defenitions

4.2.1. NHIF-Algadarif State Total Revenues:

Represent the NHIF-Algadarif State income, from both government (FMOF, SMOF), and non-government sources.

4.2.2. NHIF-Algadarif State Total Expenditures:

Represent the NHIF-Algadarif State amount spending on both direct health services (inpatient and outpatient care services), and indirect health services (capital, material and labor expenses)

4.2.3. Opt out income

Revenues generated from some private sector enterprise for allowing them to be out of the scheme.

4.2.4. Zakat income

Represent the premium contributions paid by Zakat Chamber for the poor families.

4.2.5. Pharmaceutical's co-payment

Represent 25% of medicine's price paid by the insured as a co-payment.

4.2.6. Financial Sustainability

Either the NHIF-Algadarif State revenues exceed the expenditures or the revenues and the expenditures at the break-even point

4.2.7. Financial Gap

Represent the difference between the NHIF-Algadarif State revenues, and the expenditures.

4.2.8. Premium Contributions

Compulsory deductions from the formal sector employees, which represent 10% of the monthly employee's' salary (4% paid by employees and 6% paid by employers).

4.2.9. Chapter 1staff'

Represent the salaries of the NHIF-Algadarif State paid for regular staff (permanent hiring), by the FMOF

4.3. Study Design

The design of the study is descriptive retrospective study of the financial status of the National Health Insurance Fund - Algadarif State. Two components of data will be analyzed for two different situations as follows:

4.3.1. Current situation under FFS (inpatient, outpatient) care

In this situation, data of the NHIF –Algadarif State for the years 2008-2012 will be used, by examining both revenue side and expenditure side of the financial statement, including the balance sheet and revenue statement, and they will be analyzed and categorized as follows:

- Source of revenue (GOV. and non-GOV. Revenue)
- Chart of expenditures (Direct health expenditure , and Indirect health expenditure)
- Assets
- Liabilities

4.3.2. The New situation under FFS (inpatient) and Capitation (outpatient) care

In this situation, under capitation as a new payment mechanism for the outpatient care services (Physician, Medical Assistants, Specialists visits, laboratory investigations, diagnostic services and medications) and FFS for the inpatient care services, this arrangement may alter the financial status of NHIF-Algadarif State so the assumptions applied in this study will be as follows:

- Introducing capitation payment mechanism for the outpatient care services, will be supported by the stakeholders including the prescribers, community leaders, member of the broad of directors, Doctors, Staff member, government leaders and the donors, in order to achieve the financial sustainability of NHIF – Algadarif State.

- The providers will not change their behaviors, regarding to more consuming of the inpatient as it remains paid under FFS, and also the quality and the accessibility of the health care will not change.

- The total revenue of the NHIF will increase according to the trend in the past meaning; will increase with the same growth rate in the years 2008-2012.

- The health expenditures will increase in the year 2013-2017, by the expected inflations rate(30%, 35% and 40%), at the same time the medical services will not change regarding to its price.

- As the patient paid a copayment for the drug price (25% of the drug price) under the FFS system, but under capitation payment method for the outpatient services, the capitation rate will include the whole outpatient cost including the whole drug price (100%).

Projecting and forecasting for the new situation under capitation with FFS payment will depend on the possible events that might take a place in the future, and also will depend on the historical data of the years 2008-2012. The forecasted items will be includes:

- The expected expenditures for both direct and indirect health expenditure.
- The expected revenues for both government and non-government side.

4.4. Source of Data

The data will be collected from secondary source, and can be categorized as follows:

- Source of revenues (list of revenues by source) 2008-2012.
- List of expenditures (chart of accounts and balance sheet) 2008-2012.
- Actual Health expenditures for the defined package for period 2008-2012 (Expenditures list).
- Actual cost of the outpatient care services from the providers perspective in 2012 (Providers Expenditure Statements).
- Utilization rate for the defined package for period 2008-2012 (Statistical Reports of the NHIF and Providers).
- Number of clients by age, sex and residence till 2012 (Coverage Reports).
- Number of providers and the geographical distributions of the health facilities (SMOH, private facilities)

4.5. Data Analysis

Data analysis depends mainly on the conceptual framework, study design and the assumptions, the total revenue of the State can be calculated according to the equation follows:

TR = GOV.R + NGOV.R

Where

TR = Total Revenues

GOV.R = Governmental Revenue

= # Families x 0.06[a] x head of family Salary

NGOV.R = Non-Governmental Revenue

= **# Families x Premium Amount**

The governmental revenue can be calculated according to the equation below:

GOV.R = FGR+SGR+DO+O GOV.R

Where

GOV.R= Governmental Revenue

FGR = Federal Government Revenue

SGR= State Government Revenue

DO= Donation

OGOV.R = Other Government Revenue

The non-governmental revenue can be calculated according to the equation below:

NGOV.R =ZAKAT+PRIV+INFORM+INV+O NGOV. R

Where

NGOV.R = Non-Governmental Revenue

ZAKAT = Poor Families contribution through Zakat chamber

PRIV = Private sectors contribution

INFORM= Informal sector contribution

INV = Investments =

= Direct Health Services Revenues + 0.25[b] x Drug price)

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[a]. Proportion of salary rate

[b] Copayment for drug rate

The total health expenditure can be calculated according to the equation given below:

TE = DHE+INDHE

Where

TE = Total Expenditure

DHE = Direct Health Expenditure

= **Health utilization rate x patients x unit price**

INDHE = Indirect Health Expenditure **(# health services unit x unit price)**

The Direct Health Expenditure can be calculated according to the following equation:

DHE = OPE+IPE

Where

OPE = Outpatient Expenditures

IPE = Inpatient Expenditures

OPE= PHYF+SPEF+MAF+LABINV+MED+DS

Where

PHY F = Physician visit Fee = **# GP visits x unit price of visit**

MA F = Medical Assistant visits Fee = **# M A visits x unit price of visit**

SPE F= Specialists fee = **# Specialists visit x price of visit**

LABINV= Laboratory Investigation = **# laboratory investigation x price**

MED= Medicines

= # Patient x 0.75* x Medicine's price

DS = Diagnostic Services **= # Patient x unit price**

The inpatient expenditures can be calculated by the equation:

IPE=SURO+ADM+OT DHE

Where

SUR O = Surgical Operations= **(# of Operations x Operation's Price)**

ADM = Admission services = **(Room rate x unit price + 0.75 x Medicine's price)**

OT DHE = Other Direct Health Expenditures. **(Referral Patient Expenditures)**

* Proportion Paid by the Health Insurance Scheme for drugs.

The Indirect health expenditure can be calculated according to the equation below:

INDHE = Labor +Capital +Material + OINHE

Then we can come up with the financial status of NHIF-Algadarif State under the current FFS payment mechanism situation by calculating the financial Gap by the equation below:

FG = TR-TE

Where

FG = Financial Gap

TR = Total Revenue

TE = Total Expenditure

4.6. The financial status

The current financial status under FFS payment method of the NHIF – Algadarif State, will be measured by two approaches, by measuring the financial ratio (current ratio) and by measuring the financial gap.

4.6.1. The Current (Financial) Ratio

Represent the ratio of the current assets to the current liabilities, and it shows and evaluates the ability of the NHIF – Algadarif State to pay its liabilities or short-term debts (Obligations) such as, accounts payable (payment to providers), accrued taxes, wages and short term notes payable e.g. to a bank.

Current Ratio =Total Current Assets /Total Current liabilities

The current ratio of the NHIF should be greater than (2:1), for ensuring that the scheme can meets its short-term debts or obligation with no stress, so usually the higher current ratio is better than a lower current ratio (Barton A, 2005)

4.6.2. Total Current Assets

Are the things that, the NHIF –Algadarif State owns, includes fixed assets and current assets. The fixed assets that do not expected to convert into cash during one year of normal operation (necessary for operating the business) such as vehicles, furniture, cash register and computers. The current assets are those likely to convert into cash within one year or more includes cash on hand, money in count and saving accounts and the money your customers owe the NHIF-Algadarif State (premium).

4.6.3. Total Current Liabilities

Represent the unpaid obligations of the NHIF-Algadarif State, includes current liabilities which are payable within a year, and the long –term liabilities which payable over a period more than a year.

4.6.4. The financial gap

Represent the difference between the revenues and the expenditures. The current financial status for the NHIF- Algadarif State and according to the historical data, the total health expenditure is expected to exceed the total revenue in each coming year, so the financial gap will be examined under its expected results; profit, deficit or breakeven point

4.7. Components of Per Capita Payment

The study will try to estimate the amount of capitation fee / member for the outpatient services, and the estimation will depend on the following components:

- The package of services planned to pay through per capita rate is a part from the PHC package in Sudan, because the rest of the components of PHC have been provided free of charge to all citizens, so the package will represents almost the first-contact medical care (outpatient care), which includes consultation to the General practitioner, Medical Assistant and Specialist, laboratory Investigation services, x-ray, ultra-sound and the medications at outpatient level.
- The defined package pool (cost) will be set by top down allocation, by defining the percentage of the total budget of the NHIF –Algadarif State allocated to the capitated package by each items, then divided by the number of the clients to come up with the base per capita rate/year/member.

  Annual Per Capita = Annual Outpatient Budget / # of the clients
- Providers per capita budget in a geographical area as:

  Per capita provider budget = Base per capita rate X# enrolled population.
- Assignment of enrolled individuals to providers in this study will be according to geographical area for the time being, especially for the remote areas in which there is only one provider and also for lacking in the information system

- Design for monitoring and quality assurance system is a fundamental to ensure that the providers maintain quality and responsiveness to the patients and guard against capitation payment incentives.

4.8. Forecasted Revenues and Expenditures in the years 2013-2017

The revenues and expenditures of the health insurance in the State during the period 2008-2012 is are important data that will be used for forecasting and projecting for the next 5 years (2013-2017) when changing payment for the outpatient health care services from FFS to capitation.

The forecasted revenues for the years 2013-2017, was calculated by using straight line growth rate for calculating Percent Growth Rate according to the following equation:

$$\mathbf{PR = (V_{Present} - V_{Past}) / V_{Past} X100}$$

Where:

PR= Percent Rate.

$V_{Present}$= Present Value.

V_{Past}= Past Value.

Then we can come up with the average growth rate by the equation:

$$\mathbf{AGR= 1/n \sum_{i=1}^{n} xi}$$

Where

AGR = Average Growth Ratio

n= number of years

x= Growth rate.

The average growth rate added for each year started from the year 2012 as a base and then multiplied by calculated average rate to forecast for the next year revenue as following equation:

$$\mathbf{F R = AGR \times R_{t-1}}$$

Where

F R= Forecasted Revenue

AGR= Average Growth Ratio

R = Past years Revenue.

Because of uncertainty of the future revenues and expenditures, three different scenarios will be created regarding to the most possible choice among different situation of the health insurance revenue and expenditure, the health expenditure under both fee-for services payment method and under capitation method will be adjusted to different inflation rate according to the expected inflation rate and that will be 30%, 35% and 40%, and the revenue will be adjusted to the expected increase by 2% in both government revenue and non-government revenue (expected new family's enrollment). The scenarios for coming years (2013-2017) are as follows:

Scenario (A): The revenue of the NHIF increase according to the trend in the past, and the health expenditure of the outpatient services paid under the current FFS, from NHIF and provider perspective, adjusted to the inflation rates.

Scenario (B): The revenue of the NHIF increase according to the trend in the past, and the health expenditure of the outpatient services under the capitation from both NHIF-Algadarif State and providers perspective, adjusted to the inflation rates.

Scenario (C)**:** The revenue of the NHIF increase by 2%, and the health expenditure of the outpatient services under the current FFS, and under capitation payment from NHIF perspective, adjusted to the inflation rates.

Scenario (A), indicated forecasted financial status for the year 2013-2017, if the total revenue of the health insurance increase by the same pattern and growth rate in the past (2012 will be the base year), and at the same time the expected amount paid for the outpatient services under the current FFS, firstly from NHIF perspective and secondly, from the providers perspective adjusted to the inflation rates, Then we can measure the financial gaps under both situation.

Scenario (B) indicated forecasted financial status for the year 2013-2017, if the total revenue of the health insurance increase by the same pattern and growth rate as in the past (2012 will be the base year), and at the same time the expected amount for the outpatient services under new capitation method form both NHIF-Algadarif State and providers perspective, adjusted to increase according to the inflation rates.

Scenario (C) indicated forecasted financial status for the year 2013-2017, if the total revenue of the NHIF, increase by 2% (2012 will be the base year), and at the same time the expected amount for the outpatient services under the current FFS and

under the new capitation payment method from NHIF perspective, adjusted to increase according to the inflation rates.

After measuring the financial sustainability in term of financial gap, the financial gap will be examined under its terminal result; profit, loss or breakeven point.

4.9. Possible Benefits

The results of this study will be useful in offering a detailed information and knowledge, and some implicitly guideline for the National Health Insurance Fund and policy makers in Algadarif State about the current financial situation of the Scheme in the State and the expecting financial situation if the State continue compensating the providers with the fee-for-services. Moreover the study can be the beginning of breaking the ice about introducing capitation in the health insurance system in Sudan, and it could be useful for the policy makers and other States of Sudan for preparing to reshape the existing payment mechanism by implementing capitation payment mechanisms into the payment system, and replacing the fee for service mechanism gradually, in order to come up with financial sustainability of the National Health Insurance scheme. Additionally, the study makes attempts to highlight the financial sustainability of the scheme in order to be establishes as a goal for policymakers and stakeholders. Moreover, this study would be useful as a base for further coming studies

CHAPTER V
RESULT AND DISCUSSION

The result of this study is depending mainly on the conceptual framework, the design and the assumptions. The study result will start with analyzing the current financial situation of the NHIF-Algadarif State under FFS in the year 2012, then will calculate for the capitation rate and discuss the utilization rate for the outpatient care services, followed by forecasting the financial situation of the scheme in the coming years under three different scenarios.

This chapter is divided into seventh sections; the first section will describe the revenues and expenditures of the NHIF-Algadarif State between 2008 and 2012. The second section will analyze the current financial situation in term of financial ratio and financial gap. The third section will concern about the forecasted financial situation under the current FFS payment method. The fourth section concerns about per capita calculation for the outpatient care services. The fifth section will examine the utilization rate for the inpatient care services and the actual outpatient expenditures from the provider's perspective in the year 2012. The sixth section will examine firstly, the forecasted financial gap under the new mix payment method, capitation for the outpatient care services and FFS for the inpatient care services, secondly the financial gap under FFS for both the inpatient and outpatient care services. The last section will discuss the results of the study.

The study used secondary data that related to the financing system of the NHIF- Algadarif State for analyzing the financial situation. The financial system composite of (1) the revenues of the State by resources of finance i.e. Government revenue and non-government revenues. (2) The expenditures of the State in term of direct health expenditures and indirect health expenditures that include .labor, material and capital expenditures (3) the financial situation in term of current financial ratio and financial gap.

The NHIF-Algadarif State has been categorized the revenues in term of contributions of the formal sector and informal sector, thus the study tries to itemize the revenues in term of government and non-government revenue to be more informative so the study faced difficulties to define the items individually to group

them together due to incomplete information and missed revenue items information in alternating years, the financial data are obtained from the financial statements reports in each fiscal year from the year 2008-2012 of NHIF-Algadarif State, the government revenues subdivided by the study into revenues from the Federal government and from the State government, the non-government revenues categorized into the most prominent sectors that sharing the highest revenues.

The study began with the analysis of revenues from government and non-government, direct and indirect health expenditures, current assets, liability and the financial sustainability under the current FFS situation, so the study will begin with the analysis of historical data of the revenues and expenditures.

5.1. Revenues and Expenditures of the NHIF-Algadarif State under FFS system 2008-2012

The study has collected financial data between 2008-2012, composite of total revenue, total expenditure, assets and liabilities. The source of the revenues and expenditures of the NHIF-Algadarif State will be treated as a part of study results and can be illustrated as follows

5.1.1. Revenues under Current FFS System

1) Government Revenues

The government revenues are allocated from both Federal and State Ministry of Finance monthly according to the number of the formal clients those are mandated to enroll under the scheme, the government revenue represent the 10% of the monthly salaries of the enrollees, the percentage composite of 6% that paid by the Ministry of Finance as an employer and 4% deducted from the client's salary. Additionally, the Federal Ministry of Finance paid salaries and compensation for the regular NHIF staff, contributions for some poor families, pensioners, and student at university level. The total government's revenues are cover almost 65% of the total NHIF- Algadarif State revenues. (Table 5. 1).

According to the historical data, the NHIF-Algadarif revenues from the government side during the last five years were increasing in each year. It was increased in the year 2008 by 3% from 7,999.94 million SDG to 8,109.43 million SDG, in 2009 to 9,883.34 million SDG and in 2010 to 12,103.88 by the 22% growth

rate, in 2012 the revenue was increased by 56% which represent the highest increasing rate during this period to 18,893.78 million SDG. The spending of these revenues are approved, monitored and audited by the MOSW and FMOF.

The proportion by source shows that revenues from State government revenues are the highest source of income, which represents 73% of the total government revenues, 11% represents Federal government contribution, 9% and 7% for donation and other contributions respectively, the later represents exceptions, opt-out revenues and etc.

2) Non-Government Revenues

The total non-government revenues cover almost 35% of the total revenues. The State is depend beside the revenues from the government side, on the revenues from others institutes and various activities that can be categorized as investments, which includes providing health services for the un enrolled people through the direct health facilities and also includes the copayment paid by the clients for medicines. The institutes that have the highest share in non-government revenue is Zakat Chamber that represent almost 50% of the total non-government revenues and increasing each alternate year during the five years with average growth rate about 30% annually.

Depending on the historical data in the last five years between 2008-2012, the non-government revenues increased each year with average growth rate about 28% for the whole period, is increased from 3,693.42 million SDG in 2008 to 6,477.59 million SDG in 2009 with growth rate about 75%, in 2010 decreased to 5,533.53 million SDG by the growth rate about -11%, in 2011 increased again by 25% to reached 7,175.82 million SDG and in 2012 was increased by 22% and reached 8,748.48 million SDG.

Regardless Zakat contribution as a source of high proportion for non-government income, the other sources for non-government revenues includes self-employee's contributions which started to enroll under the insurance scheme since 1999, but their growth rate is relatively small it was 5% and 9%in 2008 and 2009 respectively, comparing with e.g. Zakat chamber growth rate, in 2012 the growth rate for the informal sector decreased by 20% to reached 13% comparing with the year

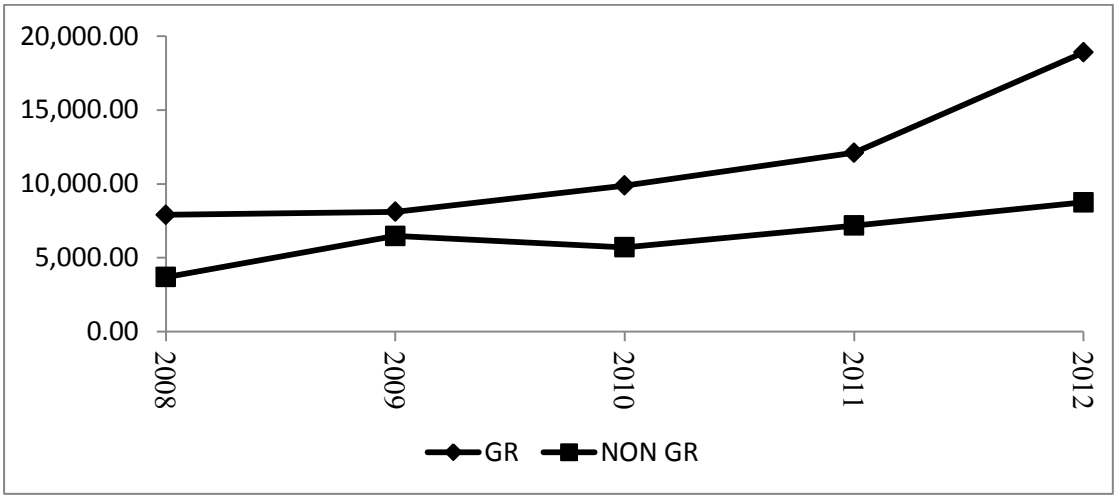
2011 and that may be an indicator for dropping out of some clients but there is no study researched to pick out the factors that stimulate dropping out of the clients. The investment revenues started in 2008 with 876.43 thousand SDG but increased over time with a higher growth rate about 50% and reached in 2012 to 3,593.40 million SDG, the data collected is not complete regarding to the proportion of the components that represent investment revenues e.g. income from providing health services to un enrolled patients through the direct health facilities and the copayment of the enrolled client paid for medicines and other investment activities. (Table 5. 1).

Table 5. 1 Total Government and Non-Government Revenues 2008-2012

Revenues Source	**2008**	**2009**	**2010**	**2011**	**2012**	**Average**	
						amount	**Gr-R**
Government Revenue							
-Federal G revenue	299,022	631,931	1,198,735	624,539	3,709.645	1,292.774	
- State G revenue	6,652.850	7,277.429	8,279.945	10,422.77	11,384.03	8,803.408	15%
-Donation	648,453	-	-	-	1,533.504	1,090.97	
-Other	300,639	200,071	406,656	1,038.568	2,266.597	842.51	
Total Government Revenue	**7,900.964 (68.1%)**	**8,109.431 (55.6%)**	**9,884.336 (63.3%)**	**12,085.88 (62.8%)**	**18,893.78 (68.4%)**	**12,029.66 (65.4%)**	**25.8%**
Non-government revenue							
-Private sector							
-informal sector	26,685	117,254	77,185	85,809	233,048	108.00	
-Zakat chamber	373,247	408,372	428,665	735,578	979,444	585,061	30%
-Investment	2,208.058	3,746.222	2,317.440	3,563.474	3,908.410	3,148.720	24%
-Other	876,429	2,067.746	2,326.593	2,634.997	3,593.395	2,299.83	50%
	209,000	138,000	583,643	155,966	34,184	244.16	
Total Non-government Revenue	**3,693.419 (31.9%)**	**6,477.594 (44.4%)**	**5,733.526 (36.7%)**	**7,175.824 (37.2%)**	**8,748.481 (31.6%)**	**6,365.769 (34.6%)**	**27.8%**
Total Revenues	**11,594.3 (100%)**	**14,587.0 (100%)**	**15,618.8 (100%)**	**19,261.7 (100%)**	**27,642.2 (100%)**	**18,395.4 (100%)**	**24.9%**

Source: Revenues list of NHIF-Algadarif 2008-2012

Figure 5. 1 Total Government and Non-Government Revenue2008-2012



Source: Table 5. 1

3) The Total Revenues:

The total revenue that includes government and non-government revenues was increasing in the last five years. It was increased in the year 2009 by 26% from 11,594.38 million SDG to 14,597.02 million SDG, 7% in the year 2010 from 14,597.02 million SDG to 15,618.86 million SDG, in the year 2011 by 23% from 15,618.86 million SDG TO 19,261.7 million SDG and in the year 2012 it was increased by 44% from 19,261.7 million SDG to 27,646.26 million SDG. The average revenues from both government and non-government during the last five years was 18,395.43 million SDG with average growth rate about 25% and that was consistency with increasing the enrollees in each alternating year either from the Formal sector or the informal sector.(Figure 5. 1)

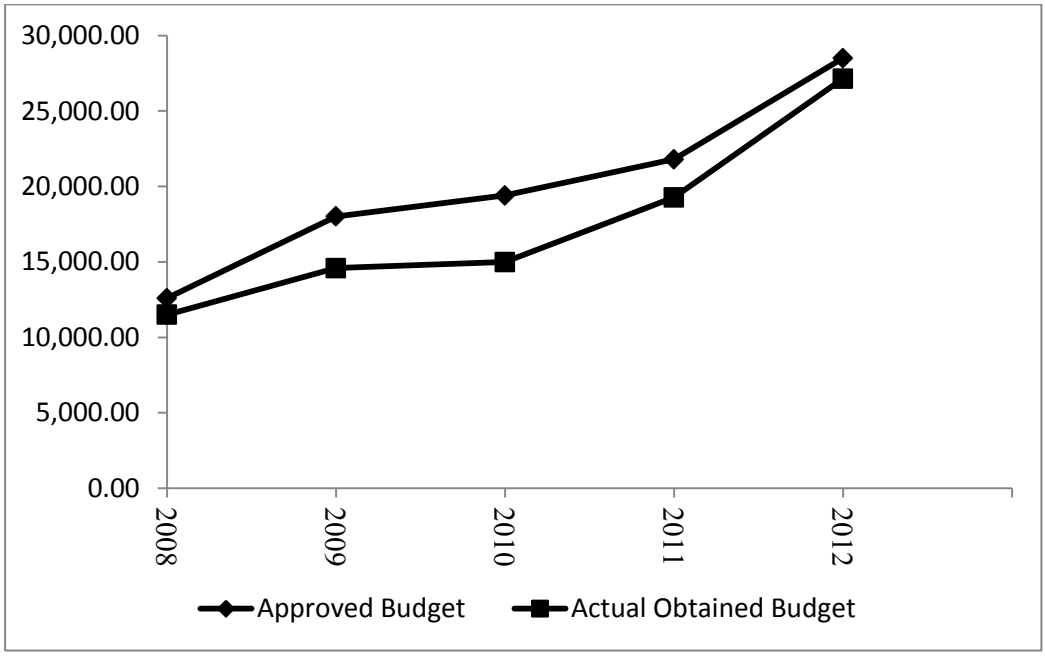
The majority of revenues are from the government side as in the most public health insurance system in the world, it was responsible for 65.4% from the total revenues, the State government alone is responsible for almost three quarter (73%) from the total government revenues and the Federal government was responsible for only 10% but actually this not the real picture because the State government act as a handler for the government revenues that already were approved and allocated by the FMOF and that consistency with that the actual obtained budget was always less than the approved budget. In the last five years the study found that, in 2008 the approved budget was 12,593.34 million SDG and the actual obtained budget was 11,507.38 million SDG, in 2009 the approved budget was 18,018.00 million SDG and the actual obtained was 14,587.02 million SDG, in 2010 the approved was 19,400.00 million SDG and the actual obtained was 14,988.86 Million SDG, in 2011 the approved was 21,805.50 million SDG and the actual obtained was 19,279.42 million SDG and in 2012 the approved budget was 28,500.00 million SDG and the actual obtained budget was 27,142.26. (Figure 5. 2).

The NHIF-Algadarif State receives revenues from the government and non-government side that are composite of 7 main sources.

- Federal Government.
- State Government.
- Donations.
- Private sector.

- Informal sector contribution
- Zakat Chamber income
- Investment.

Figure 5. 2 The Approved Budget and the Actual Obtained 2008-2012



Source: NHIF-Algadarif State Financial Report 2008-2012

Expenditures under current FFS system

The expenditures under the current FFS system are including expenditures from both government and non-government revenues. The expenditures for the purpose of the study are categorized into two categories. The direct health expenditures include the outpatient care services expenditures, the inpatient care services expenditures and the other direct health expenditures. The indirect health expenditures include labor cost, material cost, capital cost and other.

1) *Direct Health Expenditures:*

Based on the historical data in the last five years indicated there was 79.8% (14,543.44 million SDG) of the total expenditures that NHIF.A Algadarif State has spent on the direct health care services for each year during the last five years.

The majority of spending is the outpatient care service that covers 71.1% of the direct health expenditures (10,338.17), 29.9% for the inpatient care services (3,402.03 million SDG).The total outpatient care services spending is increasing in

the alternating year that is consistency with increasing the utilization rate and enrollment of a new enrollees under the scheme umbrella. It was increased by 15.4% in the year 2009 from 5,580.59 million SDG to 6,440.09 million SDG, 45.7% in the year 2010 from 6,440.09 million SDG to 9,582.53 million SDG, 26% in the year 2011 from 9,582.53 million SDG to 11,785.63 and increased 57% in the year 2012 from 11,785.63 million SDG to 18,502.03 million SDG, the average growth rate of the outpatient care services spending during the last five years is 35.9% annually.

The majority of spending in the outpatient care services is the medicines spending which keep on increasing in the alternating year that consistency with increasing enrollees and irrational use of drugs from the providers side as the payment mechanism is FFS, it was represents 68.6% of the total inpatient care spending(7,096.02 million SDG) in the last five years, in 2009 it was increased by 1.8% from 3,784.57 million SDG to 3,851.96 million SDG, in 2010 it was increased by 63.7% from 3,851.96 million SDG to 6,303.91 million SDG, in 2011 it was increased by 26% from 6,303.91 million SDG to 7,948.07 million SDG and increased 71% in the year 2012 from 7,948.07 million SDG to 13,591.61 million SDG. The average growth rate of medicines spending over the last five years is 40.6 % annually.

The total inpatient spending is increasing and decreasing in the alternating year that is consistency with increasing and decreasing the outpatient services. It was jumped by 223% from 1,326.69 million SDG in the year 2008to 4,283.21 million SDG in the year 2009, decreased 26% in the year 2010 from 4,283.21 million SDG to 3,167.08 million SDG, increased again in 2011 by 69% from 3,167.08 million SDG to 5,363.52 and increased in the year 2012 by 28% from 5,363.52 to 6,885.85. The average inpatient spending during the last five years was 4,205.27 with average growth rate about 74% annually

2) Indirect Health Expenditures

The indirect health expenditures including spending on labor, material, capital and others expenditures that includes; unpaid salaries and compensations, pledges, advances and etc. The State average spending on the indirect health expenditures was 20% of the total spending during the last five years, it was increased by 63.85% in the year 2009 from 2,292.03 million SDG to 3,753.88, by 31.4% in 2010 from 3,753.88 million SDG to 4,934.39 million SDG, in 2011, and it was decreased by 20% from

Table 5. 2 Total Expnditures 2008-2012

Expenditures Source	2008	2009	2010	2011	2012	Average amount	Average Growth rate
Direct Health Expenditures							
Outpatient Care Services [a]							
• G.P Consultation	530.023	891.122	1,040.63	1,350.76	1,411.94	953.133	%29.80
• M.A Consultation [b]	7.151	17.437	20.038	3.752	34.611	16.598	
• Specialist Consultation	281.046	351.184	452.421	225.543	327.101	327.459	
• Laboratory Investigations	728.682	976.889	1,214.03	1,830.48	2,641.01	1,478.22	
• Diagnostic Services [c]	249.116	351.506	351.501	427.021	495.76	374.982	
• **Medicines (75%)[d]**	3,784.5	3,851.96	6,303.91	7,948.07	13,591.6	7,096.02	40.60 %
Total Outpatient Expenditures	**5,580.5 (60.6%)**	**6,440.09 (44.5%)**	**9,382.53 (53.7%)**	**11,785.6 (55.9%)**	**18,502.0 (64.2%)**	**10,338.1 (56.7%)**	**35.90 %**
Inpatient Care Services							
• Admission Services [e]	71.712	85.253	122.285	112.34	229.04	124.13	
• Surgical Operations	357.229	429.372	430.511	786.051	1,388.27	678.291	
• Other inpatient Health Expenditure [f]	897.749	3,768.57	2,614.28	4,465.13	5,268.58	3,402.86	
Total Inpatient Expenditures	**1,326.6 (14.4%)**	**4,283.20 (29.6%)**	**3,167.08 (18.1%)**	**5,363.52 (25.4%)**	**6,885.89 (23.9%)**	**4,205.27 (23.1%)**	**74%**
Indirect Health Expenditures							
• Labor cost	1,192.2	2,123.34	3,656.22	2,573.32	1,875.33	2,248.11	
• Material Cost	249.274	312.655	363.53	603.431	129.47	331.67	
• Capital Cost	773.461	454.712	320.031	244.459	250.00	408.53	
• Other Indirect Expenditure	77.001	1063.17	594.611	526.941	1,198.15	691.97	
Total Indirect Health Expenditures	**2,292.0 (25%)**	**3,753.88 (25.9%)**	**4,934.39 (28.2%)**	**3,948.15 (18.7%)**	**3,452.95 (11.9%)**	**3,676.28 (20.2%)**	**15.70 %**
Total Health Expenditures	**9,199.3 (100%)**	**14,477.1 (100%)**	**17,484.0 (100%)**	**21,097.3 (100%)**	**28,840.8 (100%)**	**18,219.7 (100%)**	**34%**

Source: NHIF-Algadarif State, Expenditure List 2008-2012

Notes: [a] Health centers, Rural and Teaching Hospitals level

[b] Health personnel working at Health centers mainly at remote areas.

[c] X-ray, ultrasound services at the outpatient level.

[d] Prescribed drugs at the outpatient level represent 75% of total price.

[e] L O S, inpatient medicines, inpatient diagnostic services and etc.

4,934.39 million SDG to 3,948.15 million SDG and decreased again in2012 by 13% and reached 3,452.95 million SDG and that consistency with moving some liabilities to be paid on the next year. (Table 5. 2)

The majority of spending in the indirect health expenditures is on labor cost, the average spending on the labor in the last five years was 2,248.11 that represent 61% of the total indirect health expenditures. It was increasing and decreasing in the alternate year, it was increased by 78% in the year 2009 from 1,192.29 million SDG to 2,123.34 million SDG, 72% in the year 2010 from 2,123.34. million SDG to 3,656.22 million SDG, it was decreased by 29.6% in the year 2011 from 3,656.22 million SDG to 2,537.32 million SDG and decreased again in the year 2012 by 27% from 2,537.32 million SDG to 1,875.33 million SDG and this was consistency with that the most liabilities planned to be paid in the next year due to budget constraint is the compensation and allowance for labor.

3) Total Expenditures

The total expenditures that including direct and indirect health spending was increasing at the same time with increasing the revenues, in 2009 it was increased 57% from 9,199.30 million SDG TO 14,477.17 million SDG, in 2010 was increased 21% from 14,477.17 million SDG to 17,484.00 million SDG, in 2011 increased by 21% from 17,484.00 million SDG to 21,097.30 million SDG and in 2012 the expenditures increased by 37% and reached 28,840.87 million SDG. The average NHIF-Algadarif State spending for the last five years was 18,219.73 million SDG with growth rate about 34% annually.

The great part of the average expenditures for the last five years was the outpatient spending that represented 57% of the total expenditures (10,338.70 million SDG), the inpatient average expenditures was 23% of the total expenditures (4,205.27 million SDG), spending on the labor cost was 12% (2,248.11 million SDG) the spending on capital and material was 2%(331.671 million SDG), 2.5% (468.53 million SDG) respectively. (Figure 5. 3)

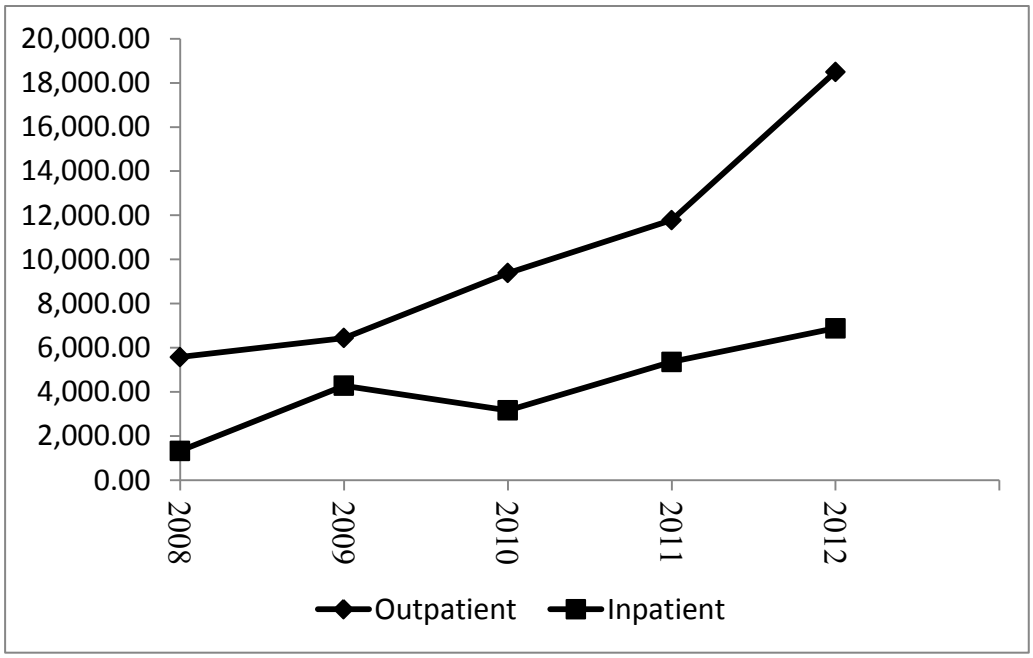
The study found that the NHIF –Algadarif State expenditures sources consist of five main categories:

- Inpatient Care Services
- Outpatient Care Services

- Labor cost.
- Material cost.
- Capital cost.

Figure 5. 3 The Total Inpatient and Outpatient Spending 2008-2012

unit: million SDG



Source: Table 5. 2

5.1.2. Financial Sustainability of the NHIF-Algadarif State under FFS 2008-2012

Comparing between the revenues and the expenditures for that specific period, there is a surplus in 2008 about 2,395.08 million SDG, in 2009 the surplus started to decline and it was only 109.85 thousand SDG, after that the NHIF Algadarif State began to get a loss that reached in 2010 about 1,865.41 million SDG, in 2011 about 1,835.60 million SDG and in 2012. The loss was 1,198.61 million SDG. The average loss during the year 2008-2012 was -478.89 thousand SDG and that is consistency with escalating health expenditures against constraint budget. (Table 5. 3)

The study found that the total revenues exceed the total expenditures in the year 2008, then in 2009 the NHIF-Algadarif State almost at the breakeven-point which indicated the last year when the State was financially sustainable, in the year 2010 the net revenues was became negative and less negative in the 2011, in the year

Table 5. 3 Financial Sustainability of the State 2008-2012

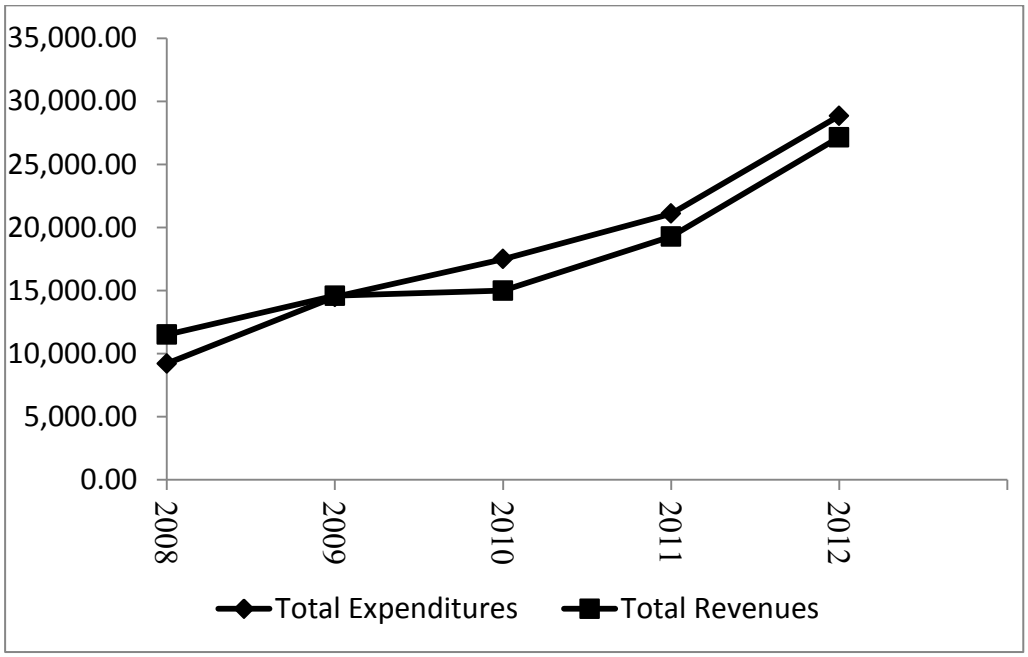
unit: million SDG

	2008	2009	2010	2011	2012	Average Amount	Average Growth
Revenues							
* Government Revenue							
• Federal G revenue	299,022	631,931	1,198,73	624,539	3,709.65	1,292.77	
• State G revenue	6,652.85	7,277.42	8,279.94	10,422.7	11,384.0	8,803.40	
• Donation	648,453	-	-	-	1,533.50	1,090.97	15%
• Other	300,639	200,071	406,656	1,038.56	2,266.59	842.51	
* Non-government revenue							
• Private sector	26,685	117,254	77,185	85,809	233,048	108.00	
• informal sector	373,247	408,372	428,665	735,578	979,444	585,061	30%
• Zakat chamber	2,208.05	3,746.22	2,317.44	3,563.47	3,908.41	3,148.72	24%
• Investments	876,429	2,067.74	2,326.59	2,634.99	3,593.39	2,299.83	50%
• Other	209,000	138,000	583,643	155,966	34,184	244.16	
Total Revenues	**11,594.3**	**14,587.0**	**15,618.8**	**19,261.7**	**27,642.2**	**18,395.4**	24.9%
Expenditures							
***Outpatient Care Service**							
• G.P Consultation	530.023	891.122	1,040.63	1,350.76	1,411.94	953.133	%29.80
• M.A Consultation	7.151	17.437	20.038	3.752	34.611	16.598	
• Specialist Consultation	281.046	351.184	452.421	225.543	327.101	327.459	
• Laboratory Investigations	728.682	976.889	1,214.03	1,830.48	2,641.01	1,478.22	
• Diagnostic Services	249.116	351.506	351.501	427.021	495.76	374.982	40.6%
• **Medicines (75%)**	3,784.57	3,851.96	6,303.91	7,948.07	13,591.61	7,096.02	35.9%
Total Outpatient Services	5,580.59	6,440.09	9,382.53	11,785.63	18,502.0	10,338.1	
Inpatient Care Services							
• Admission Services	71.712	85.253	122.285	112.34	229.04	124.13	
• Surgical Operations	357.229	429.372	430.511	786.051	1,388.27	678.291	
• Other inpatient Health Expenditures	897.749	3,768.57	2,614.28	4,465.13	5,268.58	3,402.86	74%
Total Inpatient Expenditures	1,326.69 (14.4%)	4,283.20 (29.6%)	3,167.08 (18.1%)	5,363.52 (25.4%)	6,885.89 (23.9%)	4,205.27)	
Indirect Health Expenditures							
• Labor cost	1,192.29	2,123.34	3,656.22	2,573.32	1,875.33	2,248.11	
• Material Cost	249.274	312.655	363.53	603.431	129.47	331.67	
• Capital Cost	773.461	454.712	320.031	244.459	250.00	408.53	
• Other Indirect Health Expenditures	77.001	1063.17	594.611	526.941	1,198.15	691.97	
Total Indirect Health Expenditures	2,292.03	3,753.88	4,934.39	3,948.15	3,452.95	3,676.28	15.7%
Total Expenditures	**9,199.30**	**14,477.17**	**17,484.0**	**21,097.30**	**28,840.8**	**18,219.73**	34%
Balance TR-TE	**2,395.08**	**109.85**	**-1,865.4**	**- 1,835.6**	**-1,198.**	**-478.89**	

Source: Table 5. 1 and Table 5. 2

Figure 5. 4 Financial Sustainability of the State 2008-2012

unit: million SDG



Source: Table 5. 3

2012 the total expenditures were continue exceeding the revenues emphasizing that the NHIF-Algadarif State is not financially sustainable. (Figure 5. 4)

5.2. The Current Financial Status of the NHIF-Algadarif State in 2012

5.2.1. Revenues in 2012

About 18,893.87 million SDG that represent 68.4% of the total revenues was derived from government side, that including the Federal and the State government which have the largest portion of the total revenues that represent 41% (11,384.03 million SDG). The non-government side derived about 31.6% (8,748.48 million SDG) of the total revenues; Zakat Chamber and investment had the largest portion of the total revenues by 14% and 13% respectively. (Table 5. 4)

5.2.2. Expenditures in 2012

The total expenditures in the year 2012 was 28,840.87 million SDG, the NHIF-Algadarif State was spent around 18,502.03 million SDG that represent 64% of the total expenditures on the direct health care services, spending on the drugs at outpatient care services level was 13,591.61 million SDG that represent 75% of

Table 5. 4 Financial Sustainability of the State 2012

Unit: million SDG

	Amount	**%**
Total Government and Non-Government Revenues	**27,642.26**	**100%**
Total Government Revenues	**18,893.78**	**68.4%**
Government Revenues		
-Federal G revenue	3,709.65	13.1%
- State G revenue	11,384.03	41.2%
-Donation	1,533.50	6.1%
-Other	2,266.60	8%
Total Non-Government Revenues	**8,748.48**	31.6%
Non-government Revenues		
-Private sector	233.05	0.8%
-informal sector	979.44	4%
-Zakat chamber	3,908.41	14%
-Investment	3,593.40	12.7%
-Other	34.18	0.1%
Total Expenditures	**28,840.87**	**100%**
Total direct Health expenditures	**25,387.92**	**88%**
Direct Health Expenditures(outpatient)		
-G.P Consultation	1,411.94	4.9%
-M.A Consultation	34.611	0.1%
-Specialist Consultation	327.101	1.1%
-Laboratory Investigation	2,641.01	9.1%
-Diagnostic Services	495.76	1.7%
-Medicines (75%)	13,591.61	47%
Direct Health Expenditures(inpatient)		
-Admission Services	229.04	0.8%
-Surgical Operations	1,388.27	4.8%
-Other Direct Health Expenditures	5,268.58	18.3%
Total Indirect Health Expenditures	**3,452.95**	**12%**
Indirect Health Expenditures		
-Labor cost	1,875.33	6.5%
-Material Cost	129.47	0.4%
-Capital Cost	250.00	0.9%
-Other Indirect Health Expenditures	1,198.15	4%
Financial Gap or Net Revenues	**-1,198.61**	

Source: The NHIF-Algadarif State Financial Report 2012

the total drug expenditures, represents about 47% of the total expenditures there for the spending on the outpatient drug services has the largest portion of the total expenditures (represent only 75% of the expenditures), spending on the GP's consultation was 5% (1,411.94 million SDG) of the total health expenditures.(Table 5. 4)

Inpatient spending was 6,885.89 million SDG that represent 24% from the total expenditures and the other inpatient health services that including spending on referring patient outside the State about 5,268.58 represents 18% from the total expenditures thus it has the largest portion on the inpatient spending. Spending on the indirect health services about 3,452.95 million SDG and represents 12% from the total expenditures, spending on labor was 1,875.33 million SDG which represents 7% of the total expenditures. (Table 5. 4)

5.2.3. The Current Financial Gap

Depending on the data of the year 2012, the current financial gap represents the gap between the total revenues and the total expenditures.

1) Total Revenues in 2012

Depending on the conceptual framework, the total revenues can be measured according to the following equations

TR = GOV.R + NGOV.R ——————————— (1)

Where

TR = Total Revenues

GOV.R = Governmental Revenue

NGOV.R = Non-Governmental Revenue

The governmental revenue can be calculated according to the equation below:

GOV.R = FGR+SGR+DO+O GOV.R ——————————— (2)

Where

GOV.R= Governmental Revenue

FGR = Federal Government Revenue

SGR= State Government Revenue

DO= Donation

OGOV.R = Other Government Revenue

The non-governmental revenue can be calculated according to the equation below:

NGOV.R =ZAKAT+PRIV+INFORM+INV+O NGOV. R ——————(3)

Where

NGOV.R = Non-Governmental Revenue

ZAKAT = Poor Families contribution through Zakat chamber

PRIV = Private sectors contribution

INFORM= Informal sector contribution

INV = Investments

ONGOV.R= Other Non-Government Revenue

GOV.R=3,709.64 + 11,348.03 +1,533.50 + 2,266.59 = **18,893.78** million SDG

NGOV.R=233.048+979.444+3,908.41+3,593.393+34.182=**8,748.48** million SDG

Total Revenues = 18,893.78+8,748.48 = 27,642.26 million SDG

2) Total Expenditures in 2012

Depending on data for the year 2012, the expenditures can be calculated according to the following equations:

TE = DHE+INDHE ——————————————— (4)

TE = Total Expenditure

DHE = Direct Health Expenditure

INDHE = Indirect Health Expenditure

The Direct Health Expenditure can be calculated according to the following equation:

DHE = PHYF+SPEF+MAF+LABINV+PHARM+DS+SURO+ADM+OT D

DHE = Direct Health Expenditure

PHY F = Physician visit Fee

MA F = Medical Assistant visits Fee

SPE F= Specialists fee

LABINV= Laboratory Investigation

PHARM= pharmaceutical Cost, 75% of the drug price

DS = Diagnostic Services

SUR O = Surgical Operations

ADM = Admission services

OT DHE = Other Direct Health Expenditures.

The Indirect health expenditure can be calculated according to the following equation: INDHE = Labor +Capital +Material+ OINHE ——————— (6)

DHE= 1,411.94+34.611+327.101+2,641.01+495.76+13,591.61+299.04+1,388.27+ 5,268.58 = **25,387.92** million SDG

INDHE= 1,875.33+129.47+250.00+1,198.15 =**3,452.95** million SDG

Total Expenditures = 25,387.92+3,452.95 = 28,840.81 million SDG

The financial status of NHIF-Algadarif State under the current FFS payment mechanism situation by calculating by the equation below:

FG (1) = TR-TE

Financial Gap = 27,642.26 -28,840.81= (-1,198.61) million SDG

The financial status of the NHIF –Algadarif State in the year 2012 under FFS as the current payment mechanism in term of financial gap, the state was got loss by **1,198.61** million SDG. (Table 5. 4)

The NHIF-Algadarif State in order to overcome with this deficit the State borrows from the State Zakat Chamber in term of contribution in advance, also the get support from the NHIF- at Presidency level. Moreover they delayed some labor compensation and allowance to be paid later in 2013.

5.2.4. The Current Ratio

The current ratio is a financial ratio that measures whether or not a firm has enough resources to pay its debts over the next 12 month. It compares a firm's current assets to its current liabilities. It is express as follows:

Current Ratio=Current Assets / Current Liabilities

Acceptable current Ratios are generally between 1.5-2: 1 (Barton, 2005) for healthy business, if a company's current ratio is in this range, and then generally indicates good short financial strength, low values for the current ratio indicate that a firm may have difficulty in maintaining current obligations, generally a high current ratio is better than a low current ratio

The NHIF-Algadarif State has assets comprise cash, investments, account Receivable, inventories and fixed assets that include land, buildings and vehicles and

has liabilities composite of wages payable, purchased health services, Drugs, Doctors and account payable for maintaining and repairing buildings, vehicles and equipment.

Table 5. 5 Current Ratio of the State 2012

	Amount	%
Total Assets	**40,787.71**	100%
Current Assets		
Cash in Bank	**534.546**	**1.3%**
Investment	**3,593.40**	**8.8%**
Account Receivable-Net		
• Formal Sector Contributions	**13,420.67**	**32.9%**
• Informal Sector Contributions	**10,094.01**	**24.7%**
Inventories		
• Drugs	**2,110.23**	**5.1%**
• Medical materials	**212.34t**	**0.3%**
Property, Equipment		
-Land	**5,850.00**	**14.3%**
- Buildings	**3,900.00**	**9.5%**
- Equipment	**1,284.85**	**3.1%**
Total liabilities	**28,253.96**	**100%**
-Wages Payable	**901.234**	**3.3%**
-Account Payable for Drugs	**13,281,97**	**47%**
-Account Payable for health services	**9,552.96**	**33.8%**
-Account Payable for Doctors	**2,398.22**	**8.4%**
-Account Payable for maintenance and repair		
• Buildings	**379.22**	**1.3%**
• Vehicles	**304.55**	**1.1%**
• Equipment	**311.13**	**1.1%**
- -Others	**1,124.68**	**4%**
Differences between Assets and Liabilities	**12,533.74**	
Current ratio	**1.44**	

Source: the NHIF-Algadarif State Balance Sheet 2012

According to the historical data in the year 2012, has shown that the State has total current assets represents 40,787.71 million SDG and current liabilities 28,253.71 million SDG, so the NHIF –Algadarif State has current ratio was 1.4:1.It means, The NHIF-Algadarif State for every one million owes it has 1.4 million SDG in assets, but the normal sufficient current ratio should be 2:1, there for this ratio meaning that the

State may has difficulties to meet its obligation for the next 12 month, so we can conclude that ,the State may be financially unhealthy.(Table 5. 6)

5.3. Forecasted Financial Situation under FFS method

Depending on the historical data for the years 2008-2012, the study tried to forecast the financial status of the NHIF-Algadarif State if the State continue and maintain environment in the same situation regarding to Fee-For –Services as a dominant payment method for compensating providers at both inpatient and outpatient level, this means that there is no change in the pattern of flow of Government revenues and non-government revenue on one hand and the direct health expenditures and indirect health expenditures on the other hand, only increased according to the trend in the past.

The study used the year 2012 as a base for forecasting both total revenues and total expenditures in the coming year 2013-2017. The study found that, the average growth rate of the total revenues in forecasted years is 26%, in 2013 the revenues will be increasing by 27% from 27,642.2 million SDG to 34,692.2 million SDG, in 2014 by 24% from 34,692.2 million SDG to 43,181.6 million SDG, in 2015 by 20% will be 54,277.1 million SDG, in 2016 will increase by 27% to reached 68,954.4 million SDG and in 2017 the revenues will increase by 28% from 68,954.4 million SDG to reached 88,601 million SDG. In the expenditures side the study found that the expenditures will increase by average growth rate about 29.2%, in the 2013 the total expenditures will be 36,705.33 million SDG, in 2014 will be 47,005.53 million SDG, in 2015 60,573.19 million SDG, in 2016 78,547.88 million SDG and in 2017 the total expenditures will reach 102,498.48 million SDG.

The financial situation in term of financial gap according to the forecasted revenue and expenditures, the study found the NHIF-Algadarif State will incur loss if maintain the FFS payment environment in the coming future, the study found the loss will be -2,010.1,-3,823.8,-6,296.0, -9,593.4 and -13,897.4 million SDG for the year 2013,2014,2015,2016 and 2017 respectively, the average net loss will be in the coming five years is **-7,124.3** million SDG. (Table 5. 7)

Table 5. 6 Forecasted Financial Sustainability under FFS 2013-2017

Revenues, Expenditures	Forecasted Revenues					Average	
	2013	**2014**	**2015**	**2016**	**2017**	**amount**	**Growth rate**
Total Revenues	**34,695.2 (100)**	**43,181.6 (100)**	**54,277.1 (100)**	**68,954.4 (100)**	**88,601.0 (100)**	**57,941.7 (100)**	**26.00 %**
• Federal G revenue	4,822.5 (13.9)	5,545.92 (12.8)	6,377.81 (11.8)	7,334.48 (10.6)	8,434.65 (9.5)	6,503.08 (11.2)	**15%**
• State G Revenue	13,091.6 (37.7)	15,055.3 (34.9)	17,313.6 (31.9)	19,910.7 (28.9)	22,897.3 (25.9)	17,653.7 (30.5)	**15%**
• Donation	1,993.5 (5.7)	2,591.62 (6)	3,369.11 (6.2)	4,379.84 (6.4)	5,693.79 (6.4)	3,605.5 (6.2)	**30%**
• Other	2,946.58 (8.5)	3,830.55 (8.9)	4,979.71 (9.2)	6,473.63 (9.4)	8,415.72 (9.5)	5,329.24 (9.2)	**30%**
• Private sector	284.32 (0.8)	346.87 (0.8)	423.18 (0.8)	516.28 (0.7)	629.86 (0.7)	440.1 (0.8)	**122%**
• Informal sector	1,273.28 (3.7)	1,655.26 (3.8)	2,151.84 (4)	2,797.39 (4)	3,636.61 (4.1)	2,302.87 (4)	**30%**
• Zakat chamber	4,846.43 (14)	6,009.57 (13.9)	7,451.87 (13.7)	9,240.32 (13.4)	11,457.9 (13)	7,801.24 (13.5)	**24%**
• Investments	5,390.09 (18.3)	8,085.14 (18.7)	12,127.7 (18.3)	18,191.5 (18.4)	27,287.3 (18.8)	14,216.3 (18.5)	**50%**
• Other	45.81 (0.1)	61.38 (0.1)	82.25 (0.2)	110.22 (0.2)	147.69 (0.2)	89.47 (0.2)	**34%**
• **Total Expenditures**	**36,705.3 (100)**	**47,005.5 (100)**	**60,573.1 (100)**	**78,547.8 (100)**	**102,498.4 (100)**	**65,006.1 (100)**	**34%**
• G.P Consultation	1,821.40 (5)	2,349.61 (5)	3,031.0 (5)	3,909.98 (5)	5,043.88 (4.9)	3,231.7 (5)	**29.80 %**
• MA Consultation	38.76 (0.1)	43.42 (0.1)	48.63 (0.1)	54.46 (0.1)	61.00 (0.1)	49.25 (0.1)	
• Specialist Consultation	451.40 (1.2)	622.93 (1.3)	859.64 (1.4)	1,186.31 (1.5)	1,637.11 (1.6)	951.48 (1.5)	**38%**
• Diagnostic Services	594.91 (1.6)	713.89 (1.5)	856.6 (1.4)	1,028.1 (1.3)	1,233.61 (1.2)	885.42 (1.4)	**20.00 %**
• Laboratory Investigations	3,169.21 (8.6)	3,803.05 (8.6)	4,563.6 (7.5)	5,476.40 (7)	6,571.68 (6.4)	4,716.8 (7.2)	**20%**
• **Medicines (75%)**	16,989.5 (46.3)	21,236.8 (45.2)	26,546.1 (43.8)	33,182.6 (42.2)	41,478.3 (40.5)	27,886.6 (42.9)	**25%**
• Admission Services	329.82 (0.9)	474.94 (1)	683.91 (1.1)	984.83 (1.3)	1,418.16 (1.4)	788.33 (1.2)	**44%**
• Surgical Operations	2,082.4 (5.7)	3,123.61 (6.6)	4,685.4 (7.7)	7,028.1 (8.9)	10,542.1 (10.3)	5,492.34 (8.4)	**50%**
• Other inpatient Health Expenditures	7,376.01 (20.1)	10,326 (22).	14,456.9 (23.9)	20,239.7 (25.8)	28,335.6 (27.6)	16,146.9 (24.8)	**40%**
• Labor cost	2,006.60 (5.5)	2,147.0 (4.6)	2,297.3 (3.8)	2,458.18 (3.1)	2,630.25 (2.6)	2,307.8 (3.5)	**7%**
• Material Cost	142.417 (0.4)	156.65 (0.3)	172.32 (0.3)	189.55 (0.2)	208.512 (0.2)	173.894 (0.3)	**10%**
• Capital Cost	325 (0.9)	422.5 (0.9)	549.25 (0.9)	714.02 (0.9)	928.23 (0.9)	587.801 (0.9)	**30%**
• •Other Indirect Health Expenditures	1,377.87 (3.8)	1,584.55 (3.4)	1,822.2 (3)	2,095.57 (2.7)	2,409.91 (2.4)	1,858.03 (2.9)	**15%**
Balance (financial gap)	**-2,010.1**	**-3,823.8**	**-6,296.0**	**-9,593.4**	**-13,897.4**	**-7,124.3**	

5.4. Calculation for Per Capita Rate for outpatient care services in 2012

The per capita calculation for the outpatient care services from the NHIF-Algadarif State perspective depend on using top -down allocation by defining the budget in 2012 that specified for the outpatient care services The total budget of the State for the year 2012 was 28,500.00 million SDG, the budget allocated for the outpatient services that will represents the capitation package was 15,960.00 million SDG, for the inpatient care services the allocated budget was 6,840.00 million SDG, the outpatient and inpatient care services represent the direct health services and the study found they both represented almost 80% from the total budget. The indirect health allocated budget was 5,700.00 million SDG represents 20% from the total budget. (Table 5. 8)

Table 5. 7 Total Budget Allocation of the State 2012

	Amount	%
Total Budget	**28,500.00**	**100%**
Total outpatient Budget	**15,960.00**	**56%**
Outpatient Care Services		
-G.P Consultation	2,600.00	9%
-M.A Consultation	350.000	1.2%
-Specialist Consultation	2,300.00	8.1%
-Laboratory Investigation	2,520.00	8.8%
-Diagnostic Services	525.000	1.8%
-Medicines	7,665.00	26.9%
Total Inpatient Budget	**6,840.00**	**24%**
Inpatient Care Services		
-Surgical Operations	1,388.27	4.7%
-Admission Services	1,229.04	4.3%
-Other Inpatient Services	4,222.69	15%
Total Indirect Health Budget	**5,700.00**	**20%**
Indirect Health Budget		
- Labor Cost	2,025.00	7.1%
-Material Cost	379.33	1.3%
-Capital Cost	500	1.7%
-Other Indirect Health Budget	2,795.67	9.9%

Source: The NHIF-Algadarif State Budget Plan 2012

According to the collected data for the year 2012, the study found the number of eligible clients over the State was 465.361 people. To come up with Per Capita for the outpatient care services, the budget allocated for the outpatient care services in the year 2012 will be divided by the number of the eligible clients over the State.

$$\text{Outpatient Per Capita Rate} = \frac{\text{Budget allocated for the outpatient}}{\text{\# Eligible Clients}}$$

$$\text{Outpatient per Capita Rate} = \frac{15{,}960.00}{465.361} = 34.3 \text{ SDG}$$

The majority of contribution in calculated outpatient Per Capita is for medicines that represent 16.5 SDG almost 50% of the total per capita rate and that consistency with irrationality in prescribing drugs, the next item with high share in the per capita is GP consultations that represent 16% of the total Per Capita rate (5.6 SDG), specialists about 4.9 SDG from the total Per Capita rate that represent 14% of the total Per Capita rate, laboratory investigations 5.4 SDG and represent 15.8% from the total Per Capita rate other functional services that include ultra-sound and x-ray as a diagnostic tools at the level of the outpatient contribute by 1.1 SDG that represent 3% of the total Per Capita rate and only 0.8 SDG for Medical Assistants consultation that represent 2.2% from the total Per Capita rate (Table5. 8)

Table 5. 8 Calculated Per Capita Rate for Outpatient Services 2012

Services	**Amount SDG**	**Total Expenditures**	**%**
Total outpatient Budget	**15,960.00**		
Total Number of Clients	**465.631**		
Outpatient Per Capita amount	**34.3**	**15,960.1**	**100%**
Outpatient Care Services			
-G.P Consultation	5.6	2,607.53	16%
-M.A Consultation	0.8	372.505	2.2%
-Specialist Consultation	4.9	2,281.6	14%
-Laboratory Investigation	5.4	2,514.4	15.8%
-Diagnostic Services	1.1	512.194	3%
-Medicines (100%)*	16.5	7,682.9	49%

Source: The NHIF-Algadarif Financial Records

*Represent the whole medicine's cost without copayment.

The next step in calculation for per capita rate is to assign the enrolled clients to the providers according to the geographical location and their residence, as the data derived from the NHIF-Algadarif State are poor in categorizing the clients according to the neighboring provider or health facility, the study used the available data on the clients distribution by localities to specify the amount of per capita paid for the providers at locality level (Table5. 9)

Table 5. 9 Number of Clients and Total amount of Per Capita Rate by Localities

unit: million SDG

Locality	# of clients	Amount of per capita
Algadarif Baladia	187.700	6,438.11
Alrahad	31.951	1,095.9
Alfaow	95.592	3,278.8
Alfashaga	23.900	819.780
Basonda	6.205	212.825
Albotana	8.856	303.749
Algorisha	12.266	420.722
Eastern Galabat	17.813	610.995
Western Galabat	20.325	697.162
Almafaza	6.961	238.758
Gala Alnahal	19.967	684.869
Middle Algadarif	34.095	1,169.46
Total	**465.631**	**15,971.14**

Notes: Per capita amount equalize #of client multiplied by Per Capita rate (34.3 SDG)

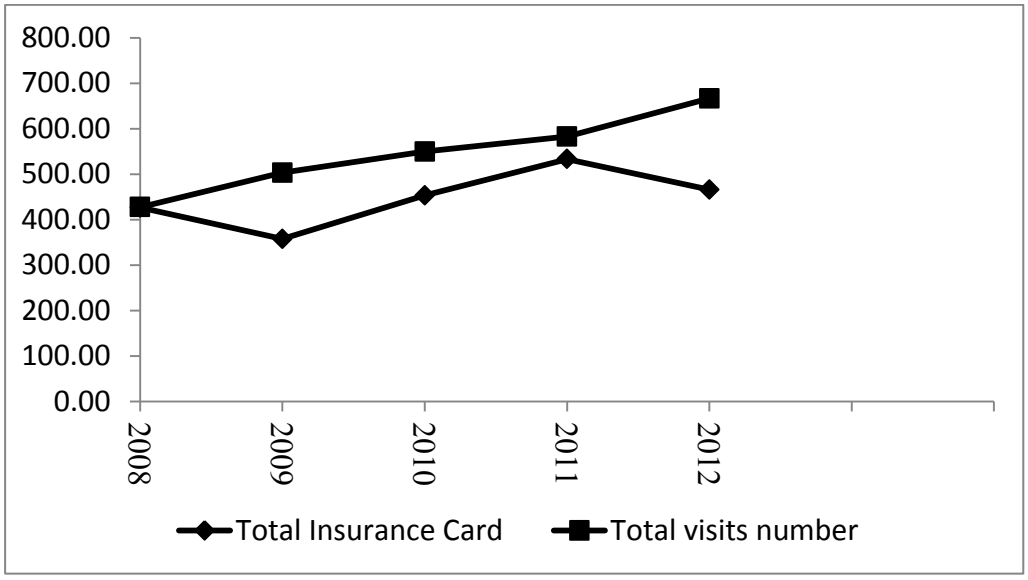
5.5. Health services utilization 2008-2012

The collected historical data for the year 2008-2012 showed the number of insurance card has been increasing over time and that consistency with the new enrollment under the scheme umbrella and due to increasing in number of new insurance card among old enrollees for the first time. The number of the insurance card in the year 2008 was 426,392 cards the number of visits to health facilities was 427,331 visits so the utilization rate was almost (1). In 2009 the number of insurance card was decreased to 357,250 cards but the total number of visits was 503,213 visits and the utilization rate increased to (1.4), in 2010 the total number of insurance card

was increased again and reached 453,125 and the number of visits was 549,504 visits with utilization (1.2), in 2011 the total number of cards was 532,890 cards, the total number of visits was 582,828 visits and the utilization rate was (1.09) and in the year 2012 the total number of cards was decreased again and reached 465,653 cards and that consistency with the last revised coverage in the State, the total number of visits was 666,679 visits and the utilization rate was increased to (1.43).

The study concluded that as the average utilization rate for the last five years was 1.3 per new consultation /per person/per year, the State utilization rate was relatively higher in comparison with the normal average utilization that between 0.5-1 new consultations per person per year in a stable population. (UNICEF, 2005)

Figure 5.5 Number of Visits and Number of Insurance Card 2008-2012



Source: the NHIF-Algadarif State, Statistical Report 2008-2012

5.5.1. Actual spending in outpatient care services and utilization rate in 2012

The study found that, the total outpatient spending in 2012 is 18,502.01 million SDG, for GP consultation was 1,411.94 million SDG that represents 7.6% from the total outpatient spending,34.611 Thousand SDG was spending on Medical Assistants consultation that represents 0.2% of the total spending,327.101 thousands SDG was spent on specialists consultation 1.8% of the total spending 495,76 thousand SDG (2.7%) was spending on diagnostic services that includes x-ray and us scanning at the outpatient level, 2,641.01million SDG (14.3%) was spending on laboratory

investigations and 13,591.6 million SDG was the spending on the medicines at the outpatient level that represents 73.5% of the actual total outpatient spending.

The total number of visits for different outpatient services during the year 2012 was 2,396.3 visits; GP consultation was 628,777 visits that represent 26.2% of the total outpatient visits, MA consultation was 33,902 visits (1.4%), Specialists consultation 32,710 visits (1.4%), diagnostic services was 24,435 visits (1%), laboratory investigation 343,866 visits (14.3%), for medicines was 1,332.68 visits (55.6%) of the total number of visits. The probability of the patient to visit the GP in the year 2012 was 94.3%, probability for visiting MA was 5.1%, for Specialists 4.9%, diagnostic services was 3.6, for laboratory investigation 51.1% and probability for drug stores visit was 199.9% that consistency with a high spending on drugs.

The utilization rate for GP whom acts as a gatekeeper was 135%(1.4) and that consistency with a high utilization rate as the FFS has been the dominant payment mechanism, for MA consultation the probability was7.3%, for specialists was 7%, diagnostic services 5.2%, laboratory investigation 73.8% and for medicines the likelihood of visiting the drug store was 283.2%.The NHIF Algadarif State actual average per capita outpatient expenditures was 51.1 SDG, 2.2 SDG for GP consultation, 1 SDG for MA consultation, 10 SDG for Specialists consultation, 20.3 SDG for diagnostic services, 7.7 SDG for laboratory investigation and 10.2 SDG the average amount paid per patient for medicines. (Table5. 10)

Table 5. 10 Outpatient Expenditures and utilization Rate 2012

unit million SDG

Outpatient services	Actual Expenditures	Number of visits	Utilization rate #visits/#total patient (%)	Total visits/total Insurance cards (%)	Average per visit Expenditures
• G.P Consultation	1,411.9 (7.6)	628,777 (26.2)	94.3	135	2.2
• MA Consultation	34.611 (0.2)	33,902 (1.4)	5.1	7.3	1
• Specialist Consultation	327.101 (1.8)	32,710 (1.4)	4.9	7	10
• Diagnostic Services	495.76 (2.7)	24,435 (1)	3.6	5.2	20.3
• Laboratory Investigation	2,641.0 (14.3)	343,866 (14.3)	51.1	73.8	7.7
• **Medicines**	13,591.6 (73.5)	1,332.68 (55.6)	199.9	283.2	10.2
• **Total**	**18,502.01**	**2.396.3**			**51.1**

Source: National Health Insurance-Algadarif State Statistical Report, 2012

5.5.2. Actual Outpatient services cost from Providers perspective

The study tried to extract the actual cost data for the outpatient services from the health care providers in the State at the level of health centers and hospitals that mainly are public facilities and acts as a monopoly in providing health services to the insurers all over the state. The study faced two obstacles while collecting such data, first the most providers are refused to cooperate and supplied the study with such data, secondly there is no perfect cost unit studies has been applied at all these health facilities, so the study depends on incomplete data derived from some officers at public facilities and private health centers.

Depending on the actual cost data from providers in the year 2012, the study found the actual average cost per the outpatient services was 1.2 SDG for General practitioner consultation that represents 4.4% from the total outpatient actual average cost, Medical Assistant consultation was 0.3 SDG (1.1%), Specialists consultation 3.9 SDG (14.4%), the low average cost for consultation consistency with too low salaries that doctors has been paid, the actual cost for diagnostic services that includes X-ray and ultra-sound at the level of outpatient have the highest share about 12.4 SDG 45.9% from the total actual average outpatient cost, for medicines was 6.5 SDG that represents 6.5% and for laboratory investigation at outpatient level was 2.7 SDG that represents 10% of the total actual average cost of the outpatient care services.

Regarding to the total actual cost for the outpatient care services from the providers perspective in the year 2012, the study depends on the number of patient visits for each outpatient services in the year 2012 and multiplied by the actual average cost for each outpatient services/visit, as the NHIF-Algadarif State clients has been receiving their health demand from different health facilities in the State, the study found that, the total actual providers expenditures for delivering outpatient health services for the insurers in the year 2012 was 12,118.82 million SDG, the total actual expenditures for GP consultation was 754.532 thousand SDG that represents 7% of the total actual providers expenditures, MA consultation expenditures was 10.176 thousand SDG (0.1%), Specialists consultation was 127.579 thousand SDG (1.2%), the low percentage for consultation was again reflects the low salaries paid for Doctors, the total expenditures on diagnostic services was 302.994 million SDG about 2.8% of the total expenditures, laboratory investigations expenditures was

928.438 thousand SDG (8.6%) and the highest expenditures was on the medicines 9,995.1 million SDG about 80.3% of the total providers expenditures that consistency with the providers has been investing more and depending on medicines commodity financially comparing with the other outpatient services.(Table 5. 11).

Table 5. 11 Actual Outpatient Expenditures by Providers 2012

Unit SDG

	Outpatient Services	**Average Actual cost /services/visit**	**Number of visits**	**Total Actual outpatient cost**
•	G.P Consultation	1.2 (4.3)	628,777 (26.2)	754.532 (7)
•	MA Consultation	0.3 (1.1)	33,902 (1.4)	10.176 (0.1)
•	Specialist Consultation	3.9 (13.9)	32,710 (1.4)	127.579 (1.2)
•	Diagnostic Services	10.4 (44)	24,435 (1)	254.127 (2.8)
•	Laboratory Investigations	2.7 (9.6)	343,866 (14.3)	928.438 (8.6)
•	**Medicines (75%)**	7.5 (26.8)	1,332.68 (55.6)	9,995.10 (80.3)
•	**Total**	**26 (100)**	**2,396.37 (100)**	**12,069.95 (100)**

Source: NHIF and State Hospitals and Health Centre, 2012

5.5.3. Comparison between Outpatient Expenditures from different perspective 2012

Based on historical data on outpatient expenditures, the study found that the NHIF-Algadarif State spent on the average outpatient per capita 51 SDG and that is too high comparing with the average actual cost from the provider's perspective which was only 26 SDG, so actually the NHIF paid almost double the actual cost to providers. The study depends on top-down allocation by defining the budget in 2012 that allocated to the outpatient services and then divided by the of clients in the State, the calculated Per Capita is 34.3 SDG for the outpatient services, so by this per capita rate the outpatient expenditures from the NHIF-Algadarif State can fall by 17 SDG per capita (33%), at the same time the providers can gain profit 8 SDG per capita (31%), therefore both NHIF and Providers can be better off regarding the their financial sustainability for the former and the later will not get loss. (Table 5. 12)

Table 5. 12 Outpatient Expenditures from NHIF, Providers and Per Capita 2012

unit: SDG

Outpatient Services	Actual Per Capita Expenditures(NHIF)	Actual Per Capita Expenditures(Providers)	Calculated Per Capita Rate
• G.P Consultation	**2.2**	**1.2**	5.6
	(4)	**(4.3)**	(16)
• MA Consultation	**1**	**0.3**	0.8
	(2)	**(1.1)**	(2)
• Specialist Consultation	**10**	**3**	4.9
	(19)	**(13.9)**	(14)
• Diagnostic Services	**20.3**	**10.4**	5.4
	(40)	**(44)**	(17)
• Laboratory Investigations	**7.7**	**2.7**	1.1
	(15)	**(9.6)**	(3)
• **Medicines (75%)**	**10.2**	**8.5**	16.5
	(20)	**(26.8)**	(48)
• **Total**	**51.1**	**26**	**34.3**
	(100%)	**(100%)**	**(100%)**

Source: The NHIF, Hospital and Health Centre State, 2012

Note: Per capita calculated from the NHIF perspective, so the items percentage is different from that for provider's items percentage.

5.6. Forecasted Financial Situation from different perspective under different scenarios

Based on the historical data on revenues and expenditures of the NHIF-Algadarif State in the last five years2008-2012 and the actual provider's expenditures on the outpatient care services in the year 2012, trend analysis is used for forecasting revenues and expenditures under different expenditures perspective and payment system.

The study concerns with the financial sustainability of the NHIF-Algadarif State by changing the payment system for the outpatient care services from the current FFS to capitation payment system, the study concerns more on the current economic crises and galloping inflation that the country has been suffering for a long time that reflected mainly on continues decreasing on government revenues regarding to a lower obtained budget than the actual planned budget as the government budget represents about 65% from the total revenues.

Following the economic crises and galloping inflation rate, the study must set up clear target in forecasting the financial situation for the NHIF-Algadarif State for the coming five years in different payment system and from different perspectives, therefor different scenarios are created and treated to indicate the most possible choice among different situation regarding to State revenues and expenditures. Revenues from both government and non-government side will continue growing up as the trend in the past, including only the actual obtained revenues and not the planned revenues. Moreover, the coming total revenues in the next five years expected to increase due to expansion in insurance coverage.

The study considered three different scenarios to fulfill the different payment and perspectives. The trend analysis and historical data during the last five years (2008-2012) will be used for studying the possibility of financial sustainability in the three scenarios. The study will use the year 2012 as a base for projecting both revenues and expenditures

The three scenarios are as follows:

- **Scenario (A)** :The revenue of the NHIF increase according to the trend in the past, and the health expenditure from NHIF- Algadarif State perspective under FFS and the outpatient expenditures from the provider perspective , adjusted to the inflation rates.
- **Scenario (B):** The revenue of the NHIF increase according to the trend in the past, and the health expenditure from NHIF- Algadarif State perspective under capitation, and the outpatient expenditures from provider's perspective adjusted to the inflation rates.
- **Scenario (C)**: The revenue of the NHIF increase by 2%, and the health expenditure from NHIF- Algadarif State perspective under FFS and under new capitation payment, adjusted to the inflation rates.

For scenario (A), indicated forecasted financial status for the year 2013-2017, if the total revenue of the health insurance, increase by the same pattern and growth rate as in the past (2012 will be the base year), and at the same time the expected amount paid for the outpatient services firstly, under FFS and secondly, under the actual cost from the providers perspective will be adjusted to the inflation rate.

For scenario (B) indicated forecasted financial status for the year 2013-2017, if the total revenue of the health insurance, increase by the same pattern and growth rate as in the past (2012 will be the base year), and at the same time the expected amount paid for the outpatient services under the new capitation method for both NHIF and provider's perspective, adjusted to the inflation rates.

For scenario (C) indicated forecasted financial status for the years 2013-2017, if the total revenue of the NHIF, increase by 2% (2012 will be the base year), and at the same time the expected amount paid for the outpatient services under FFS and under the new capitation payment method, adjusted to increase according to the inflation rate.

As the country has been suffering from economic crises and high inflation rate, the study will adjust high inflation rate regarding to the expenditures from different perspective in each scenarios, so the inflation rate will be adjusted as the expected to be in the coming years and for sensitivity analysis will be 30%, 35% and 40%.

In scenario A, the study findings shows that the NHIF-Algadarif State net revenue in the year 2012 was negative, therefor the net revenues for the year 2013-2017 expected to be also negative especially with adjusted high inflation rate, so the financial gap (net revenue) of the NHIF for the coming years if the total revenues trend is the same as in the past, and the total expenditures continue under FFS as in the past with 30% adjusted inflation rate are; -2,797.9, -6,559.4, -9,086.3, -13,418.0, -18,447.0 million SDG respectively. Financial gap if the expenditures adjusted to 35% inflation rate are; -4,239.9 , -9,380.8 , -16,684.1 , -26,840.5 , -40,722.1 million SDG respectively and at 40% inflation rate adjusted to the expenditures the financial gap for the year 2013-2017 are -5,681.9 , -13,346.4 , -24,862.4 , -41,840.4 , -66,511.7 million respectively.(Table 5. 15). The forecasted financial sustainability of the providers if the NHIF-Algadarif State continues compensating them under FFS at 30% inflation rate is; 8,361.7 , 10,869.6 , 14,130.1 , 18,371.0 , 23,881.8 million SDG respectively, at 35% inflation rate the forecasted financial gap is; 7,758.17, 9,270.9, 10,951.4, 12,753.1 and 14,574.6 million SDG respectively and at 40% inflation rate the providers forecasted financial gap for the years 2013-2017 will be; 7,154.6, 7,611.3, 7,528.0, 6,475.6 and 3,781.6 million SDG respectively.(Table 5. 16)

In scenario B, the study findings show that, the financial gap of NHIF – Algadarif State for the year 2013-2017 when the outpatient paid under capitation, in the year 2013 the net revenues will be positive by 507.570 thousand SDG and are negative for subsequent years by -1,283.7, -3,561.6, -6,157.9, -9,045.1 million SDG respectively at 30% inflation rate, at 35% inflation rate the financial gap will be -808.32, -4,748.2, -10,428.1, -18,397.6, -29,324.2 million SDG respectively, at 40% inflation rate the forecasted financial gap will be -2,123.00, -8,364.2 , -17,887.1 , -32,075.5, -52,840.8 for the year 2013-2017.(Table V-17). The forecasted financial gap of the providers under the new capitation payment method for the years 2013-2017, at 30% inflation rate will be; 723.19, 940.22, 1,222.21, 1,588.88 and 2,065.57 million SDG respectively, at 35% inflation rate the forecasted financial gap will be; -797.9, -2,114.5, -4,203.2, -7,427.6 and -12,306.47 and at 40% inflation rate, the financial sustainability of the providers under new capitated outpatient in term of financial gap for the years 2013-2017 will be; -1,595.9, -4,309.00, -8,729.9, -15,728.3 and -26,578.0 million SDG respectively. The increasing of financial gap negatively is probably due to the whole price burden by the providers (100%), and no copayment (cost sharing) paid by the patient, the drug expenditures alone represent 86% of the whole providers budget received from the NHIF-Algadarif State budget.(Table V-18)

In scenario C that assumes the revenues of the NHIF-Algadarif State increase by 2% , the study findings show that the financial gap if the outpatient paid by FFS for the year 2013-2017 will be -2,104.0 , -4,695.8 , -8,000.7 , -12,038.9 , -16,674.9 million SDG respectively at 30% inflation rate , at 35% inflation rate the financial gap will be -3,545.9 , -8,517.1 , -15,590.6 , -25,461.4 , -38,980.0 million SDG respectively and at 40% inflation rate the financial gap of the NHIF –Algadarif State will be -4,958.0 , -12,484.8 , -23,776.2 , -40,461.3 , -64,739.6 million SDG respectively.(Table V-19) The financial gap if the outpatient paid by capitation will be positive in the year 2013 by 1,200.5 million SDG and negative in subsequent year 2014-2017 by -420.04 , -2,416.1 , -4,778.9 , -7,273.1 million SDG respectively at 30% inflation rate, at 35% inflation rate the financial gap will be -114.410 , -3,884.5 , -9,342.5 , -17,018.5 , -27,552.1 for the year 2013-2017 respectively and at 40% ,the financial gap will be -1,429.5 , -7,500.6 , -16,807.5 , -30,696.4 and -51,086.9 million SDG for the year 2013-2017 respectively (Table5. 20)

Table 5. 13 Forecasted Financial Sustainability for the year 2013-2017 Scenario A (FFS, NHIF Perspective)

unit: million SDG

	Forecasted Revenues				
	2013	**2014**	**2015**	**2016**	**2017**
***Total Revenues**	**34,695.2 (100)**	**43,181.6 (100)**	**54,277.1 (100)**	**68,954.4 (100)**	**88,601.0 (100)**
Total Expenditures(TE)	**37,493.1 (100)**	**48,741.0 (100)**	**63,363.4 (100)**	**82,372.4 (100)**	**107,048. (100)**
***Outpatient Expenditure**	**24,052.6 (64.1)**	**31,268.4 (64.2)**	**40,648. (64)**	**52,843.6 (63.9)**	**68,696.7 (64)**
• G.P Consultation	1,835.52 (4.9)	2,386.18 (4.9)	3,102.03 (4.9)	4,032.7 (4.9)	5,242.3 (4.9)
• MA Consultation	44.994 (0.1)	58.493 (0.1)	76.040 (0.1)	98.852 (0.1)	128.508 (0.1)
• Specialist Consultation	425.231 (1.2)	552.801 (1.2)	718.641 (1.2)	934.233 (1.2)	1,214.5 (1.2)
• Diagnostic Services	644.488 (1.7)	837.834 (1.7)	1,089.18 (1.7)	1,415.9 (1.7)	1,840.7 (1.7)
• Laboratory Investigations	3,433.3 (9.1)	4,463.3 (9.1)	5,802.3 (9.1)	7,542.9 (9.1)	9,805.85 (9.1)
• Medicines (75%)	17,669.1 (46.5)	22,969.8 (45.6)	29,860.8 (46.6)	38,818.9 (46.6)	50,464.7 (46.5)
***Inpatient Expenditures**	**8,951.7 (23.8)**	**11,637.2 (23.8)**	**15,128.3 (24)**	**19,666.8 (23.8)**	**25,566.8 (24)**
• Admission Services	329.82 (0.8)	474.94 (0.8)	683.91 (0.8)	984.83 (0.8)	1,418.16 (0.8)
• Surgical Operations	2,082.4 (4.8)	3,123.61 (4.8)	4,685.4 (4.8)	7,028.1 (4.8)	10,542.1 (4.76)
• Other inpatient Health Expenditures	7,376.01 (18.3)	10,326 (18.3).	14,456.9 (18.3)	20,239.7 (18.3)	28,335.6 (18.3)
***Indirect health Expenditures**	**4,488.8 (12)**	**5,835.5 (12)**	**7,586.1 (12)**	**9,861.9 (12)**	**12,820.6 (12)**
• Labor cost	2,437.9 (6.4)	3,169.3 (6.4)	4,120.1 (6.5)	5,356.1 (6.5)	6,962.9 (6.4)
• Material Cost	168.417 (0.4)	218.65 (0.4)	284.4 (0.4)	364.7 (0.4)	480.512 (0.4)
• Capital Cost	325 (0.9)	422.5 (0.9)	549.25 (0.9)	714.02 (0.9)	928.23 (0.9)
• •Other Indirect Health Expenditures	1,557.6 (4.1)	2,024.8 (4.2)	2,632.3 (4.1)	3,422.0 (4.1)	4,448.6 (4.1)
Balance(TR-TE) financial gap(1)	**-2,797.9**	**-6,559.4**	**-9,086.3**	**-13,418.0**	**-18,447.0**
Financial Gap (2)	**-4,239.9**	**-9,380.8**	**16,682.1**	**26,840.5**	**-40,722.1**
Financial Gap (3)	**-5,681.9**	**-13,346.4**	**-24,862.1**	**-41,840.4**	**-66,511.7**

Notes:

Financial gap (1), Total Expenditures at inflation rate 30%= TE x1.30_{t-1}

Financial gap (2), Total Expenditures at inflation rate 35%= TE x1.35_{t-1}

Financial gap (3), Total Expenditures at inflation rate 40%= TE x1.40_{t-1}

Table 5. 14 Forecasted Financial Sustainability for the 2013-2017 Scenario A (FFS, Providers Perspective)

unit: million SDG

Revenues, Expenditures	Forecasted Revenues				
	2013	2014	2015	2016	2017
***Total Revenues [a]**	**24,052.60**	**31,268.40**	**40,648.00**	**52,843.60**	**68,696.70**
***Total Outpatient Expenditure(TOE)**	**15,690.90**	**20,398.80**	**26,517.90**	**34,472.60**	**44,814.90**
	-53	**-53**	**-53**	**-53**	**-53**
•G.P Consultation	980.89	1,275.16	1,657.71	2,155.02	2,801.52
	-4.9	-4.9	-4.9	-4.9	-4.9
•MA Consultation	13.228	17.1964	22.35532	29.061916	37.780
	-0.1	-0.1	-0.1	-0.1	-0.1
•Specialist Consultation	165.852	215.6076	280.28988	364.376844	473.690
	-1.2	-1.2	-1.2	-1.2	-1.2
•Diagnostic Services	330.365	429.4745	558.31685	725.811905	943.555
	-1.1	-1.1	-1.1	-1.1	-1.1
•Laboratory Investigations	1,206.97	1,569.06	2,039.78	2,651.71	3,447.22
	-9.1	-9.1	-9.1	-9.1	-9.1
• Medicine (75%)[b]	12,995.70	16,894.41	21,962.73	28,551.55	37,117.02
	-46.5	-45.6	-46.6	-46.6	-46.5
Balance(TR-TE) or Financial Gap (1)	**8,361.70**	**10,869.60**	**14,130.10**	**18,371.00**	**23,881.80**
Financial Gap (2)	**7,758.17**	**9,270.92**	**10,951.40**	**12,753.19**	**14,574.65**
Financial Gap (3)	**7,154.67**	**7,611.30**	**7,528.06**	**6,475.68**	**3,781.61**

Notes:

[a] The providers outpatient revenues paid by the NHIF-Algadarif State under FFS.

[b] Represent proportion paid by the health insurance fund

Financial gap (1), Total Outpatient Expenditures at inflation rate 30%= TOE x1.30_{t-1}

Financial gap (2), Total Outpatient Expenditures at inflation rate 35%= TOE x1.35_{t-1}

Financial gap (3), Total Outpatient Expenditures at inflation rate 40%= TOE x1.40_{t-1}

Table 5. 15 Forecasted Financial Sustainability for the year 2013-2017 Scenario B (Capitation, NHIF perspective)

unit: million SDG

	Forecasted Revenues				
	2013	**2014**	**2015**	**2016**	**2017**
***Total Revenues**	**34,695.2**	**43,181.6**	**54,277.1**	**68,954.4**	**88,601.0**
Total Expenditures(TE)	**34,188.7 (100)**	**44,465.3 (100)**	**57,12.34 (100)**	**75,112.3 (100)**	**97,646.1 (100)**
*** Outpatient Expenditure**	**20,748.1 (64.1)**	**26,972.6 (64.2)**	**35,064.3 (64)**	**45,583.6 (63.9)**	**59,258.7 (64)**
• G.P Consultation	3,389.75 (4.9)	4,406.7 (4.9)	5,728.7 (4.9)	7,447.3 (4.9)	9,681.5 (4.9)
• MA Consultation	484.256 (0.1)	629.533 (0.1)	818.393 (0.1)	1,063.9 (0.1)	1,383.1 (0.1)
• Specialist Consultation	2,951.8 (1.2)	3,837.3 (1.2)	4,988.5 (1.2)	6,485.1 (1.2)	8,430.6 (1.2)
• Diagnostic Services	3,268.8 (1.7)	4,249.3 (1.7)	5,524.1 (1.7)	7,181.4 (1.7)	9,335.8 (1.7)
• Laboratory Investigations	665.85 (9.1)	865.61 (9.1)	1,125.3 (9.1)	1,462.8 (9.1)	1,901.8 (9.1)
• Medicines(100%)[α]	9,987.8 (46.5)	12,984.1 (45.6)	16,879.3 (46.6)	21,943.1 (46.6)	28,526.1 (46.5)
Inpatient Expenditures	**8,951.7 (23.8)**	**11,637.2 (23.8)**	**15,128.3 (24)**	**19,666.8 (23.8)**	**25,566.8 (24)**
• Admission Services	329.82 (0.8)	474.94 (0.8)	683.91 (0.8)	984.83 (0.8)	1,418.16 (0.8)
• Surgical Operations	2,082.4 (4.8)	3,123.61 (4.8)	4,685.4 (4.8)	7,028.1 (4.8)	10,542.1 (4.76)
• Other inpatient Health Expenditures	7,376.01 (18.3)	10,326 (18.3).	14,456.9 (18.3)	20,239.7 (18.3)	28,335.6 (18.3)
***Indirect health Expenditures**	**4,488.8 (12)**	**5,855.5 (12)**	**7,586.1 (12)**	**9,861.9 (12)**	**12,820.6 (12.8)**
• Labor cost	2,437.3 (6.4)	3,169.3 (6.4)	4,120.1 (6.5)	5,356.1 (6.5)	6,962.9 (6.4)
• Material Cost	168.33 (0.4)	218.82 (0.4)	248.41 (0.4)	369.21 (0.4)	480.32 (0.4)
• Capital Cost	325 (0.9)	422.5 (0.9)	549.25 (0.9)	714.02 (0.9)	928.23 (0.9)
• •Other Indirect Health Expenditures	1,557.6 (4.1)	2,024.8 (4.2)	2,632.3 (4.1)	3,422.1 (4.1)	4,448.6 (4.1)
Balance(TR-TE) Financial gap (1)	**507.570**	**-1,283.7**	**-3,561.6**	**-6,157.9**	**-9,045.1**
Financial Gap (2)	**-808.32**	**-4,748.2**	**-10,428.1**	**-18,397.6**	**-29,324.2**
Financial Gap (3)	**-2,123.00**	**-8,364.2**	**-17,887.1**	**-32,075.5**	**-52,840.8**

Notes

[a] Represent the whole price of drugs without insurers copayment

Financial gap (1), Total Expenditures at inflation rate 30% = TE $x1.30_{t-1}$

Financial gap (2), Total Expenditures at inflation rate 35% = TE $x1.35_{t-1}$

Financial gap (3), Total Expenditures at inflation rate 40% = TE $x1.40_{t-1}$

Table 5. 16 Forecasted Financial Sustainability for the 2013-2017 Scenario B (Capitation, providers perspective)

Unit: million SDG

	Forecasted Revenues				
	2013	2014	2015	2016	2017
***Total Revenues** [a]	20,748.10	26,972.60	35,064.30	45,583.60	59,258.70
***Total Outpatient Expenditure(TOE)**	**20,024.91**	26,032.38	33,842.09	43,994.72	57,193.13
	-53	**-53**	**-53**	**-53**	**-53**
•G.P Consultation	980.89	1,275.16	1,657.71	2,155.02	2,801.52
	-4.9	-4.9	-4.9	-4.9	-4.9
•MA Consultation	13.228	17.1964	22.35532	29.061916	37.780
	-0.1	-0.1	-0.1	-0.1	-0.1
•Specialist Consultation	165.852	215.6076	280.28988	364.376844	473.690
	-1.2	-1.2	-1.2	-1.2	-1.2
•Diagnostic Services	330.365	429.4745	558.31685	725.811905	943.555
	-1.1	-1.1	-1.1	-1.1	-1.1
•Laboratory Investigations	1,206.97	1,569.06	2,039.78	2,651.71	3,447.22
	-9.1	-9.1	-9.1	-9.1	-9.1
• **Medicine (100%)**[b]	17,327.60	22,525.88	29,283.64	38,068.74	49,489.36
	-46.5	-45.6	-46.6	-46.6	-46.5
Balance(TR-TE) Financial Gap (1)	**723.19**	**940.22**	**1,222.21**	**1,588.88**	**2,065.57**
Financial Gap (2)	**-797.90**	**-2,114.50**	**-4,203.29**	**-7,427.64**	**-12,306.47**
Financial Gap (3)	**-1,595.90**	**-4,309.00**	**-8,729.94**	**-15,728.34**	**-26,578.01**

Notes:

[a] The providers outpatient revenues paid by the NHIF-Algadarif State under Capitation.

[b] Represent the whole price of the drugs .

Financial gap (1), Total Outpatient Expenditures at inflation rate 30%= TOE x1.30_{t-1}

Financial gap (2), Total Outpatient Expenditures at inflation rate 35%= TOE x1.35_{t-1}

Financial gap (3), Total Outpatient Expenditures at inflation rate 40%= TOE x1.40_{t-1}

Table 5. 17 Forecasted Financial Sustainability for the year 2013-2017 Scenario C (FFS, NHIF perspective)

Unit: million SDG

Total Revenues and Expenditures	**Forecasted Revenues**				
	2013	**2014**	**2015**	**2016**	**2017**
***Total Revenues**	**35,389.1 (100)**	**44,045.2 (100)**	**55,362.6 (100)**	**70,333.5 (100)**	**90,373.1 (100)**
Total Expenditures	**37,493.1 (100)**	**48,741.0 (100)**	**63,363.4 (100)**	**82,372.4 (100)**	**107,048. (100)**
***Outpatient Expenditure**	**24,052.6 (64.1)**	**31,268.4 (64.2)**	**40,648. (64)**	**52,843.6 (63.9)**	**68,696.7 (64)**
• G.P Consultation	1,835.52 (4.9)	2,386.18 (4.9)	3,102.03 (4.9)	4,032.7 (4.9)	5,242.3 (4.9)
• MA Consultation	44.994 (0.1)	58.493 (0.1)	76.040 (0.1)	98.852 (0.1)	128.508 (0.1)
• Specialist Consultation	425.231 (1.2)	552.801 (1.2)	718.641 (1.2)	934.233 (1.2)	1,214.5 (1.2)
• Diagnostic Services	644.488 (1.7)	837.834 (1.7)	1,089.18 (1.7)	1,415.9 (1.7)	1,840.7 (1.7)
• Laboratory Investigations	3,433.3 (9.1)	4,463.3 (9.1)	5,802.3 (9.1)	7,542.9 (9.1)	9,805.85 (9.1)
• Medicines (75%)	17,669.1 (46.5)	22,969.8 (45.6)	29,860.8 (46.6)	38,818.9 (46.6)	50,464.7 (46.5)
Inpatient Expenditures	**8,951.7 (23.8)**	**11,637.2 (23.8)**	**15,128.3 (24)**	**19,666.8 (23.8)**	**25,566.8 (24)**
• Admission Services	329.82 (0.8)	474.94 (0.8)	683.91 (0.8)	984.83 (0.8)	1,418.16 (0.8)
• Surgical Operations	2,082.4 (4.8)	3,123.61 (4.8)	4,685.4 (4.8)	7,028.1 (4.8)	10,542.1 (4.76)
• Other inpatient Health Expenditures	7,376.01 (18.3)	10,326 (18.3).	14,456.9 (18.3)	20,239.7 (18.3)	28,335.6 (18.3)
***Indirect health Expenditures**	**4,488.8 (12)**	**5,835.5 (12)**	**7,586.1 (12)**	**9,861.9 (12)**	**12,820.6 (12.8)**
• Labor cost	2,437.9 (6.4)	3,169.3 (6.4)	4,120.1 (6.5)	5,356.1 (6.5)	6,962.9 (6.4)
• Material Cost	168.417 (0.4)	218.65 (0.4)	284.4 (0.4)	364.7 (0.4)	480.512 (0.4)
• Capital Cost	325 (0.9)	422.5 (0.9)	549.25 (0.9)	714.02 (0.9)	928.23 (0.9)
• •Other Indirect Health Expenditures	1,557.6 (4.1)	2,024.8 (4.2)	2,632.3 (4.1)	3,422.0 (4.1)	4,448.6 (4.1)
Balance(TR-TE) financial gap(1)	**-2,104.0**	**-4,695.77**	**-8,000.76**	**-12,038.9**	**-16,674.9**
Financial Gap (2)	**-3,545.9**	**-8,517.16**	**-15,596.6**	**-25,461.4**	**-38,950.0**
Financial Gap (3)	**-4,988.0**	**-12,482.8**	**-23,776.7**	**-40,461.3**	**-64,739.6**

Notes:

1. $TR = 1.02 \times TR_{t-1}$
2. Financial gap (1), Total Expenditures at inflation rate 30% = $TE \times 1.30_{t-1}$
3. Financial gap (2), Total Expenditures at inflation rate 35% = $TE \times 1.35_{t-1}$
4. Financial gap (3), Total Expenditures at inflation rate 40% = $TE \times 1.40_{t-1}$

Table 5. 18 Forecasted Financial Sustainability for the year 2013-2017 Scenario C (Capitation, NHIF perspective)

unit: million SDG

	Forecasted Revenues				
	2013	**2014**	**2015**	**2016**	**2017**
***Total Revenues**	**35,389.1**	**44,045.2**	**55,362.6**	**70,333.5**	**90,373.1**
Total Expenditures	**34,188.7 (100)**	**44,465.3 (100)**	**57,778.3 (100)**	**75,112.3 (100)**	**97,646.1 (100)**
*** Outpatient Expenditure**	**20,748.1 (64.1)**	**26,972.6 (64.2)**	**35,064.3 (64)**	**45,583.6 (63.9)**	**59,258.7 (64)**
• G.P Consultation	3,389.75 (4.9)	4,406.7 (4.9)	5,728.7 (4.9)	7,447.3 (4.9)	9,681.5 (4.9)
• MA Consultation	484.256 (0.1)	629.533 (0.1)	818.393 (0.1)	1,063.9 (0.1)	1,383.1 (0.1)
• Specialist Consultation	2,951.8 (1.2)	3,837.3 (1.2)	4,988.5 (1.2)	6,485.1 (1.2)	8,430.6 (1.2)
• Diagnostic Services	3,268.8 (1.7)	4,249.3 (1.7)	5,524.1 (1.7)	7,181.4 (1.7)	9,335.8 (1.7)
• Laboratory Investigations	665.85 (9.1)	865.61 (9.1)	1,125.3 (9.1)	1,462.8 (9.1)	1,901.8 (9.1)
• Medicines (100%)	9,987.8 (46.5)	12,984.1 (45.6)	16,879.3 (46.6)	21,943.1 (46.6)	28,526.1 (46.5)
Inpatient Expenditures	**8,951.7 (23.8)**	**11,637.2 (23.8)**	**15,128.3 (24)**	**19,666.8 (23.8)**	**25,566.8 (24)**
• Admission Services	329.82 (0.8)	474.94 (0.8)	683.91 (0.8)	984.83 (0.8)	1,418.16 (0.8)
• Surgical Operations	2,082.4 (4.8)	3,123.61 (4.8)	4,685.4 (4.8)	7,028.1 (4.8)	10,542.1 (4.76)
• Other inpatient Health Expenditures	7,376.01 (18.3)	10,326 (18.3).	14,456.9 (18.3)	20,239.7 (18.3)	28,335.6 (18.3)
***Indirect health Expenditures**	**4,488.8 (12)**	**5,855.5 (12)**	**7,586.1 (12)**	**9,861.9 (12)**	**12,820.6 (12.8)**
• Labor cost	2,437.3 (6.4)	3,169.3 (6.4)	4,120.1 (6.5)	5,356.1 (6.5)	6,962.9 (6.4)
• Material Cost	168.33 (0.4)	218.82 (0.4)	248.41 (0.4)	369.21 (0.4)	480.32 (0.4)
• Capital Cost	325 (0.9)	422.5 (0.9)	549.25 (0.9)	714.02 (0.9)	928.23 (0.9)
• •Other Indirect Health Expenditures	1,557.6 (4.1)	2,024.8 (4.2)	2,632.3 (4.1)	3,422.1 (4.1)	4,448.6 (4.1)
Balance(TR-TE) Financial gap (1)	**1,200.5**	**-420.04**	**-2,416.1**	**-4,778.9**	**-7,273.11**
Financial Gap (2)	**-114.41**	**-3,884.51**	**-9,342.5**	**-17,018.5**	**-27,552.1**
Financial Gap (3)	**-1,429.36**	**-7,500.61**	**-16,801.5**	**-30,696.4**	**-51,068.9**

Notes:

1. TR = 1.02 x TR_{t-1}
2. Financial gap (1), forecasted expenditures at inflation rate 30% = TE x1.30_{t-1}
3. Financial gap (2), forecasted expenditures at inflation rate 35% = TE x1.35_{t-1}
4. Financial gap (3), forecasted expenditures at inflation rate 40% = TE x1.40_{t-1}

In comparing the forecasted financial sustainability from different perspective in the years 2013-2017, in scenario (A) and at 30% the study found that the average Financial gap from the NHIF-Algadarif perspective will be-10,061.7 million SDG, at 35% inflation rate will be-19,573.08 million SDG and at 40% inflation rate the average financial gap of the NHIF perspective for the year 2013-2017 will be -30,448 million SDG. From the provider's perspective the average forecasted financial gap at 30%, 35% and 40% will be 15,122.84, 11,061.67 and 6,510.26 million SDG respectively.

In scenario (B), the average forecasted financial gap from NHIF perspective in the years 2013-2017 and at 30%inflation rate will be -3,908.15 million SDG, at 35% inflation rate will be -12,741.2 million SDG and at 40% inflation rate the average forecasted financial gap will be -22,658.12 million SDG. From the providers perspective the average forecasted financial gap at 30% inflation rate will be 1,308.01 million SDG, at 35% inflation rate will be -5,369.9 million SDG and at 40% inflation rate the average forecasted financial gap under capitation from provider perspective for the years 2013-2017 will be -11,388.84 million SDG.

In scenario (C),The average forecasted financial gap of the NHIF-Algadarif State for the years 2013-2017 under capitation at 30% inflation rate will be -2,737.5 million SDG, at 35% will be -11,528.4 million SDG and at 40% inflation rate the average financial gap will be -21,499.35 million SDG. Under FFS, the average financial gap of the NHIF perspective for the years 2013-2017, will be -8,702.8, -18,414.2 and -29,289.68 million SDG for the years 2013-2017 at inflation rate 30%, 35% and 40% respectively. (Table 5. 19)

Table 5. 19 Forecasted Financial Sustainability from different perspective, 2013-2017

unit: million SDG

Inflation Rate	**Forecasted Average Financial Gap 2013-2017**				**Forecasted Average Financial GAP, NHIF Perspective**	
	Scenario A (FFS)		Scenario B (Capitation)		Scenario C (FFS, Capitation)	
	NHIF	Provider	NHIF	Provider	NHIF (FFS)	NHIF (Capitation)
30%	-10,061.7	15,122.4	-3,908.15	1,308.01	-8,707.9	-2,737.5
35%	-19,573.08	11,061.6	-12,741.2	-5,369.9	-18,414.2	-11,582.4
40%	-30,448.5	6,510.26	-22,658.12	-11,388.84	-29,289.68	-21,499.35

Source: Table 5. 13 and 5.14 and 5. 15

5.7. Forecasted Financial Sustainability from different perspective under different outpatient utilization rate and inflation rates

The study also examined the different perspectives as a part of sensitivity analysis under possibility of increasing or decreasing in the utilization rate for the outpatient in the years 2013-2017, the study assumed the utilization rate will increase by 20% and decreased by the same rate in the coming years.

5.7.1. Forecasted Financial Sustainability under FFS, and outpatient utilization rate increased by 20% (NHIF perspective)

The findings show that the outpatient expenditures from the NHIF-Algadarif State perspective will increase and the forecasted financial gap will be more negative comparing with the forecasted financial gap at the current utilization rate, and will be -7,576.35, -11,813.18, -17,214.9, -23,986.62 and -32,222.44 million SDG for the years 2013-2017 respectively. The financial gap from NHIF-Algadarif State perspective under capitation for the outpatient care services will not change. (Table 5. 20)

Table 5. 20 Forecasted Financial Sustainability of NHIF (FFS, 20% increased utilization rate)

Revenues and Expenditures	**Forecasted Revenues and Expenditures**				
	2013	**2014**	**2015**	**2016**	**2017**
***Total Revenues (TR)**	34,695.2	43,181.6	54,277.1	68,954.4	88,601.00
Total Expenditures(TE)	42,271.5	54,994.7	71,492.0	92,941.0	120,823.4
***Outpatient Expenditure**	28,831.0	37,522.0	48,777.6	63,412.3	82,436.0
***Inpatient Expenditures**	8,951.70	11,637.2	15,128.3	19,666.8	25,566.8
***Indirect health Expenditures**	4,488.80	5,835.50	7,586.10	9,861.90	12,820.6
Financial Gap (TR-TE)	**-7,576.35**	**-11,813.1**	**-17,214.9**	**-23,986.62**	**-32,222.44**

5.7.2. Forecasted Financial Sustainability under FFS and outpatient utilization rate increased by 20% (Provider's perspective)

The forecasted financial sustainability of the providers under FFS and the outpatient utilization rate adjusted to increase by 20%in the years 2013-2017, the

providers will continue gaining more profit comparing with the current outpatient utilization rate, and the forecasted financial gap will be 10,001.97, 13,043.52, 19,403.33, 28,163.3 and 40,137.09 million SDG respectively. The provider will still gain profit by almost 53% of their actual outpatient expenditures. (Table 5. 21)

Table 5. 21 Forecasted Financial Sustainability from the Providers perspective (FFS, 20% increased utilization rate)

Revenues, Expenditures	**Forecasted Revenues**				
	2013	**2014**	**2015**	**2016**	**2017**
Total Revenues	28,831.05	37,522.08	48,777.60	63,412.32	82,436.04
***Total Outpatient Expenditure(TOE)**	18,829.08	24,478.56	31,821.48	41,367.12	53,777.88
Balance(TR-TE) or Financial Gap	**10,001.97**	**13,043.52**	**19,403.33**	**28,163.19**	**40,137.09**

*The amount paid for the providers by the NHIF-Algadarif State (outpatient claims)

5.7.3. Forecasted Financial Sustainability under Capitation and the outpatient utilization rate increased by 20% (provider's perspective)

The forecasted financial sustainability of the providers under capitation with the outpatient utilization rate adjusted to increase by 20%, the financial gap will be more negative in the years 2013-2017 by -3,281.79, -4,266.26, -5,546.21, -7,210.06 and -9,373.06 million SDG respectively, so the providers will get loss especially at higher inflation rate, the loss will present almost 13% of their actual expenditures in the years 2013-2017. (Table 5. 22)

Table 5. 22 Forecasted Financial Sustainability from the Providers perspective (Capitation, 20% increased utilization rate)

	Forecasted Revenues and Expenditures				
	2013	2014	2015	2016	2017
***Total Revenues**	20,748.10	26,972.60	35,064.30	45,583.60	59,258.70
***Total Outpatient Expenditure(TOE)**	24,029.89	31,238.86	40,610.51	52,793.66	68,631.76
Financial Gap (30%)	**-3,281.79**	**-4,266.26**	**-5,546.21**	**-7,210.06**	**-9,373.06**
Financial Gap (35%)	**-4,483.29**	**-5,828.20**	**-7,576.73**	**-9,849.75**	**-12,804.64**
Financial Gap (40%)	**-5,744.86**	**-7,468.24**	**-9,708.79**	**-12,621.41**	**-16,407.81**

5.7.4. Forecasted Financial Sustainability under FFS and the outpatient utilization rate decreased by 20% (NHIF perspective)

The study also examined the forecasted financial sustainability of the NHIF-Algadarif State under FFS and the outpatient utilization rate decreased by 20% in the years 2013-2017, the findings shown that the financial gap will be positive in the year 2013-2017 by 3,956.07, 3,220.68, 2,328.02, 1,420.61 and 806.98 million SDG respectively. (Table 5. 23)

Table 5. 23 Forecasted Financial Sustainability of NHIF (FFS, 20% decreased utilization rate)

Revenues and Expenditures	**Forecasted Revenues and Expenditures**				
	2013	**2014**	**2015**	**2016**	**2017**
***Total Revenues (TR)**	34,695.2	43,181.60	54,277.1	68,954.4	88,601.0
Total Expenditures(TE)	30,739.1	39,960.92	51,949.0	67,533.7	93,344.6
***Outpatient Expenditure**	19,2420	23,090.5	32,518.4	42,274.8	54,957.2
***Inpatient Expenditures**	8,951.70	11,637.20	15,128.3	19,666.8	25,566.8
***Indirect health Expenditures**	4,488.80	5,835.50	7,586.10	9,861.90	12,820.6
Financial Gap (TR-TE)	**2,012.70**	**694.18**	**-955.70**	**-2,849.10**	**-4,743.6**

5.7.5. Forecasted Financial Sustainability under FFS and outpatient utilization rate decreased by 20% (Providers perspective)

The study findings show that, when the utilization rate decreased by 20% under FFS, the forecasted financial gap of the providers for the years 2013-2017will be positive by 6,689.3, 8,695.72, 11,304.08, 14,696.8 and 19,105.3 million SDG respectively.(Table 5. 24)

Table 5. 24 Forecasted Financial Sustainability of Providers (FFS, 20% decreased utilization rate)

Revenues, Expenditures	**Forecasted Revenues**				
	2013	**2014**	**2015**	**2016**	**2017**
***Total Revenues**	19,2420	25,014.72	32,518.4	42,274.8	54,957.2
***Total Outpatient Expenditure(TOE)**	12,552.7	16,319.0	21,214.32	27,578.0	35,851.9
Balance(TR-TE) or Financial Gap	**6,689.30**	**8,695.72**	**11,304.08**	**14,696.8**	**19,105.3**

5.7.6. Forecasted Financial Sustainability under Capitation and outpatient utilization rate decreased by 20% (Providers perspective)

The study findings regarding to providers perspective under the new capitated outpatient care services, and the utilization rate decreased by 20% in the years 2013-2017 and at 30% inflation rate, the forecasted financial gap will be 4,728.17, 6,146.70, 7,990.63, 10,387.8 and 13,504.2 million SDG respectively. (Table 5. 25)

Table 5. 25 Forecasted Financial Sustainability from Providers perspective (Capitation, 20% decreased utilization rate)

	Forecasted Revenues and Expenditures				
	2013	2014	2015	2016	2017
***Total Revenues**	20,748.10	26,972.6	35,064.30	45,583.6	59,258.7
***Total Outpatient Expenditure(TOE)**	16,019.93	20,825.9	27,073.67	35,195.7	45,754.5
Financial Gap (TR-TE)	**4,728.17**	**6,146.70**	**7,990.63**	**10,387.8**	**13,504.2**

5.8. Discussion

The financial sustainability of the NHIF-Algadarif State is a crucial measure to ensure stability and continuity of the scheme to produce benefits in the long run in term of health services to all subscribers in the State according to their needs, but this sustainability will not take a place unless the other partners regarding to health care providers also be financially sustainable to be able to provide all health services demanded by the insurance clients in the long run, so this section discuss the forecasted financial sustainability from different perspective under possibilities that might take a place in the future and under both FFS and capitation payment method.

5.8.1. The Forecasted Financial Sustainability under FFS payment method

1) NHIF-Algadarif State perspective

The study findings show that, if the NHIF-Algadarif State continues compensating the providers under FFS for both outpatient and inpatient care services, and at the same time the revenues increase only as the trend in the past, the scheme will continue incurring loss in the years 2013-2017. Furthermore, the loss will become more negative when the medical inflation rate increases. The financial gap under FFS from the NHIF-Algadarif State perspective in the years 2013-2017 at 30% inflation rate will be -2,797.9, -6,559.4, -9,086.3, -13,418.0 and -18,447.0 million SDG respectively, at 35% inflation rate, the financial gap will be -4,239.9 , -5,681.9 , -13,364.4 , -24,862.1 and -41,840.4 million SDG respectively, at 40% inflation rate the financial gap will be-9,380.8, -16,682.1 , -26,840.5 , -40,722.1 and -66,511.7 million SDG respectively, so this result can reflect the effect of inflation rate on increasing the health care expenditures. Furthermore, the forecasted average growth rate of the NHIF-Algadarif State health expenditures (34%) will still be higher than the forecasted average growth rate of revenues (26%)

2) Providers perspective

The forecasted financial sustainability of the providers in term of financial gap if providers continue compensating by FFS the outpatient care services, the providers will gain profit in the years 2013-2017, at 30% inflation rate the financial gap for the outpatient will be 8,361.7 , 10,869.6 , 14,130.1 , 18,371.00 and 23,881.8 million SDG respectively, at 35% the providers financial gap will be, 7.758.1 , 9,270.92 , 10,952.4 ,

12,753.19 and 14,574.65 million SDG respectively and the reducing in profit could be due to increasing inflation rate, at 40% the forecasted financial gap of the providers under FFS, for the years 2013-2017 will be 7,154.6 , 7,611.3 , 7,528.06 , 6,475.6 and 3,781.6 million SDG respectively, so the providers under FFS will get profit for the coming years by almost 53% of their actual cost. Furthermore, the financial gap will get smaller over the coming years as the inflation rate increase.

5.8.2. Achieving Forecasted Financial sustainability of the NHIF-under FFS (NHIF perspective)

For the financial sustainability of the scheme under FFS, the scheme should increase its revenues for the coming years 2013-2017 by, 8%, 15%, 16%, 19% and 20% respectively at 30% inflation rate, at 35% inflation rate as the gap will become more negative the scheme should increase the revenues by 12%, 21%, 30%, 38% and 45%, and this high percentage consistency with the inflation rate, at 40% inflation rate the revenues should increase by 16%, 31%, 46%, 60% and 75% for the years 2013-2017 respectively. It is very difficult for the NHIF-Algadarif State to increase the revenues by that much in the coming years unless adoption of effective measure will take a place to increase the NHIF-Algadarif State revenues in the coming years so the scheme should generates more revenues especially from non-government side regard to enrollment more informal sector, increasing the investment and encourage the sponsors like Zakat Chamber to enroll more poor families in the scheme.

5.8.3. Forecasted Financial Sustainability under FFS and outpatient utilization rate increased by 20% (NHIF-perspective)

The study also adjusted the outpatient utilization rate to increase by 20% for the subsequent years 2013-2017, and the findings show that at inflation rate 30% the forecasted financial gap for the NHIF perspective will be -7,576.35 , -11,813.18 , -17,214.9 , -23,986.6 and -32,222.44 million SDG respectively, so these financial gaps are more wider negative when comparing with the financial gap under the real utilization rate, and this indicates that when the utilization rate increase under the FFS payment method the NHIF-Algadarif State health expenditures will increase in the same rhythm. Increasing the utilization rate in the coming years may take a place as a

result of FFS incentive (Supplier Induce Demand), moral hazard and deterioration of the health status of the clients.

5.8.4. Forecasted Financial Sustainability under FFS and outpatient utilization rate increased by 20% (Providers perspective)

When the outpatient utilization rate increased by 20%, the providers will gain more profit by 10,001.97, 13,043.52, 19,403.33, 28,163.3 and 40,137.09 million SDG for the years 2013-2017 respectively and these profits represent almost double the profit comparing with profit generated at the real outpatient utilization rate, so increasing utilization rate will increase the providers profit if paid under FFS payment method there for the providers has incentive to increase the utilization rate under FFS to generate more profit probably through supplier induced demand (SID).

5.8.5. Forecasted Financial Sustainability under FFS and outpatient utilization rate decreased by 20% (NHIF-perspective)

The study also adjust decreasing in the outpatient utilization rate for the years 2013-2017 by 20%, and measured the financial gap from the NHIF-Algadarif State under FFS payment method and found that the financial gap will be 2,012.70, 694.18, -955.70, -2,849.10 and - 4,743.6 million SDG respectively, and when comparing these financial gap with financial gap under the real utilization rate we can notice that the financial sustainability of the NHIF-Algadarif State will be better off when the utilization rate decrease, so the scheme can decrease the utilization rate if the real utilization rate proved as a result of moral hazard by more health education and through playing a major rule on providing preventive medicine. Otherwise, any trial to decrease the utilization rate may lead to accessibility issues

5.8.6. Forecasted Financial Sustainability under FFS and outpatient utilization rate decreased by 20% (Providers perspective)

The study examined the financial sustainability of the providers under FFS, when the outpatient adjusted to decrease by 20% in the years 2013-2017, and at 30% inflation rate the financial gaps are 6,689.3, 8,695.72, 11,304, 14,696.8 and 19,105.3 million SDG respectively, when comparing with the same situation under FFS but with real utilization rate we can found that the profit is less when the utilization rate decrease by 20%, so in spite the providers are using relatively lower resources in a

decreased utilization rate comparing with the resources used in the real utilization rate but they prefer higher utilization rate under FFS rather than lower utilization rate.

5.8.7. The forecasted Financial Sustainability under Capitation payment method

The study tried to find a safe tract to ensure the financial sustainability of the scheme through introducing a rational payment method as capitation in the NHIF-Algadarif payment system and then examined and measured the financial status from different perspective in order to evaluate the financial sustainability of the scheme.

1) The NHIF-Algadarif State perspective

The study found that the financial gap under capitated outpatient from the NHIF-Algadarif State perspective for the years 2013-2017, at 30% inflation rate will be less comparing with FFS, at 30% inflation rate will be 507.570 , -1,283.7 , -3,561.6, -6,157.9 and -9,045.1 SDG respectively at 35% inflation rate the financial gap will be -808.32 , -4,748.2 , -10,428.1 , -18,397.6 and -29,324.1 million SDG respectively and at 40% inflation rate the financial gap will be –2,123.00 , -8,364.2 , -17,887.1 , -32,075.5 and -52,840.8 million SDG respectively, so the result findings can encourage the NHIF-Algadarif State to adopt capitated outpatient instead of FFS regarding to the declining in the outpatient expenditures by almost 14% of health expenditures under FFS in the coming years. Increasing or decreasing the outpatient utilization rate will have no influence in the health expenditures from the NHIF-Algadarif State perspective under capitation payment method as in FFS, but the risk of increasing utilization rate is mainly will be bearing by the providers.

2) The Providers perspective

The forecasted financial sustainability from provider's perspective when changing the outpatient care payment into capitation for the years 2013-2017, the study found that the provider's financial gap will become too small comparing with the financial gap under FFS and it will be 723.19, 940.22 , 1,222.21 , 1,588.88 and 2,065.57 million SDG respectively at 30% inflation rate, at 35% inflation rate the financial gap will be -797.9 , -2,114.5 , -4,203.29 , -7,427.6 and -12,306.47 million SDG respectively and at 40% inflation rate the forecasted financial gap of the providers under capitated outpatient for the years 2013-2017 will be -1,595.9 , -

4,309.00 , -8,729.9 , -15,728.34 and -26,578.0 million SDG respectively, so we can conclude that under capitation payment method the providers will incur loss especially at higher inflation rate, the providers loss is consistency with the way that used to calculate the per capita rate from the NHIF-Algadarif State perspective only also under capitation the providers have to covered all the drugs price and they will not going to charge the patient a copayment. Moreover, higher inflation rate accompany with predefined budget will lead to more loss.

5.8.8. Achieving Forecasted Financial sustainability under Capitation (NHIF-perspective)

For financial sustainability of the scheme under capitation, the NHIF-Algadarif State should increase the revenues in the years 2013-2017 by 0%, 3%, 6%, 9% and 10% at inflation rate 30%, and we can notice that, the revenue percentage required for financial sustainability of the scheme under capitation is less than revenues percentage required under FFS, at 35% inflation rate the revenues should increase by 2%, 11%, 19% , 27% and 33%, at 40% the revenues should be increased by 6%, 19%, 33%, 47% and 60% respectively

The way adopted by the study to calculate the per capita rate by using top-down allocation from the NHIF-Algadarif State perspective only as budget cap, is the root cause of reducing the financial gap in the coming years under capitation payment method.

5.8.9. Expenditures derived by implementing capitation payment method

Regarding to capitation payment implementation, the per capita calculation, the data base and measures that are required for assigning the client to the physician or health facility geographically could be another source of expenditures bearing by the NHIF-Algadarif State, therefore, the NHIF-Algadarif State should prepares a budget for implementing the capitation payment method. The expenditures for capitation implementation may include labor, capital and material expenses.

5.8.10. Forecasted financial sustainability under capitation and the outpatient utilization rate increased by 20% (Providers perspective)

The study adjusted the outpatient utilization rate to increase by 20% and then measured the financial gap from the providers perspective if they paid for the

outpatient care by capitation, the study found that the providers may incur loss as under capitation, the budget will not change at least during the year 2013-2017, the financial gap will be -3,281.79, -4,266.26, -5,546.21, -7,210.06 and -9,373.06 million SDG in the years 2013-2017 respectively at 30% inflation rate, at 35% the financial gap will be more less by -4,483.29, -5,828.20, -7,576.73, -9,849.75 and -12,804.64 million SDG respectively, and at 40% inflation rate the financial gap of the providers under capitation payment method with outpatient increased by 20% in the years 2013-2017 will be more negative by -5,744.86, -7,468.24, -9,708.79,-12,621.41 and -16,407.81 million SDG respectively, the forecasted loss will represent almost 13% of the actual providers expenditures and almost represent the decreasing percentage of the NHIF when moving from FFS towards capitation. Increasing utilization rate under capitation is expected as the patient will not going to pay the copayment rate for the drugs.

5.8.11. Forecasted financial sustainability under capitation and the outpatient utilization rate decreased by 20% (Providers perspective)

The study also adjusted the utilization rate to decrease by 20% under capitation in the years 2012-2017, and then measured the financial sustainability of the providers that will be more profitable by 4,728.17, 6,146.70, 7,990.63, 10,387.8 and 13,504.2 million SDG respectively, these profits represents almost 30% of their actual outpatient expenditures, so the provider's behavior under capitation scenario will change definitely to secure their financial sustainability by compensating the deficit through holding up provision of health services to the NHIF-Algadarif State clients and may try to decrease the accessibility to the health services or offering health services to the insurers with great caution in order to compensate the expected loss in the mystery future of capitation payment method. This measure definitely will affect the patient satisfaction as well as general health status of the whole prescribers in the State.

CHAPTER VI
CONCLUSION AND RECOMMENDATION

This chapter is divided into four parts. The first part is the summary of study of financial status of the National Health Insurance Fund –Algadarif State if it changes the payment method for outpatient care services from Fee for Services to capitation payment method. The second part is the policy recommendation. The third part is the suggested studies and finally the fourth part concerns with the limitation of the study.

6.1. Summary

It is a fact that capitation payment method makes both purchaser and providers use resources in more cost effective manner, improve equity and increase equality in allocation of resources for basic health care services per person. Moreover, capitation can makes the providers changing their services mix to favor low-cost health promotion, disease prevention and chronic disease management rather than more expensive curative care in order to generate more saving. However, capitation payment method may leads to problems of accessibility to the health care services, under supply accompany with quality issues in health care provision.

The objective of this study is to analyze the cash flow of the National Health Insurance Fund –Algadarif State during the previous five years 2008-2012 and to investigate its forecasted financial status during 2013-2017 if it changes the outpatient care services payment method from FFS into capitation payment method. In studying the financial sustainability of the NHIF-Algadarif State, three different scenarios are investigated; scenario (A) the total revenues of the State increasing according to the trend in the past and the actual expenditures under current FFS from the NHIF-Algadarif State perspective beside the actual outpatient expenditures from provider perspective adjusted to different expected inflation rates, scenario (B) the same as the scenario (A) but the outpatient paid under new capitation payment mechanism from NHIF-Algadarif State and the providers perspective ,adjusted to different inflation rates, scenario (C) the total revenues of the NHIF-Algadarif State increasing by 2% and amount paid under FFS and under capitation from NHIF perspective adjusted to different inflation rates.

The study methods are depends on the cash flow analysis, the trend analysis and the growth ratio method. For cash flow analysis, the study grouped the NHIF-Algadarif State revenues into two categories; government revenues and non-government revenues. The government revenues consist of Federal government revenues, State government revenues, donation and other. The non-government revenues are categorized into; contributions from the private sector, informal sector contributions, Zakat Chamber contribution for the poor, investments and other. The total expenditures are categorized into; direct health expenditures that includes outpatient expenditures and the inpatient expenditures, the indirect health expenditures that includes labor, capital and material cost beside other indirect health expenditures.

The study depends on the available semi-complete data for the years 2008-2012 as the previous data before 2008 are either unavailable or incomplete thus the study not used an econometric method to estimate the demand and the unit cost of the provided health services to the clients. However, the study depends on demand for forecasting the revenues and the cost function and the price of the medical services for forecasting the expenditures from the NHIF-Algadarif State and the provider respectively. The trend analysis that used to forecast the coming revenues and expenditures based on growth ratio method in great part and to less extent the study based on simple regression as some components data are incomplete.

The study tried to calculate Per Capita rate for the outpatient care services depending on the existing planned budget for the NHIF-Algadarif State that allocated to the outpatient package which includes; General Practitioners consultation, Medical Assistant consultation, Specialist consultation, laboratory investigation, diagnostic services that includes x-ray and ultrasound scanning at the outpatient level and finally the package includes medicines prescription at outpatient level. The study then used top-down allocation for assignment the budget to the different outpatient health care service. The per capita rate is the same for all clients as the data on population characteristics regarding to age sex and epidemiological and geographical data are incomplete furthermore, the data about clients number assign to each provider or each nearby health facility also are not available, therefore the study assigned the clients by localities and not by providers. Additionally, the study investigates the utilization rate

for the outpatient services and found that it is 1.4 per capita/ new consultation /year and this rate is higher than the normal range that between 0, 5-1 among stable population.

The collection of the actual data on expenditures for each outpatient health services from provider perspective was very difficult and the providers are not co-operated with the study, so the data used in the study are outcome of unofficial visits and based mainly on private relationship between the author and his friend with the providers at health centers and hospitals level.

The study findings show that the NHIF-Algadarif State was financial sustainable in the year 2008 and 2009 but in 2010, 2011 and 2012 the scheme incurred deficits. The current ratio of the scheme in 2012 was 1.4:1 that means the NHIF-Algadarif State owned 1.4 SDG for each I SDG in its liabilities, and the study found this ratio may indicates the NHIF-Algadarif state was financially un healthy to pay its debts in the year 2013 as the healthy current ratio is 1.5-2:1. Furthermore, regarding to revenues, the study found that the government contribute by 65% of the total NHIF-Algadarif State and the remainder derived from non-government side e.g. Zakat income, investment etc.

The financial sustainability of the NHIF-Algadarif State under FFS, the financial gap in the coming years 2013-2017 will be -2,797.9, -6,559.4, -9,086.3, -13,418.0 and -18,447.0 million SDG respectively, so in order to achieve the financial sustainability the NHIF-Algadarif State has to increase the revenues in coming years 2013-2017 by 8%, 15%, 16%, 19% and 20% respectively. Moreover, the providers will gain profit for the years 2013-2017 if the NHIF-Algadarif State continue compensating them for the outpatient services by FFS and the study found that the providers profit will be 8,361.66, 10,870.18, 14,150.32, 18,370.6 and 23,881.8 million SDG for the year 2013-2017 respectively, these profits represent 53% of their actual outpatient expenditures in each coming year. Moreover, increasing utilization rate will increase the NHIF-Algadarif State financial gap to be more negative, but the providers profit will continue increasing.

By introducing capitation payment method for the outpatient care services, the study found that, the financial gap in coming years 2013-2017 will be 506.570, -1,283.7, -3,561.6, -6,157.9 and -9,045.1 million SDG respectively, so in order the

NHIF-Algadarif State achieve its financial sustainability has no need to increase its revenues in the year 2013 as the revenue is almost near the breakeven point, therefore the State has to decrease the expenditures or increase the revenues for the year 2013-2017 by only 0%, 3%, 6%, 9% and 10% respectively, so introducing capitation for the outpatient care services will decrease the expenditures in the years 2013-2017 comparing with FFS by 3,304.5, 4,295.8, 5,583.7, 7,259.9 and 9,437.9 million SDG respectively and that represent 14% of total outpatient expenditures for each coming year.

The providers under capitation will get almost loss if per capita rate calculated from the NHIF-Algadarif State perspective only especially in high inflation rate and high utilization rate, so at 35% inflation rate the providers financial gap will be -797.9 , -2,114.5 , -4,203.29 , -7,427.6 and -12,306.47 million SDG for the years 2013-2017 respectively, and if the utilization rate increases e.g. 20% the forecasted financial gap from the providers perspective under capitation payment method will be -3,281.79 , -4,266.26 , -5,546.21, -7,210.06 and -9,373.06 million SDG in the years 2013-2017 respectively, therefore the providers may change their behavior in order to compensate their loss by decreasing the number of utilized health services for the clients as the result of the study when utilization rate adjusted to decreased by 20, the providers could compensate their deficits and their profit increased by 29% of their actual cost.

Depending on the results of the study, the root cause of the financial instability of the NHIF-Algadarif State could be:

- High health spending due to high outpatient utilization rate (1.35 new consultation /member /year).
- Failure of the government to maintain and allocate the approved budget to the NHIF-Algadarif State. (Actual obtained budget less than approved budget).
- Higher medical services inflation rate as a part of economic instability in Sudan.

6.2. Policy Recommendation

The policy recommendation of the study regarding to ensure the financial sustainability of the scheme could be;

1. NHIF-Algadarif State perspective:

- The scheme authority as well as the policymaker and stakeholder, should priories the financial sustainability of the scheme by disseminating the results of the study
- For ensuring the Financial sustainability of the scheme if continue paid the outpatient care under FFS payment method, the inflation rate should not exceed 30% and the utilization rate should be decreased by e.g. 20% if proved the higher utilization rate is due to moral hazard by conducting the required studies, the utilization rate can decrease by conducting health education programs to the clients through available media e.g. TV, Radio etc. and playing a major rule in promotion and preventive medicine in the State, if not the NHIF-Algadarif State should increase the revenues for the years 2013-2017 by 8%, 15%, 16%, 19% and 20% respectively to be financially sustainable.
- To ensure financial sustainability of the scheme under capitated outpatient care, the inflation rate should not exceed 30% and the NHIF-Algadarif State revenue should increase by 0%, 3%, 6%, 9% and 10% in the years 2013-2017 respectively

2. Provider's perspective:

- For ensuring the financial sustainability of the scheme under FFS, the providers should decrease the utilization rate by e.g.20% through avoiding over utilization of health services and by divert their efforts to preventive medicine.
- To ensure the financial sustainability of the providers, the calculated capita rate should include the providers perspective cost, expected inflation rate, risk adjustment, etc. and not only from the NHIF-Algadarif State perspective in order to avoid provider's deficit and their behavior changes regarding to underutilization of the health services and accessibility issue,

3. The scheme can increase its revenues from many resources that could include:

- Expanding the health insurance coverage through enrolling more informal sector and private institutes.

- Increasing the contribution rate for the poor families sponsored by Zakat Chamber at the State level, to be at least the same as the contribution rate paid by the Federal Zakat Chamber for some poor families.
- Generate more revenues through expanding the investments.

4. Successful implementation for capitation payment method required many measures and precautions can be summarized as follows

- Developing the information system and effective computer's programs with smooth data collection process including the data required for calculating per capita amount and for monitoring system performance e.g. base line file, collection of data on each physician and health facility including industry, capacity and capability to provide outpatient health services and geographical distribution etc. Data on enrollees by age, gender, health status and residence is also required.
- Designing a monitoring and quality assurance system to be guard against provider financial incentive regarding to underservicing and over consuming referral and inpatient care services in favor of outpatient services, establishing a simple performance indicator-based system is crucial including continuous checks and balance needed to ensure quality and access to necessary services beside regular monitoring outcomes of the outpatient services.
- Establishing measures for improving provider incentive with capitation payment method regarding to referral and inpatient admission, the measures may include; ensuring provider has adequate supplies and equipment, establishing referral guidelines and financial incentive or penalty e.g. fund holding. On the other hand, substantial program of patient education should take a place and this includes; details of the benefit package and process of receiving the health services when needed.
- Involving stakeholder including physicians, Ministry of Health, politics, Ministry of Finance, Zakat Chamber, clients and other partners in the new payment method

6.3. Suggestion for further studies

The study could be a base for further studies which act as a crucial measures to ensure advocacy and to encourage evidence based decisions, the suggested further studies can include:

1. Short Run Studies:
    - The root causes of increasing utilization rate; FFS incentive, Moral Hazard or deterioration in health status.
    - Cost unit analysis for the health services for both NHIF-Algadarif State and provider's perspective.
    - Demand and supply for health insurance services
2. Long run studies:
    - Analysis the behavior change of providers, patient and the NHIF under the new capitation policy

6.4. Limitation of the study

The study could be treated mainly as situation analysis of the NHIF-Algadarif State and not in-depth analysis as the study have a limited time, budget constraints and technical resources, including technical capacity and sound baseline information on cost and volume of needed care, thus the study used the expenditures as a proxy for cost. Lack of population characteristic information also enforced the study to base on readily available information. Limited technical capacity and time available to design and build up an optimal capitation payment system and to measure the financial status for the NHIF-Algadarif State, therefore the results of this study cannot be generalized to the whole states in Sudan because of different theme and disparity between the states. Moreover, the results of this study should be taken with caution by other studies and institutes as the situation is different.

The study could not be able to investigate the behavior change of the providers and the clients as well as the National Health Insurance, after changing into capitation payment method as the capitation was not implemented yet in Sudan. Furthermore, the experience of other countries is difficult to rely on as the themes are so different, therefore this issue can be investigated after implementing the capitation payment method in Sudan.

REFERENCES

Abt Associates Inc., (1994). *Fundamental of NGO financial sustainability.* [Online]. 2009. Available from http://www2.pathfinder.org [January 17, 2013].

AnetLerman, D. *How Capitated payment Affects Primary Health Care Physicians.* [online].2002. Available from: http://www.medicalpracticecme.com [January 9, 2013]

Barton MB, Dayhoff DA, and Soumeri SB. (2001). Measuring access to effective care among elderly medicare enrollees in managed and Fee-for-Services: a retrospective cohort study. *BMC Health Services Research.* 1(1):11.

Taylor T, Fankhauser R, and Fowler T. (2009). Financial Impact of capitation Matrix System on the Total Knee and Hip Arthroplasty. *the Journal of Arthroplasty(October 2008). 24, (5)*: 783-788.

Catalano.R, Libby.A, Snowden.L, Cuellar.AE. (2000). The effect of capitated financing on mental health services for children and youth: the Colorado experiance . *Am J Public Health*, 90(12):1861-1865.

Coleman EA et al. (2000). Acomparison of functional outcomes after hip fracture in group/staff HMOs and fee-for-services system. . *Eff Clin Pract*, 3(5):229-239.

Dusheiko.M, Gravelle H,Jacobs R, Smith P. (2006). The effect of financial incentives on gatekeeping doctors:Evidance from a natural experiment. *Journal of Health Economics.*, 25(3):449-478.

Gosden T et al (2000. *Capitation ,Salary,FFS,Mixed System of payment. effect on the behaviour of PHC provider.*[online]. Available from: http://www.hpm.org [January 5, 2013]

Gosden.T,Sibbald B, Williams J, Petchey R, and Leese B. (2003). Paying doctors by salary: a controlled study of general practitioner behaviour in England. *Health Policy*, 64(3):415-423.

Sudan Federal Ministry of Health (2007). *Annual Report of Implementing Activities in 2007.* Khartoum: Sudan Federal Ministry of Health.

Hsiao, W. (2000). *Health Care Financing in Developing Nations.* Boston: Harvard University School of Public Health.

Joan, R et al. (2002). *Mental Health Costs and Access Under Alternative Capitation Systems in Colorado.* Health Serv Res. 37(2): 315-340.

John C, Cheryl C, Sheila O. (2009). *Designing and Implementing Health Care Provider Payment System,How-To Manuals.* Washigton DC: THE WORLD BANK, 2000.

National Health Insurance Fund. (2001). *The National Health Insurance Act*. Khartoum, Sudan: Ministry of Justice.

Kerr E, Hays R, Mittman B, Siu A, Brook R. (I997). Primary care physicians'satisfaction with quality of care in California capitated medical groups. *JAMA*, 278(4): 308-312.

National Health Insurance Fund, Algadarif State. (2012). *The Annual Report of Revenues and Expenditures in the year 2012.* Sudan, Algadarif State: Ministry of Social Welfare

Sudan National Health Insurance Fund, (2011). *Annual Report of Activities.* Khartoum: National Health Insurance Fund.

Sudan National Health Insurance Fund,. (2010). *Annual Report of Activities* Khartoum: National Health Insurance Fund.

NHIF, S. (2011). *Statistical yearbook 1996-2011*. Algadarif: National Health Insurance -Algadarif State.

NHIF.S. (2010). *Annual Stastistical Report.* Algadarif: : National Health Insurance Fund, Algadarif State.

Olsen T. (1988). Sustainability of Health Care:a Framework for Analysis.Oxford Journals, *Health Policy and Planning*, 13(3): 287-295.

Rhodes, G. (2012). *Option for provider payment in Sudan.* Khartoum: National Health Insurance Fund (2012).

SFMH. (2003). *25 YEARS STARTEGIC PLAN FOR HEALTH SECTOR.* Khartoum: Sudan Federal Ministry OF Health.

Stephen M, Larry M, Mina M, Stephen M, Beth K, and Gretchen V. (1992). Prepayment with office-based Physician in Publicly Funded Programs:Results from the Children's Medicaid Program. *PEDIATRICS*, 89(4): 761-767.

Sudan Ministry of Health, World Health Orgnization. (2008). *Sudan National Health Account 2008* . Khartoum: Sudan Ministry of Health.

Sudan, C. B. (2012). *Annual Report* . Khartoum: Central Bank of Sudan.

Winnie C, Supakankunti S, Sriratanaban J, Wattana S and Pongpanich S. (2001). *Impact of capitation payment:the Social Security Scheme of Thailand.* [online]. Available from http://www.econ.chula.ac.th [January 9, 2013].

APPENDICES

APPENDIX A

Government and Non-government Revenues 2008-2012

Source	2008	2009	2010	2011	2012
Federal public	176.070	276.049	391.455	322.568	316.225
State public	6,276.6	6,764.429	7,976.05	9,844.975	10,613.6
Private sector	3.840	117.254	77.185	85.508	206.273
Pensions	15.000	34.410	-	-	-
National Pension's Fund	29.949	65.326	48.780	55.515	75.450
Families of martyrs	19.584	65.280	50.754	75.528	130.290
Poor Families	303.834	970.942	897.877	1,814.1	1,228.5
Families of orphans	60.000	100.000	70.000	192.456	256.608
Student support fund	18.000	36.505	58.500	72.000	89.451
lawyers	27.845	-	-	-	26.775
State government	376.300	513.000	303.900	577.800	770.400
Shepherds	1.320	-	-	-	-
Prisoners	6.640	10.000	12.250	45.000	55.000
Imams and preachers	-	-	-	3.840	4.608
Self-employee insurance	371.926	406.371	428.664	735.578	979.444
Federal office of Zakat	1,800.00	2,700.00	1,350.00	1,625.00	1,990.00
Federal Social welfare	-	119.640	-	-	-
Investments	867.420	2,067.75	2,326.59	2,634.6	3.593.4
Federal Support	648.453	-	-	-	1,533.5
Financial Arrears	648.453	-	406.655	1,038.57	2,266.6
Other	509.453	338.070	583.643	155.966	34.182
Federal Ministry of Finance	-	-	-	-	2,971.9
Total	11,507.38	14,587.03	14,988.9	19,279.4	27,142.3

Source: National Health Insurance Fund-Algadarif State Financial Records, 2008-2012

APPENDIX B

Direct Health Care Expenditures 2008-2012

Health Service	2008	2009	2010	2011	2012
Medicines	3,784.1	4,597.23	6,303.911	7,948.79	13,591.6
General Practitioners consultation	504.623	891.122	1,016.7	521.577	1,411.9
Specialist consultation	281.046	351.184	452.418	225.543	327.101
Dentist Consultation	25.401	270.111	24.396	12.888	-
Laboratory Investigations	728.682	967.889	1,214.3	1,830.478	2,641.00
Major operations	64.905	126.271	158.79	79.495	326.517
Moderate operations	38.200	54.890	57.480	39.101	121.188
Minor operations	74.184	66.749	64.572	32.150	91.859
X-ray	113.855	209.237	105.92	161.305	244.830
Ultra sound	122.900	142.269	225.009	129.249	207.110
Normal lab our	35.006	35.511	36.695	22.323	54.014
Caesarian section	60.515	80.925	142.250	64.750	150.154
ECG	12.380	15.505	20.985	19.440	43.814
Physiotherapy	16.598	30.850	33.836	22.466	34.610
Admission	71.706	85.742	122.641	112.547	229.867
Medical Assistant Consultation	7.151	17.437	20.038	30,752	34,611
Eye operations	77.185	75.350	105.920	74.495	274.629
ENT Operation	13.635	24.360	16.165	29.825	506.837
Orthopedics	10.100	6.550	810	-	-
Laparoscopy	8.250	4.550	500	-	4.546
Dental services	70.768	70.643	56.480	19.878	122.779
Dressing	12.473	30.187	40.746	22.646	44,657
Endoscopy	400	-	-	-	18.900
Referral cases	807.231	1,563.9	1,876.9	1,549.3	1,738.993
Other	86.879	2,986.3	1,45.543	2,345.5	3,564.9
Total	6,907.26	10,723.3	12,145.9	17,221.7	25,387.93

APPENDIX C

Total Expenditures 2008-2012

Expenses Item		2008	2009	2010	2011	2012
Compensation Allowance	**Chapter (1)**	1,192.7	-	1,742.044	969.977	-
Operational Expenses	**Chapter (2)**	-	1,439.6	1,900.7	1,603.43	1,875.33
	Health	3,508.7	5,457.18	4,900.6	7,229.904	9,552.96
Health Expenditures	**Services**					
	Doctors	780.913	1,534.8	1,781.9	1,998.24	2,398.22
	Medicines	2,694.4	3,843.1	5,973.5	7,949.07	13,287.9
	Hospital	-	-	-	-	-
Rehabilitation (Chapter 3&4)	**Health Facilities**	249.274	453.712	363.550	234.308	129.470
	Branch Unit	-	1,008.7	12.231	10.151	250.000
Deposits		-	1,727.8	346.560	978.163	1,124.68
Advances		-	12.123	83.891	5.880	20.356
Testaments		-	916	71.159	101.234	53.135
State's Collaboration Fund		-	-	-	-	-
Debts		-	7	-	-	-
Supply Store		-	-	317.227	-	-
Total		9,199.4	14,577.17	17,484.1	21,079.4	28,686.135

Source: National Health Insurance –Algadarif State Financial Records, 2008-2012

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